Publications of the U.S. Geological Survey, 1991

U.S. DEPARTMENT OF THE INTERIOR

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1991

Publications of the U.S. Geological Survey

This catalog is a list of (1) books and maps[1] that were published during 1991, and (2) articles by Geological Survey personnel in non-Geological Survey journals and books that came to our attention in 1991; it supplements the permanent catalogs "Publications of the Geological Survey, 1879-1961", "Publications of the Geological Survey, 1962-1970", and "Publications of the U.S. Geological Survey, 1971 through 1981." These permanent catalogs, as well as some others, are available under the conditions indicated below from Book and Open-File Report Sales, Box 25425, Denver, CO 80225. The catalogs are also available over the counter at any of the Geological Survey offices that sell books.

Permanent catalogs "Publications of the Geological Survey, 1879-1961" and "Publications of the Geological Survey, 1962-1970" may be purchased in paperback book form for $6.00 and as microfiche for $4.00.

Permanent catalog "Publications of the U.S. Geological Survey, 1971 through 1981" may be purchased in paperback book form (two volumes, publications listing and index) for $15 and as a set of microfiche for $8.00.

Supplements for 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989 and 1990, may be purchased in paperback book form and are priced as follows: 1982, $3; 1983, $3; 1984, $3.25; 1985, $3.75; 1986, $4.25; 1987, $4; 1988, $3.75; 1989, $4; 1990, $4.50.

State catalogs currently available may be purchased in paperback book form and are priced as follows: Alaska, $3.50; Arkansas, $1; California, $4.75; Colorado, $3.50; Florida, $1; Massachusetts/Rhode Island/Connecticut, $1; New York, $1; Oregon, $1; Pennsylvania/New Jersey, $2.50; Utah, $3.

Copies of the monthly catalog "New Publications of the U.S. Geological Survey" may be obtained free on request.

Those wishing to be placed on a free subscription list of the monthly catalog "New Publications of the U.S. Geological Survey" should apply in writing to the U.S. Geological Survey, 582 National Center, Reston, VA 22092.

Prices of available publications, except informal reports released to the open files and through the National Technical Information Service (NTIS), are given in (1) current issues of the monthly catalog "New Publications of the U.S. Geological Survey" and (2) "Price and Availability List of U.S. Geological Survey Publications (year)." Limited quantities of circulars and publications of general interest are free. Publications listed in this catalog but not found in the price and availability list are no longer available.

Prices of reports released to the open files (including reports prefixed OF and WRI) are given in a listing "U.S. Geological Survey Open-File Reports," updated bimonthly, available in microfiche for $3.50 from USGS Book and Open-File Report Sales, Box 25425, Denver, CO 80225.

Prices of reports released through the NTIS may be obtained by writing to the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161; please include NTIS number preceding each item.

[1]Individual topographic quadrangle maps are not listed, they are shown on State indexes to topographic maps, which are free on application to the U.S. Geological Survey Map Distribution, Federal Center, Box 25286, Denver, CO 80225, and to offices where books and maps are sold over the counter. These indexes also show commercial dealers in each State.

AVAILABILITY OF BOOKS AND MAPS BY MAIL

In ordering books give the series designation and number, such as Geological Survey Bulletin 738, and the full title. In ordering maps give name or series designation and number, such as Fairfax, Va., 7.5-minute or GQ-851. Include your full address and zip code, plainly printed. Prepayment is required and should be made by check or money order payable to Department of the Interior - USGS, except for periodicals (see below). Postage stamps are not accepted. Do not send cash. Remittances must be in United States funds.

Prices listed include cost of domestic surface transportation. For transmittal outside the U.S.A. (except to Canada and Mexico), a surcharge of 25 percent of the net bill should be included to cover surface transportation.

Books

Professional papers, bulletins, water-supply papers, Techniques of Water-Resources Investigations, circulars, single copies of Earthquakes and Volcanoes, Preliminary Determination of Epicenters, the annual catalog Publications of the Geological Survey, and some miscellaneous reports, including some from the foregoing series that have gone out of print at the Superintendent of Documents, are obtainable by mail from

USGS Book and Open-File Report Sales
Box 25425
Denver, CO 80225

On orders of 100 copies or more of the same report to the same address, a 25-percent discount is allowed (limited quantities of circulars and publications of general interest are usually free of charge). Open-file reports and reports available only through the NTIS should be ordered according to instructions under appropriate headings in this announcement. Discount does not apply to open-file reports and reports available through the NTIS.

Subscriptions to periodicals (Earthquakes and Volcanoes and Preliminary Determination of Epicenters) can be obtained ONLY from the

Superintendent of Documents, Government Printing Office,
Washington, DC 20402

Domestic remittance should be made by check or money order (payable to Superintendent of Documents) or charged to VISA or MasterCard. Please add 25 percent for mailing to countries outside the U.S. and its possessions.

Maps

For maps of all areas of the United States, address mail orders to

USGS Map Sales
Box 25286
Denver, CO 80225

Residents of Alaska may order Alaska maps from

USGS Map Sales—Alaska
101 12th Ave., Box 12
Fairbanks, AK 99701

On an order amounting to $500 or more at the list price, a 50-percent discount is allowed; no other discount is applicable. The discount applies to all maps and charts distributed by the Geological Survey. A $1 postage and handling charge is applicable on orders of less than $10. Check or money order should be payable to Department of the Interior - USGS

AVAILABILITY OF BOOKS AND MAPS OVER THE COUNTER

Books

Book reports of the Geological Survey are available *over the counter* at the following Geological Survey offices, all of which are authorized agents of the Superintendent of Documents:

WASHINGTON, D.C.—Main Interior Bldg., Room 2650, 1849 C St., NW.

DENVER, Colorado—Federal Bldg., Rm. 169, 1961 Stout St.

MENLO PARK, California—Bldg. 3 (Stop 532), Rm. 3128, 345 Middlefield Road

RESTON, Virginia—507 National Center, Rm. 1C402, 12201 Sunrise Valley Dr.

SALT LAKE CITY, Utah—Federal Bldg., Rm. 8105, 125 South State St.

SAN FRANCISCO, California—Customhouse, Rm. 504, 555 Battery St.

SPOKANE, Washington—U.S. Courthouse, Rm. 678, West 920 Riverside Ave.

ANCHORAGE, Alaska—Rm. 101, 4230 University Dr.

ANCHORAGE, Alaska—Rm. G-84, 605 West 4th Ave.

Maps

Maps may be purchased *over the counter* at the U.S. Geological Survey offices where books are sold and also at the following Geological Survey offices:

ROLLA, Missouri—1400 Independence Road

DENVER, Colorado—Map Distribution, Bldg. 810, Federal Center

FAIRBANKS, Alaska—New Federal Bldg., 101 Twelfth Ave.

STENNIS SPACE CENTER, Mississippi—Bldg. 3101

Survey maps are also sold by some 2,800 commercial dealers throughout the United States. Prices charged are generally higher than those shown on this list. Dealers are listed in State Catalogs of Topographic and Other Maps, which are obtainable free of charge by mail or over the counter from Geological Survey offices listed on this page.

BOOKS

PROFESSIONAL PAPERS

Professional papers are mainly comprehensive scientific reports of wide and lasting interest and importance to professional scientists and engineers. Included are reports on the results of resource studies, and of topographic, hydrologic, and geologic investigations. They also include collections of related papers addressing different aspects of a single scientific topic.

P 1012. PUERTO RICO. Hydrogeology of the karst of Puerto Rico, by E. V. Giusti. 1978 (1991). 68 p. 2 plates in pocket. (Reprint.)

P 1078. Tectonics of the Indonesian region, by W. B. Hamilton. Prepared on behalf of the Ministry of Mines, Government of Indonesia, and the Agency for International Development, U.S. Department of State, in cooperation with the Geological Survey of Indonesia, the Australia Bureau of Mineral Resources, Geology and Geophysics, and the Lamont-Doherty Geological Observatory of Columbia University. 1979 (1991). 345 p. 1 plate in pocket. (Reprint.)

P 1273-F. MONTANA, SOUTH DAKOTA, WYOMING. Geochemical evolution of water in the Madison Aquifer in parts of Montana, South Dakota, and Wyoming, by J. F. Busby, L. N. Plummer, R. W. Lee and B. B. Hanshaw. 1991. p. F1-F89. (Geology and hydrology of the Madison Limestone and associated rocks in parts of Montana, Nebraska, North Dakota, South Dakota, and Wyoming.)

P 1367. SOUTH CAROLINA. Studies related to the Charleston, South Carolina, earthquake of 1886; Neogene and Quaternary lithostratigraphy and biostratigraphy. Prepared in cooperation with the U.S. Nuclear Regulatory Commission. 1990. 191 p. (Chapters A-G are issued as a single volume and are not available separately.)

Introduction, by Lucy McCartan, U.S. Geological Survey. p. 1-5.

A. Quaternary stratigraphy in the vicinity of Charleston, South Carolina, and its relationship to local seismicity and regional tectonism, by Lucy McCartan, R. E. Weems, and E. M. Lemon, Jr., U.S. Geological Survey. p. A1-A39.

B. Calcareous nannofossils from Pliocene and Pleistocene deposits in South Carolina, by L. M. Bybell, U.S. Geological Survey. p. B1-B9.

C. Evolution of Neogene and Quaternary marine Ostracoda, United States Atlantic Coastal Plain; evolution and speciation in Ostracoda, IV, by T. M. Cronin, U.S. Geological Survey. p. C1-C43.

D. Biostratigraphic and paleoenvironmental interpretations from late Pleistocene Ostracoda, Charleston, South Carolina, by S. K. Lyon, PEER Consultants. p. D1-D48.

E. Neogene and Pleistocene dinocysts of the Charleston, South Carolina, region, by L. E. Edwards, U.S. Geological Survey. p. E1-E9.

F. Mollusks from the Edisto Formation (lower Miocene) of South Carolina, by L. W. Ward, U.S. Geological Survey; and B. W. Blackwelder, Tenneco. p. F1-F7.

G. A summary of selected stratigraphic occurrences of Neogene and Quaternary invertebrate faunas and microfloras in the Charleston, South Carolina, area, by R. E. Weems and Lucy McCartan, U.S. Geological Survey. p. G1-G31.

P 1386-G. Glaciers of the Middle East and Africa, edited by R. S. Williams, Jr., and J. G. Ferrigno, U.S. Geological Survey. 1991. p. G1-G70. (Satellite image atlas of glaciers of the world, edited by R. S. Williams, Jr., and J. G. Ferrigno.)

1. Glaciers of Turkey, by Ajun Kurter, Istanbul University. p. G1-G30.

2. Glaciers of Iran, by J. G. Ferrigno, U.S. Geological Survey. p. G31-G47.

3. Glaciers of Africa, by J. A. T. Young, University of Edinburgh; and Stefan Hastenrath, University of Wisconsin. p. G49-G70.

P 1391. CALIFORNIA. Cenozoic giant pectinids from California and the Tertiary Caribbean Province; *Lyropecten, "Macrochlamis," Vertipecten,* and *Nodipecten* species, by J. T. Smith. 1991. 155 p.

P 1392. Climatic atlas of the Delaware River basin, by C. B. Jenner and H. F. Lins. 1991. 127 p.

P 1401-A. CALIFORNIA. Ground water in the Central Valley, California; a summary report, by G. L. Bertoldi, R. H. Johnston and K. D. Evenson. 1991. p. A1-A44. (Regional Aquifer-System Analysis; Central Valley, California.)

P 1404-E. MARYLAND, DELAWARE, DISTRICT OF COLUMBIA. Hydrogeologic framework of the coastal plain of Maryland, Delaware, and the District of Columbia, by D. A. Vroblesky and W. B. Fleck. 1991. p. E1-E45. 2 plates in pocket. (Regional Aquifer-System Analysis; Northern Atlantic Coastal Plain.)

P 1406-C. Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California, by F. N. Robertson. 1991. p. C1-C90. (Regional Aquifer-System Analysis; southwest alluvial basins, Arizona and adjacent states.)

P 1408-G. IDAHO. Geohydrology of the regional aquifer system, western Snake River plain, southwestern Idaho, by G. D. Newton. 1991. p. G1-G52. 1 plate in pocket. (Regional Aquifer-System Analysis; Snake River plain, Idaho.)

P 1409-D. NEVADA, UTAH. Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states, by T. J. Burbey and D. E. Prudic. 1991. p. D1-D84. (Regional Aquifer-System Analysis, Great Basin, Nevada-Utah.) (Supersedes Open-file report 90-560.)

P 1430. CALIFORNIA, ARIZONA. A contribution to the structural history of the Vidal-Parker region, California and Arizona, by W. J. Carr, *with a section on* Level line, by D. D. Dickey. Prepared in cooperation with the U.S. Nuclear Regulatory Commission. 1991. 40 p. 5 plates in pocket.

P 1494. CALIFORNIA, ARIZONA. Floods of February 1980 in Southern California and central Arizona, by E. H. Chin, National Weather Service; B. N. Aldridge, and R. J. Longfield, U.S. Geological Survey. Prepared jointly by the U.S. Geological Survey and the National Oceanic and Atmospheric Administration. 1991. 126 p. 3 plates in pocket.

P 1501. CALIFORNIA. The Cenozoic evolution of the San Joaquin Valley, California, by J. A. Bartow. 1991. 40 p. 2 plates in pocket. (Supersedes Open-file report 87-581.)

P 1502. CALIFORNIA. Microbanded manganese formations; protoliths in the Franciscan Complex, California, by J. S. Huebner and M. J. Flohr. 1990. 72 p.

P 1503. KENTUCKY. Mississippian rocks in Kentucky, by E. G. Sable, U.S. Geological Survey; and G. R. Dever, Jr., Kentucky Geological Survey. Prepared in cooperation with the Kentucky Geological Survey. 1990. 125 p. 1 plate in pocket.

P 1504. SOUTH CAROLINA. Earthquake-induced liquefaction features in the coastal setting of South Carolina and in the fluvial setting of the New Madrid seismic zone, by S. F. Obermeier, R. B. Jacobson, J. P. Smoot, R. E. Weems, G. S. Gohn, U.S. Geological Survey; J. E. Monroe, U.S. Army Corps of Engineers; and D. S. Powars, U.S. Geological Survey. 1990. 44 p. 1 plate in pocket.

P 1505-B,C. COLORADO. Geologic framework and stratigraphy of Cretaceous and Tertiary rocks of the Southern Ute Indian Reservation, southwestern Colorado, by W. M. Aubrey, C. M. Molenaar, and J. K. Baird. Prepared in cooperation with the Southern Ute Tribe and the U.S. Bureau of Indian Affairs. 1991. 36 p. 3 plates in pocket. (Geology and mineral resources of the Southern Ute Indian Reservation, edited by R. S. Zech.) (Chapters B and C are issued as a single volume and are not available separately.)

B. Geologic framework of Cretaceous and Tertiary rocks in the Southern Ute Indian Reservation and adjacent areas in the northern San Juan Basin, southwestern Colorado, by W. M. Aubrey. p. B1-B24.

C. Stratigraphic cross sections of Upper Cretaceous rocks in the northern San Juan Basin, Southern Ute Indian Reservation, southwestern Colorado, by C. M. Molenaar and J. K. Baird. p. C1-C12.

P 1505-D. COLORADO. Coal resources of Upper Cretaceous Fruitland Formation in the Southern Ute Indian Reservation, southwestern Colorado, by D. T. Sandberg. Prepared in cooperation with the Southern Ute Tribe and the U.S. Bureau of Indian Affairs. 1990. p. D1-D24. 3 plates in pocket. (Geology and mineral resources of the Southern Ute Indian Reservation, edited by R. S. Zech.)

P 1506-B. WYOMING, UTAH, COLORADO. Revised stratigraphic nomenclature for the Wasatch and Green River formations of Eocene age, Wyoming, Utah, and Colorado, by H. W. Roehler. 1991. p. B1-B38. (Geology of the Eocene Wasatch, Green River, and Bridger (Washakie) formations, greater Green River basin, Wyoming, Utah, and Colorado.)

P 1506-C. WYOMING, COLORADO. Godiva Rim Member; a new stratigraphic unit of the Green River Formation in Southwest Wyoming and Northwest Colorado, by H. W. Roehler. 1991. p. C1-C17. (Geology of the Eocene Wasatch, Green River, and Bridger (Washakie) formations, greater Green River basin, Wyoming, Utah, and Colorado.)

P 1507. NEW MEXICO. Geology of volcanic and subvolcanic rocks of the Raton-Springer area, Colfax and Union counties, New Mexico, by G. R. Scott, R. E. Wilcox and H. H. Mehnert. 1990. 58 p.

P 1508. WYOMING, COLORADO, UTAH. Stratigraphy of the Mesaverde Group in the central and eastern greater Green River basin, Wyoming, Colorado, and Utah, by H. W. Roehler. 1990. 52 p. 2 plates in pocket.

P 1512. Description and development of the Cordilleran orogenic belt in the Southwestern United States and northern Mexico, by Harald Drewes. 1991. 92 p. 2 plates in pocket.

P 1513-A. MARSHALL ISLANDS. Introduction: Enewetak Atoll and the PEACE program, by T. W. Henry and B. R. Wardlaw. Prepared in cooperation with the U.S. Defense Nuclear Agency. 1990. p. A1-A29. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)

P 1513-B. MARSHALL ISLANDS. Sediment facies of Enewetak Atoll lagoon, by B. R. Wardlaw, T. W. Henry and W. E. Martin. Prepared in cooperation with the Defense Nuclear Agency. 1991. p. B1-B60. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)

P 1513-C. MARSHALL ISLANDS. Calcareous nannofossils and planktic foraminifers from Enewetak Atoll, western Pacific Ocean, by L. M. Bybell and R. Z. Poore. Prepared in cooperation with the Defense Nuclear Agency. 1991. p. C1-C21. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)

P 1513-D. MARSHALL ISLANDS. Larger foraminifer biostratigraphy of PEACE boreholes, Enewetak Atoll, western Pacific Ocean, by T. G. Gibson and Richard Margerum. Prepared in cooperation with the U.S. Defense Nuclear Agency. 1991. p. D1-D14. (Geologic and geophysical investigations of Enewetak Atoll, Republic of the Marshall Islands.)

P 1516. Oliverian domes, related plutonic rocks, and mantling Ammonoosuc Volcanics of the Bronson Hill Anticlinorium, New England Appalachians, by G. W. Leo. 1991. 92 p. 1 plate in pocket.

BULLETINS

Bulletins contain significant data and interpretations that are of lasting scientific interest but are generally more limited in scope or geographic coverage than professional papers. They include the results of resource studies and of geologic and topographic investigations; as well as collections of short papers related to a specific topic.

B 1573. CONNECTICUT. Bedrock geology of the Bristol Quadrangle, Hartford, Litchfield, and New Haven counties, Connecticut, by H. E. Simpson. Prepared in cooperation with the State of Connecticut Geological and Natural History Survey. 1989 (1990). 13 p. 1 plate in pocket. (Revised and updated version of an earlier, smaller format book.)

B 1674-E. MONTANA. Petrology of chromite-bearing rocks from the lowermost cyclic units in the Stillwater Complex, Montana, by P. J. Loferski, B. R. Lipin, U.S. Geological Survey;

and R. W. Cooper, Lamar University. 1990. p. E1-E28. (Contributions on ore deposits in the early magmatic environment.)

B 1702-K. ARIZONA. Mineral resources of the Kofa Unit 4 North Wilderness Study Area, Yuma County, Arizona, by D. R. Sherrod, D. B. Smith, M. D. Kleinkopf, U.S. Geological Survey; and D. D. Gese, U.S. Bureau of Mines. 1990. p. K1-K12. (Mineral resources of wilderness study areas; southwestern and south-central Arizona.)

B 1704-A. ARIZONA. Mineral resources of the Mohave Wash Wilderness Study Area, Mohave County, Arizona, by J. G. Evans, D. R. Sherrod, R. H. Hill, R. C. Jachens, U.S. Geological Survey; and J. R. McDonnell, Jr., U.S. Bureau of Mines. 1990. p. A1-A17. (Mineral resources of wilderness study areas; Havasu region, Arizona.)

B 1704-B. ARIZONA. Mineral resources of the Gibraltar Mountain and Planet Peak Wilderness Study Areas, La Paz County, Arizona, by R. G. Eppinger, J. A. Peterson, H. R. Blank, Jr., K. E. Livo, D. H. Knepper, Jr., J. A. Pitkin, U.S. Geological Survey; J. E. Spencer, S. J. Reynolds, M. J. Grubensky, Arizona Geological Survey; T. J. Kreidler, and D. C. Scott, U.S. Bureau of Mines. 1990. p. B1-B32. (Mineral resources of wilderness study areas; Havasu region, Arizona.)

B 1704-C. ARIZONA. Mineral resources of the Swansea Wilderness Study Area, La Paz and Mohave counties, Arizona, by R. M. Tosdal, R. G. Eppinger, H. R. Blank, Jr., D. H. Knepper, Jr., A. J. Gallagher, J. A. Pitkin, S. L. Jones, U.S. Geological Survey; and G. S. Ryan, U.S. Bureau of Mines. 1990. p. C1-C24. (Mineral resources of wilderness study areas; Havasu region, Arizona.)

B 1704-D. ARIZONA. Mineral resources of the Cactus Plain and East Cactus Plain Wilderness Study Areas, La Paz County, Arizona, by R. M. Tosdal, R. G. Eppinger, J. A. Erdman, W. F. Hanna, J. A. Pitkin, H. R. Blank, Jr., R. M. O'Leary, J. R. Watterson, U.S. Geological Survey; and T. J. Kreidler, U.S. Bureau of Mines. 1990. p. D1-D32. (Mineral resources of wilderness study areas; Havasu region, Arizona.)

B 1728-G. NEVADA, UTAH. Mineral resources of the Marble Canyon Wilderness Study Area, White Pine County, Nevada, and Millard County, Utah, by M. F. Diggles, G. A. Nowlan, H. R. Blank, Jr., S. M. Marcus, U.S. Geological Survey; and R. F. Kness, U.S. Bureau of Mines. 1990. p. G1-G22. (Mineral resources of wilderness study areas; east-central Nevada and part of adjacent Beaver and Iron counties, Utah.)

B 1738-D. OREGON. Mineral resources of the Diablo Mountain Wilderness Study Area, Lake County, Oregon, by M. F. Diggles, H. D. King, M. E. Gettings, J. E. Conrad, D. L. Sawatzky, G. S. Soreghan, U.S. Geological Survey; T. J. Peters, and S. L. Willett, U.S. Bureau of Mines. 1990. p. D1-D22. (Mineral resources of wilderness study areas; south-central Oregon.)

B 1741-E. OREGON. Mineral resources of the Gold Creek and Sperry Creek Wilderness Study Areas, Malheur County, Oregon, by J. G. Evans, J. G. Frisken, Andrew Griscom, D. L. Sawatzky, U.S. Geological Survey; and M. S. Miller, U.S. Bureau of Mines. 1990. p. E1-E20. (Mineral resources of wilderness study areas; east-central Oregon.)

B 1741-G. OREGON. Mineral resources of the Blue Canyon and Owyhee Breaks Wilderness Study Areas, Malheur County, Oregon, by D. B. Vander Meulen, V. E. Barlock, P. S. Plumley, J. G. Frisken, Andrew Griscom, U.S. Geological Survey; and J. D. Causey, U.S. Bureau of Mines. 1990. p. G1-G28. (Mineral resources of wilderness study areas; east-central Oregon.) (Supersedes Open-file report 90-517.)

B 1744-C. OREGON. Mineral resources of the Soda Mountain Wilderness Study Area, Jackson County, Oregon, by W. J. Pickthorn, R. J. Goldfarb, Donald Plouff, S. J. Sutley, M. D. Wilcox, U.S. Geological Survey; T. J. Peters and S. L. Willett, U.S. Bureau of Mines. 1990. p. C1-C12. (Mineral resources of wilderness study areas; central and far western Oregon.)

B 1754-E. UTAH. Mineral resources of the Mill Creek Canyon Wilderness Study Area, Grand County, Utah, by M. F. Diggles, J. E. Case, H. N. Barton, J. S. Duval, U.S. Geological Survey; and M. E. Lane, U.S. Bureau of Mines. 1990. p. E1-E20. (Mineral resources of wilderness study areas; upper Colorado River region, Utah.)

B 1787-N. UTAH. Sedimentology, mineralogy, palynology, and depositional history of some uppermost Cretaceous and lowermost Tertiary rocks along the Utah Book and Roan cliffs east of the Green River, by K. J. Franczyk, J. K. Pitman and D. J. Nichols. 1990. p. N1-N27. 2 plates in pocket. (Evolution of sedimentary basins; Uinta and Piceance basins.)

B 1787-P. UTAH, COLORADO. Middle Cretaceous stratigraphy on the south and east sides of the Uinta Basin, northeastern Utah and northwestern Colorado, by C. M. Molenaar and W. A. Cobban. 1991. p. P1-P34. 1 plate in pocket. (Evolution of sedimentary basins; Uinta and Piceance basins.)

B 1787-X. UTAH. Ground-water chemistry and diagenetic reactions in Tertiary sandstones of the Green River and Wasatch formations, Uinta Basin, Utah, by R. B. Wanty, J. K. Pitman and T. D. Fouch. 1991. p. X1-X21. (Evolution of sedimentary basins; Uinta and Piceance basins.)

B 1787-Y. COLORADO. Structural control on distribution of sedimentary facies in the Pennsylvanian Minturn Formation of north-central Colorado, by K. J. Houck, University of Colorado. 1991. p. Y1-Y33. (Evolution of sedimentary basins; Uinta and Piceance basins.)

B 1839-E,F. Evolution of sedimentary basins; Appalachian Basin. 1990. 43 p. 2 plates in pocket. (Chapters E and F are issued as a single volume and are not available separately.)

E. Structural and stratigraphic framework of the Giles County area, a part of the Appalachian Basin of Virginia and West Virginia, by R. C. McDowell and A. P. Schultz. p. E1-E24.

F. Late Paleozoic depositional trends in the central Appalachian Basin, by K. J. Englund and R. E. Thomas. p. F1-F19.

B 1857-I. Epithermal gold deposits; Part II, by Ed DeWitt, U.S. Geological Survey; J. P. Thorson, Exxon Co.; R. C. Smith, consulting geologist; J. W. Whipple, U.S. Geological Survey; and J. A. Saunders, Auburn University. 1991. p. I1-I48. (Geology and resources of gold in the United States; D. R. Shawe and R. P. Ashley, scientific editors; L. M. H. Carter, technical editor.) (Part I is B 1857-H.)

Geology and gold deposits of the Oatman District, northwestern Arizona, by Ed DeWitt, U.S. Geological Survey; J. P. Thor-

son, Exxon Co., and R. C. Smith, consulting geologist. p. I1-I28.

Geology and gold deposits of the Marysville mining district, Montana, by J. W. Whipple, U.S. Geological Survey. p. I29-I36.

Gold deposits of the Boulder County gold district, Colorado, by J. A. Saunders, Auburn University. p. I37-I48.

B 1866-F. OKLAHOMA. In situ stress analysis of wellbore breakouts from Oklahoma and the Texas Panhandle, by R. L. Dart. 1990. p. F1-F28. (Evolution of sedimentary basins; Anadarko Basin.)

B 1878. NEVADA. Spatial analysis of geochemical and geologic information from the Tonopah 1° × 2° Quadrangle, Nevada, by J. L. Dwyer and J. T. Nash. 1991. 21 p. 3 plates in pocket.

B 1887. NEW YORK, VERMONT, NEW HAMPSHIRE. Summary results of the Glens Falls CUSMAP project, New York, Vermont, and New Hampshire, edited by J. F. Slack, U.S. Geological Survey. 1990. 279 p.

A. An introduction to the geology and Paleozoic history of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by J. B. Thompson, Jr., Harvard University. p. A1-A13.

B. Geology of the Adirondack portion of the Glens Falls 1° × 2° Quadrangle, by J. M. McLelland, Colgate University. p. B1-B10.

C. Magnetic and gravity expression of Cretaceous alkalic plutonic complexes at Cuttingsville and Mount Ascutney, Vermont, by D. L. Daniels, U.S. Geological Survey. p. C1-C8.

D. Zircon U-Pb data for the Moretown and Barnard volcanic members of the Missisquoi Formation and a dike cutting the Standing Pond Volcanics, southeastern Vermont, by J. N. Aleinikoff, U.S. Geological Survey; and Paul Karabinos, Williams College. p. D1-D10.

E. Lineament analysis of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by H. A. Pohn, U.S. Geological Survey. p. E1-E6.

F. Regional exploration geochemistry of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by K. C. Watts, Jr., U.S. Geological Survey. p. F1-F70.

G. Airborne and ground electromagnetic studies of the eastern half of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by C. L. Long, U.S. Geological Survey. p. G1-G7.

H. Metallic mineral deposits in the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by J. F. Slack and P. G. Schruben, U.S. Geological Survey. p. H1-H6.

I. Detection of geobotanical anomalies associated with mineralization in the Glens Falls 1° × 2° Quadrangle, by M. S. Power and N. M. Milton, U.S. Geological Survey. p. I1-I8.

J. The Piermont Allochthon, northern Connecticut Valley area, New England; preliminary description and resource implications, by R. H. Moench, U.S. Geological Survey. p. J1-J23.

K. Stratabound zinc-lead-copper deposits in the Cambrian carbonate-siliciclastic shelf sequence at Lion Hill, west-central Vermont, by S. H. B. Clark, U.S. Geological Survey. p. K1-K9.

L. The Lion Hill zinc-lead-copper deposit, Brandon, Vermont; source of lead and fluid systematics, by N. K. Foley, U.S. Geological Survey. p. L1-L9.

M. Some controls on trace-element concentrations, especially uranium, in selected peat deposits of Vermont and New Hampshire, by C. C. Cameron, P. G. Schruben, U.S. Geological Survey; and E. L. Boudette, New Hampshire State Geologist. p. M1-M10.

N. Distribution of gold, molybdenum, tin, and selected other elements in the vicinity of Mount Ascutney, Windsor County, Vermont, by L. J. Cox, U.S. Geological Survey. p. N1-N7.

O. Carbonate-hosted gold mineralization of hydrothermal-replacement origin adjacent to a syenitic stock at Cuttingsville, Vermont, and the potential for other syenite-related gold deposits in New England, by G. R. Robinson, Jr., U.S. Geological Survey. p. O1-O18.

P. Epigenetic uranium mineralization in the middle Proterozoic Mount Holly Complex near Ludlow and Jamaica, Vermont, by R. A. Ayuso, U.S. Geological Survey; and C. A. Ratté, Vermont State Geologist. p. P1-P18.

Q. Geochemistry of stream sediments and heavy-mineral concentrates from the Orange County copper district, east-central Vermont, by J. F. Slack, P. J. Atelsek, and J. W. Whitlow, U.S. Geological Survey. p. Q1-Q21.

R. Preliminary assessment of metallic mineral resources in the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by J. F. Slack, U.S. Geological Survey. p. R1-R26.

B 1895. Shorter contributions to paleontology and stratigraphy, edited by W. J. Sando, U.S. Geological Survey. 1990. 60 p. (Chapters A-C are issued as a single volume and are not available separately.)

A. Conodont biostratigraphy of the Permian Road Canyon Formation, Glass Mountains, Texas, by B. R. Wardlaw, U.S. Geological Survey; and R. E. Grant, Smithsonian Institution. p. A1-A18.

B. The rugose coral *Ankhelasma*; index to Viséan (Lower Carboniferous) shelf margin in the Western Interior of North America, by W. J. Sando, U.S. Geological Survey; E. W. Bamber, and B. C. Richards, Geological Survey of Canada. p. B1-B29.

C. Lithostratigraphy and conodont biostratigraphy across the Lower-Middle Ordovician disconformity (early to middle Whiterockian) at Pratt Ferry, central Alabama, by T. H. Shaw, City University of New York; K. E. Roberson, University of Tennessee; and A. G. Harris, U.S. Geological Survey. p. C1-C13.

B 1898. CALIFORNIA. Liquefaction susceptibility in the San Bernardino Valley and vicinity, Southern California; a regional

evaluation, by J. C. Matti and S. E. Carson. 1991. 53 p. 5 plates in separate case. (Supersedes Open-file report 86-562.)

B 1904-C,D. MINNESOTA, MICHIGAN. Tectonic imbrication and foredeep development in the Penokean Orogen, east-central Minnesota; an interpretation based on regional geophysics and the results of test-drilling. The Penokean Orogeny in Minnesota and upper Michigan; a comparison of structural geology, by D. L. Southwick, G. B. Morey, Minnesota Geological Survey; and T. B. Holst, University of Minnesota, Duluth. 1991. 27 p. (Contributions to Precambrian geology of Lake Superior region; edited by P. K. Sims and L. M. H. Carter.) (Chapters C and D are issued as a single volume and are not available separately.)

C. Tectonic imbrication and foredeep development in the Penokean Orogen, east-central Minnesota; an interpretation based on regional geophysics and the results of test-drilling, by D. L. Southwick and G. B. Morey, Minnesota Geological Survey. p. C1-C17.

D. The Penokean Orogeny in Minnesota and upper Michigan; a comparison of structural geology, by T. B. Holst, University of Minnesota, Duluth. p. D1-D10.

B 1904-E. MICHIGAN. Great Lakes tectonic zone in Marquette area, Michigan; implications for Archean tectonics in north-central United States, by P. K. Sims. 1991. p. E1-E17. (Contributions to Precambrian geology of Lake Superior region; edited by P. K. Sims and L. M. H. Carter.)

B 1904-F. MICHIGAN. Archean geology of the northern block of the Ishpeming greenstone belt, Marquette County, Michigan, by R. C. Johnson and T. J. Bornhorst, Michigan Technological University. 1991. p. F1-F20. (Contributions to Precambrian geology of Lake Superior region; edited by P. K. Sims and L. M. H. Carter.)

B 1904-G,H. MICHIGAN, WISCONSIN. Neodymium isotopic evidence for early Proterozoic units in the Watersmeet gneiss dome, northern Michigan. Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin, by K. M. Barovich, P. J. Patchett, University of Arizona; Z. E. Peterman, P. K. Sims, and W. C. Day, U.S. Geological Survey. 1991. 23 p. (Contributions to Precambrian geology of Lake Superior region; edited by P. K. Sims and L. M. H. Carter.) (Chapters G and H are issued as a single volume and are not available separately.)

G. Neodymium isotopic evidence for early Proterozoic units in the Watersmeet gneiss dome, northern Michigan, by K. M. Barovich, P. J. Patchett, University of Arizona; Z. E. Peterman, and P. K. Sims, U.S. Geological Survey. p. G1-G7.

H. Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin, by W. C. Day, P. K. Sims, and Z. E. Peterman, U.S. Geological Survey. p. H1-H16.

B 1904-K. MICHIGAN. Nature and style of deformation in the foreland of the early Proterozoic Penokean Orogen, northern Michigan, by J. S. Klasner, Western Illinois University and U.S. Geological Survey; R. W. Ojakangas, University of Minnesota-Duluth and U.S. Geological Survey; K. J. Schulz, U.S. Geological Survey; and G. L. LaBerge, University of Wisconsin-Oshkosh and U.S. Geological Survey. 1991. p. K1-K22. (Contributions to Precambrian geology of Lake Superior region; edited by P. K. Sims and L. M. H. Carter.)

B 1907. ARIZONA. The nature and possible significance of the Batamote copper-bismuth-silver anomaly, Pima County, Arizona, by D. L. Huston, University of Tasmania; and P. K. Theobald, U.S. Geological Survey. 1990. 19 p. 2 plates in pocket.

B 1908. Selected papers in the applied computer sciences 1990, edited by D. A. Wiltshire. 1990. 56 p. (Published as one volume and not available as separate chapters.)

A. Applications of user-supplied transformations in computer-graphics programs, by S. A. Leake. p. A1-A5.

B. Linking digital technology to printing technology for producing publication-quality color graphics, by G. J. Allord and K. J. Hitt. p. B1-B7.

C. Generating color separations of geologic maps on the computer, by Alex Acosta and J. M. Barrett. p. C1-C20.

D. Digital spatial data technology and applications, by R. W. Olsen. p. D1-D10.

E. Radon potential defined by exploratory data analysis and geographic information systems, by Katherine Fitzpatrick-Lins, T. L. Johnson and J. K. Otton. p. E1-E10.

F. Automation of data systems; Minnesota's approach for water-use data, by L. C. Trotta. p. F1-F4.

B 1916. VIRGINIA. Manganese contents of some sedimentary rocks of Paleozoic age in Virginia, by E. R. Force and L. J. Cox. 1991. 25 p.

A. Manganese contents of some lower Paleozoic carbonate rocks of Virginia, by E. R. Force. p. A1-A9.

B. Manganese contents of some rocks of Silurian and Devonian ages in Northwest Virginia, by L. J. Cox. p. B1-B16.

B 1917-B. WYOMING. Ammonites and some characteristic bivalves from the Upper Cretaceous Frontier Formation, Natrona County, Wyoming, by W. A. Cobban. 1990. p. B1-B13. (Evolution of sedimentary basins; Powder River basin.)

B 1917-C. WYOMING. Petrology, diagenesis, and sedimentology of oil reservoirs in Upper Cretaceous Shannon Sandstone Beds, Powder River basin, Wyoming, by P. L. Hansley and C. G. Whitney. 1990. p. C1-C33. (Evolution of sedimentary basins; Powder River basin.)

B 1917-D. WYOMING, MONTANA. Uplift of the Bighorn Mountains, Wyoming and Montana; a sandstone provenance study, by C. E. Whipkey, V. V. Cavaroc, North Carolina State University; and R. M. Flores, U.S. Geological Survey. 1991. p. D1-D20.

B 1917-E. WYOMING. Red beds of the Triassic Chugwater Group, southwestern Powder River basin, Wyoming, by V. V. Cavaroc, North Carolina State University; and R. M. Flores, U.S. Geological Survey. 1991. p. E1-E17. (Evolution of sedimentary basins; Powder River basin.)

B 1919. WYOMING. A petrologic study of the Fox Hills Sandstone, Rock Springs Uplift, Wyoming, by N. L. Hickling. 1991. 15 p.

B 1923. COLORADO. Taxonomic revision of the Spermatopsida of the Oligocene Creede flora, southern Colorado, by J. A. Wolfe, U.S. Geological Survey; and H. E. Schorn, University of California, Berkeley. 1990. 40 p.

B 1928. CALIFORNIA. Stratigraphy of the Lower and Middle(?) Triassic Union Wash Formation, east-central California, by Paul Stone, C. H. Stevens and M. J. Orchard. 1991. 26 p.

B 1929. ARIZONA. Magnetostratigraphy of the San Francisco volcanic field, Arizona, by K. L. Tanaka, T. C. Onstott and E. M. Shoemaker. 1990. 35 p.

B 1930. Gold-bearing skarns, by T. G. Theodore, G. J. Orris, J. M. Hammarstrom and J. D. Bliss. 1991. 61 p. (Supersedes Open-file report 87-273.)

B 1932. The Midcontinent of the United States; permissive terrane for an olympic dam-type deposit?, edited by W. P. Pratt and P. K. Sims, U.S. Geological Survey. 1990. 81 p.

Introduction, by W. P. Pratt and P. K. Sims, U.S. Geological Survey. p. 1-2.

Petrogenesis and tectonic setting of middle Proterozoic iron oxide-rich ore deposits; an ore deposit model for olympic dam-type mineralization, by S. A. Hauck, UMETCO Minerals Corp. p. 4-39.

Geologic setting and ages of Proterozoic anorogenic rhyolite-granite terranes in the central United States, by P. K. Sims, U.S. Geological Survey. p. 40-47.

General features of the St. Francois and Spavinaw granite-rhyolite terranes and the Precambrian metallogenic region of Southeast Missouri, by E. B. Kisvarsanyi, Missouri Geological Survey. p. 48-57.

Progress toward an occurrence model for Proterozoic iron oxide deposits; a comparison between the ore provinces of South Australia and Southeast Missouri, by M. T. Einaudi and Naomi Oreskes, Stanford University. p. 58-69.

The geophysical signature of Olympic Dam and Midcontinent (U.S.A.) analogs, by W. J. Hinze, Purdue University. p. 70.

Methodology for analysis of the Proterozoic metallogenic province of Southeast Missouri; a blueprint for state and Federal cooperation (a.k.a. the "Olympic Dam Project"), by E. B. Kisvarsanyi and C. E. Robertson, Missouri Geological Survey. p. 76.

Geologic mapping and evaluation of the Pea Ridge iron ore mine (Washington County, Missouri) for rare-earth element and precious metal potential; a progress report, by M. A. Marikos, L. M. Nuelle, and C. M. Seeger, Missouri Geological Survey. p. 77-81.

B 1934. Shorter contributions to paleontology and stratigraphy, edited by W. J. Sando, U.S. Geological Survey. 1991. 45 p. (Chapters A-E are issued as a single volume and are not available separately.)

A. A giant scaphite from the Turonian (Upper Cretaceous) of the Western Interior of the United States, by W. A. Cobban, U.S. Geological Survey; and W. J. Kennedy, University of Oxford. p. A1-A2.

B. Evolution and biogeography of the Cenomanian (Upper Cretaceous) ammonite *Metoicoceras* Hyatt, 1903, with a revision of *Metoicoceras praecox* Haas, 1949, by W. A. Cobban, U.S. Geological Survey; and W. J. Kennedy, University of Oxford. p. B1-B11.

C. *Baculites thomi* Reeside, 1927, an Upper Cretaceous ammonite in the Western Interior of the United States, by W. A. Cobban, U.S. Geological Survey; and W. J. Kennedy, University of Oxford. p. C1-C8.

D. Discovery of Early Ordovician fossils in Bucks County, Pennsylvania, by J. E. Repetski and A. A. Drake, Jr., U.S. Geological Survey. p. D1-D6.

E. An unusual Late Cretaceous fauna from an oyster-rich interval in the Santa Cruz Mountains of California, by W. P. Elder, U.S. Geological Survey. p. E1-E18.

B 1935. Stratigraphic notes, 1989-90. 1991. 40 p.

The Salmon River Formation; a lower Eocene sequence in the central Oregon Coast Range, by P. D. Snavely, Jr. p. 1-4.

Revisions to the stratigraphy of the Connecticut Valley trough, eastern Vermont, by N. L. Hatch, Jr. p. 5-7.

Revisions to the nomenclature of some middle Proterozoic granitic rocks in the northern Berkshire Massif, Massachusetts, and the southern Green Mountains, Vermont and Massachusetts, by N. M. Ratcliffe. p. 9-26.

The Sohnari Formation in southern Pakistan, by W. F. Outerbridge, N. O. Frederiksen, M. R. Khan, R. A. Khan, M. J. Qureshi, M. Z. Khan, Niamatullah and S. A. Khan. p. 27-40.

B 1937. COLORADO. Crystalline rocks of the Strawberry Lake area, Front Range, Colorado, by E. J. Young. 1990. 61 p. 1 plate in pocket. (Chapters A and B are not available separately.)

A. Petrography and geochemistry, by E. J. Young. p. A1-A43.

B. Petrology, by E. J. Young. p. B1-B18.

B 1938. NEW MEXICO. Coal resources of the Fruitland Formation in part of the Ute Mountain Ute Indian Reservation, San Juan County, New Mexico, by L. N. Roberts. Prepared in cooperation with the U.S. Bureau of Indian Affairs, and the Ute Mountain Ute Tribe. 1991. 15 p. 1 plate in pocket.

B 1940. NEW MEXICO. Geology of the La Vida Mission Quadrangle, San Juan and McKinley counties, New Mexico, by R. L. Miller, M. A. Carey and C. L. Thompson-Rizer. Prepared in cooperation with the U.S. Bureau of Indian Affairs. 1991. 64 p. 2 plates in pocket.

B 1942. MISSOURI. Geology and mineral-resource assessment of the Springfield 1° × 2° Quadrangle, Missouri, as appraised in September 1985, edited by J. A. Martin, Missouri Geological Survey; and W. P. Pratt, U.S. Geological Survey. Prepared in cooperation with the Missouri Department of Natural Resources, Division of Geology and Land Survey. 1991. 115 p. 2 plates in pocket.

Introduction, by W. P. Pratt, U.S. Geological Survey. p. 1-2.

Geologic and structural overview, by M. A. Middendorf, Missouri Geological Survey. p. 3-6.

Surficial geology, by J. W. Whitfield, Missouri Geological Survey. p. 7-8.

Distribution of lithofacies and inferred depositional environments in the Cambrian System, by J. R. Palmer, Missouri Geological Survey. p. 9-38.

Examples of graphical data displays used in the resource study, by J. O. Kork, U.S. Geological Survey. p. 39-50.

Geochemical studies of subsurface carbonate rocks, by R. L. Erickson, M. S. Erickson, and Barbara Chazin, U.S. Geological Survey. p. 51-52.

Geochemistry of basal Cambrian sandstones in parts of Missouri, Arkansas, and Kansas, by E. L. Mosier, U.S. Geological Survey. p. 53-64.

Aeromagnetic and gravity studies of buried basement rocks, by Lindrith Cordell, U.S. Geological Survey. p. 65-75.

Industrial mineral resources, by A. W. Rueff, Missouri Geological Survey. p. 77-80.

Mines, prospects, and occurrences of metallic minerals and barite, by H. M. Wharton, Missouri Geological Survey. p. 81-86.

Fluid-inclusion evidence for the source of ore fluids for mississippi valley-type deposits in Missouri, Arkansas, Kansas, and Oklahoma, by D. L. Leach, E. L. Rowan, and J. G. Viets, U.S. Geological Survey. p. 87-89.

Resource assessment for mississippi valley-type base-metal deposits, by R. L. Erickson and Barbara Chazin, U.S. Geological Survey. p. 90-94.

A model for genesis of red-bed–evaporite-associated stratabound copper deposits and potential in the Springfield 1° × 2° Quadrangle and surrounding areas, by T. S. Hayes, U.S. Geological Survey. p. 95-101.

Precambrian geology and mineral-resource potential, by E. B. Kisvarsanyi, Missouri Geological Survey. p. 102-110.

Appendix 1. Principal maps and reports resulting from the Springfield CUSMAP project, compiled by H. M. Wharton, Missouri Geological Survey. p. 112-113.

Appendix 2. Field guide, Springfield area, Missouri, by C. E. Robertson and T. L. Thompson, Missouri Geological Survey. p. 114-115.

B 1943. ALASKA. Gold placers of the Circle District, Alaska; past, present, and future, by W. E. Yeend. 1991. 42 p. 1 plate in pocket.

B 1945. MONTANA. The Red Butte Conglomerate; a thrust-belt-derived conglomerate of the Beaverhead Group, southwestern Montana, by J. C. Haley and W. J. Perry, Jr. 1991. 19 p.

B 1946. ALASKA. Geologic studies in Alaska by the U.S. Geological Survey, 1989, edited by J. H. Dover and J. P. Galloway, U.S. Geological Survey. 1990. 121 p.

Kinematics of late faults along Turnagain Arm, Mesozoic accretionary complex, south-central Alaska, by D. C. Bradley, U.S. Geological Survey; and T. M. Kusky, University of California, Santa Barbara. p. 3-10.

Fossil pollen from nonmarine sedimentary rocks of the eastern Yukon-Tanana region, east-central Alaska, by H. L. Foster, U.S. Geological Survey; and Yaeko Igarashi, Hokkaido University. p. 11-20.

Significance of Triassic marble from Nakwasina Sound, southeastern Alaska, by S. M. Karl, D. A. Brew, and B. R. Wardlaw, U.S. Geological Survey. p. 21-28.

Geochemistry and paleotectonic implications of metabasaltic rocks in the Valdez Group, southern Alaska, by J. S. Lull and George Plafker, U.S. Geological Survey. p. 29-38.

Oligocene age of strata on Unga Island, Shumagin Islands, southwestern Alaska, by Louie Marincovich, Jr., U.S. Geological Survey; and V. D. Wiggins, Chevron. p. 39-43.

Mafic and ultramafic rocks of the Dishna River area, north-central Iditarod Quadrangle, west-central Alaska, by M. L. Miller, U.S. Geological Survey. p. 44-50.

Shear sense in mylonites, and implications for transport of the Rampart Assemblage (Tozitna Terrane), Tanana Quadrangle, east-central Alaska, by R. T. Miyaoka and J. H. Dover, U.S. Geological Survey. p. 51-64.

Petroleum source potential and thermal maturity of the Tertiary Usibelli Group of Suntrana, central Alaska, by R. G. Stanley, Hugh McLean, and M. J. Pawlewicz, U.S. Geological Survey. p. 65-76.

K-Ar and $^{40}Ar/^{39}Ar$ ages of tuff beds at Ocean Point on the Colville River, Alaska, by J. E. Conrad, E. H. McKee, and B. D. Turrin, U.S. Geological Survey. p. 77-82.

Development of an Alaskan radiocarbon data base as a subset of the International Radiocarbon Data Base (IRDB), by J. P. Galloway, U.S. Geological Survey; and Renee Kra, University of Arizona. p. 83-87.

The nature and significance of post-thermal-peak shear zones west of the Great Tonalite Sill near Juneau, southeastern Alaska, by R. J. Hooper, University of South Florida; D. A. Brew, U.S. Geological Survey; G. R. Himmelberg, University of Missouri; H. H. Stowell, University of Alabama; R. L. Bauer, University of Missouri; and A. B. Ford, U.S. Geological Survey. p. 88-94.

Proterozoic U-Pb zircon age of granite in the Kallarichuk Hills, western Brooks Range, Alaska; evidence for Precambrian basement in the schist belt, by S. M. Karl and J. N. Aleinikoff, U.S. Geological Survey. p. 95-100.

Summary of Late Cretaceous environments near Ocean Point, North Slope, Alaska, by R. L. Phillips, U.S. Geological Survey. p. 101-106.

Gold placers, geomorphology, and paleo-drainage of Eureka Creek and Tofty areas, Alaska, by Warren Yeend, U.S. Geological Survey. p. 107-109.

U.S. Geological Survey reports on Alaska released in 1989, compiled by E. R. White, U.S. Geological Survey. p. 110-115.

Reports about Alaska in non-USGS publications released in 1989 that include USGS authors, compiled by E. R. White, U.S. Geological Survey. p. 116-121.

B 1947. Factors affecting the recognition of faults exposed in exploratory trenches, by M. G. Bonilla and J. J. Lienkaemper. 1991. 54 p. 1 microfiche in pocket.

B 1948. UTAH, NEVADA. Cambrian stratigraphy of the Wendover area, Utah and Nevada, by L. B. McCollum, Eastern Washington University; and D. M. Miller, U.S. Geological Survey. 1991. 43 p.

B 1949. MONTANA. Depositional environments for strata of composite section of Frontier Formation, Madison Range, southwestern Montana, by R. G. Tysdal. 1991. 23 p.

B 1950. ALASKA. Geochemical studies in Alaska by the U.S. Geological Survey, 1989, edited by R. J. Goldfarb, J. T. Nash and J. W. Stoeser. 1990. 61 p. (Chapters A-F are issued as a single volume and are not available separately.)

A. Interpretation of geochemical data from Admiralty Island, Alaska; evidence for volcanogenic massive sulfide mineralization, by K. D. Kelley. p. A1-A9.

B. Geochemical orientation study for identification of metallic mineral resources in the Sitka Quadrangle, southeastern Alaska, by E. L. Rowan, E. A. Bailey and R. J. Goldfarb. p. B1-B12.

C. Geology and geochemistry of mineralization in the Bethel Quadrangle, southwestern Alaska, by T. P. Frost. p. C1-C9.

D. Gold associated with cinnabar- and stibnite-bearing deposits and mineral occurrences in the Kuskokwim River region, southwestern Alaska, by J. E. Gray, T. P. Frost, R. J. Goldfarb and D. E. Detra. p. D1-D6.

E. Stable isotope systematics of epithermal mercury-antimony mineralization, southwestern Alaska, by R. J. Goldfarb, J. E. Gray, W. J. Pickthorn, C. A. Gent and B. A. Cieutat. p. E1-E9.

F. Gold anomalies and newly identified gold occurrences in the Lime Hills Quadrangle, Alaska, and their association with the Hartman Sequence plutons, by M. S. Allen. p. F1-F16.

B 1951. Earthquake hazard associated with deep well injection: a report to the U.S. Environmental Protection Agency, by Craig Nicholson, University by California, Santa Barbara; and R. L. Wesson, U.S. Geological Survey. Prepared in cooperation with the U.S. Environmental Protection Agency. 1990. 74 p. 1 plate in pocket. (Supersedes Open-file report 87-331.)

B 1953. SOUTH CAROLINA, MISSOURI. Possible relationship between seismicity and warm intrusive bodies in the Charleston, South Carolina, and New Madrid, Missouri, areas, by Lucy McCartan and M. E. Gettings. Prepared in cooperation with the U.S. Nuclear Regulatory Commission. 1991. 18 p.

B 1954. United States earthquakes, 1985, by C. W. Stover and L. R. Brewer, U.S. Geological Survey. 1991. 170 p.

Northern and Central California earthquakes, 1985, by R. A. Uhrhammer, University of California, Berkeley. p. 131-132.

Hawaii earthquakes, 1985, by R. Y. Koyanagi, U.S. Geological Survey. p. 131-134.

Mississippi Valley earthquakes, 1985, by W. Stauder, R. B. Herrmann, John Chulick, S. Neiers, S. Horton, C. Carr, and C. Finn, St. Louis University. p. 132, 135-136.

Western Nevada and eastern California earthquakes, 1985, by U. R. Vetter, University of Nevada. p. 137-138.

New England seismicity, 1985, by J. P. McCaffrey, Boston College, Weston Observatory. p. 139-140.

Seismicity of New Mexico, 1985, by A. R. Sanford, L. H. Jaksha, New Mexico Institute of Mining and Technology; and D. J. Cash, Los Alamos National Laboratory. p. 140-141.

Socorro, New Mexico, area earthquakes, 1985, by A. R. Sanford, L. H. Jaksha, Shirley Wade, and Kevin King, New Mexico Institute of Mining and Technology. p. 141-143.

Oklahoma earthquakes, 1985, by J. E. Lawson, Jr., and K. V. Luza, Oklahoma Geological Survey. p. 143-145.

Southeastern United States earthquakes, 1985, by M. S. Sibol, M. C. Chapman, and G. A. Bollinger, Virginia Polytechnic Institute and State University. p. 146.

Utah earthquakes, 1985, by E. D. Brown, University of Utah. p. 146-149.

Washington earthquakes, 1985, by R. S. Ludwin, S. D. Malone, R. S. Crosson, and A. I. Qamar, University of Washington. p. 149-153.

Strong-motion seismograph data, by R. L. Porcella and J. C. Switzer, U.S. Geological Survey. p. 157-168.

B 1956. NEBRASKA. Uranium and diagenesis in evaporitic lacustrine mudstone of the Oligocene White River Group, Dawes County, Nebraska, by K. A. Dickinson. 1991. 25 p.

B 1958. CALIFORNIA. Industrial minerals in California: economic importance, present availability, and future development, compiled and edited by E. W. Tooker, U.S. Geological Survey; and D. J. Beeby, California Department of Conservation. Prepared in cooperation with the California Department of Conservation, Division of Mines and Geology. 1990. 127 p.

Introduction, by E. W. Tooker, U.S. Geological Survey; and D. J. Beeby, California Department of Conservation. p. 1-3.

California's industrial-mineral resources, by J. A. Anderson, California State Mining and Geology Board. p. 5-6.

The variety, uses, and demand for industrial-mineral resources in California, convened by Hal McVey, Mineral Marketing, Inc. p. 7-28.

The importance of industrial minerals in our everyday lives, by Hal McVey, Mineral Marketing, Inc. p. 7-9.

Production and demand for industrial minerals in California, by George W. Griggs, U.S. Borax and Chemical Corp. p. 9-11.

Aggregate resources; California's effort under SMARA to ensure their continued availability, by D. J. Beeby, California Department of Conservation. p. 118-121.

B 1962. MONTANA. Contributions to Late Cretaceous stratigraphy and paleontology, western Montana, by T. S. Dyman, J. C. Haley, W. J. Perry, Jr., R. G. Tysdal, D. J. Nichols and W. A. Cobban. 1991. 26 p. (Chapters A-C are issued as a single volume and are not available separately.)

A. Redefinition of Frontier Formation; Beaverhead Group contact, Lima Peaks area, southwestern Montana and southeastern Idaho, by T. S. Dyman, J. C. Haley and W. J. Perry, Jr. p. 1-7.

B. Biostratigraphic correlation of Santonian and Campanian formations in the northwestern part of Yellowstone National Park, and the Madison Range and Livingston area of southwestern Montana, by R. G. Tysdal and D. J. Nichols. p. 11-19.

C. Occurrence and significance of the middle Turonian (Upper Cretaceous) belemnite *Actinocamax* in central western Montana, by W. A. Cobban. p. 23-26.

B 1965. Linearized inversion of reflection traveltimes, by M. W. Lee and W. F. Agena. 1991. 21 p.

B 1977. UTAH. Evolution of hydrothermal fluids in the Alta Stock, central Wasatch Mountains, Utah, by D. A. John. 1991. 51 p.

B 1980-A. Gold deposits related to greenstone belts in Brazil; deposit modeling workshop; Part A, Excursions, edited by C. H. Thorman, U.S. Geological Survey; E. A. Ladeira, Universidade Federal de Minas Gerais, Brazil; and D. C. Schnabel, U.S. Geological Survey. 1991. p. A1-A86.

Introduction to a workshop on Gold deposits related to greenstone belts in Brazil; Belo Horizonte, Brazil, 1986, by C. H. Thorman, U.S. Geological Survey; and E. A. Ladeira, Universidade Federal de Minas Gerais, Brazil. p. A5-A22.

Geological field excursion from Belo Horizonte to Ouro Preto, Minas Gerais, Brazil, by E. A. Ladeira, Universidade Federal de Minas Gerais, Brazil. p. A27-A37.

Field excursion from Belo Horizonte to Ouro Preto; side excursion along the road to Moeda, Minas Gerais, Brazil, by E. A. Ladeira, Universidade Federal de Minas Gerais, Brazil; and Ronald Fleischer, Construtora Andrade Gutierrez, Brazil. p. A43-A47.

Surface and underground geological excursion around and in the Passagem de Mariana gold mine, Minas Gerais, Brazil, by Ronald Fleischer, Construtora Andrade Gutierrez, Brazil; and D. S. Vial, Rio Doce Geologia e Mineração, Brazil. p. A53-A62.

Excursion to the Morro Velho gold mine, Minas Gerais, Brazil, by F. W. R. Vieira, L. H. A. Lisboa, J. L. Chaves, G. A. I. de Oliveira, P. L. C. Clemente, and R. L. de Oliveira, Mineração Morro Velho, Brazil. p. A67-A73.

Excursion to the Cuiaba gold mine, Minas Gerais, Brazil, by F. W. R. Vieira, M. Corbani Filho, J. T. F. Fonseca, Aguinaldo Pereira, G. A. I. de Oliveira, and P. L. C. Clemente, Mineração Morro Velho, Brazil. p. A79-A86.

B 1986. CALIFORNIA. Marion Peak Quadrangle, Fresno County, California; analytic data, by J. G. Moore. 1991. 23 p.

B 1995-B. CALIFORNIA. Distribution and juxtaposition of Mesozoic lithotectonic elements in the basement of the Santa Maria Basin, California, by Hugh McLean. 1991. p. B1-B12.

WATER-SUPPLY PAPERS

Water-supply papers include reports on the geology, hydrology, quality, recoverability, and utilization of water resources. They include also several series of statistical reports on streamflow, floods, ground-water levels, and water quality.

W 1135. WASHINGTON. Ground-water resources of Snohomish County, Washington, by R. C. Newcomb. Prepared in cooperation with Snohomish County Public Utility District No. 1 and the Washington State Department of Conservation and Development. 1952 (1990). 133 p. 2 plates in pocket. (Reprint.)

W 1544-F. A field method for measurement of infiltration, by A. I. Johnson. 1963 (1991). p. F1-F27. (General ground-water techniques.) (Reprint.)

W 1545-C. Shortcuts and special problems in aquifer tests, compiled by Ray Bentall. 1963 (1991). p. C1-C117. 4 plates in pocket. (Methods of aquifer tests.) (Reprint.)

Composite type curve for analyzing aquifer-test data, by W. C. Walton and W. J. Drescher. p. C1-C3.

Graphic method for plotting aquifer-test data, by G. A. LaRocque, Jr. p. C4-C9.

Chart for the computation of drawdowns in the vicinity of a discharging well, by C. V. Theis. p. C10-C15.

Use of a slide rule in solving ground-water problems by the nonequilibrium formula, by C. V. Theis and R. H. Brown. p. C16-C18.

Graphic shortcuts in applying the nonequilibrium formula to ground-water problems, by M. A. Warren. p. C19-C28.

A simplified time- and distance-drawdown graph, by H. G. May. p. C29-C32.

Method for determination of the coefficient of storage from straight-line plots without extrapolation, by S. W. Lohman. p. C33-C37.

Special drawdown scales for predicting water-level changes throughout heavily pumped areas, by C. S. Conover and H. O. Reeder. p. C38-C44.

Type curves for the solution of single-boundary problems, by R. W. Stallman. p. C45-C47.

Type curves for nonsteady radial flow in an infinite leaky artesian aquifer, by H. H. Cooper, Jr. p. C48-C55.

Drawdown patterns in aquifers having a straight-line boundary, by S. M. Lang. p. C56-C68.

The cone of depression and the area of diversion around a discharging well in an infinite strip aquifer subject to uniform recharge, by R. H. Brown. p. C69-C85.

Ground-water movement in a rectangular aquifer bounded by four canals, by R. H. Brown. p. C86-C100.

Drawdowns caused by a well discharging under equilibrium conditions from an aquifer bounded by a finite straight-line source, by C. V. Theis. p. C101-C105.

Chart for determination of the percentage of pumped water being diverted from a stream or drain, by C. V. Theis and C. S. Conover. p. C106-C109.

Locus circles as an aid in the location of a hydrogeologic boundary, by E. A. Moulder. p. C110-C112.

Spacing of wells, by C. V. Theis. p. C113-C115.

W 1608-O. Reclamation by tubewell drainage in Rechna Doab and adjacent areas, Punjab region, Pakistan, by G. T. Malmberg. Prepared in cooperation with the West Pakistan Water and Power Development Authority under the auspices of the United States Agency for International Development. 1975 (1991). p. O1-O72. 5 plates in separate case. (Contributions to the hydrology of Asia and Oceania.) (Reprint.)

W 1662-B. Specific yield; laboratory experiments showing the effect of time on column drainage, by R. C. Prill, A. I. Johnson and D. A. Morris. Prepared in cooperation with the California Department of Water Resources. 1965 (1991). p. B1-B55. (Hydrologic properties of Earth materials.) (Reprint.)

W 1837. KENTUCKY. Hydrology of the cavernous limestones of the Mammoth Cave area, Kentucky, by R. F. Brown. Prepared in cooperation with the Commonwealth of Kentucky, the University of Kentucky, Kentucky Geological Survey, Kentucky Department of Commerce, and the National Park Service. 1966 (1991). 64 p. (Reprint.)

W 2023. WYOMING. Selenium in waters in and adjacent to the Kendrick Project, Natrona County, Wyoming, by M. A. Crist. Prepared in cooperation with the Wyoming State Engineer, City of Casper Board of Public Utilities, Wyoming Game and Fish Commission, and Wyoming Department of Health. 1974 (1990). 39 p. 3 plates in pocket. (Reprint.)

W 2220. Basic ground-water hydrology, by R. C. Heath. Prepared in cooperation with the North Carolina Department of Natural Resources and Community Development. 1983 (1991). 84 p. (Reprint.)

W 2292. MISSISSIPPI. Geohydrology and simulated effects of large ground-water withdrawals on the Mississippi River alluvial aquifer in northwestern Mississippi, by D. M. Sumner and B. E. Wasson. Prepared in cooperation with the Mississippi Department of Natural Resources, Bureau of Land and Water Resources. 1990. 60 p. (Supersedes Open-file report 84-822.)

W 2346. PENNSYLVANIA. Geohydrology and ground-water resources of Philadelphia, Pennsylvania, by G. N. Paulachok. Prepared in cooperation with the City of Philadelphia Water Department. 1991. 79 p.

W 2365. MONTANA. Methods for estimating monthly streamflow characteristics at ungaged sites in western Montana, by Charles Parrett, U.S. Geological Survey; and K. D. Cartier, Confederated Salish and Kootenai Tribes. Prepared in cooperation with the U.S. Bureau of Indian Affairs and the Confederated Salish and Kootenai Tribes. 1990. 30 p.

W 2367. ILLINOIS. Results of hydrologic research at a low-level radioactive-waste disposal site near Sheffield, Illinois, edited by B. J. Ryan. 1991. 73 p. (Supersedes Open-file report 88-318.)

Microclimate, evapotranspiration, and tritium release by plants, by M. P. deVries and R. W. Healy. p. 16-23.

Runoff and land modification, by J. R. Gray. p. 23-27.

Water movement through a trench cover, by R. W. Healy. p. 27-34.

Water and tritium movement in the unsaturated zone, by P. C. Mills. p. 34-45.

Gases in the unsaturated zone, by R. G. Striegl. p. 45-52.

Water and tritium movement in the saturated zone, by R. W. Healy, B. J. Ryan and George Garklavs. p. 52-57.

Water chemistry, by C. A. Peters. p. 57-67.

W 2368-B. INDIANA. Effects of surface coal mining and reclamation on the geohydrology of six small watersheds in west-central Indiana, by J. D. Martin, R. F. Duwelius and C. G. Crawford. 1990. p. B1-B53. (Physical environment and geohydrologic effects of surface coal mining in west-central Indiana.)

W 2370-G. CALIFORNIA. Soil water and vegetation responses to precipitation and changes in depth to ground water in Owens Valley, California, by S. K. Sorenson, P. D. Dileanis and F. A. Branson. Prepared in cooperation with Inyo County and the Los Angeles Department of Water and Power. 1991. p. G1-G54. (Hydrology and soil-water-plant relations in Owens Valley, California.) (Supersedes Open-file report 89-260.)

W 2372. INDIANA. Method for estimating low-flow characteristics of ungaged streams in Indiana, by L. D. Arihood and D. R. Glatfelter. Prepared in cooperation with the Indiana State Board of Health. 1991. 18 p. 1 plate in pocket. (Supersedes Open-file report 86-323.)

W 2374. VIRGINIA. Low-flow characteristics of streams in Virginia, by D. C. Hayes. Prepared in cooperation with the Virginia Water Control Board. 1991. 69 p. 2 plates in pocket. (Supersedes Open-file report 89-586.)

W 2375. National water summary 1988-89; hydrologic events and floods and droughts, by U.S. Geological Survey (R. W. Paulson, E. B. Chase, R. S. Roberts, and D. W. Moody, compilers). 1991. 591 p.

Overview and background, by R. W. Paulson, E. B. Chase, R. S. Roberts, and D.W. Moody, U.S. Geological Survey. p. 3-10.

Introduction, by R. W. Paulson, E. B. Chase, R. S. Roberts, and D. W. Moody, U.S. Geological Survey. p. 11-12.

Review of water year 1988 hydrologic conditions and water-related events, by G. J. McCabe, Jr., J. L. Barker, and E. B. Chase, U.S. Geological Survey. p. 14-25.

Seasonal summaries of hydrologic conditions, water year 1988, by R. R. Heim, Jr., National Oceanic and Atmospheric Administration; and G. J. McCabe, Jr., U.S. Geological Survey. p. 26-33.

Review of water year 1989 hydrologic conditions and water-related events, by G. J. McCabe, Jr., J. D. Fretwell, and E. B. Chase, U.S. Geological Survey. p. 34-49.

Seasonal summaries of hydrologic conditions, water year 1989, by G. J. McCabe, Jr., U.S. Geological Survey; and R. R. Heim, Jr., National Oceanic and Atmospheric Administration. p. 50-57.

Storm-surge flooding by Hurricane Hugo on the U.S. Virgin Islands, Puerto Rico, and South Carolina, September 1989, by R. E. Schuck-Kolben, and Lionel Kaufman, U.S. Geological Survey. p. 59-64.

Climate and floods, by K. K. Hirschboeck, Louisiana State University. p. 67-88.

Climate and droughts, by A. L. McNab and T. R. Karl, National Oceanic and Atmospheric Administration. p. 89-98.

Evapotranspiration and droughts, by R. L. Hanson, U.S. Geological Survey. p. 99-104.

Paleohydrology and its value in analyzing floods and droughts, by R. D. Jarrett, U.S. Geological Survey. p. 105-116.

Flood forecasting and drought prediction by the National Weather Service, by Eugene Stallings, National Weather Service. p. 117-122.

Flood and drought functions of the U.S. Army Corps of Engineers, by David Wingerd and M. T. Tseng, U.S. Army Corps of Engineers. p. 123-132.

National flood insurance program; twenty years of progress toward decreasing nationwide flood losses, by B. R. Mrazik and H. A. Kinberg, Federal Emergency Management Agency. p. 133-142.

Flood simulation for a large reservoir system in the lower Colorado River basin, Texas, by L. W. Mays, University of Texas. p. 143-146.

Management of water resources for drought conditions, by W. R. Walker, Virginia Water Resources Research Center; M. S. Hrezo, Radford University; and C. J. Haley, Virginia Water Resources Research Center. p. 147-156.

Introduction to State summaries of floods and droughts, by R. W. Paulson, E. B. Chase, R. S. Roberts, and D. W. Moody, U.S. Geological Survey. p. 158-161.

Alabama; floods and droughts, prepared by H. H. Jeffcoat, J. B. Atkins, D. B. Adams, U.S. Geological Survey; and S. F. Williams, Assistant State Climatologist. p. 163-170.

Alaska; floods and droughts, prepared by R. D. Lamke, U.S. Geological Survey. p. 171-180.

Arizona; floods and droughts, prepared by J. H. Eychaner, M. R. Rehmann, U.S. Geological Survey; and A. J. Brazel, Arizona State University. p. 181-188.

Arkansas; floods and droughts, by B. L. Neely, Jr., U.S. Geological Survey; J. G. Hehr, State Climatologist; and J. R. Young, Arkansas Soil and Water Conservation Commission. p. 189-196.

California; floods and droughts, prepared by R. A. Hunrichs, U.S. Geological Survey. p. 197-206.

Colorado; floods and droughts, prepared by D. L. Collins, U.S. Geological Survey; N. J. Doesken, Assistant State Climatologist; and W. P. Stanton, Colorado Water Conservation Board. p. 207-214.

Connecticut; floods and droughts, prepared by L. A. Weiss, U.S. Geological Survey; and C. J. Hughes, Connecticut Department of Environmental Protection. p. 215-222.

Delaware; floods and droughts, prepared by G. N. Paulachok, R. H. Simmons, U.S. Geological Survey; J. R. Mather, J. A. Skindlov, Office of the State Climatologist of Delaware; L. A. Sprague, and P. J. Cherry, Delaware Department of Natural Resources and Environmental Control. p. 223-230.

Florida; floods and droughts, prepared by W. C. Bridges, M. A. Franklin, U.S. Geological Survey; and T. A. Gleeson, Florida State University. p. 231-238.

Georgia; floods and droughts, prepared by H. G. Golden, G. W. Hess, U.S. Geological Survey; G. L. Plummer, State Climatologist, H. S. Carter, former State Climatologist, University of Georgia; and D. B. Ashley, Georgia Department of Natural Resources. p. 239-246.

Hawaii; floods and droughts, prepared by Reuben Lee, U.S. Geological Survey; Paul Haraguchi, and Tom Nakama, Hawaii Department of Land and Natural Resources. p. 247-254.

Idaho; floods and droughts, prepared by L. C. Kjelstrom, U.S. Geological Survey, and staff of the Office of the Idaho State Climatologist, University of Idaho, and the Idaho Department of Water Resources. p. 255-262.

Illinois; floods and droughts, prepared by E. E. Zuehls, U.S. Geological Survey; and W. M. Wendland, State Climatologist, Illinois State Water Survey. p. 263-270.

Indiana; floods and droughts, prepared by D. R. Glatfelter, U.S. Geological Survey; J. E. Newman, Purdue University; Martin Mann, and Siavash Beik, Indiana Department of Natural Resources. p. 271-278.

Iowa; floods and droughts, prepared by P. J. Soenksen and D. A. Eash, U.S. Geological Survey; H. J. Hillaker, Iowa State Climatology Office; and E. M. Gordon, Iowa Department of Public Defense. p. 279-286.

Kansas; floods and droughts, prepared by R. W. Clement, U.S. Geological Survey; L. D. Bark, Kansas State University; and T. C. Stiles, Kansas Water Office. p. 287-294.

Kentucky; floods and droughts, prepared by K. J. Ruhl, U.S. Geological Survey; Glen Conner, State Climatologist, Western Kentucky University; and A. L. Smothers, Kentucky Division of Water. p. 295-302.

Louisiana; floods and droughts, prepared by F. N. Lee, U.S. Geological Survey; R. A. Muller, Louisiana State University; and R. R. Cox, Louisiana Department of Urban and Community Affairs. p. 303-310.

Maine; floods and droughts, prepared by T. J. Maloney and W. P. Bartlett, Jr., U.S. Geological Survey, and R. E. Lautzenheiser, New England Climatic Service. p. 311-318.

Maryland and the District of Columbia; floods and droughts, prepared by R. W. James, Jr., U.S. Geological Survey; W. J. Moyer, Maryland State Climatologist; A. J. Wagner, National Oceanic and Atmospheric Administration; and G. T. Setzer, Maryland Department of Natural Resources. p. 319-326.

Massachusetts; floods and droughts, prepared by S. W. Wandle, Jr., U.S. Geological Survey; and R. E. Lautzenheiser, New England Climatic Service. p. 327-334.

Michigan; floods and droughts, prepared by S. P. Blumer, U.S. Geological Survey; F. V. Nurnberger, State Climatologist; D. A. Hamilton, and R. C. Sorrell, Michigan Department of Natural Resources. p. 335-344.

Minnesota; floods and droughts, prepared by G. H. Carlson, U.S. Geological Survey; J. A. Zandlo, D. B. Milles, and Ogbazghi Sium, Minnesota Department of Natural Resources. p. 345-352.

Mississippi; floods and droughts, prepared by R. E. Southard, E. J. Tharpe, U.S. Geological Survey; C. L. Wax, State Climatologist; and C. A. Branch, Mississippi Bureau of Land and Water Resources. p. 353-360.

Missouri; floods and droughts, prepared by L. A. Waite, U.S. Geological Survey; W. L. Decker, University of Missouri-Columbia; and S. A. McIntosh, Missouri Department of Natural Resources. p. 361-368.

Montana; floods and droughts, prepared by L. A. Merritt, U.S. Geological Survey; J. M. Caprio, State Climatologist, Montana State University; and R. G. Brasch, Montana Department of Natural Resources and Conservation. p. 369-376.

Nebraska; floods and droughts, prepared by G. B. Engel and E. E. Fischer, U.S. Geological Survey. p. 377-384.

Nevada; floods and droughts, prepared by Otto Moosburner, R. P. Williams, U.S. Geological Survey; John James, State Climatologist; and Michael Turnipseed, Nevada Department of Conservation and Natural Resources. p. 385-392.

New Hampshire; floods and droughts, prepared by R. E. Hammond, U.S. Geological Survey; and R. E. Lautzenheiser, New England Climatic Service. p. 393-400.

New Jersey; floods and droughts, prepared by W. R. Bauersfeld, R. D. Schopp, U.S. Geological Survey; and M. D. Shulman, Rutgers University. p. 401-408.

New Mexico; floods and droughts, prepared by S. D. Waltemeyer, R. L. Gold, U.S. Geological Survey; and K. E. Kunkel, State Climatologist. p. 409-414.

New York; floods and droughts, prepared by G. C. Gravlee, Jr., Richard Lumia, S. W. Wolcott, U.S. Geological Survey; B. E. Dethier, Northeast Regional Climate Center; Durbhakula Muralidhar, W. F. Daley, F. J. Dwyer, George Koch, and R. L. Konsella, New York State Department of Environmental Conservation. p. 415-424.

North Carolina; floods and droughts, prepared by T. J. Zembrzuski, Jr., C. L. Hill, J. C. Weaver, R. W. Coble, H. C. Gunter, U.S. Geological Survey; and J. M. Davis, North Carolina State University. p. 425-434.

North Dakota; floods and droughts, prepared by G. L. Ryan, U.S. Geological Survey; and L. A. Klapprod, North Dakota State Water Commission. p. 435-442.

Ohio; floods and droughts, prepared by J. M. Sherwood, U.S. Geological Survey; J. C. Rogers, Ohio State University; and J. B. Pickens, Ohio Department of Natural Resources. p. 443-450.

Oklahoma; floods and droughts, prepared by R. L. Tortorelli, U.S. Geological Survey; E. J. Cooter, Oklahoma Climatological Survey; and J. W. Schuelein, Oklahoma Water Resources Board. p. 451-458.

Oregon; floods and droughts, prepared by L. L. Hubbard, U.S. Geological Survey. p. 459-466.

Pennsylvania; floods and droughts, prepared by J. B. Lescinsky, H. N. Flippo, Jr., U.S. Geological Survey; Jane Myers, National Oceanic and Atmospheric Administration; and William Gast, Pennsylvania Department of Environmental Resources. p. 467-474.

Puerto Rico; floods and droughts, prepared by Eloy Colón-Dieppa, Heriberto Torres-Sierra, U.S. Geological Survey; J. A. Colón, National Weather Service Forecast Office, San Juan; and Raymond Acevedo, Puerto Rico Department of Natural Resources. p. 475-482.

Rhode Island; floods and droughts, prepared by P. N. Walker, U.S. Geological Survey; and R. E. Lautzenheiser, New England Climatic Service. p. 483-488.

South Carolina; floods and droughts, prepared by W. J. Stringfield, U.S. Geological Survey; J. C. Purvis, State Climatologist; and Danny Johnson, South Carolina Water Resources Commission. p. 489-496.

South Dakota; floods and droughts, prepared by R. D. Benson, U.S. Geological Survey; W. F. Lytle, State Climatologist; R. B. Smith, and D. E. Dvorak, South Dakota Department of Military and Veterans Affairs. p. 497-504.

Tennessee; floods and droughts, prepared by J. D. Weaver, U.S. Geological Survey. p. 505-512.

Texas; floods and droughts, prepared by B. D. Jones, U.S. Geological Survey. p. 513-520.

U.S. Virgin Islands; floods and droughts, prepared by Eloy Colón-Dieppa, Heriberto Torres-Sierra, and Jorge Ortiz, U.S. Geological Survey. p. 521-526.

Utah; floods and droughts, prepared by R. C. Christensen, D. D. Carlson, U.S. Geological Survey; G. L. Ashcroft, Assistant State Climatologist, Utah State University; and D. L. Anderson, Utah Division of Water Resources. p. 527-534.

Vermont; floods and droughts, prepared by J. C. Denner, U.S. Geological Survey; and R. E. Lautzenheiser, New England Climatic Service. p. 535-542.

Virginia; floods and droughts, prepared by E. H. Nuckels, B. J. Prugh, Jr., U.S. Geological Survey; P. J. Michaels, University of Virginia; and D. R. Jones, Virginia Water Control Board. p. 543-550.

Washington; floods and droughts, prepared by J. R. Williams, U.S. Geological Survey. p. 551-558.

West Virginia; floods and droughts, prepared by G. S. Runner, U.S. Geological Survey; and P. J. Michaels, University of Virginia. p. 559-566.

Wisconsin; floods and droughts, prepared by W. R. Krug, U.S. Geological Survey; and B. D. Simon, Wisconsin Department of Natural Resources. p. 567-574.

Wyoming; floods and droughts, prepared by S. A. Druse, U.S. Geological Survey. p. 575-582.

W 2376. FLORIDA. Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida, by C. R. Goodwin. Prepared in cooperation with the U.S. Army Corps of Engineers. 1991. 49 p. (Supersedes Open-file report 88-76.)

CIRCULARS

Circulars present technical or nontechnical information of wide popular interest in a format designed for distribution at no cost to the public. They are published to disseminate administrative information or important scientific information of an ephemeral nature.

C 0930-J. International Strategic Minerals Inventory summary report; tin, by Sutphin, D. M., U.S. Geological Survey; A. E. Sabin, formerly with the U.S. Bureau of Mines; and B. L. Reed, U.S. Geological Survey. 1990. 52 p.

C 1021. Concepts for a national water-quality assessment program, by R. M. Hirsch, W. M. Alley and W. G. Wilber. 1988 (1990). 42 p. (Reprint.)

C 1033. Proceedings of a U.S. Geological Survey workshop on Environmental geochemistry, edited by B. R. Doe. 1990. 194 p.

1. Environmental Geochemistry Program, by L. H. Filipek. p. 1-6.

2. Toxic substances hydrology; surface- and ground-water contamination, by G. E. Mallard and S. E. Ragone. p. 7-9.

3. The state of soil and plant geochemical surveys, by H. T. Shacklette. p. 11-19.

4. Geochemical studies; the Missouri experience, by A. T. Miesch. p. 21-23.

5. Written communication on environmental geochemistry in Missouri, by W. B. Howe, Missouri Division of Geology and Land Survey, sent to B. R. Doe. p. 25.

6. Soil studies in the Northern Great Plains, by R. R. Tidball. p. 27-32.

7. Weathering process research; pedology and soil geochemistry in drainage basins, by M. J. Pavich. p. 33-36.

8. The mode of occurrence of extractable elements in soils from the Northern Great Plains, by J. M. McNeal. p. 37-38.

9. Uranium-series disequilibrium in Quaternary soils; significance for ^{222}Rn hazard assessment, by D. R. Muhs, C. A. Bush and J. N. Rosholt. p. 39-44.

10. Biogeochemical baselines and the importance of species, plant parts, and season; the U.S. Geological Survey's studies of big sagebrush in the West, by J. A. Erdman. p. 45-46.

11. Vegetation studies in the Northern Great Plains, by L. P. Gough. p. 47-49.

12. Remote sensing of vegetative responses to the environment, by N. M. Milton. p. 51-52.

13. Cooperative studies by the U.S. Geological Survey and the U.S. National Park Service in environmental biogeochemistry, by L. P. Gough, R. C. Severson and L. L. Jackson. p. 53-55.

14. Monitoring geochemical processes with geophysics, by G. R. Olhoeft. p. 57-60.

15. Bedrock geochemistry and the environment, by J. J. Connor. p. 61-62.

16. Geochemistry of rock-water reactions in basalt aquifers of the Columbia River plateau, by P. P. Hearn, W. C. Steinkampf, L. D. White and J. R. Evans. p. 63-68.

17. Early diagenesis and metal-organic matter interactions in alkaline playa lakes of the Lahontan Basin, Nevada, by W. H. Orem. p. 69-70.

18. The role of organic matter in weathering processes, by R. K. Kotra. p. 71-72.

19. Application of geophysical methods to the study of pollution associated with abandoned and injection wells, by F. C. Frischknecht. p. 73-77.

20. The use of spectroscopy in environmental geochemical studies, by R. N. Clark and T. V. King. p. 79-82.

21. Application of stable-isotope techniques to environmental geochemistry, by E. C. Spiker. p. 83-85.

22. Quaternary geology and pollution problems; an example from the San Francisco Bay area, California, by E. J. Helley. p. 87-96.

23. Toward a capability for predicting transport of sediments on the continental shelf and slope and in submarine canyons along the northeast coast of the United States, by Bradford Butman. p. 97-101.

24. Characteristics of coal-mine wastes for rehabilitation work, by R. C. Severson. p. 103-104.

25. The role of coal characterization in the control of acid precipitation, by J. H. Medlin and F. O. Simon. p. 105-118.

26. Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California, by M. A. Sylvester. p. 119-124.

27. A potential source area for selenium and mercury in agricultural drainage water at Kesterson Reservoir, San Joaquin Valley,

California, by R. R. Tidball, R. C. Severson, J. M. McNeal and S. A. Wilson. p. 125-131.

28. Geoelectrical studies on the Panoche Fan area of the San Joaquin Valley, California, by R. J. Bisdorf. p. 133-137.

29. Initial shallow seismic tests in the Panoche Fan area, Fresno County, California, by W. P. Hasbrouck. p. 139-142.

30. Relation of selenium at Kesterson National Wildlife Refuge to potential soil-forming source rocks, by T. S. Presser. p. 143-144.

31. Heavy-metal accumulations in sediments of Boston Harbor, Massachusetts, by M. H. Bothner. p. 145-148.

32. New Bedford Harbor and Buzzards Bay; transport of pollutants on fine-grained marine sediments, by Bradford Butman. p. 149-154.

33. The Georges Bank monitoring program; trace metals in bottom sediments, by M. H. Bothner. p. 155-158.

34. Geochemical studies of plants and soils in the Beluga coal field, Alaska, by R. C. Severson and L. P. Gough. p. 159-160.

35. Potential saltwater intrusion into freshwater aquifers during exploration for and mining of phosphorite off the Southeastern United States, by F. T. Manheim. p. 161-162.

36. Some basic facts about radioactive radon, by J. S. Duval and A. B. Tanner. p. 163-164.

37. Geology of the Reading Prong, New York, and its application to predicting areas that have high radon potential, by L. C. Gundersen. p. 165-168.

38. The role of National Uranium Resource Evaluation aerial gamma-ray data in assessment of radon hazard potential, by J. S. Duval. p. 169-170.

39. Potential for indoor radon hazards; a first geologic estimate, by J. K. Otton. p. 171-173.

40. Hazards associated with fibrous minerals, by Malcolm Ross. p. 175-176.

41. Environmental concerns related to selenium in the Western United States, by J. M. McNeal, G. L. Feder, W. G. Wilber and S. J. Deverel. p. 177-178.

42. Copper-molybdenum imbalances and the incidence of nutritional diseases in livestock and humans, by J. A. Erdman. p. 179-181.

43. Bibliography of selected geochemical studies of the environment by the U.S. Geological Survey, compiled by H. T. Shacklette, R. C. Severson and L. P. Gough. p. 183-194.

C 1042. Economic effects of western Federal land-use restrictions on U.S. coal markets, by W. D. Watson, A. L. Medlin, K. K. Krohn, U.S. Geological Survey; D. S. Brookshire, University of Wyoming; and R. L. Bernknopf, U.S. Geological Survey. 1991. 197 p.

C 1054. A user's manual for a method of map scanning and digital editing for thematic map production and data-base construction, by D. R. Soller, W. R. Stettner, K. J. Lanfear and D. S. Aitken. 1990. 38 p.

C 1056. ALASKA. 1990 annual report on Alaska's mineral resources, edited by J. L. Schneider. Prepared in cooperation with the U.S. Bureau of Land Management, the Fish and Wildlife Service, the Minerals Management Service, the National Park Service, the U.S. Bureau of Mines, the U.S. Forest Service, and the Department of Energy. 1990. 67 p.

C 1058. Metalliferous black shales and related ore deposits; proceedings, 1989 United States Working Group meeting, International Geological Correlation Program Project 254, edited by R. I. Grauch, U.S. Geological Survey; and H. L. O. Huyck, University of Cincinnati. 1990. 85 p.

Geochemistry of the Ordovician high-calcium black shales hosting major gold deposits of the Getchell Trend in Nevada, by E. I. Bloomstein and J. B. Clark, Santa Fe Pacific Mining Corp. p. 1-5.

Geochemical control on the abundance of vanadium in black shales and other carbonaceous rocks, by G. N. Breit, R. B. Wanty, and M. L. Tuttle, U.S. Geological Survey. p. 6-8.

Nickel-molybdenum-platinum-gold deposits in black shales of southern China; a new ore type with possible analogs in Pennsylvanian rocks of the U.S.A., by R. M. Coveney, Jr., University of Missouri; and Chen Nansheng, Academia Sinica, China. p. 9-11.

Geochemical and mineralogical comparison of the Upper Pennsylvanian Stark Shale Member of the Dennis Limestone, east-central Kansas, with the Middle Pennsylvanian Mecca Quarry Shale Member of the Carbondale Formation in Illinois and of the Linton Formation in Indiana, by G. A. Desborough, J. R. Hatch, and J. S. Leventhal, U.S. Geological Survey. p. 12-30.

Organic ligands and metal-organic complexing in ore fluids of sedimentary origin, by T. H. Giordano, New Mexico State University. p. 31-41.

When is a metalliferous black shale not a black shale?, by H. L. O. Huyck, University of Cincinnati. p. 42-56.

Recent Black Sea sediments; Leg 4, 1988 Black Sea expedition, by T. W. Lyons, Yale University. p. 57-58.

Organic geochemical studies of metalliferous parts of the middle Proterozoic Nonesuch Formation of northern Michigan, by P. A. Meyers, E. S. Ho, and J. L. Mauk, University of Michigan. p. 59-64.

Organic geochemical and petrological investigations of a natural reactor and its environs at Oklo, Gabon; a preliminary report, by Bartholomew Nagy, University of Arizona; J. S. Leventhal, U.S. Geological Survey; and F. Gauthier-Lafaye, Centre National de la Recherche Scientifique, France. p. 65-67.

Midcontinent Virgilian (Upper Pennsylvanian) black shales in eastern Kansas, by R. B. Schultz and J. B. Maynard, University of Cincinnati. p. 68-78.

C 1062. USGS research on mineral resources, 1991; program and abstracts, edited by E. E. Good, J. F. Slack, and R. K. Kotra,

U.S. Geological Survey. 1991. 99 p. (Seventh V. E. McKelvey forum on Mineral amd energy resources.)

Geochemical evidence for near-surface precious- and base-metal disseminated and vein deposits in the west-central Vermilion District, northeastern Minnesota, by H. V. Alminas, J. B. McHugh, U.S. Geological Survey; and E. C. Perry, Jr., Northern Illinois University. p. 1-2.

Chemistry of natural waters in the St. Helens mining district, Washington: a test of hydrogeochemical prospecting methods in the Cascade Range, by R. P. Ashley, R. C. Evarts, and W. R. Miller, U.S. Geological Survey. p. 2.

Geochemistry and metallogeny of granitic rocks from the Appalachian Mountains; examples from the Northeast Kingdom Batholith, Vermont, and the Lucerne and Deblois batholiths, Maine, by R. A. Ayuso and J. G. Arth, U.S. Geological Survey. p. 3.

Applications of gravity data to studies of framework geology, evaluation of mineral deposits, and mineral prospecting in northwestern Alaska, by D. F. Barnes and J. S. Kelley, U.S. Geological Survey. p. 3-4.

Mineral-resource assessment of Puerto Rico, by W. J. Bawiec, Andrew Griscom, R. D. Krushensky, S. P. Marsh, G. E. McKelvey, and K. M. Scanlon, U.S. Geological Survey. p. 4-5.

Geophysical applications in mineral-resource assessment, Cedar City 1° × 2° Quadrangle, southwestern Utah, by H. R. Blank, U.S. Geological Survey. p. 5.

Assessment of undiscovered mineral resources, Tongass National Forest, southeastern Alaska, by D. A. Brew, L. J. Drew, J. M. Schmidt, D. H. Root, and D. F. Huber, U.S. Geological Survey. p. 6.

Synthesis of geophysical and geological data centered on the Idaho Batholith and the Challis volcanic field, Idaho, by J. W. Cady, Viki Bankey, Keenan Lee, A. E. McCafferty, J. A. Pitkin, and W. D. Stanley, U.S. Geological Survey. p. 6-9.

Mineral deposits of the Midcontinent Rift, Lake Superior region, United States and Canada, by W. F. Cannon and T. A. McGervey, U.S. Geological Survey. p. 7.

Mapping minerals with imaging spectroscopy near Canon City, Colorado, by R. N. Clark, A. J. Gallagher, and G. A. Swayze, U.S. Geological Survey. p. 8.

Geologic settings of barite deposits as indicators of the potential for other types of mineral deposits, by S. H. B. Clark, U.S. Geological Survey. p. 8-9.

Tectonomagmatic settings of Proterozoic metallogenic provinces in the Southwestern United States, by C. M. Conway, U.S. Geological Survey. p. 9-10.

Preliminary assessment of the mineral resources of the Cedar City 1° × 2° Quadrangle, Utah, by T. M. Cookro, U.S. Geological Survey; M. A. Shubat, Utah Geological and Mineral Survey; and J. L. Jones, U.S. Geological Survey. p. 10.

Copper deposits in Tertiary red beds in Bolivia, by D. P. Cox, U.S. Geological Survey; Raul Carrasco, Orlando André, Alberto Hinojosa, Servicio Géologico de Bolivia; and K. R. Long, U.S. Geological Survey. p. 11.

Geologic map of the Sierrita-Mogollon Corridor (Arizona-New Mexico) and implications for mineral resources, by L. J. Cox, B. B. Houser, E. R. Force, M. E. Gettings, Alison Burchell, and F. S. Fisher, U.S. Geological Survey. p. 11-13.

Laser-microprobe studies of sulfur isotopes in stockwork and massive sulfide ores, Rua Cove Mine, south-central Alaska, by D. E. Crowe, W. C. Shanks III, U.S. Geological Survey; and J. W. Valley, University of Wisconsin. p. 13-14.

Exploration guides for precious-metal deposits in volcanic domes, by C. G. Cunningham and G. E. Ericksen, U.S. Geological Survey. p. 15-16.

Origin of iron, rare-earth elements, copper, and gold in middle Proterozoic deposits of the Midcontinent region, U.S.A., by W. C. Day, G. B. Sidder, A. E. McCafferty, L. E. Cordell, U.S. Geological Survey; E. B. Kisvarsanyi, Missouri Department of Natural Resources; R. O. Rye, U.S. Geological Survey; and L. M. Nuelle, Missouri Department of Natural Resources. p. 16.

Anomalous concentrations of fine-grained native gold in stream sediments of east-central Lemhi County, Idaho, by G. A. Desborough, W. H. Raymond, and K. V. Evans, U.S. Geological Survey. p. 16-18.

Element dispersion in alluvium covering gold deposits in the Kelly Creek valley, Getchell gold trend, Humboldt County, Nevada, by D. E. Detra, S. M. Smith, P. K. Theobald, and P. M. Theodorakos, U.S. Geological Survey. p. 18-19.

Advances in plumbic prospecting, by B. R. Doe, U.S. Geological Survey. p. 19.

Farah Garan, Saudi Arabia: bimodal-volcanogenic Zn-Cu-Au mineralization in a late Proterozoic rift basin, southeastern Arabian Shield, by J. L. Doebrich, A. A. Bookstrom, and R. B. Carten, U.S. Geological Survey. p. 20.

Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part III: Mineral deposits, by J. L. Doebrich, U.S. Geological Survey; L. J. Garside, Nevada Bureau of Mines and Geology; D. R. Shawe, J. H. McCarthy, Jr., R. L. Turner, R. F. Hardyman, J. A. Erdman, U.S. Geological Survey; H. F. Bonham, and J. V. Tingley, Nevada Bureau of Mines and Geology. p. 20-21.

Use of Landsat thematic mapper images for studying volcanic-rock-hosted precious-metal deposits in the Central Andean region, B. A. Eiswerth, T. L. Bowers, U.S. Geological Survey; Lucia Cuitino, Felipe Diaz, Servicio Nacional de Geologia y Mineria, Chile; Hugo Gumucio, Servicio Geólogico de Bolivia; Aldo Gutarra, Oficina Nacional de Evaluación de Recursos Naturales, Peru; Nestor Jimenez, J. L. Lizeca, Servicio Geólogico de Bolivia; Ramon Moscoso, Servicio Nacional de Geologia y Mineria, Chile; Fernando Murillo, Servicio Geólogico de Bolivia; Luis Quispesivana, Instituto Geólogico Minero y Metalurgico, Peru; Jaime Rodriguez, Universidad de Chile; L. C. Rowan, U.S. Geological Survey; Rubén Tejada, and César Vilca, Instituto Geólogico Minero y Metalurgico, Peru. p. 21.

Can trace and rare-earth elements in fluorite be useful in geochemical exploration? Encouraging evidence from the Sierra Cuchillo area, New Mexico, by R. G. Eppinger, U.S. Geological Survey; L. G. Closs, Colorado School of Mines; A. L. Meier, and J. M. Motooka, U.S. Geological Survey. p. 22.

Biogeochemical and geochemical expression of poorly exposed epithermal mineralization in the southeastern Challis volcanic field, Idaho, by J. A. Erdman, U.S. Geological Survey; F. J. Moye, Idaho State University; and P. K. Theobald, U.S. Geological Survey. p. 22-23.

Volcanic-hosted epithermal precious-metal deposits in the Central Andes; geology, resources, and exploration strategy, by G. E. Ericksen, C. G. Cunningham, and B. A. Eiswerth, U.S. Geological Survey. p. 23-24.

The use of lead-isotope geochemistry to evaluate economic potential for gold-silver mineralization; an example from the North Amethyst vein system and the Creede mining district, Colorado, by N. K. Foley and R. A. Ayuso, U.S. Geological Survey. p. 24-26.

The Bisbee Group of the Tombstone Hills, southeastern Arizona; stratigraphy, structure, metamorphism, and mineralization, by E. R. Force, U.S. Geological Survey. p. 26.

Concentration and zonation of copper and palladium in the Mesozoic Belmont diabase sheet, Culpeper Basin, northern Virginia; an exploration guide to enrichment of precious metals in mafic magmatic rocks, by A. J. Froelich, L. G. Woodruff, H. E. Belkin, and David Gottfried, U.S. Geological Survey. p. 26-29.

Lithologic and tectonic controls on mercury mineralization in the Bethel 1° × 3° Quadrangle, southwestern Alaska, by T. P. Frost and S. E. Box, U.S. Geological Survey. p. 29-31.

Detailed profiles of southeastern Arizona obtained by a truck-mounted magnetometer; a step toward better utilization of the information content of geophysical data, by M. E. Gettings, M. W. Bultman, and F. S. Fisher, U.S. Geological Survey. p. 31-32.

Synorogenic auriferous fluids of the Juneau gold belt, Southeast Alaska; stable-isotope evidence for a deep crustal origin, by R. J. Goldfarb and W. J. Pickthorn, U.S. Geological Survey. p. 32-33.

Black shales as hosts for unconventional platinum-group-element resources? Examples from southern China and the Yukon, Canada, and implications for U.S. resources, by R. I. Grauch, U.S. Geological Survey; R. M. Coveney, Jr., J. B. Murowchick, University of Missouri; and Chen Nansheng, Academia Sinica, China. p. 33.

Subsurface structure and lithology near the Getchell gold trend, Osgood Mountains, Nevada; geophysical insights, by V. J. S. Grauch, D. B. Hoover, and W. S. Wojniak, U.S. Geological Survey. p. 34.

Geochemical exploration criteria for epithermal cinnabar and stibnite deposits, southwestern Alaska, by J. E. Gray, D. E. Detra, R. J. Goldfarb, and K. E. Slaughter, U.S. Geological Survey. p. 34-35.

Geochemical investigation of ground water associated with disseminated gold deposits along the Getchell Trend, northern Nevada, by D. J. Grimes, W. H. Ficklin, J. B. McHugh, and A. L. Meier, U.S. Geological Survey. p. 35-36.

Comparative metallogeny of the Soviet Far East and Alaska, by D. J. Grybeck, W. J. Nokleberg, U.S. Geological Survey; and T. K. Bundtzen, Alaska Division of Geological and Geophysical Surveys. p. 36.

Seasonal variation in the silver concentration in mesquite *(Prosopis juliflora)* collected near Globe, Arizona, by T. F. Harms, U.S. Geological Survey. p. 36-37.

Marine ferromanganese deposits near the Marshall Islands, by J. R. Hein, U.S. Geological Survey; Jung-Keuk Kang, Korea Ocean Research and Development Institute; M. S. Schulz, U.S. Geological Survey; Suk-Hoon Yoon, Korea Research and Development Institute; and V. K. Smith, U.S. Geological Survey. p. 37-38.

U.S. Geological Survey research on agricultural industrial minerals in the United States; implications for exploration, by J. R. Herring, D. Z. Piper, Sherilyn Williams-Stroud, C. S. Spirakis, and R. A. Sheppard, U.S. Geological Survey. p. 38-39.

Low-level gold determinations by use of flow injection analysis-atomic absorption spectrophotometry; an application to precious-metal-resource assessment in the Iditarod 1° × 3° Quadrangle, southwestern Alaska, by D. M. Hopkins, J. E. Gray, and K. E. Slaughter, U.S. Geological Survey. p. 39.

Geophysical and geological studies of the Roseau 1° × 2° Quadrangle, Minnesota and Ontario, by R. J. Horton, W. C. Day, T. L. Klein, and B. D. Smith, U.S. Geological Survey. p. 40-41.

Interpretation of new geophysical data obtained by airborne instruments for the Effie-Coon Lake area, Minnesota, by R. J. Horton, B. D. Smith, V. F. Labson, and R. J. Bisdorf, U.S. Geological Survey. p. 41-42.

An overview of industrial minerals of the U.S. Atlantic and Gulf of Mexico coastal plains, by J. W. Hosterman, U.S. Geological Survey. p. 42-43.

Geology and mineral-resource potential of part of the northern Safford Basin, southeastern Arizona, by B. B. Houser, J. M. Kruger, and R. A. Johnson, University of Arizona. p. 43-44.

Geology and genesis of the Baid al Jimalah and Silsilah tungsten-tin deposits, Kingdom of Saudi Arabia, by R. J. Kamilli, U.S. Geological Survey. p. 44.

The Mogollon mining district, southwestern New Mexico; classic epithermal silver-gold vein deposits revisited, by R. J. Kamilli, U.S. Geological Survey. p. 44-45.

Mineral-resource potential of the Sitka 1° × 3° Quadrangle, southeastern Alaska, by S. M. Karl, R. J. Goldfarb, K. D. Kelley, D. M. Sutphin, C. A. Finn, A. B. Ford, and D. A. Brew, U.S. Geological Survey. p. 45-46.

Mineral-resource assessment of the Goodnews 1° × 3° Quadrangle and parts of the Hagemeister Island and Nushagak Bay quadrangles, southwestern Alaska, by J. E. Kilburn, S. E.

Box, R. J. Goldfarb, J. E. Gray, and J. L. Jones, U.S. Geological Survey. p. 46.

Large sulfide-sulfate mounds, hydrothermal fluids, and altered sediment in Escanaba Trough, southern Gorda Ridge; elements of a mature hydrothermal system at a sediment-covered spreading axis, by R. A. Koski, J. L. Morton, R. A. Zierenberg, W. C. Shanks III, U.S. Geological Survey; A. C. Campbell, Massachusetts Institute of Technology; and K. A. Kvenvolden, U.S. Geological Survey. p. 46-47.

Natural aggregates; mining challenge of the 1990's, by W. H. Langer, U.S. Geological Survey. p. 47-48.

Heavy-mineral placers at the Fall Zone, by C. E. Larsen, U.S. Geological Survey. p. 48-49.

Recognition of distinct terranes in lower Paleozoic host rocks in the Getchell gold trend, Humboldt County, Nevada, by D. J. Madden-McGuire and S. P. Marsh, U.S. Geological Survey. p. 49-50.

Areas of mineral-resource favorability (with emphasis on gold and chromite) in the Anchorage 1° × 3° Quadrangle, southern Alaska, by D. J. Madden-McGuire and G. R. Winkler, U.S. Geological Survey. p. 50-51.

Mineral-resource assessment of the Altiplano and Cordillera Occidental, Bolivia; a progress report, by S. P. Marsh, D. H. Knepper, Jr., K. R. Long, and J. W. Cady, U.S. Geological Survey. p. 52.

Mercury-sulfur-gypsum mineralization at Crater, California; a suggestion of gold mineralization at depth, by S. P. Marsh, C. T. Wrucke, U.S. Geological Survey; and K. P. Corbett, Weber State University. p. 52-53.

Regional aeromagnetic and gravity data bases for studies centered on the Idaho Batholith and Challis volcanic field, by A. E. McCafferty and Viki Bankey, U.S. Geological Survey. p. 53.

Application of grade and tonnage models to the development of strategies for mineral deposit exploration, by G. E. McKelvey and J. D. Bliss, U.S. Geological Survey. p. 53-54.

A reconnaissance study of gold mineralization associated with garnet skarn at Nambija, Zamora Province, Ecuador, G. E. McKelvey and J. M. Hammarstrom, U.S. Geological Survey. p. 55.

Hydrogeochemical exploration in areas of thin glacial overburden, northeastern Minnesota, by W. R. Miller, W. H. Ficklin, and J. B. McHugh, U.S. Geological Survey. p. 55-60.

Reconnaissance geologic mapping using digital aeromagnetic data and space-shuttle radar data for a heavily forested area of the Guayana Shield, northwestern Brazil, by F. P. Miranda, Petrobras-CENPES; A. E. McCafferty, U.S. Geological Survey; and J. V. Taranik, University of Nevada. p. 56-57.

Tourmalinite and iron-formation in the Yellowjacket Formation, Idaho cobalt belt, Lemhi County, Idaho, by P. J. Modreski and J. J. Connor, U.S. Geological Survey. p. 57.

Geophysical logs in an oxide copper deposit near Casa Grande, Arizona, by P. H. Nelson, U.S. Geological Survey; D. J. Johnston, Schlumberger Well Services; H. G. Kreis, Asarco; and J. L. Mikesell, U.S. Geological Survey. p. 57-58.

Regional structural setting of gold deposits in the Carolina slate belt of North Carolina, by T. W. Offield and T. L. Klein, U.S. Geological Survey. p. 58-59.

Latin American mineral-resource data available through the U.S. Geological Survey, by F. W. Pierce and K. S. Bolm, U.S. Geological Survey. p. 59-60.

Preliminary results of geochemical investigations of aerial gamma-ray anomalies in the Getchell gold trend, Humboldt County, Nevada, by J. A. Pitkin, U.S. Geological Survey. p. 60-61.

Phosphorite deposits of the northern Blake Plateau as observed from the NR-1 submarine and Delta minisubmersible, by Peter Popenoe and F. T. Manheim, U.S. Geological Survey. p. 61-63.

Silt-fraction mineralogy of unconsolidated sediment samples from the continental shelf, slope, and rise off the Northeastern United States, by L. J. Poppe and J. A. Commeau, U.S. Geological Survey. p. 63-64.

Basin evolution and petroleum studies in the U.S. eastern Great Basin; relevance to mineral investigations, by C. J. Potter, J. A. Grow, C. H. Thorman, H. E. Cook, and J. A. Peterson, U.S. Geological Survey. p. 63-65.

Resource assessment of the Mount Katmai 1° × 2° Quadrangle and adjacent parts of the Naknek and Afognak quadrangles, Alaska Peninsula, by J. R. Riehle, S. E. Church, and L. B. Magoon, U.S. Geological Survey. p. 65-66.

Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part IV, A model for the evaluation of Cenozoic basins for concealed mineral systems, by D. L. Sawatzky, G. L. Raines, J. L. Doebrich, R. L. Turner, U.S. Geological Survey; L. J. Garside, Nevada Bureau of Mines and Geology; and J. H. McCarthy, Jr., U.S. Geological Survey. p. 67.

Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part I, Geology, by R. A. Schweickert, Mackay School of Mines; J. H. Stewart, U.S. Geological Survey; J. H. Dilles, Oregon State University; L. J. Garside, Nevada Bureau of Mines and Geology; R. C. Greene, R. F. Hardyman, D. S. Harwood, and N. J. Silberling, U.S. Geological Survey. p. 67-68.

Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part II, Audio-magnetotelluric survey near Reno and Carson City, Nevada, by R. M. Senterfit and D. P. Klein, U.S. Geological Survey. p. 68.

Early to middle Proterozoic supracrustal rocks and mineralization of the southern Guayana Shield, Venezuela, by G. B. Sidder, W. E. Brooks, U.S. Geological Survey; Yasmin Estanga, Fernando Nuñez, and Andres Garcia, Corporación Venezolana de Guayana-Compania Técnica Minera. p. 69.

Evolution of an early Proterozoic rift basin in the La Esmeralda area, Guayana Shield, Venezuela, by G. B. Sidder, W. C. Day, R. M. Tosdal, S. D. Olmore, U.S. Geological Survey;

Luis Guzman, and Freddy Prieto, Corporación Venezolana de Guayana-Compania Técnica Minera. p. 69-70.

Gold-bearing quartz veins along the Mojave-Sonora megashear zone, northern Sonora, Mexico, by M. L. Silberman, U.S. Geological Survey; Anita Moore-Nall, Gardiner, MT; and B. M. Smith, Lawrence Berkeley Laboratory. p. 70-72.

Geology and mineral potential of Precambrian basement rocks of the Trans-Hudson Orogen, U.S.A., by P. K. Sims, Z. E. Peterman, and T. G. Hildenbrand, U.S. Geological Survey. p. 72-73.

Development and testing of the CHIM electrogeochemical exploration method, by D. B. Smith, D. B. Hoover, and R. F. Sanzolone, U.S. Geological Survey. p. 74.

$^{40}Ar/^{39}Ar$ thermochronology of fracture-controlled mineral deposits of the Idaho Batholith; age, thermal history, and origin, by L. W. Snee, Karen Lund, K. V. Evans, U.S. Geological Survey; C. H. Gammons, Monash University, Australia; and M. J. Kunk, U.S. Geological Survey. p. 74-76.

The Re-Os isotope system as a tracer in the study of platinum-group-element and gold deposits, by R. J. Walker, University of Maryland; J. W. Morgan, U.S. Geological Survey; D. D. Lambert, Monash University, Australia; A. J. Naldrett, University of Toronto; J. K. Bohlke, U.S. Geological Survey; and V. Rajamani, Nehru University, India. p. 76-77.

The Getchell gold trend, northwestern Nevada; geologic structure delineated by further processing of electromagnetic data collected during a helicopter survey, by W. S. Wojniak and D. B. Hoover, U.S. Geological Survey. p. 77.

SOPAC; a decade of research on mineral and hydrocarbon resources in the South Pacific, by F. L. Wong, B. A. Richmond, H. G. Greene, J. R. Dingler, J. R. Hein, K. A. Kvenvolden, M. S. Marlow, J. L. Morton, D. M. Rubin, D. W. Scholl, and J. G. Vedder, U.S. Geological Survey. p. 78-79.

The origin of evaporite deposits; a model based on a hydrologically open system, by W. W. Wood and W. E. Sanford, U.S. Geological Survey. p. 79-80.

U.S. Geological Survey mineral-resource and tectonic studies in Venezuela, by J. C. Wynn, S. D. Olmore, Floyd Gray, W. C. Day, G. B. Sidder, and N. J Page, U.S. Geological Survey. p. 80-83.

Platinum-group mineral investigations, East and South Kalimantan, Indonesia, by M. L. Zientek, U.S. Geological Survey; and Bambang Pardiarto, Directorate of Mineral Resources, Indonesia. p. 82-84.

C 1063. Mineral resource information sources in the Western United States, edited by S. M. Marcus, U.S. Geological Survey. Prepared in cooperation with the U.S. Bureau of Land Management, the U.S. Bureau of Mines, and the states of Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming. 1991. 52 p.

Minerals information sources in Federal agencies; U.S. Bureau of Land Management, by Jean Juilland, U.S. Bureau of Land Management. p. 1-3.

Minerals information sources in Federal agencies; U.S. Bureau of Mines, by Michael McKinley, U.S. Bureau of Mines. p. 4-10.

Minerals information sources in Federal agencies; U.S. Geological Survey, by S. M. Marcus, U.S. Geological Survey. p. 11-14.

Minerals information sources in state agencies; Alaska, by M. A. Wiltse, Alaska Division of Geological and Geophysical Surveys. p. 15-17.

Minerals information sources in state agencies; Arizona, by J. W. Welty, Arizona Geological Survey. p. 18-21.

Minerals information sources in state agencies; California, by Ralph Loyd and J. B. Rapp, California Division of Mines and Geology. p. 22-24.

Minerals information sources in state agencies; Colorado, by Mark Davis, Colorado Geological Survey. p. 25-26.

Minerals information sources in state agencies; Hawaii, edited by S. M. Marcus, U.S. Geological Survey. p. 27.

Minerals information sources in state agencies; Idaho, by E. H. Bennett, Idaho Geological Survey. p. 28-29.

Minerals information sources in state agencies; Montana, by R. B. Berg, Montana Bureau of Mines and Geology. p. 30-32.

Minerals information sources in state agencies; Nevada, by B. W. Purkey, Nevada Bureau of Mines and Geology. p. 33-35.

Minerals information sources in state agencies; New Mexico, by James Barker, New Mexico Bureau of Mines and Mineral Resources. p. 36-39.

Minerals information sources in state agencies; Oregon, by J. J. Gray, Oregon Department of Geology and Mineral Industries. p. 40-41.

Minerals information sources in state agencies; Utah, by Robert Gloyn and Bryce Tripp, Utah Geological and Mineral Survey. p. 42-45.

Minerals information sources in state agencies; Washington, by W. M. Phillips, Washington Division of Geology and Earth Resources. p. 46-48.

Minerals information sources in state agencies; Wyoming, by W. D. Hausel, Geological Survey of Wyoming. p. 49-50.

C 1064. Proceedings of the 1990 Billings land reclamation symposium on Selenium in arid and semiarid environments, Western United States, edited by R. C. Severson, U.S. Geological Survey; S. E. Fisher, Jr., OSM-WTC, Denver; and L. P. Gough, U.S. Geological Survey. 1991. 146 p.

A. Selenium geochemistry; a conspectus, by J. R. Herring, U.S. Geological Survey. p. 7-24.

B. Solubility, sorption, and redox relationships for selenium in reclaimed environments; a review, by T. H. Brown, OSM-WTC, Denver. p. 27-33.

C. Geobotany of selenium, by J. C. Emerick and L. S. DeMarco, Colorado School of Mines. p. 37-41.

D. Aquatic cycling of selenium; implications for fish and wildlife, by A. D. Lemly and G. J. Smith, U.S. Fish and Wildlife Service. p. 45-53.

E. Selenium mobility in soils and its absorption, translocation, and metabolism in plants, by H. F. Mayland, U.S. Department of Agriculture; L. P. Gough, and K. C. Stewart, U.S. Geological Survey. p. 57-64.

F. AB-DTPA extractable soil selenium as a predictor of seleniferous vegetation, by R. A. Prodgers, Consultant, Butte; and F. F. Munshower, Montana State University. p. 67-71.

G. Selenium poisoning in livestock, by L. F. James, H. F. Mayland, and K. E. Panter, U.S. Department of Agriculture. p. 75-79.

H. Selenium research at the South Dakota Agricultural Experiment Station, by I. S. Palmer and O. E. Olson, South Dakota State University. p. 83-88.

I. Selenium in soils and plants from native and irrigated lands at the Kendrick Reclamation Project area, Wyoming, by J. A. Erdman, R. C. Severson, J. G. Crock, T. F. Harms, U.S. Geological Survey; and H. F. Mayland, U.S. Department of Agriculture. p. 91-105.

J. Selenium sources in the Diablo Range, western Fresno County, California, by R. R. Tidball, R. C. Severson, T. S. Presser and W. C. Swain. p. 109-114.

K. Preliminary results of the Department of the Interior's irrigation drainage studies, by M. I. Sylvester, U.S. Geological Survey; J. P. Deason, U.S. Department of the Interior; H. R. Feltz, U.S. Geological Survey; and R. A. Engberg, U.S. Department of the Interior. p. 117-122.

L. Selenium issues in drastically disturbed land reclamation planning in arid and semiarid environments, by S. E. Fisher, Jr., OSM-WTC, Denver; and F. F. Munshower, Montana State University. p. 125-133.

C 1065. First international symposium on Volcanic ash and aviation safety, edited by T. J. Casadevall, U.S. Geological Survey. 1991. 58 p.

Cleanup of Grant County Airport after May 18, 1980, eruption of Mount Saint Helens, by D. M. Bailey, Port of Moses Lake, Washington. p. 11.

Volcanoes and aviation safety in Costa Rica, by Jorge Barquero H., Universidad Nacional, Costa Rica. p. 12.

Detection and discrimination of volcanic ash clouds by infrared radiometry; II, Experimental, by I. J. Barton and A. J. Prata, CSIRO, Australia. p. 12.

Volcanic ash characterization, by G. K. Bayhurst, A. S. Mason, and K. H. Wohletz, Los Alamos National Laboratory. p. 12-13.

Frequency and regional extent of ash eruptions from Alaskan volcanoes, by J. E. Beget, S. E. Swanson, and D. B. Stone, University of Alaska. p. 13.

The ingestion and melting properties of volcanic ash in aircraft engines, by Alain Bernard, Université Libre, Belgium; and François LeGuern, CEN-Saclay, France. p. 13.

Predicting the times and intensities of explosive volcanic eruptions, by Sutikno Bronto, Volcanological Survey of Indonesia. p. 13-14.

747-400 airplane damage survey following a volcanic ash encounter, by E. E. Campbell, Boeing Commercial Airplane Group. p. 14.

Recommended flight-crew procedures if volcanic ash is encountered, by E. E. Campbell, Boeing Commercial Airplane Group. p. 14-15.

Volcanic ash ingested by jet engines, by T. J. Casadevall, G. P. Meeker, U.S. Geological Survey; and Z. J. Przedpelski, General Electric Aircraft Engines. p. 15.

Gases and aerosols in volcanic eruptions clouds; impacts on aircraft, by T. J. Casadevall, U.S. Geological Survey; and T. M. Murray, Boeing Co. p. 15.

Volcano eruption notification and aircraft avoidance, by C. F. Criswell, Federal Aviation Administration. p. 16.

Current and future capabilities in forecasting the trajectories, transport and dispersion of volcanic ash clouds at the Canadian Meteorological Centre, by Real D'Amours, Canadian Meteorological Centre. p. 16.

Analysis of satellite images of Redoubt Volcano plumes, by K. G. Dean and Larry Whiting, University of Alaska. p. 17.

Multiphase flows and the modeling of gas/particle flows, by Rand Decker, University of Utah. p. 17.

Influence of volcanic clouds on gas turbine engines, by M. G. Dunn, CALSPAN Corp., and D. P. Wade, Defense Nuclear Agency. p. 17.

ADPIC calculated volcanic ash cloud transport and fallout from the 20 December 1990 Mount Saint Helens puff, by J. S. Ellis and T. J. Sullivan, Lawrence Livermore National Laboratory. p. 18.

Development of a real time ATC volcanic ash advisory system based on the aviation weather information system, by J. E. Evans, Massachusetts Institute of Technology. p. 18.

Warning systems and pilot actions, by P. M. Foreman, International Federation of Air Line Pilots Associations, Canada. p. 18-19.

Volcanic ash; international regulatory aspects, by Tom Fox, International Civil Aviation Organization, Canada. p. 19.

Lessons from the 16 September 1986 eruption of Lascar Volcano, North Chile, by P. W. Francis, Stephen Self, University of Hawaii; and L. S. Glaze, Jet Propulsion Laboratory. p. 19.

Particle aggregation controlled by electrical charge in volcanic plumes, by J. S. Gilbert, S. J. Lane, and R. S. J. Sparks, Bristol University. p. 20.

Mitigation methods of volcanic hazards during eruptions; case of the 1982-83 crisis at Galunggung Volcano (Indonesia), by

Volcanic-event notification at Mount St. Helens, by Bobbie Myers, U.S. Geological Survey; and G. J. Theisen, U.S. Forest Service. p. 34-35.

Volcanoes and atmospheric temperature, by R. E. Newell, Massachusetts Institute of Technology. p. 35.

Aviation safety for ash clouds in Japan and JAL's system for Sakurajima's eruptions, by Saburo Onodera, Japan Air Lines; and Kosuke Kamo, Sakurajima Volcanological Observatory. p. 35.

Grain impacts on an aircraft windscreen; the Redoubt 747 encounter, by David Pieri, Jet Propulsion Laboratory; and Robert Oeding, PDA Engineering. p. 35-36.

Detection and discrimination of volcanic-ash clouds by infra-red radiometry; I, Theory, by A. J. Prata and I. J. Barton, CSIRO, Australia. p. 36.

Volcanic-ash cloud warnings in the Australian region, by R. J. Potts and Frank Whitby, Bureau of Meteorology, Australia. p. 36.

Impact of volcanic ash from Redoubt Volcano eruption on GE CF6-80C2 turbofan engines, by Z. J. Przedpelski, General Electric Aircraft Engines; and T. J. Casadevall, U.S. Geological Survey. p. 36-37.

Radar remote sensing of volcanic-ash clouds, by W. I. Rose and A. B. Kostinski, Michigan Technological University. p. 37-38.

Regional monitoring of volcanic ash clouds by Geostationary Meteorological Satellite, by Yosihiro Sawada, Shizuoka Meteorological Observatory, Japan. p. 38.

Utility of AVHRR sensor for remote sensing of Alaskan eruption clouds, by D. J. Schneider and W. I. Rose, Michigan Technological University. p. 38.

A mesoscale data assimilation system adapted for trajectory calculations over Alaska, by T. W. Schlatter and S. G. Benjamin, NOAA Forecast Systems Laboratory. p. 38-39.

Mass, distribution, grain size, and origin of 1989-1990 tephrafall deposits of Redoubt Volcano, Alaska, by W. E. Scott and R. G. McGimsey, U.S. Geological Survey. p. 39.

Ash clouds; conditions in the eruption column, by Stephen Self and G. P. L. Walker, University of Hawaii. p. 40.

Volcanoes; their occurrence and geography, by Tom Simkin, Smithsonian Institution. p. 40.

Use of satellite imagery to track volcanic ash clouds in Indonesia; a new possibility for aviation safety, by Tumpal Situmorang and Subroto Modjo, Volcanological Survey of Indonesia. p. 41.

Preparation and dissemination of volcanic ash plume information by the Monitoring and Aviation Branch of the National Meteorological Center, by A. H. Smith, National Meteorological Center. p. 41.

Volcanic ash detection and tracking system applied to Indonesia; a proposed alternative, by Indroyono Soesilo, Agency for the Assessment and Application of Technology (BPPT), Indonesia. p. 42.

Dispersal of ash by volcanic eruption columns, by R. S. J. Sparks, J. S. Gilbert, Bristol University; M. I. Bursik, Jet Propulsion Laboratory; and S. N. Carey, University of Rhode Island. p. 42.

Application of radar for the observation of volcanic ash, by M. L. Stone, Massachusetts Institute of Technology. p. 42.

Modeling volcanic ash transport, dispersion and deposition, by B. J. B. Stunder, NOAA Air Resources Laboratory. p. 43.

Current state of volcano monitoring; strengths and weaknesses, by D. A. Swanson, U.S. Geological Survey. p. 43.

Thermal properties of volcanic ash, by S. E. Swanson and J. E. Beget, University of Alaska. p. 43-44.

Performance deterioration on aircraft jet engines with presence of solid particles, by Widen Tabakoff, University of Cincinnati. p. 44.

Development of a prediction scheme for the volcanic ash fall from Redoubt Volcano, by H. L. Tanaka, University of Alaska. p. 44.

Volcano observatories and volcanic ash warning, by R. I. Tilling, T. J. Casadevall, U.S. Geological Survey; G. H. Heiken, Los Alamos National Laboratory; and G. E. Sigvaldason, University of Iceland. p. 44-45.

Current procedures for in-flight advisories regarding volcanic eruptions and ash in domestic airspace, by M. A. Tomlinson, National Weather Service. 45 p.

The aeronautical volcanic ash problem, by Jerald Uecker, National Weather Service. p. 45.

Aircraft avoidance regions for volcanic ash, by P. L. Versteegen, D. D. D'Autrechy, Science Application International Corp.; and Charles Galloway, U.S. Department of Defense. p. 46.

Volcanic ash as an ingestion hazard, by A. T. Weaver, Pratt & Whitney. p. 46.

New roles for airports in response to volcanic distribution, by Anders Westman, Alaska International Airport. p. 46.

Ash-fall deposits from large-scale phreatomagmatic volcanism; limitations of available eruption column models, by C. J. N. Wilson, University of Cambridge. p. 47.

Effects of volcanic ash on aircraft powerplants and airframes, by L. M. Zinser, National Center for Atmospheric Research (retired). p. 47.

C 1066. Tecumseh's prophecy; preparing for the next New Madrid earthquake; a plan for an intensified study of the New Madrid seismic zone, edited by R. M. Hamilton, U.S. Geological Survey, and A. C. Johnston, Center for Earthquake Research and Information/Memphis State University; with contributions by the participants in the New Madrid seismic zone workshop, Nov. 15-16, 1989, Memphis, Tennessee. 1990(1991). 30 p. (Reprint.)

C 1067. Program for earthquake hazards assessment in the Pacific Northwest, by K. M. Shedlock and C. S. Weaver. 1991. 29 p.

C 1068. MISSOURI. The Conterminous United States Mineral-Resource Assessment Program; background information to accompany folio of geologic and mineral-resource maps of the Rolla 1° × 2° Quadrangle, Missouri, by W. P. Pratt. Prepared in cooperation with the Missouri Department of Natural Resources, Division of Geology and Land Survey. 1991. 10 p.

C 1070. NEVADA. The Conterminous United States Mineral Appraisal Program; background information to accompany folio of geologic, geochemical, geophysical, and mineral resources maps of the Tonopah 1° by 2° Quadrangle, Nevada, by D. A. John, J. T. Nash, Donald Plouff and D. H. Whitebread. 1991. 13 p.

C 1075. Coasts in crisis, by S. J. Williams, K. A. Dodd and K. K. Gohn. 1990. 32 p. (Public issues in earth science.)

C 1085. INDIANA. Our changing landscape; Indiana Dunes National Lakeshore, by C. L. Hill, B. J. Ryan, B. A. McGregor, U.S. Geological Survey; and Marie Rust, National Park Service. 1991. 44 p. (Public issues in earth science.)

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

TWI 02-E2. Borehole geophysics applied to ground-water investigations, by W. S. Keys. 1990. 150 p. (Supersedes Open-file report 87-539.)

TWI 06-A2. Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model, by S. A. Leake and D. E. Prudic. 1991. 68 p. (Supersedes Open-file report 88-482.)

YEARBOOK

United States Geological Survey yearbook, fiscal year 1990. 1991. 108 p.

International decade for reducing loss from natural disasters, by W. W. Hays. p. 1-3.

Hurricane Hugo, September 1989, by R. E. Schuck-Kolben and Lionel Kaufman. p. 6-8.

USGS employee restores water supply to St. Croix Disaster Relief Center, by S. L. Holmes. p. 8.

Hurricane Hugo and Puerto Rico, by R. W. Rodriguez and R. M. Webb. p. 8-11.

Hurricane Hugo and the South Carolina coast, by J. W. Haines. p. 11-12.

Redoubt Volcano, Alaska, by T. P. Miller. p. 12-15.

Kilauea Volcano, Hawaii, by T. L. Wright. p. 15-17.

Alaska disasters; natural and manmade, by M. B. Shasby. p. 18.

A perspective for the 1990's, by D. A. Rickert. p. 19-24.

Water quality; what we have learned, by W. G. Wilber. p. 24-26.

Transportation planning and geologic maps, by R. L. Bernknopf and J. F. Sutter. p. 41-44.

World energy resources assessment, by D. L. Gautier and C. D. Masters. p. 44-45.

Tapping the potential mineral resources of Alaska, by D. J. Grybeck. p. 45-47.

Idaho National Forest roadless areas, by R. G. Worl. p. 47-48.

Voyage of the century; Neptune and Triton, by L. A. Soderblom, R. L. Kirk and A. S. McEwen. p. 48-50.

Flooding in the Arkansas, Red, and Trinity rivers, by K. L. Wahl. p. 51-53.

Toxic substances in water resources, by G. E. Mallard and P. D. Capel. p. 53-55.

Atrazine in streams of the Midwestern United States, by D. A. Goolsby. p. 55-57.

Drought in California, 1987-90, by R. A. Hunrichs. p. 57-60.

Continuing evolution in mapping technology, by Lindy Mann. p. 61.

Building partnerships for geographic data sharing, by M. A. Domaratz. p. 61-62.

Cartographic data aid response to national emergencies, by Lindy Mann. p. 62-65.

Digital revision of the New Jersey State base map, by D. E. Catts and R. G. Fegeas. p. 66-67.

Using GIS to link health and earth science data bases, by D. R. Wolf. p. 68.

Quality map products from digital data, by T. M. McCulloch. p. 68.

Lake Baikal in the Soviet Union, by P. P. Hearn, S. M. Colman and P. W. Lipman. p. 69-72.

The Soviet Far East and Alaska, by W. J. Nokleberg, W. W. Patton, Jr. and P. P. Hearn. p. 72-73.

Cooperative mineral activities in Latin America, by N. J Page, C. G. Cunningham and G. E. McKelvey. p. 74-75.

Computer-assisted map revision; Bolivia, by R. D. Sanchez. p. 76-77.

Saudi Arabia; new directions, by K. A. Sargent and Paul Williams. p. 78-79.

Coal resources in Pakistan, by P. D. Warwick. p. 79-80.

Bangladesh; results of a 10-year program, by M. D. Kleinkopf and J. W. Whitney. p. 80-81.

Mapping half the world, by George Gryc. p. 82.

Mass storage system for earth science data, by Joe Aquilino and T. E. Huffman. p. 83-84.

Electronic mail, by Paul Celluzzi. p. 84-85.

Arctic Data Interactive; a hypermedia system, by D. A. Wiltshire. p. 85-87.

Microcomputer graphic presentations, by B. R. Schachte. p. 87-88.

New quarters for map distribution and drilling-core research centers, by E. G. Powell. p. 89.

Recycling program, by J. E. Cordyack. p. 90.

Automation in the Office of Personnel, by E. J. Christian. p. 90-91.

Child care, by K. B. Rutledge. p. 91-92.

GENERAL INTEREST PUBLICATIONS

General Interest Publications briefly summarize, for nontechnical readers, the latest information on major topics in the earth sciences about which the Survey receives frequent inquiries from the general public. This series of booklets, brochures, leaflets, and essay reprints are written by Survey scientists and cover topics such as earthquakes, energy resources, ground water, landforms and land use, marine geology, rain, rocks and mineral resources.

A primer on water, by L. B. Leopold and W. B. Langbein. 1960 (1991). 50 p. (Reprint.)

Periodicals

EARTHQUAKES AND VOLCANOES

For a complimentary copy write to Earthquakes and Volcanoes, U.S. Geological Survey, 904 National Center, Reston, VA 22092.

Earthquakes and Volcanoes, v. 22, no. 2. 1990. p. 52-87.

Earthquakes and Volcanoes, v. 22, no. 3. 1991. p. 91-153.

Earthquakes and Volcanoes, v. 22, no. 4. 1990. p. 154-185.

PRELIMINARY DETERMINATION OF EPICENTERS

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Single copies of monthly issues may be purchased only from USGS Book and Open-File Report Sales, Box 25425, Denver CO 80225.

Preliminary determination of epicenters. Monthly listing for July 1990. 40 p.

Preliminary determination of epicenters. Monthly listing for August 1990. 32 p.

Preliminary determination of epicenters. Monthly listing for September 1990. 28 p.

Preliminary determination of epicenters. Monthly listing for October 1990. 28 p.

Preliminary determination of epicenters. Monthly listing for November 1990. 28 p.

Preliminary determination of epicenters. Monthly listing for December 1990. 32 p.

Preliminary determination of epicenters. Monthly listing for January 1991. 40 p.

Preliminary determination of epicenters. Monthly listing for February 1991. 28 p.

Preliminary determination of epicenters. Monthly listing for March 1991. 28 p.

Preliminary determination of epicenters. Monthly listing for April 1991. 32 p.

Preliminary determination of epicenters. Monthly listing for May 1991. 28 p.

Preliminary determination of epicenters. Monthly listing for June 1991. 28 p.

Miscellaneous and Special Books

GEOGRAPHIC NAMES INFORMATION SYSTEM (GNIS)

The Geographic Names Information System currently consists of approximately two million name entries with information about the feature name and category and its geographic location by coordinates, county, and USGS topographic maps. The name file was developed from published 7.5-minute topographic maps. In areas where 7.5-minute maps have not been published, 15-minute maps or 1:250,000-scale maps provided basic name data.

Alphabetical listings are available for each State, territory and outlying area. These preliminary gazetteers list only those names found on the topographic maps of the U.S. Geological Survey. Two topical listings are available: a national listing of populated places and an abridged version of all States, territories and outlying areas, which contains about 40,000 populated places, other administrative places, and major physical features. Many of these files are also available in microfiche.

Other computer listings, specialized searches, and computer tapes may also be purchased.

GNIS, developed by Branch of Geographic Names, Office of Geographic and Cartographic Research, National Mapping Division, is the basis for Professional Paper 1200. The first chapter, P-1200-NJ (New Jersey) was published in 1982 (revised 1983). Each State, territory, and outlying area will be published as a separate chapter after further research and compilation. All other Federal sources, most State sources and other pertinent materials as well as historical documents are researched to complete the requirements for the National Names Depository. Additional published gazetteers include Arizona, Delaware, Indiana, Kansas, North Dakota, and South Dakota; and Oregon, Iowa and Florida are complete and in various stages of printing and editing. State files in compilation include Alabama, Mississippi, Massachusetts, Utah, Pennsylvania and Rhode Island. The interim materials described may meet the needs of a wide variety of potential users until all chapters have been published.

Products may be ordered from Earth Science Information Center, U.S. Geological Survey, 507 National Center, Reston, Virginia 22092. Telephone (703) 648-6045.

Information may be requested from U.S. Geological Survey, Manager GNIS, 523 National Center, Reston, Virginia 22092. Telephone (703) 648-4544.

OTHER SPECIAL BOOKS

Suggestions to authors of the reports of the United States Geological Survey, revised and edited by W. R. Hansen. 1991. 289 p. (Seventh edition.)

CATALOGS

Price and availability list of U.S. Geological Survey publications, 1990. 1991. 49 p.

Publications of the U.S. Geological Survey, 1990. 1991. 445 p.

WATER-RESOURCES INVESTIGATIONS REPORTS

"Water-Resources Investigations Reports" (WRI) in this listing is applied to reports that are of an interpretative nature made available to the public outside the formal USGS publications series. WRI's are not reproduced and distributed in quantity as are formal USGS publications, but are available for public inspection at the indicated depositories.

The following WRI reports are available from: USGS Book and Open-File Report Sales, Box 25425, Denver, CO 80225 (telephone 303-236-7476). For specific ordering instructions, please refer to "Reports Available Only Through Book and Open-File Report Sales" under "Open-File Reports." When ordering, use the WRI number preceding each item, and do not mix orders for WRI reports and open-file reports with other Geological Survey products.

In the water-resources investigations report and the open-file report listings that follow, offices where reports may be inspected are identified by the symbols listed below:

- A — Earth Science Information Center, Rm. 101, 4230 University Dr., Anchorage, AK 99508-4664.
- Da — Library, Rm. C2002, Bldg. 20, Denver Federal Center, Lakewood, CO 80225.
- Db — Earth Science Information Center, Rm. 169, Federal Bldg., 1961 Stout St., Denver, CO 80294.
- F — Library, 2255 North Gemini Dr., Flagstaff, AZ 86001.
- LA — Public Inquiries Office, Rm. 7638, Federal Bldg., 300 North Los Angeles St., Los Angeles, CA 90012. (Closed.)
- M — Library, 345 Middlefield Rd., Menlo Park, CA 94025.
- NC — Library, Rm. 4A100, National Center, 12201 Sunrise Valley Dr., Reston, VA 22092.
- S — Earth Science Information Center, Rm. 678, U.S. Courthouse, West 920 Riverside Ave., Spokane, WA 99201.
- SF — Earth Science Information Center, Rm. 504, Customhouse, 555 Battery St., San Francisco, CA 94111.
- U — Earth Science Information Center, Rm. 8105, Federal Bldg., 125 South State St., Salt Lake City, UT 84138.
- Wa — Earth Science Information Center, U.S. Department of the Interior, Rm. 2650, 1849 C St., NW, Washington, DC 20240.
- Wb — U.S. Department of the Interior, Natural Resources Library, Gifts and Exchange Section, 1849 C St., NW, Washington, DC 20240.

WRI 81-1117. OKLAHOMA. Generalized altitude and configuration of the base of the High Plains regional aquifer, northwestern Oklahoma, by J. S. Havens. 1981. 2 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (USGS, WRD, Room 621, 215 Dean A. McGee Ave., Oklahoma City, OK 73102.)

WRI 84-4032. NEVADA. Geohydrology of test well USW H-1, Yucca Mountain, Nye County, Nevada, by F. E. Rush, William Thordarson and D. G. Pyles. Prepared in cooperation with the U.S. Department of Energy. 1984. 56 p. (NC, Da, M, Wb, Db; USGS, WRD, Yucca Mountain Project Branch Library, Box 25046, Mail Stop 421, Denver Federal Ctr., Denver, CO 80225-0046.)

WRI 84-4089. PUERTO RICO. Estimates of 7-day, 10-year low flow at ungaged streams in Puerto Rico, by Eloy Colón-Dieppa and Vicente Quiñones-Aponte. 1984. (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) (Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.)

WRI 85-4229. WYOMING, MONTANA. Ground-water-flow systems in the Powder River structural basin, Wyoming and Montana, by J. G. Rankl and M. E. Lowry. 1990. 39 p., 1 over-size sheet. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 86-4001. OREGON. Geology, structure, and thickness of hydrogeologic units in part of the Columbia Plateau, Oregon, by J. B. Gonthier. 1990. 6 over-size sheets, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402.)

WRI 86-4195. PENNSYLVANIA. Technique for estimating depths of 100-year floods in Pennsylvania, by H. N. Flippo, Jr. 1990. 16 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb.)

WRI 86-4364. Definition of the geohydrologic framework and preliminary simulation of ground-water flow in the Mississippi Embayment aquifer system, Gulf Coastal Plain, United States, by J. K. Arthur and R. E. Taylor. 1990. 97 p., 2 over-size sheets. (NC, Da, M, Wb.)

WRI 87-4123. PUERTO RICO. Elevation of the water-table surface for the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March 1986, by Angel Román-Más and Orlando Ramos-Ginés. Prepared in cooperation with the Puerto Rico Department of Agriculture. 1987. 2 over-size sheets, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.

WRI 87-4130. NEW HAMPSHIRE. Hydrogeology of the Cocheco River basin, southeastern New Hampshire, by J. E. Cotton. Prepared in cooperation with the State of New Hampshire, Department of Environmental Services, Water Resources Division. 1989. 47 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Wb.)

WRI 87-4135. WASHINGTON. Ground-water pumpage from the Columbia Plateau regional aquifer system, Washington, 1984, by D. R. Cline and M. E. Knadle. Prepared in cooperation with the State of Washington Department of Ecology. 1990. 32 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; and Library, West 920 Riverside Ave., Room 656, Spokane, WA 99201.)

WRI 87-4145. GEORGIA. Hydrogeology, chemical quality, and availability of ground water in the upper Floridan Aquifer, Albany area, Georgia, by D. W. Hicks, H. E. Gill and S. A. Longsworth. Prepared in cooperation with the City of Albany, Water, Gas, and Light Commission. 1987. 52 p., 3 over-size

sheets. (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)

WRI 87-4160. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the central Aguirre Quadrangle, Puerto Rico, March 1986, by Sigfredo Torres-González and Fernando Gómez-Gómez. 1987. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.

WRI 87-4161. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Salinas Quadrangle, Puerto Rico, March 1986, by Vicente Quiñones-Aponte and Fernando Gómez-Gómez. 1987. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.

WRI 87-4162. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Guayama Quadrangle, Puerto Rico, March 1986, by Rafael Dacosta and Fernando Gómez-Gómez. 1987. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.

WRI 88-4016. MINNESOTA. Water quality of lakes and streams in Voyageurs National Park, northern Minnesota, 1977-84, by G. A. Payne. Prepared in cooperation with the National Park Service. 1991. 95 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 88-4100. Geohydrology and regional ground-water flow of the coastal lowlands aquifer system in parts of Louisiana, Mississippi, Alabama, and Florida; a preliminary analysis, by Angel Martin, Jr. and C. D. Whiteman, Jr. 1989. 88 p., 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, P. O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)

WRI 88-4105. WASHINGTON, OREGON, IDAHO. Surface-water resources of the Columbia Plateau in parts of Washington, Oregon, and Idaho, by L. M. Nelson. 1991. 4 over-size sheets. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

WRI 88-4132. COLORADO. Water quality of Fountain and Monument creeks, south-central Colorado, with emphasis on relation of water quality to stream classifications, by P. R. Edelmann. Prepared in cooperation with the Colorado Springs Department of Utilities and the Lower Fountain Water-Quality Management Association. 1990. 99 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 88-4145. NEW YORK. Glacial history and geohydrology of the Irondequoit Creek valley, Monroe County, New York, by W. M. Kappel and R. A. Young. Prepared in cooperation with the Monroe County Environmental Health Laboratory, Monroe County Department of Engineering. 1989. 34 p., 3 over-size sheets. (NC, Da, M, Wb; Library, USGS, P.O. Box 1669, Albany, NY 12201.)

WRI 88-4147. MASSACHUSETTS. Stream-aquifer relations and yield of stratified-drift aquifers in the Nashua River basin, Massachusetts, by V. A. de Lima. Prepared in cooperation with the Massachusetts Department of Environmental Management. 1991. 47 p. (NC, Da, M, Wb.)

WRI 88-4163. TRUK ISLANDS. Ground-water resources of selected high volcanic islands of Truk with emphasis on small village supplies, by K. J. Takasaki. Prepared in cooperation with the Government of Truk State. 1989. 60 p. (NC, Da, M, Wb, SF, LA.)

WRI 88-4174. FLORIDA. Effect of spray irrigation of treated wastewater on water quality of the surficial aquifer system, Reedy Creek Improvement District, central Florida, by E. R. German. Prepared in cooperation with the Reedy Creek Improvement District. 1990. 43 p. (NC, Da, M, Wb; USGS, WRD, 224 West Center St., Suite 1006, Altamonte Springs, FL 32714.)

WRI 88-4179. NEW HAMPSHIRE, MAINE. Hydrogeology, water quality, and effects of increased municipal pumpage of the Saco River valley glacial aquifer; Bartlett, New Hampshire to Fryeburg, Maine, by D. H. Tepper, D. J. Morrissey, C. D. Johnson and T. J. Maloney. Prepared in cooperation with the Maine Department of Conservation, the New Hampshire Water Supply and Pollution Control Commission, the New Hampshire Water Resources Board, and the Town of Conway, New Hampshire. 1990. 113 p., 6 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb; USGS, WRD, 26 Ganneston Dr., Augusta, ME.)

WRI 88-4198. SOUTH DAKOTA. A digital simulation of the glacial-aquifer system in the northern three-fourths of Brown County, South Dakota, by P. J. Emmons. Prepared in cooperation with the City of Aberdeen and the South Dakota Department of Water and Natural Resources. 1990. 74 p. (NC, Da, M, Wb, Db.)

WRI 88-4209. WYOMING. Use of paleoflood investigations to improve flood-frequency analyses of plains streams in Wyoming, by M. E. Cooley. Prepared in cooperation with the Wyoming Highway Department. 1990. 75 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 88-4213. Floods in West Virginia, Virginia, Pennsylvania, and Maryland, November 1985, by D. H. Carpenter. 1990. 86 p. (NC, Da, M, Wb; USGS, WRD, 208 Carroll Bldg., 8600 La Salle Rd., Towson, MD 21204.)

WRI 88-4229. MISSISSIPPI. Freshwater use in Mississippi, 1985, by J. A. Callahan and N. L. Barber. Prepared in cooperation with the Mississippi Department of Environmental Quality, Bureau of Land and Water Resources. 1990. 1 over-size sheet. (NC, Da, M, Wb.)

WRI 89-4003. NORTH DAKOTA. Estimated use of water in North Dakota in 1985 and trends during 1960-85, by E. A. Wesolowski. Prepared in cooperation with the North Dakota State Water Commission. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 821 East Interstate Ave., Bismarck, ND 58501-1199.)

WRI 89-4031. RHODE ISLAND. Hydrogeology, water quality, and ground-water development alternatives in the lower Wood River ground-water reservoir, Rhode Island, by D. C. Dickerman, E. C. Trench and J. P. Russell. Prepared in cooperation with the Rhode Island Water Resources Board. 1990. 109 p. (NC, Da, M, Wb.)

WRI 89-4051. OREGON, WASHINGTON. Use of elutriate tests and bottom-material analyses in simulating dredging effects on water quality of selected rivers and estuaries in Oregon and Washington, 1980-1983, by G. J. Fuhrer and Duane Evans. Prepared in cooperation with the U.S. Army Corps of Engineers. 1990. 54 p., 1 over-size sheet. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS, Library, 5400 McArthur, Vancouver, WA 98661.)

WRI 89-4052. WASHINGTON. Characterization and simulation of rainfall-runoff relations for headwater basins in western King and Snohomish counties, Washington, by R. S. Dinicola. Prepared in cooperation with the King County Department of Public Works, King County Department of Planning and Community Development, Snohomish County Department of Public Works, and Municipality of Metropolitan Seattle. 1990. 52 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

WRI 89-4057. OREGON. Adequacy of available hydrogeologic data for evaluation of declining ground-water levels in the Fort Rock Basin, south-central Oregon, by W. D. McFarland and G. N. Ryals. Prepared in cooperation with the Oregon Water Resources Department. 1991. 47 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb, LA SF, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS, Library, 5400 McArthur, Vancouver, WA 98661.)

WRI 89-4069. NEW MEXICO. Geohydrology of the Morrison Formation in the western San Juan basin, New Mexico, by G. E. Welder and R. L. Klausing. Prepared in cooperation with the New Mexico State Engineer Office and the Navajo Nation. 1990. 1 over-size sheet. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)

WRI 89-4078. WYOMING. A concept of the shallow ground-water system along the North Platte River, south-central Wyoming, by M. A. Crist. Prepared in cooperation with the Wyoming State Engineer. 1990. 23 p., 2 over-size sheets. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 89-4080. Users manual for ANNIE, a computer program for interactive hydrologic analyses and data management, by A. M. Lumb, J. L. Kittle, Jr. and K. M. Flynn. 1990. 236 p. (NC, Da, M, Wb.)

WRI 89-4098. SOUTH CAROLINA. Water use in South Carolina, 1985, by W. J. Stringfield and S. C. Lambert. Prepared in cooperation with the South Carolina Water Resources Commission. 1990. 27 p. (NC, Da, M, Wb.)

WRI 89-4099. CALIFORNIA. Geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California, by C. J. Londquist and P. L. Martin. 1989. 41 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 89-4106. ILLINOIS. Techniques for computing discharge at four navigation dams on the Illinois and Des Plaines rivers in Illinois, by D. M. Mades, L. S. Weiss and J. R. Gray. Prepared in cooperation with the U.S. Army Corps of Engineers, Rock Island District. 1991. 58 p. (NC, Da, M, Wb; USGS, WRD, 102 East Main St., 4th Floor, Urbana, IL 61801.)

WRI 89-4110. WASHINGTON. Quality of water in an inactive uranium mine and its effects on the quality of water in Blue Creek, Stevens County, Washington, 1984-85, by S. S. Sumioka. Prepared in cooperation with the U.S. Bureau of Indian Affairs and the U.S. Bureau of Land Management. 1991. 62 p. (NC, Da, M, Wb; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402-4384.)

WRI 89-4115. PUERTO RICO. Potentiometric surface of the principal aquifer and hydrologic conditions in the Ponce-Juana Diaz area, Puerto Rico, April-May, 1987, by Félix Rodríguez-del-Río and Vicente Quiñones-Aponte. 1990. 2 over-size sheets; sheet 2, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, GPO Box 364424, San Juan PR 00936-4424.)

WRI 89-4116. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March to April, 1987, by Félix Rodríguez-del-Río and Fernando Gómez-Gómez. 1990. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, Wb; USGS, WRD, P.O. Box 364424, San Juan, PR 00936.) Available only from USGS, WRD, P.O. Box 364424, San Juan, PR 00936-4424.

WRI 89-4117. NEVADA. Shallow ground water in the Whitney area, southeastern Las Vegas Valley, Clark County, Nevada; Part I, Description of chemical quality, 1986-87, by D. H. Emme and D. E. Prudic. Prepared in cooperation with the U.S. Bureau of Reclamation. 1991. 47 p. (NC, Da, M, Wb, LA, SF, U; USGS WRD, 1500 East Tropicana, Suite 201, Las Vegas, NV 89119; and 705 North Plaza St., Room 224, Carson City, NV 89701.)

WRI 89-4121. WASHINGTON. Extent and source of organic solvents in ground water in the Argonne Road area near Spokane, Washington, by N. P. Dion and S. S. Sumioka. Prepared in cooperation with the State of Washington Department of Ecology. 1991. 39 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

WRI 89-4124. ILLINOIS. Determination of hydraulic properties in the vicinity of a landfill near Antioch, Illinois, by R. T. Kay and J. D. Earle. Prepared in cooperation with the U.S. Environmental Protection Agency. 1990. 28 p. (NC, Da, M, Wb, Wa; USGS, WRD, 102 East Main St., 4th Floor, Urbana, IL 61801.)

WRI 89-4125. WASHINGTON. Available habitat for salmon and steelhead trout in the lower Puyallup, White, and Carbon rivers in western Washington, by S. S. Embrey. Prepared in cooperation with the Pierce County Department of Public Works and State of Washington Department of Ecology. 1991. 62 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

WRI 89-4127. NEW MEXICO. Ground-water availability and quality in eastern Bernalillo County and vicinity, central New Mexico, by G. E. Kues. Prepared in cooperation with the Bernalillo County Commission and the New Mexico State Engineer Officer. 1990. 82 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)

WRI 89-4129. WISCONSIN. Ground-water levels and quality at Crex Meadows Wildlife Area, Burnett County, Wisconsin, by G. L. Patterson. Prepared in cooperation with the Wisconsin Department of Natural Resources. 1990. 19 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719.)

WRI 89-4136. MINNESOTA. Hydrogeology and water quality of glacial-drift aquifers in the Bemidji-Bagley area, Beltrami, Clearwater, Cass, and Hubbard counties, Minnesota, by J. R. Stark, J. P. Busch and M. H. Deters. Prepared in cooperation with the Minnesota Department of Natural Resources and the Bemidji-Bagley Ground-Water Study Steering Committee. 1991. 135 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 89-4141. MISSISSIPPI. Transport and fate of acetone in an outdoor model stream, Stennis Space Center near Bay St. Louis, Mississippi, by R. E. Rathbun, D. J. Shultz, D. W. Stephens and D. Y. Tai. 1989. 101 p. (NC, Da, M, Wb.)

WRI 89-4142. FLORIDA. An assessment of the flow of variable-salinity ground water in the middle confining unit of the Floridan aquifer system, west-central Florida, by J. J. Hickey. Prepared in cooperation with the Southwest Florida Water Management District. 1990. 13 p. (NC, Da, M, Wb; USGS, WRD, Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)

WRI 89-4163. Effects of land-use buffer size on Spearman's partial correlations of land use and shallow ground-water quality, by L. E. Hay and W. A. Battaglin. 1990. 28 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 89-4164. RHODE ISLAND, MASSACHUSETTS. Estimating surface-water runoff to Narragansett Bay, Rhode Island and Massachusetts, by K. G. Ries, III. Prepared in cooperation with the Rhode Island Department of Environmental Management. 1990. 44 p., 1 over-size sheet, scale 1:125,000 (1 inch = about 2 miles). (NC, Da, M, Wb.)

WRI 89-4167. CONNECTICUT. Effects of urbanization on peak streamflows in four Connecticut communities, 1980-84, by L. A. Weiss. Prepared in cooperation with the State of Connecticut Department of Transportation; Town of Enfield; and cities of Meriden, New Britain and Norwalk. 1990. 40 p., 4 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, A, Db, LA, U, M, Wb; USGS, WRD, NED Library, 10 Causeway St., Room 926, Boston, MA 02222-1040; PIO, ESIS, USGS, E-146 Federal Bldg., Box 53, 701 "C" St., Anchorage, AK 99508-4664.)

WRI 89-4169. PENNSYLVANIA. Geohydrology and simulation of ground-water flow in the carbonate rocks of the Valley Creek basin, eastern Chester County, Pennsylvania, by R. A. Sloto. Prepared in cooperation with the Chester County Water Resources Authority. 1990. 60 p., 3 over-size sheets, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Wb; USGS, WRD, 111 Great Valley Pkwy., Malvern, PA 19355.)

WRI 89-4170. SOUTH DAKOTA. Quality of water from surficial-outwash aquifers in the Big Sioux River basin, eastern South Dakota, by S. J. Lawrence and S. K. Sando. Prepared in cooperation with the South Dakota Department of Water and Natural Resources. 1991. 81 p. (NC, Da, M, Wb, Db.)

WRI 89-4173. WYOMING. Stream-aquifer system in the upper Bear River valley, Wyoming, by K. C. Glover. Prepared in cooperation with the Wyoming State Engineer. 1990. 58 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 89-4174. ARIZONA. Predevelopment hydrology of the Gila River Indian Reservation, south-central Arizona, by B. W. Thomsen and J. H. Eychaner. Prepared in cooperation with the U.S. Bureau of Indian Affairs. 1991. 44 p., 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 375 South Euclid Ave., Tucson, AZ 85719-6644; 1545 West University Dr., Tempe, AZ 85281; 2255 North Gemini Dr., Flagstaff, AZ 86001; and 1940 South 3rd Ave., Yuma, AZ 85364.)

WRI 89-4175. NEVADA. Phosphorus in the Truckee River between Vista and Patrick, Storey and Washoe counties, Nevada, August 1984, by R. J. Hoffman. Prepared in cooperation with the Nevada Department of Conservation and Natural Resources. 1990. 33 p. (NC, Da, M, Wb, LA, SF, U; USGS, WRD, 705 North Plaza St., Room 224, Carson City, NV 89701; and 1500 East Tropicana, Suite 201, Las Vegas, NV 89119.)

WRI 89-4177. COLORADO. Estimated water-quality conditions and potential downstream channel effects of the proposed Rock Creek and Wolford Mountain reservoirs, north-central Colorado, by D. L. Butler. Prepared in cooperation with the Colorado River Water Conservation District. 1990. 101 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 89-4180. Ground-water pumpage from the Gulf Coast aquifer systems, 1960-85, south-central United States, by T. O. Mesko, T. A. Williams, D. J. Ackerman and A. K. Williamson. 1990. 177 p., 5 over-size sheets, scale 1:3,333,333 (1 inch = about 52 miles). (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

WRI 89-4180. Ground-water pumpage from the Gulf Coast aquifer systems, 1960-85, south-central United States, by T. O. Mesko, T. A. Williams, D. J. Ackerman and A. K. Williamson. 1990. 177 p., 5 over-size sheets, scale 1:1,500,000 (1 inch = about 24 miles). (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

WRI 89-4184. NEW MEXICO. Simulation of the effects of ground-water withdrawal from a well field adjacent to the Rio Grande, Santa Fe County, New Mexico, by D. P. McAda. Prepared in cooperation with the Santa Fe Metropolitan Water Board. 1990. 27 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)

WRI 89-4185. INDIANA. Effects of storm runoff on water quality in the White River and Fall Creek, Indianapolis, Indiana, June through October 1986 and 1987, by J. D. Martin and R. A. Craig. Prepared in cooperation with the Indianapolis Department of Public Works. 1990. 114 p. (NC, Da, M, Wb; USGS, WRD, 5957 Lakeside Blvd., Indianapolis, IN 46278.)

WRI 89-4187. IOWA. Automatic tracer-dilution method used for stage-discharge ratings and streamflow hydrographs on small Iowa streams, by P. J. Soenksen. Prepared in cooperation with the Iowa Department of Transportation, Highway Research Board. 1990. 45 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1230, 400 South Clinton St., Room 269, Federal Bldg., Iowa City, IA 52244.)

WRI 89-4189. Calibration and sensitivity analysis of a ground-water flow model of the coastal lowlands aquifer system in parts of Louisiana, Mississippi, Alabama, and Florida, by Angel Martin, Jr. and C. D. Whiteman, Jr. 1990. 54 p., 4 over-size sheets. (NC, Da, M, Wb; USGS, WRD, P.O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)

WRI 89-4190. KANSAS. Preliminary evaluation of the effects of an abandoned oil refinery on chemical quality of water in the Arkansas River valley, Arkansas City, Kansas, 1985-86, by T. B. Spruill. Prepared in cooperation with the Kansas Department of Health and Environment. 1990. 53 p., 1 over-size sheet, scale 1:6,000 (1 inch = 500 feet). (NC, Da, M, Wb, Db; Public Inquiries Office, Rolla, MO; USGS, WRD, 4821 Quail Crest Pl., Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

WRI 89-4193. Liquid chromatographic determination of atrazine and its degradation products in water, by T. R. Steinheimer and M. G. Ondrus. 1990. 19 p. (NC, Da, M, Wb, Db.)

WRI 89-4194. ARIZONA, CALIFORNIA. Estimates of consumptive use and ground-water return flow and the effect of rising and sustained high river stage on the method of estimation in Cibola Valley, Arizona and California, 1983 and 1984, by S. J. Owen-Joyce. Prepared in cooperation with the U.S. Bureau of Reclamation. 1990. 41 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 3738 North 16th St., Suite E, Phoenix, AZ, 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ.)

WRI 89-4201. TENNESSEE. A pilot study for delineation of areas contributing water to wellfields at Jackson, Tennessee, by R. E. Broshears, J. F. Connell and N. C. Short. Prepared in cooperation with the Tennessee Department of Health and Environment and the Jackson Utility Division. 1991. 32 p. (NC, Da, M, Wb; USGS, WRD, 810 Broadway, Suite 500, Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International,. 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 89-4209. HAWAII. Water resources of the island of Kahoolawe, Hawaii; preliminary findings, by K. J. Takasaki. Prepared in cooperation with the Hawaii Department of Land and Natural Resources, Division of Water and Land Development. 1991. 17 p. (NC, Da, M, Wb, SF, LA.)

WRI 89-4210. NEW JERSEY. Application of a distributed-routing rainfall-runoff model to flood-frequency estimation in Somerset County, New Jersey, by J. L. Fulton. Prepared in cooperation with the Somerset County Board of Chosen Freeholders. 1990. 78 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 90-4000. CALIFORNIA. Assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt by using a simple hydrochemical model, by R. P. Hooper, C. T. West and N. E. Peters. Prepared in cooperation with the California Air Resources Board. 1990. 68 p. (NC, Da, M, Wb; USGS, WRD, 6481 Peachtree Industrial Blvd., Doraville, GA 30360.)

WRI 90-4001. MINNESOTA. Effects of present and projected ground-water withdrawals on the Twin Cities aquifer system, Minnesota, by M. E. Schoenberg. Prepared in cooperation with the Minnesota Department of Natural Resources and Metropolitan Council of the Twin Cities. 1990. 165 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

WRI 90-4002. FLORIDA. Quantity and quality of stormwater runoff from western Daytona Beach, Florida, and adjacent areas, by G. F. Taylor. Prepared in cooperation with the City of Daytona Beach. 1990. 88 p. (NC, Da, M, Wb; USGS, WRD, Suite 1006, 224 West Center St., Altamonte Springs, FL 32174.)

WRI 90-4004. NEW JERSEY. Geophysical and chemical investigations of ground water at five industrial or waste-disposal sites in Logan Township, Gloucester County, New Jersey, 1983-87, by Jane Kozinski, P. J. Lacombe, J. J. Hochreiter, Jr. and J. C. Lewis. Prepared in cooperation with the Township of Logan, Gloucester County. 1990. 131 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 90-4005. COLORADO. Analysis of water-quality data and sampling programs at selected sites in north-central Colorado, by D. K. Mueller. Prepared in cooperation with the Northern Colorado Water Conservancy District and the U.S. Bureau of Reclamation. 1990. 79 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225.)

WRI 90-4009. IOWA. Regional evaluation of hydrologic factors and effects of pumping, St. Peter-Jordan Aquifer, Iowa, by M. R. Burkart and R. C. Buchmiller. 1990. 44 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1230, 400 South Clinton St., Room 269, Federal Bldg., Iowa City, IA 52244.)

WRI 90-4010. FLORIDA. Potential for ground-water development in central Volusia County, Florida, by J. O. Kimrey. Prepared in cooperation with Volusia County. 1990. 31 p. (NC, Da, M, Wb; USGS, WRD, Suite 1006, 224 West Center St., Altamonte Springs, FL 32714.)

WRI 90-4014. CALIFORNIA. Water resources of the Descanso area, San Diego County, California, by L. F. Duell, Jr. Prepared in cooperation with the County of San Diego. 1990. 26 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, 2800 Cottage Way, Federal Bldg., Room W-2234, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 90-4015. TENNESSEE. Recharge rates and aquifer hydraulic characteristics for selected drainage basins in middle and East Tennessee, by A. B. Hoos. Prepared in cooperation with the Tennessee State Planning Office and the Tennessee Department of Health and Environment. 1990. 34 p. (NC, Da, M, Wb; USGS, WRD, Room A-413 Federal Bldg., Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 90-4017. ARKANSAS. Trends and comparison of water quality and bottom material of northeastern Arkansas streams, 1974-85, and effects of planned diversions, by J. C. Petersen. Prepared in cooperaton with the Arkansas Soil and Water Conservation Commission. 1990. 215 p. (NC, Da, M, Wb.)

WRI 90-4018. CALIFORNIA. Comparison of recording current meters in shallow waters of San Francisco Bay, California, by J. W. Gartner and R. N. Oltmann. Prepared in cooperation with the California State Water Resources Control Board. 1990. 84 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 90-4020. COLORADO. Geohydrologic evaluation of the upper part of the Mesaverde Group, northwestern Colorado, by S. G. Robson and Michael Stewart. Prepared in cooperation with the Colorado Department of Natural Resources, Mined Land Reclamation Division, the U.S. Office of Surface Mining Reclamation and Enforcement, and the U.S. Bureau of Land Management. 1990. 125 p., 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 90-4021. CALIFORNIA. Methods for selection and hydrologic description of potential landfill sites in southeastern San Diego County, California, by C. A. Kaehler. Prepared in cooperation with the San Diego County Department of Public Works. 1990. 73 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 90-4026. OHIO. Geohydrology, ground-water quality, and simulated ground-water flow, Geauga County, Ohio, by S. M. Eberts, E. S. Bair and J. T. de Roche. Prepared in cooperation with the Geauga County Planning Commission. 1990. 117 p., 2 over-size sheets. (NC, Da, M, Wb.)

WRI 90-4027. GEORGIA. Analysis of the effects of hypothetical changes in ground-water withdrawal from the Floridan aquifer system in the area of Glynn County, Georgia, by R. B. Randolph and R. E. Krause. Prepared in cooperation with the City of Brunswick, Georgia; Glynn County, Georgia; Georgia Department of Natural Resources, Environmental Protection Division, Georgia Geological Survey; Coastal Area Planning and Development Commission; and the U.S. Army Corps of Engineers. 1990. 32 p., 3 over-size sheets; sheets 2 and 3, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)

WRI 90-4028. MICHIGAN. Geohydrology and water quality of Kalamazoo County, Michigan, 1986-88, by S. J. Rheaume. Prepared in cooperation with the Michigan Department of Natural Resources and Kalamazoo County. 1990. 102 p., 3 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 6520 Mercantile Way, Suite 5, Lansing, MI 48911.)

WRI 90-4029. Programs and analytical methods for the U.S. Geological Survey acid rain quality-assurance project, by R. B. See, T. C. Willoughby, M. H. Brooks and J. D. Gordon. 1990. 57 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Branch of Quality Assurance, Box 25046, Mail Stop 401, Federal Ctr., Denver, CO 80225.)

WRI 90-4030. External quality-assurance results for the National Atmospheric Deposition Program/National Trends Network during 1988, by R. B. See, J. D. Gordon and T. C. Willoughby. 1990. 26 p. (NC, Da, M, Wb, U; USGS, Branch of Quality Assurance, Box 25046, Mail Stop 401, Federal Ctr., Denver, CO 80225.)

WRI 90-4031. NORTH CAROLINA. Effects of channel modifications on the hydrology of Chicod Creek basin, North Carolina, 1975-87, by R. R. Mason, Jr., C. E. Simmons and S. A. Watkins. Prepared in cooperation with the U.S. Department of Agriculture. 1990. 84 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 2857, Century Station, Room 440, 300 Fayetteville St., Raleigh, NC 27602.)

WRI 90-4032. VIRGINIA. Geohydrology and the occurrence of volatile organic compounds in ground water, Culpeper Basin of Prince William County, Virginia, by D. L. Nelms and D. L. Richardson. Prepared in cooperation with the Prince William Health District. 1990. 94 p., 5 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 3600 West Broad St., Room 606, Richmond, VA 23230.)

WRI 90-4035. NORTH CAROLINA. Hydrogeologic unit map of the Piedmont and Blue Ridge provinces of North Carolina, by C. C. Daniel, III and R. A. Payne. Prepared in cooperation with the North Carolina Department of Environment, Health, and Natural Resources. 1990. 1 over-size sheet. (NC, Da, M, Wb.)

WRI 90-4036. Analysis of ground-water flow in the A-Sand Aquifer at Paramaribo, Suriname, South America, by C. B. Hutchinson. Prepared in cooperation with the Organization of American States. 1990. 65 p. (NC, Da, M, Wb; USGS, WRD, Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33614.)

WRI 90-4043. KANSAS. Hydrogeology and ground-water-quality conditions at the Emporia-Lyon County Landfill, eastern Kansas, 1988, by N. C. Myers and P. R. Bigsby. Prepared in cooperation with the City of Emporia and Lyon County. 1990. 42 p. (NC, Da, M, Wb, Db; PIO, Rolla, MO; USGS, WRD, 4821 Quail Crest Pl., Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

WRI 90-4044. TENNESSEE. Effects of storm-water runoff on local ground-water quality, Clarksville, Tennessee, by A. B. Hoos. Prepared in cooperation with the Tennessee Department of Health and Environment. 1990. 57 p. (NC, Da, M, Wb; USGS, WRD, Room A-413 Federal Building, Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 90-4045. MISSOURI. Simulation of flood hydrographs for small basins in Missouri, by L. W. Becker. Prepared in cooperation with the Missouri Highway and Transportation Commission. 1990. 40 p. (NC, Da, M, Wb; USGS, WRD, 1400 Independence Rd., Mail Stop 200, Rolla, MO 65401.)

WRI 90-4046. NEW JERSEY. Water-quality trends in New Jersey streams, by L. E. Hay and J. P. Campbell. 1990. 297 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 90-4048. Preconditioned conjugate-gradient 2 (PCG2), a computer program for solving ground-water flow equations, by M. C. Hill. 1990. 43 p. (NC, Da, M, Wb, Db.)

WRI 90-4055. NEW MEXICO. Infiltration and evapotranspiration within the Albuquerque, New Mexico, area with a section on historical water-resource trends during the 1954-80's period of urban growth, by C. L. Goetz and S. G. Shelton. Prepared in cooperation with the New Mexico State Engineer Office and the City of Albuquerque. 1990. 96 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)

WRI 90-4059. PUERTO RICO. Potentiometric surface of the alluvial aquifer and hydrologic conditions near Gurabo and Juncos, Puerto Rico, March 1988, by J. C. Puig and J. M. Rodríguez. Prepared in cooperation with the Puerto Rico Department of Natural Resources and the Puerto Rico Aqueduct and Sewer Authority. 1990. 2 over-size sheets, scale 1:20,000 (1 inch = 1,667 feet).

(NC, Da, M, Wb; USGS, WRD, GPO Box 364424, San Juan, PR 00936-4424.)

WRI 90-4060. Salt-dome locations in the Gulf Coastal Plain, south-central United States, by J. D. Beckman and A. K. Williamson. 1990. 44 p., 1 over-size sheet, scale 1:1,500,000 (1 inch = about 24 miles). (NC, Da, M, Wb; USGS, WRD, GC RASA, North Shore Plaza Bldg., Room 104, 55 North Interregional Highway, Austin, TX 78702.)

WRI 90-4061. MISSISSIPPI. Water withdrawals in the Black Warrior-Tombigbee Basin and Alcorn County, Mississippi, 1985-87, by N. L. Barber. Prepared in cooperation with the U.S. Army Corps of Engineers. 1991. 42 p. (NC, Da, M, Wb; USGS, WRD, 100 West Capitol St., Suite 710, Jackson, MS 39269.)

WRI 90-4062. NEW JERSEY. Results of test drilling in Howell Township, Monmouth County, New Jersey, by G. A. Brown and O. S. Zapecza. Prepared in cooperation with the U.S. Army Corps of Engineers. 1990. 42 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

WRI 90-4063. FLORIDA. Geohydrologic framework and an analysis of a well-plugging program, Lee County, Florida, by H. R. La Rose. Prepared in cooperation with the South Florida Water Management District. 1990. 26 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 107, 9100 NW 36th St., Miami, FL 33178.)

WRI 90-4064. TENNESSEE. Reconnaissance of the occurrence of agricultural chemicals in ground water in Haywood, Lake, Obion, and Shelby counties, Tennessee, by D. W. Hanchar. Prepared in cooperation with the Tennessee Department of Health and Environment, Division of Water Pollution Control. 1991. 28 p. (NC, Da, M, Wb; USGS, WRD, Room A-413 Federal Bldg., Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 90-4065. KANSAS. Characterization of ground-water flow and chemical transport beneath two irrigated fields in south-central Kansas, 1988, by A. T. Rutledge and J. O. Helgesen. 1990. 37 p. (NC, Da, M, Wb, Db; Earth Sci. Information Ctrs., Rolla, MO; USGS, WRD, 4821 Quail Crest Pl., Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

WRI 90-4066. ARKANSAS. Hydrogeology and quality of ground water in the Boone Formation and Cotter Dolomite in karst terrain of northwestern Boone County, Arkansas, by V. A. Leidy and E. E. Morris. 1990. 57 p. (NC, Da, M, Wb.)

WRI 90-4067. IDAHO. Streamflow losses and ground-water level changes along the Big Lost River at the Idaho National Engineering Laboratory, Idaho, by C. M. Bennett. Prepared in cooperation with the U.S. Department of Energy. 1990. 49 p. (NC, Da, M, Wb; USGS, WRD, Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 84303-2230.)

WRI 90-4068. MISSOURI. Analysis of alternative modifications for reducing backwater flooding at the Honey Creek coal strip mine reclamation site in Henry County, Missouri, by T. W. Alexander. Prepared in cooperation with the Missouri Department of Natural Resources, Land Reclamation Commission. 1990. 22 p. (NC, Da, M, Wb; USGS, WRD, 1400 Independence Rd., Mail Stop 200, Rolla, MO 65401.)

WRI 90-4069. FLORIDA. Geology, hydrology, and water quality of the surficial aquifer system in Volusia County, Florida, by G. G. Phelps. Prepared in cooperation with Volusia County. 1990. 67 p. (NC, Da, M, Wb; USGS, WRD, Suite 1006, 224 West Center St., Altamonte Springs, FL 32714.)

WRI 90-4070. CALIFORNIA. Geologic sources, mobilization, and transport of selenium from the California Coast Ranges to the western San Joaquin Valley; a reconnaissance study, by T. S. Presser, W. C. Swain, R. R. Tidball and R. C. Severson. Prepared in cooperation with the San Joaquin Valley Drainage Program. 1990. 66 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 90-4071. COLORADO. Water-quality and sediment-transport characteristics in Kenney Reservoir, White River basin, northwestern Colorado, by R. L. Tobin and C. P. Hollowed. Prepared in cooperation with the Colorado River Water Conservation District. 1990. 218 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 90-4080. CALIFORNIA. Geohydrology, water quality, and water budgets of Golden Gate Park and the Lake Merced area in the western part of San Francisco, California, by E. B. Yates, S. N. Hamlin and L. H. McCann. Prepared in cooperation with the San Francisco Water Department. 1990. 45 p., 1 over-size sheet. (NC, Da, M, Wb, SF, LA; USGS, WRD, 2800 Cottage Way, Federal Bldg., Room W-2234, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 90-4082. RHODE ISLAND. Rhode Island streams, 1978-88; an update on water-quality conditions, by J. C. Briggs. Prepared in cooperation with the State of Rhode Island, Department of Environmental Management. 1990. 39 p. (NC, Da, M, Wb.)

WRI 90-4087. MISSISSIPPI. Low-flow and flow-duration characteristics of Mississippi streams, by P. A. Telis. Prepared in cooperation with the Pat Harrison Waterway District, Pearl River Basin Development District, Tombigbee River Valley Water Management District, and Mississippi Department of Environmental Quality. 1991. 214 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 100 West Capitol St., Suite 710, Jackson, MS 39269.)

WRI 90-4089. ARKANSAS. Water-level maps of the Mississippi River valley alluvial aquifer in eastern Arkansas, 1987, by P. W. Westerfield. Prepared in cooperation with the Arkansas Geological Commission, Arkansas Soil and Water Conservation Commission, local conservation districts, and the U.S. Soil Conservation Service. 1990. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 2301 Federal Office Bldg., 700 West Capitol Ave., Little Rock, AR 72201.)

WRI 90-4090. IDAHO. Tritium in ground water at the Idaho National Engineering Laboratory, Idaho, by L. J. Mann and L. D. Cecil. Prepared in cooperation with the U.S. Department of Energy. 1990. 35 p. (NC, Da, M, Wb; USGS, WRD, Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 84303-2230.)

WRI 90-4091. VIRGINIA. Assessment of ground-water contamination from a leaking underground storage tank at a defense supply center near Richmond, Virginia, by W. G. Wright and J.

D. Powell. Prepared in cooperation with the U.S. Department of Defense. 1990. 38 p. (NC, Da, M, Wb, USGS, WRD, 3600 West Broad St., Room 606, Richmond, VA 23230.)

WRI 90-4092. TENNESSEE. Hydrogeology and preliminary assessment of the potential for contamination of the Memphis Aquifer in the Memphis area, Tennessee, by W. S. Parks. Prepared in cooperation with the City of Memphis, Memphis Light, Gas and Water Division. 1990. 39 p., 3 over-size sheets, scale 1:125,000 (1 inch = about 2 miles); 1 plate in mylar (available only as a black and white reproduction). (NC, Da, M, Wb, USGS, WRD, Room A-413 Federal Bldg., Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 90-4093. SOUTH DAKOTA. Water resources of Hutchinson and Turner counties, South Dakota, by R. J. Lindgren and D. S. Hansen. Prepared in cooperation with the South Dakota Geological Survey and Hutchinson and Turner counties. 1990. 100 p. (NC, Da, M, Wb, Db.)

WRI 90-4094. DELAWARE. Water use in the St. Jones River basin, Kent County, Delaware, 1983-86, by D. J. Phelan. Prepared in cooperation with the Delaware Department of Natural Resources and Environmental Control. 1990. 30 p. (NC, Da, M, Wb; USGS, WRD, 300 South New St., Room 1201, Dover, DE 19901.)

WRI 90-4096. NORTH CAROLINA. Water-quality characteristics of inflow to and outflow from B. Everett Jordan Lake, North Carolina, 1982-86, by R. G. Garrett. Prepared in cooperation with the U.S. Army Corps of Engineers. 1990. 49 p. (NC, Da, M, Wb.)

WRI 90-4097. NORTH CAROLINA. Water-quality characteristics of inflow to and outflow from Falls Lake, North Carolina, 1982-87, by R. G. Garrett. Prepared in cooperation with the U.S. Army Corps of Engineers. 1990. 56 p. (NC, Da, M, Wb.)

WRI 90-4099. ARKANSAS. Ground-water quality and preliminary assessment of the potential for contamination beneath agricultural lands in central Lonoke County, Arkansas, by V. A. Leidy and E. E. Morris. Prepared in cooperation with the Arkansas Department of Pollution Control and Ecology. 1990. 31 p. (NC, Da, M, Wb; USGS, WRD, 2301 Federal Office Bldg., 700 Capitol Ave., Little Rock, AR 72201.)

WRI 90-4101. Computerized stratified random site-selection approaches for design of ground-water-quality sampling network, by J. C. Scott. 1990. 109 p. (NC, Da, M, Wb.)

WRI 90-4103. COLORADO. Sediment discharge in Fortification Creek and the effect of sedimentation rate on the proposed Rampart Reservoir, northwestern Colorado, by D. L. Butler, R. O. Hawkinson and R. W. Boulger, Jr. 1990. 22 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 90-4107. TEXAS. Relation between urbanization and water quality of streams in the Austin area, Texas, by J. E. Veenhuis and R. M. Slade, Jr. Prepared in cooperation with the City of Austin. 1990. 64 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

WRI 90-4109. OHIO. Geologic setting and water quality of selected basins in the active coal-mining areas of Ohio, 1987-88, by A. C. Sedam. Prepared in cooperation with the Ohio Department of Natural Resources, Division of Reclamation. 1991. 97 p. (NC, Da, M, Wb.)

WRI 90-4113. VIRGINIA. Ground-water contamination and movement at the Defense General Supply Center, Richmond, Virginia, by J. D. Powell, W. G. Wright, D. L. Nelms and R. J. Ahlin. Prepared in cooperation with the U.S. Department of Defense. 1990. 36 p. (NC, Da, M, Wb.)

WRI 90-4115. FLORIDA. Water-resources potential of the freshwater lens at Key West, Florida, by D. J. McKenzie. Prepared in cooperation with the South Florida Water Management District. 1990. 24 p. (NC, Da, M, Wb; USGS, WRD, 9100 NW 36th St., Suite 107, Miami, FL 33178.)

WRI 90-4117. KANSAS. Hydrogeology and ground-water-quality conditions at the Linn County Landfill, eastern Kansas, 1988-89, by Ronald Falwell, P. R. Bigsby and N. C. Myers. Prepared in cooperation with Linn County, Kansas. 1990. 48 p. (NC, Da, M, Wb, Db; USGS, WRD, 4821 Quail Crest Pl., Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

WRI 90-4120. IDAHO. Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the American Falls Reservoir area, Idaho, 1988-89, by W. H. Low and W. H. Mullens. Prepared in cooperation with the U.S. Fish and Wildlife Service and the U.S. Bureau of Reclamation. 1990. 78 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702.)

WRI 90-4121. Estimates of hydraulic conductivity from aquifer-test analyses and specific-capacity data, Gulf Coast regional aquifer systems, south-central United States, by D. E. Prudic. 1991. 38 p. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

WRI 90-4122. MICHIGAN. Hydrology and land use in Grand Traverse County, Michigan, by T. R. Cummings, J. L. Gillespie and N. G. Grannemann. Prepared in cooperation with Grand Traverse County and the Michigan Department of Natural Resources. 1990. 99 p., 3 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 6520 Mercantile Way, Suite 5, Lansing, MI 48911.)

WRI 90-4123. ARKANSAS. A preliminary assessment of the potential for artificial recharge in eastern Arkansas, by D. J. Fitzpatrick. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission. 1990. 32 p. (NC, Da, M, Wb.)

WRI 90-4127. NORTH CAROLINA. Effects of land-management practices on sediment yields in northeastern Guilford County, North Carolina, by C. L. Hill. Prepared in cooperation with the Guilford Soil and Water Conservation District. 1991. 40 p. (NC, Da, M, Wb.)

WRI 90-4128. ARIZONA. Trend analysis of selected water-quality constituents in the Verde River basin, central Arizona, by Stanley Baldys, III. Prepared in cooperation with the Arizona Department of Environmental Quality. 1990. 55 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 1545 West University Dr., Tempe, AZ 85281; 2255 North Gemini Dr., Flagstaff, AZ 86001; and 1940 South 3rd Ave., Yuma, AZ 85364.)

WRI 90-4129. COLORADO. Hydrologic relations between streamflow and subalpine wetlands in Grand County, Colorado, by

B. C. Ruddy and R. S. Williams, Jr. Prepared in cooperation with the Denver Water Department. 1991. 53 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 90-4130. The computer model SHARP, a quasi-three-dimensional finite-difference model to simulate freshwater and saltwater flow in layered coastal aquifer systems, by H. I. Essaid. 1990. 181 p. (NC, Da, M, Wb; H. I. Essaid, USGS, WRD, 345 Middlefield Rd., Mail Stop 421, Menlo Park, CA 94025.)

WRI 90-4133. KENTUCKY. Water availability and vulnerability of ground water to contamination in northwestern Hardin County, Kentucky, by D. S. Mull, R. J. Faust and G. R. Martin. Prepared in cooperation with Hardin County Water District No. 1. 1990. 62 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Wb.)

WRI 90-4134. VIRGINIA. Ground-water hydrology and quality in the Valley and Ridge and Blue Ridge physiographic provinces of Clarke County, Virginia, by W. G. Wright. Prepared in cooperation with the Clarke County Water Study Committee and the Lord Fairfax Planning District Commission. 1990. 61 p. (NC, Da, M, Wb; USGS, WRD, 3600 West Broad St., Room 606, Richmond, VA 23230.)

WRI 90-4135. FLORIDA. A method to estimate canal leakage to the Biscayne Aquifer, Dade County, Florida, by D. A. Chin. Prepared in cooperation with the South Florida Water Management District and Metro-Dade Environmental Resources Management. 1990. 32 p. (NC, Da, M, Wb; USGS, WRD, Suite 107, 9100 Northwest 36th St., Miami, FL 33178.)

WRI 90-4136. OHIO. Long-term effects of surface coal mining on ground-water levels and quality in two small watersheds in eastern Ohio, by W. L. Cunningham and R. L. Jones. Prepared in cooperation with the U.S. Department of the Interior, Office of Surface Mining. 1990. 74 p. (NC, Da, M, Wb.)

WRI 90-4137. TENNESSEE. Delineation of ground-water contamination using soil-gas analyses near Jackson, Tennessee, by R. W. Lee. Prepared in cooperation with the City of Jackson, Tennessee, Jackson Utility Division. 1991. 9 p. (NC, Da, M, Wb; USGS, WRD, Room A-413 Federal Bldg., Nashville, TN 37203; 1013 North Broadway, Knoxville, TN 37917; and AgriCenter International, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

WRI 90-4138. KENTUCKY. Gulf Coast Regional Aquifer-System Analysis: a Kentucky perspective, by H. F. Grubb and J. K. Arthur. 1991. 28 p. (NC, Da, M, Wb; USGS, WRD, 2301 Bradley Ave., Louisville, KY 40217; 100 West Capitol St., Suite 710, Jackson, MS 39269; and 55 North Interregional Hwy., North Shore Plaza Bldg., Room 104, Austin, TX 78702-5206.)

WRI 90-4141. GEORGIA. A preliminary investigation of the hydrogeology and contamination in the area of an abandoned manufactured gas plant in Albany, Georgia, by M. J. Chapman, B. M. Gallaher and D. A. Early. Prepared in cooperation with the City of Albany, Water, Gas, and Light Commission. 1990. 56 p. (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)

WRI 90-4143. FLORIDA. Hydrologic effects of well-field operations in a wetland, Dade County, Florida, by R. S. Sonenshein and R. H. Hofstetter. Prepared in cooperation with the South Florida Water Management District and the Metro-Dade Water and Sewer Authority. 1990. 16 p. (NC, Da, M, Wb; USGS, WRD, Suite 107, 9100 NW 36th St., Miami, FL 33178.)

WRI 90-4147. IDAHO. Mineralogical correlation of surficial sediment from area drainages with selected sedimentary interbeds at the Idaho National Engineering Laboratory, Idaho, by R. C. Bartholomay. Prepared in cooperation with the U.S. Department of Energy. 1990. 17 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702.)

WRI 90-4148. FLORIDA. Preliminary report on the hydrology of Lake Five-O and vicinity, Bay County, Florida, by W. J. Andrews, J. P. Oliveros and J. J. Collins. Prepared in cooperation with the U.S. Environmental Protection Agency and the Florida Department of Environmental Regulation. 1990. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

WRI 90-4149. WASHINGTON. Quality of ground water in Clark County, Washington, 1988, by G. L. Turney. Prepared in cooperation with the Intergovernmental Resource Center of Clark County. 1990. 97 p. (NC, Da, M, Wb, SF, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; USGS Library, Room 656, West 920 Riverside Ave., Spokane, WA 99201.)

WRI 90-4152. SOUTH DAKOTA. Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Angostura Reclamation Unit, southwestern South Dakota, 1988-89, by E. A. Greene, C. L. Sowards and E. W. Hausmann. Prepared in cooperation with the U.S. Fish and Wildlife Service and the U.S. Bureau of Reclamation. 1990. 75 p. (NC, Da, M, Wb, Db, U.)

WRI 90-4153. Water-level changes in the High Plains Aquifer underlying parts of South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, and Texas; predevelopment through nonirrigation season 1988-89, by J. T. Dugan, D. E. Schild and W. M. Kastner. 1990. 29 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, CO 80225.)

WRI 90-4155. MISSISSIPPI. Summary of aquifer tests in Mississippi, June 1942 through May 1988, by L. J. Slack and Daphne Darden. Prepared in cooperation with the Mississippi Department of Environmental Quality. 1991. 40 p. (NC, Da, M, Wb; USGS, WRD, 100 West Capitol St., Suite 710, Jackson, MS 39269.)

WRI 90-4156. Governing equations and model approximation errors associated with the effects of fluid-storage transients on solute transport in aquifers, by D. J. Goode. 1990. 20 p. (NC, Da, M, Wb.)

WRI 90-4157. MISSISSIPPI. Potentiometric-surface map of the Eutaw-McShan Aquifer in northeastern Mississippi, August through December 1987, by G. D. Goldsmith. Prepared in cooperation with the Mississippi Department of Environmental Quality, Office of Land and Water Resources. 1991. 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb.)

WRI 90-4158. OHIO. Geohydrology and water quality in northern Portage County, Ohio, in relation to deep-well brine injection, by S. M. Eberts. Prepared in cooperation with the City of Akron and the Ohio Water Development Authority. 1991. 63 p., 3 over-size sheets. (NC, Da, M, Wb.)

WRI 90-4159. KANSAS. Monitoring regional ground-water quality; statistical considerations and description of a monitoring network in Kansas, by T. B. Spruill. Prepared in cooperation with the Kansas Department of Health and Environment. 1990. 41 p. (NC, Da, M, Wb, Db; USGS, WRD, 4821 Quail Crest Pl., Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

WRI 90-4164. A steady-state unsaturated-zone model to simulate pesticide transport, by A. T. Rutledge and J. O. Helgesen. 1991. 13 p. (NC, Da, M, Wb, Db; USGS, WRD, 4821 Quail Crest Pl., Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

WRI 90-4166. ILLINOIS. Determination of water use in Rockford and Kankakee areas, Illinois, by J. K. LaTour. Prepared in cooperation with the Illinois Environmental Protection Agency. 1991. 70 p. (NC, Da, M, Wb; USGS, WRD, 102 East Main St., 4th Floor, Urbana, IL 61801.)

WRI 90-4167. NORTH DAKOTA, MINNESOTA. Gaged and estimated monthly streamflow during 1931-84 for selected sites in the Red River of the North basin in North Dakota and Minnesota, by R. S. Guenthner, J. F. Weigel and D. G. Emerson. Prepared in cooperation with the U.S. Bureau of Reclamation. 1990. 230 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 821 East Interstate Ave., Bismarck, ND 58501.)

WRI 90-4169. MONTANA. Water-surface profile and flood boundaries for the computed 100-year flood, Poplar River, Fort Peck Indian Reservation, Montana, by R. J. Omang. Prepared in cooperation with the Fort Peck Tribes. 1990. 2 over-size sheets, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., 1500 North 30th St., Billings, MT 59101.)

WRI 90-4170. LOUISIANA. Louisiana hydrologic atlas map No. 6; water-quality survey of the Barataria Basin, 1988, by D. K. Demcheck. Prepared in cooperation with the Louisiana Department of Transportation and Development. 1991. 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, P.O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)

WRI 90-4172. ALASKA. A preliminary forecast of the advance of Hubbard Glacier and its influence on Russell Fiord, Alaska, by D. C. Trabant, R. M. Krimmel and Austin Post. Prepared in cooperation with the U.S. Department of Agriculture, Forest Service and National Park Service. 1991. 34 p. (NC, Da, M, Wb, A, SF, LA, S; USGS, WRD, 4230 University Dr., Suite 201, Anchorage, AK 99508-4664; 800 Yukon Drive, Fairbanks, AK 99775; and Room 441, Federal Bldg., 710 West 9th Ave., Juneau, AK 99801.)

WRI 90-4177. ARKANSAS. Summary and analysis of water-use data collection in eastern Arkansas, by N. T. Baker. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission. 1990. 25 p. (NC, Da, M, Wb.)

WRI 90-4178. ARIZONA. Simulation of ground-water flow and potential land subsidence, Avra Valley, Arizona, by R. T. Hanson, S. R. Anderson and D. R. Pool. Prepared in cooperation with the City of Tucson. 1990. 41 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 1545 West University Dr., Tempe, AZ 85281; 2255 North Gemini Dr., Flagstaff, AZ 86001; and 1940 South 3rd Ave., Yuma, AZ 85364.)

WRI 90-4183. LOUISIANA. Louisiana ground-water map No. 3; Potentiometric surface, 1989, and water-level changes, 1980-89, of the Sparta Aquifer in north-central Louisiana, by C. W. Smoot and R. C. Seanor. Prepared in cooperation with the Louisiana Department of Transportation and Development. 1991. 2 over-size sheets, scale 1:570,240 (1 inch = 9 miles). (NC, Da, M, Wb; USGS, WRD, P.O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)

WRI 90-4184. NEBRASKA. Ground-water quality in the Nemaha Natural Resources District, southeastern Nebraska, 1989, by D. Q. Tanner and G. V. Steele. Prepared in cooperation with the Nemaha Natural Resources District. 1991. 52 p. (NC, Da, M, Wb; USGS, WRD, 406 Federal Bldg., 100 Centennial Mall North, Lincoln, NE 68508.)

WRI 90-4185. NEVADA. Measurement of vertical flow in borehole UE-3e 4 using geophysical logs, Nevada Test Site, Nye County, Nevada, by A. E. Hess and F. L. Paillet. 1991. 17 p. (NC, Da, M, Wb.)

WRI 90-4187. WYOMING. Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Riverton Reclamation Project, Wyoming, 1988-89, by D. A. Peterson, T. F. Harms, Pedro Ramirez, Jr., G. T. Allen and A. H. Christenson. 1991. 84 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 2617 East Lincolnway, Suite B, Cheyenne, WY 82001.)

WRI 90-4188. SOUTH CAROLINA. Low-flow characteristics of natural streams in the Blue Ridge, Piedmont, and upper Coastal Plain physiographic provinces of South Carolina, by M. G. Zalants. Prepared in cooperation with the South Carolina Department of Health and Environmental Control. 1991. 92 p. 1 over-size sheet. (NC, Da, M, Wb.)

WRI 90-4189. KENTUCKY. Ground-water levels and tritium concentrations at the Maxey Flats low-level radioactive waste disposal site near Morehead, Kentucky, June 1984 to April 1989, by K. S. Wilson and B. E. Lyons. Prepared in cooperation with the Kentucky Natural Resources and Environmental Protection Cabinet. 1991. 217 p. (NC, Da, M, Wb.)

WRI 90-4190. ARIZONA. Geohydrology and chemical quality of ground water, San Bernardino National Wildlife Refuge, Arizona, by S. A. Longsworth. Prepared in cooperation with the U.S. Fish and Wildlife Service. 1991. 28 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 1545 West University Dr., Tempe, AZ 85281; 2255 North Gemini Dr., Flagstaff, AZ 86001; and 1940 South 3rd Ave., Yuma, AZ 85364.)

WRI 90-4191. KENTUCKY. Effects of oil production on water resources in the Kentucky River basin, Kentucky, by R. D. Evaldi and J. A. Kipp. Prepared in cooperation with the Kentucky Geological Survey. 1991. 58 p. (NC, Da, M, Wb.)

WRI 90-4192. SOUTH DAKOTA. Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Belle Fourche Reclamation Project, western South Dakota, 1988-89, by W. R. Roddy, E. A. Greene and C. L. Sowards. Prepared in cooperation with the U.S. Fish and

Wildlife Service and the U.S. Bureau of Reclamation. 1991. 113 p. (NC, Da, M, Wb, Db, U.)

WRI 90-4194. Application of geophysical well log analysis to characterization of aquifers in the Sinai region, Republic of Egypt, by F. L. Paillet, E. S. Zaghloul and Tag El Daftar. 1990. 54 p. (NC, Da, M, Wb.)

WRI 90-4195. FLORIDA. Ground-water recharge in Florida; a pilot study in Okaloosa, Pasco, and Volusia counties, by John Vecchioli, C. H. Tibbals, A. D. Duerr and C. B. Hutchinson. Prepared in cooperation with the Florida Department of Environmental Regulation. 1990. 16 p., 3 over-size sheets, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

WRI 90-4197. NEW YORK. Regionalization of flood discharges for rural, unregulated streams in New York, excluding Long Island, by Richard Lumia. Prepared in cooperation with the New York State Department of Transportation. 1991. 119 p., 2 over-size sheets. (NC, Da, M, Wb; Library, USGS, P.O. Box 1669, Albany, NY 12201.)

WRI 90-4200. Computer software for converting ground-water and water-quality data from the National Water Information System for use in a geographic information system, by J. C. Scott. 1991. 55 p. (NC, Da, M, Wb.)

WRI 90-4201. CALIFORNIA. Sodium and chloride data from selected streams in the Lassen area, north-central California, and their relation to thermal-fluid discharge from the Lassen hydrothermal system, by K. M. Paulson and S. E. Ingebritsen. 1991. 29 p. (NC, Da, M, Wb, SF, LA.)

WRI 90-4202. FLORIDA. Fishes in the forested flood plain of the Ochlockonee River, Florida, during flood and drought conditions, by H. M. Leitman, M. R. Darst and J. J. Nordhaus. Prepared in cooperation with the Florida Game and Fresh Water Fish Commission. 1991. 36 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

WRI 90-4203. CALIFORNIA, OREGON. Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Klamath Basin, California and Oregon, 1988-89, by S. K. Sorenson and S. E. Schwarzbach. Prepared in cooperation with the U.S. Fish and Wildlife Service and the U.S. Bureau of Reclamation. 1991. 64 p. (NC, Da, M, Wb, SF, A; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 90-4206. IDAHO. Experimental suction drilling in basalts at the Idaho National Engineering Laboratory, Idaho, by W. E. Teasdale and R. R. Pemberton. 1990. 10 p. (NC, Da, M, Wb, Db, U; USGS, WRD, Box 25046, Mail Stop 415, Federal Ctr., Denver, Colorado 80225.)

WRI 90-4207. RHODE ISLAND. Plan for developing a water-use data program in Rhode Island, by M. A. Horn and P. A. Craft. Prepared in cooperation with the Rhode Island Department of Environmental Management and the Rhode Island Governor's Office of Housing, Energy, and Intergovernmental Relations. 1991. 26 p. (NC, Da, M, Wb.)

WRI 91-4004. PENNSYLVANIA, DELAWARE. Altitude and configuration of the water-level surface in the lower Paleozoic and Precambrian crystalline rocks of the Red Clay Creek basin, Chester County, Pennsylvania, and New Castle County, Delaware, June through October 1989 and March 1990, by K. L. Vogel, W. L. Miller and B. C. McManus. Prepared in cooperation with the Chester County Water-Resources Authority and the Delaware Geological Survey. 1991. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb; USGS, WRD, 111 Great Valley Parkway, Malvern, PA 19355.)

WRI 91-4010. IDAHO. Stratigraphy of the unsaturated zone and uppermost part of the Snake River Plain Aquifer at the Idaho Chemical Processing Plant and Test Reactors area, Idaho National Engineering Laboratory, Idaho, by S. R. Anderson. Prepared in cooperation with the U.S. Department of Energy. 1991. 71 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702.)

WRI 91-4015. IDAHO. Background concentrations of selected radionuclides, organic compounds, and chemical constituents in ground water in the vicinity of the Idaho National Engineering Laboratory, by B. R. Orr, L. D. Cecil and L. L. Knobel. Prepared in cooperation with the U.S. Department of Energy. 1991. 52 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702.)

WRI 91-4019. CALIFORNIA. Quantity and quality of ground-water inflow to the San Joaquin River, California, by S. P. Phillips, Sherrill Beard and R. J. Gilliom. Prepared in cooperation with the California Department of Water Resources and the California State Water Resources Control Board. 1991. 64 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, 2800 Cottage Way, Federal Bldg., Room W-2234, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

WRI 91-4021. TEXAS. Withdrawals from the Edwards-Trinity aquifer system and contiguous hydraulically connected units, west-central Texas, December 1974 through March 1977, by D. L. Lurry and D. J. Pavlicek. 1991. 1 over-size sheet, scale 1:750,000 (1 inch = about 12 miles). (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753; USGS, ESIC, 507 National Ctr., Reston, VA 22092.)

WRI 91-4029. MONTANA, WYOMING. Trends in selected water-quality characteristics, Powder River and tributaries, Montana and Wyoming, water years 1968-88 and 1975-88, by L. E. Cary. Prepared in cooperation with the Montana Department of Natural Resources and Conservation, the Wyoming State Engineer, and the Wyoming Water Development Commission. 1991. 42 p. (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428, Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., 1500 North 30th, Billings, MT.)

WRI 91-4032. MONTANA. Reconnaissance of ground-water resources of the Fort Peck Indian Reservation, northeastern Montana, by J. N. Thamke. Prepared in cooperation with the Water Resources Office of the Fort Peck Tribes. 1991. 2 over-size sheets; sheet 1, scale 1:200,000 (1 inch = about 3.2 miles). (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; Eastern Montana Coll., 1500 North 30th, Billings, MT 59101.)

WRI 91-4037. MISSISSIPPI. Flood characteristics of Mississippi streams, by M. N. Landers and K. V. Wilson, Jr. Prepared in cooperation with the Mississippi State Highway Department.

1991. 82 p. (NC, Da, M, Wb; USGS, WRD, 100 West Capitol St., Suite 710, Jackson, MS 39269.)

WRI 91-4041. ARIZONA. Basin characteristics and streamflow statistics in Arizona as of 1989, by J. M. Garrett and D. J. Gellenbeck. Prepared in cooperation with the Arizona Department of Water Resources and Flood Control District of Maricopa County. 1991. 612 p. (NC, Da, M, Wb; USGS, WRD, 375 South Euclid Ave., Tucson, AZ, 85719-6644; 1545 West University Dr., Tempe, AZ 85281; 2255 North Gemini Dr., Flagstaff, AZ 86001; and 1940 South 3rd Ave., Yuma, AZ 85364.)

WRI 91-4047. IDAHO. Hydrologic conditions and distribution of selected chemical constituents in water, Snake River Plain Aquifer, Idaho National Engineering Laboratory, Idaho, 1986 to 1988, by B. R. Orr and L. D. Cecil. Prepared in cooperation with the U.S. Department of Energy. 1991. 56 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702.)

WRI 91-4052. MONTANA. Effects of potential geothermal development in the Corwin Springs Known Geothermal Resources Area, Montana, on the thermal features of Yellowstone National Park, edited by M. L. Sorey. 1991. 193 p. (NC, Da, M, Wb.)

A. Summary and conclusions, by M. L. Sorey. p. A1-A17.

B. Introduction, by M. L. Sorey. p. B1-B6.

C. Geologic setting of the Corwin Springs Known Geothermal Resources Area-Mammoth Hot Springs area in and adjacent to Yellowstone National Park, by K. L. Pierce, K. D. Adams and N. C. Sturchio. p. C1-C37.

D. Electrical geophysical investigations in the Norris-Mammoth corridor, Yellowstone National Park, and the adjacent Corwin Springs Known Geothermal Resources Area, by W. D. Stanley, D. B. Hoover, M. L. Sorey, B. D. Rodriguez and W. D. Heran. p. D1-D18.

E. Soil mercury and streambed-temperature anomalies in the Norris-Mammoth-La Duke corridor, by W. L. Hamilton and R. L. Chambers. p. E1-E24.

F. Geochemical investigations of hydraulic connections between the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park, by Y. K. Kharaka, R. H. Mariner, T. D. Bullen, B. M. Kennedy and N. C. Sturchio. p. F1-F38.

G. Hydrologic investigations in the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park, by M. L. Sorey, E. M. Colvard, D. A. Nimick, R. R. Shields, J. J. Thordsen and Gil Ambats. p. G1-G41.

H. Effects of potential geothermal development, by M. L. Sorey. p. H1-H12.

OPEN-FILE REPORTS

Open-file reports include unpublished manuscript reports, maps, and other material and are made available for public consultation and use. They are a nonpermanent form of publication that may be cited in other publications as sources of information. They are not considered to be a part of the formal literature.

Most open-file reports are available from: USGS Book and Open-File Report Sales, Box 25425, Denver, CO 80225 (telephone: 303-236-7476). The following listing of open-file reports is subdivided to show which reports are available from the Denver facility and which ones are not. Specific instructions for ordering and availability of reports are given under each sublisting.

Open-file reports are also available for reference only, **not for purchase**, at additional locations indicated in each open-file listing.

Reports Available Only Through USGS Book and Open-File Report Sales

Microfiche and (or) black and white paper copies of most reports may be obtained from: USGS Book and Open-File Report Sales, Box 25425, Denver, CO 80225 (telephone 303-236-7476). When ordering, please use the open-file number and full title. *Do not mix orders for open-file reports with orders for other Geological Survey products.* Prices for duplicate slides and color photographs can be obtained on request. Check or money order, in exact amount for open-file reports ordered, should be payable to Department of the Interior—USGS. Prepayment is required. No discount is applicable. For transmittal outside the U.S.A. (except Canada and Mexico), a surcharge of 25 percent of the bill should be included to cover surface transportation.

A microfiche copy of a computer listing of reports showing report number and paper copy and microfiche prices is available from: Book and Open-File Report Sales. The listing does not show author or title of the reports. This "Open File Report Price Listing" is updated bimonthly. Contact Book and Open-File Report Sales for information concerning the price of the listing.

OF 63-0152. OKLAHOMA. Surface water of Kiamichi River basin in southeastern Oklahoma, by L. L. Laine, *with a section on* Quality of water, by T. R. Cummings. Prepared in cooperation with the Oklahoma Water Resources Board. 1963. 39 p.

OF 84-0815. IOWA. Iowa ground-water-quality monitoring program, by M. G. Detroy. Prepared in cooperation with the University of Iowa Hygienic Laboratory and Iowa Geological Survey. 1985. 34 p. (NC, Da, M, Wb; USGS, WRD, Room 269, 400 South Clinton St., Iowa City, IA 52244.)

OF 85-0566. MICHIGAN. Water resources activities in Michigan, 1985, compiled by T. J. Spicer. 1985. 65 p. (NC, Da, M, Wb.)

OF 86-0302. IOWA. Permitted water use in Iowa, 1985, by D. L. Runkle, J. L. Newman and E. M. Shields. Prepared in cooperation with the Iowa Department of Water, Air and Waste Management, and the Iowa Geological Survey. 1985. 24 p. (NC, Da, M, Wb; USGS, WRD, Room 269, 400 South Clinton St., Iowa City, IA.)

OF 86-0317. KANSAS. January 1986 water levels, and data related to water-level changes, western and south-central Kansas, by B. J. Dague. Prepared in cooperation with the Kansas State Board of Agriculture, Western Kansas Groundwater Management District No. 1, and the Kansas Geological Survey. 1986. 165 p. (NC, Da, M, Wb, T, Db; USGS, WRD, 1950 Constant Ave., Campus West, Lawrence, KS 66046; and 206 Fulton Terrace, Garden City, KS.)

OF 86-0458-D. ARIZONA. Breccia pipe and geologic map of the southwestern Hualapai Indian Reservation and vicinity, Arizona, by G. H. Billingsley, K. J. Wenrich, P. W. Huntoon and R. A. Young. Prepared in cooperation with the U.S. Bureau of Indian Affairs and the Hualapai Tribe. 1990. 33 p., 2 over-size sheets, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Db, SF, LA, U;

Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 86-0476. IOWA. Floods in the Floyd River basin, Iowa, by A. J. Heinitz. Prepared in cooperation with the Iowa Department of Transportation. 1986. 60 p. (NC, Da, M, Wb; USGS, WRD, 400 South Clinton St., Iowa City, IA.)

OF 87-0022. Unusual, high-temperature, iron-rich mineral phases produced by natural burning of coal seams; analytical data, by J. R. Herring and P. J. Modreski. 1986. 38 p. (NC, D, M.)

OF 87-0043. Summary of infiltration rates in arid and semiarid regions of the world, with an annotated bibliography, by M. S. Bedinger. 1987. 48 p. (NC, Da, M, Wb.)

OF 87-0102. OHIO. Current water-resources activities in Ohio, 1987, compiled by C. C. Vince. 1987. 61 p. (NC, Da, M, Wb; USGS, WRD, 975 West 3rd Ave., Columbus, OH 43212.)

OF 87-0121. Thermal-pulse flowmeter for measuring slow water velocities in boreholes, by A. E. Hess. 1990. 70 p. (NC, Da, M, Wb.)

OF 87-0158. A C language implementation of the SRO (Murdock) detector/analyzer, by J. N. Murdock and S. E. Halbert. 1991. 130 p. (NC, Da, M.)

OF 87-0461. Summary of data for onsite and laboratory analyses of precipitation runoff from carbonate-rock surfaces, National Acid Precipitation Assessment Program, June 1984 to September 1986, by R. B. See and M. M. Reddy. Prepared in cooperation with the National Park Service. 1987. 14 p. (NC, Da, M, Wb.)

OF 87-0463. NEVADA. Isotope content and temperature of precipitation in southern Nevada, August 1983-August 1986, by W. K. Milne, L. V. Benson and P. W. McKinley. Prepared in cooperation with the U.S. Department of Energy. 1987. 37 p. (NC, Da, M, Wb.)

OF 87-0528. NEW JERSEY. Ground-water flow in the New Jersey coastal plain, by Mary Martin. 1990. 182 p. (NC, Da, M, Wb; USGS, WRD, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

OF 87-0535. Preparation of average annual runoff map of the United States, 1951-80, by W. R. Krug, W. A. Gebert and D. J. Graczyk. 1989. 414 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719.)

OF 87-0536. NEVADA. Hydrogeologic data from selected wells and test holes in and adjacent to the Nevada Test Site, Nye County, Nevada, through 1986, by F. E. Arteaga, C. S. Savard, M. E. Johnson and J. C. Stone. Prepared in cooperation with the U.S. Department of Energy. 1991. 23 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Wb, LA, SF, U; USGS, WRD, 705 North Plaza St., Room 224, Carson City, NV 89701.)

OF 87-0547. Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming, by B. D. Nordlund and T. D. Liebermann. Prepared in cooperation with the U.S. Bureau of Reclamation. 1990. 441 p. (NC, Da, M, Wb.)

OF 87-0550. COLORADO. Data from laboratory dissolution experiments using a welded tuff from Snowshoe Mountain near Creede, Colorado, by M. M. Reddy and M. G. Werner. Prepared in cooperation with the U.S. Department of Energy. 1987. 23 p. (NC, Da, M, Wb.)

OF 87-0676. An interactive program to display user-generated or file-based maps on a personal computer monitor, by W. H. Langer and R. W. Stephens. 1987. 69 p., one 5 1/4 inch diskette. (NC, Da, M, Wb.)

OF 88-0010. COLORADO. Fracture history of the Divide Creek and Wolf Creek anticlines and its relation to Laramide basin-margin tectonism, southern Piceance Basin, northwestern Colorado, by M. A. Grout and E. R. Verbeek. 1991. 53 p. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Donald Fawcett, Office of the State Engineer, Ground Water Section, 1313 Sherman St., Room 818, Denver, CO 80203.)

OF 88-0076. FLORIDA. Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida, by C. R. Goodwin. Prepared in cooperation with the U.S. Army Corps of Engineers. 1991. 50 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; Federal Reserve Bank Bldg., Suites 106/107, 9100 Northwest 36th St., Miami, FL; Suite 216, 80 North Hughey Ave., Orlando, FL 32801; Suite B-5, 4710 Eisenhower Blvd., Tampa, FL; and Suite 200, 1851 Executive Center Dr., Jacksonville, FL.)

OF 88-0196. OHIO. Water-resources activities in Ohio, 1988, by L. D. Camp. 1988. 2 p. (NC, Da, M, Wb.) (Water fact sheet.)

OF 88-0204. COLORADO. Fracture data for the Divide Creek and Wolf Creek anticlines area, southern Piceance Basin, northwestern Colorado, by M. A. Grout. 1988. 66 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 88-0305. NEW MEXICO, TEXAS. Geohydrology and simulation of ground-water flow in the Mesilla Basin, Dona Ana County, New Mexico, and El Paso County, Texas, by P. F. Frenzel and C. A. Kaehler; *with a section on* Water quality and geochemistry, by S. K. Anderholm. 1990. 179 p., 5 over-size sheets. (NC, Da, M, Wb; USGS, WRD, Pinetree Office Park, 4501 Indian School Rd. NE, Suite 200, Albuquerque, NM 87110.)

OF 88-0329. ARIZONA. Flow in the unsaturated zone, Tucson, Arizona, by D. D. Graham. 1988. 2 p. (NC, Da, M, Wb.) (Water fact sheet.)

OF 88-0340. MICHIGAN. Water resources activities in Michigan, 1988, compiled by T. J. Spicer. 1988. 62 p. (NC, Da, M, Wb.)

OF 88-0450-P. WYOMING, MONTANA. Petroleum geology of the Powder River basin, Wyoming and Montana, by G. L. Dolton, J. E. Fox and J. L. Clayton. 1990. 64 p. (NC, Da, M, Db, U, S; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 88-0450-U. Geology and petroleum resources, Paradox Basin Province, by J. A. Peterson. 1989. 69 p. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280; Donald Fawcett,

Office of the State Engineer, Ground Water Section, Room 818, 1313 Sherman St., Denver, CO 80203.)

OF 88-0450-V. IOWA. Review of the geology of the Sioux Uplift and Iowa Shelf provinces as a basis for estimates of undiscovered hydrocarbon resources, by J. R. Hatch. 1990. 20 p. (NC, Da, M.)

OF 88-0450-X. OREGON, WASHINGTON. Geologic basis for petroleum resource assessment of onshore western Oregon and Washington (Province 72), by R. G. Stanley. 1991. 29 p. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 88-0450-Y. ALASKA. Geology, play descriptions, and petroleum resources of the Alaskan North Slope (petroleum provinces 58-60), by K. J. Bird. 1991. 52 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 88-0500. NEW JERSEY. Hydrogeochemical data from an acidic deposition study at McDonalds Branch basin in the New Jersey pinelands, 1983-86, by D. G. Lord, J. L. Barringer, P. A. Johnsson, P. F. Schuster, R. L. Walker, J. E. Fairchild, B. N. Sroka and Eric Jacobsen. Prepared in cooperation with the New Jersey Department of Environmental Protection. 1990. 132 p. (NC, Da, M, Wb; USGS, WRD, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

OF 88-0701. PUERTO RICO. Compilation of ground-water level measurements obtained by the U.S. Geological Survey in Puerto Rico, 1958-85, by Sigfredo Torres-González. 1991. 163 p. (NC, Da, M, Wb; USGS, WRD, G.P.O. Box 4424, San Juan, PR 00936.)

OF 89-0016. IDAHO, MONTANA. Preliminary mineral resource assessment of the Elk City 1° by 2° Quadrangle, Idaho and Montana, by Karen Lund, H. V. Alminas, M. D. Kleinkopf, W. J. Ehmann and J. D. Bliss. 1989. 123 p., 14 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 89-0020. Chemical composition of ferromanganese crusts in the world ocean; a review and comprehensive database, edited by F. T. Manheim and C. M. Lane-Bostwick. 1988. 475 p. (NC, Da, M.)

Introduction, by F. T. Manheim. p. 1-2.

History of investigation of ferromanganese oxide crust, by F. T. Manheim. p. 3-26.

Archive collections, by T. H. Ling and F. T. Manheim. p. 27-35.

Computer database development, by C. M. Lane-Bostwick and F. T. Manheim. p. 36-38.

Analytical methods; sample preparation, water content and major element determination by X-ray fluorescence spectrometry, by J. A. Commeau and F. T. Manheim. p. 39-43.

Analytical methods; the determination of 27 elements in ferromanganese materials, by P. J. Aruscavage, Herbert Kirschenbaum and F. M. Brown. p. 44-53.

Interlaboratory calibrations and other analytical checks, by F. T. Manheim, J. A. Commeau, B. W. Haynes, D. M. Root, Vesna Marchig, Peter Halbach and Doris Puteanus. p. 54-58.

Data, by C. M. Lane-Bostwick and F. T. Manheim. p. 59-69.

Data interpretation and mapping, by F. T. Manheim and C. M. Lane-Bostwick. p. 70-156.

OF 89-0027. SOUTH CAROLINA, GEORGIA. Ground-water chemical evolution and diagenetic processes in the upper Floridan Aquifer, southern South Carolina and northeastern Georgia, by R. A. Burt. Prepared in cooperation with the South Carolina Water Resources Commission. 1989. 129 p. (NC, Da, M, Wb; USGS, WRD, 1835 Assembly St., Suite 677-A, Columbia, SC 29201.)

OF 89-0052. WISCONSIN, MICHIGAN. Data on polychlorinated biphenyls, dieldrin, lead, and cadmium in Wisconsin and upper Michigan tributaries to Green Bay, July 1987 through April 1988, by L. B. House. Prepared in cooperation with the U.S. Environmental Protecton Agency. 1990. 7 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719-1133.)

OF 89-0079. CALIFORNIA. Abundances of major elements and sedimentary components in Miocene and early Pliocene cuttings from a well in the South Elwood oil field area, offshore Santa Barbara-Ventura Basin, Southern California, by C. M. Isaacs, J. H. Tomson, J. E. Taggart, Jr. and L. L. Jackson. 1990. 27 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 89-0133. NEVADA. Feasibility study of the seismic reflection method in Amargosa Desert, Nye County, Nevada, by T. M. Brocher, P. E. Hart and S. F. Carle. 1990. 150 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 89-0139. FREQFIT; a computer program which performs numerical regression and statistical chi-squared goodness of fit analysis, by G. S. Hofland and C. C. Barton. 1990. 62 p. (NC, Da, M, LA, SF, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 89-0236. GEORGIA. Geohydrologic evaluation of spring sites at Social Circle, Georgia, December 5-8, 1988, by J. S. Clarke. Prepared in cooperation with Walton County. 1989. 18 p. (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)

OF 89-0239. NEW MEXICO. Base-flow investigation on the Sacramento River, September 25, 1985, near Sunspot, Otero County, New Mexico, by C. D. Nagel. Prepared in cooperation with the City of Alamogordo. 1990. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Pinetree Office Park, Suite 200, 4501 Indian School Rd. NE, Albuquerque, NM 87110.)

OF 89-0246. Summary of data from onsite and laboratory analysis of precipitation runoff from carbonate-stone surfaces, National Acid Precipitation Assessment Program, June 1984 to November 1987, by M. M. Reddy, P. F. Schuster and J. J. Harte. Pre-

pared in cooperation with the National Park Service. 1989. 19 p. (NC, Da, M, Wb.)

OF 89-0266. MISSISSIPPI. Precipitation-quality monitoring in southern Mississippi, 1982-87, by G. A. Bednar and P. E. Grantham. Prepared in cooperation with the Mississippi Department of Natural Resources, Bureau of Pollution Control. 1989. 33 p. (NC, Da, M, Wb.)

OF 89-0275. Report planning, preparation, and review guide, by J. E. Moore, D. A. Aronson, J. H. Green and Celso Puente. 1990. 81 p. (NC, Da, M, Wb.)

OF 89-0310-A. ISOEDIT; a program for interactive editing of seismic reflection velocity models, by F. N. Zihlman. 1989. 34 p. (NC, Da, M.)

OF 89-0310-B. ISOEDIT; a program for interactive editing of seismic reflection velocity models, by F. N. Zihlman. 1989. One 5 1/4 inch diskette. (NC, Da, M.)

ISOEDIT may be run on PC, XT, and AT type microcomputers using MS-DOS (PC-DOS) v2.0 or greater. The executable image is available in two versions: PC/XT type and AT type. The PC/XT type will run on AT type machines but the AT type requires an AT machine. IOSEDIT will use a math coprocessor if one is present, otherwise it will software emulate one. ISOEDIT will automatically detect and use CGA, EGA, VGA and Hercules video resolutions but will only produce a monochrome display on a color monitor.

OF 89-0321. ALASKA. Data report for the 1987 seismic refraction survey; Alaska Range and Fairbanks South deployments, by B. C. Beaudoin, Gregory Perkins, G. S. Fuis and J. H. Luetgert. 1989. 114 p., 1 SEGY standard format magnetic tape. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.) (Copies of the magnetic tape are available through the National Geophysical Data Ctr., NOAA/EGCY, 325 Broadway, Boulder, CO 80303; telephone 303-497-6123.)

OF 89-0336. Preliminary geologic map of the Turafyf Quadrangle, Sheet 31C, Kingdom of Saudi Arabia, by C. R. Meissner, Jr., G. P. Riddler, Marcel Van Eck, N. C. Aspinall, A. M. Farasani and S. M. Dini. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1989. 29 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

OF 89-0382. NEVADA, CALIFORNIA. Ground-water-quality assessment of the Carson River basin, Nevada and California; analysis of available water-quality data through 1987, by A. H. Welch, R. W. Plume, E. A. Frick and J. L. Hughes. 1989. 115 p., 2 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb, SF, LA, U; USGS, WRD, 705 North Plaza St., Room 224, Carson City, NV 89701.)

OF 89-0390. NEW HAMPSHIRE. Geohydrologic, ground-water quality, and streamflow data for the stratified-drift aquifers in the lower Merrimack and coastal river basins, southeastern New Hampshire, by S. M. Flanagan and P. J. Stekl. Prepared in cooperation with the State of New Hampshire Department of Environmental Services, Water Resources Division. 1990. 130 p., 3 over-size sheets, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Wb; USGS, WRD, 10 Causeway St., Room 926, Boston, MA 02222-1040; and 525 Clinton St., RFD 12, Bow, NH 03301.)

OF 89-0391. COLORADO, OHIO. Water-quality data-collection activities in Colorado and Ohio; Phase III, Evaluation of existing data for use in assessing regional water-quality conditions and trends, by J. M. Norris, Janet Hren, D. N. Myers, T. H. Chaney and C. J. Oblinger Childress. 1990. 63 p. (NC, Da, M, Wb, Db; USGS, WRD, Room H-2101, Bldg. 53 (Box 25046, Mail Stop 415), Denver Federal Ctr., Denver, CO 80225-0046; and 975 West 3rd Ave., Columbus, OH 43212.)

OF 89-0395. FLORIDA. Summary of hydrogeologic, water-quality, and biological data from two small basins, Southeast Hillsborough County, Florida, by T. H. Thompson and P. A. Metz. Prepared in cooperation with the Florida Institute of Phosphate Research. 1990. 34 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; and Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33634.)

OF 89-0402. NEW JERSEY. Hydrogeologic reconnaissance of the Swope Oil Superfund Site and vicinity, Camden and Burlington counties, New Jersey, by G. J. Barton and M. M. Krebs. Prepared in cooperation with the U.S. Environmental Protection Agency. 1990. 247 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

OF 89-0403. Operating manual for the U.S. Geological Survey Minimonitor, 1988 revised edition, analog-voltage model, by J. H. Ficken and C. T. Scott. 1989. 92 p. (NC, Da, M, Wb.)

OF 89-0413. CALIFORNIA. Lithology, mineralogy, and paleontology of Quaternary lake deposits in Long Valley Caldera, California, by R. B. Fournier. 1989. 97 p., 2 over-size sheets. (NC, Da, M, Wb.)

OF 89-0420. LOUISIANA. Chemical, tissue, and physical data from water and bottom material in the lower Calcasieu River, Louisiana, by C. R. Demas, D. K. Demcheck and C. R. Garrison. 1990. 281 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 66492, 6554 Florida Blvd., Baton Rouge, LA 70896.)

OF 89-0422. NEVADA, CALIFORNIA. Chemical and isotopic data for water from wells, springs, and streams in carbonate-rock terrane of southern and eastern Nevada and southeastern California, 1985-88, by J. M. Thomas, B. F. Lyles and L. A. Carpenter. Prepared in cooperation with the Desert Research Institute, University of Nevada System. 1991. 24 p., 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb, LA, SF, U; USGS, WRD, Room 224, Federal Bldg., 705 North Plaza St. Carson City, NV 89701; and 1500 East Tropicana, Suite 201, Las Vegas, NV 89119.)

OF 89-0573. ARIZONA, NEVADA. One and two-dimensional inversion of magnetotelluric data across the Basin-Range–Colorado Plateau, Virgin Mountains area, NW Arizona and SW Nevada, by J. A. Meredith and F. C. Frischknecht. 1989. 43 p. (NC, Da, M, Db, U, SF, LA; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 89-0595. CALIFORNIA. Hydrologic, meteorological, and unsaturated-zone moisture-content data, Franklin Lake playa, Inyo County, California, by J. B. Czarnecki. Prepared in cooperation with the U.S. Department of Energy. 1990. 38 p. (NC, Da, M, Wb, Db.)

OF 89-0600-D. Preliminary determination of epicenters monthly listing October-December 1989, by National Earthquake Information Center. 1989. 84 p. (NC, Da, M.)

OF 89-0613. A bibliography of atrazine and its simple degradation products in the environment, by P. D. Capel. 1989. 195 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

OF 89-0619. CALIFORNIA. Description of salinity, temperature, chlorophyll, suspended-sediment, and velocity data, South San Francisco Bay, California, February-April 1987, by M. J. Taylor and B. T. Yost. Prepared in cooperation with the California Department of Water Resources and the California State Water Resources Control Board. 1990. 28 p. (NC, Da, M, Wb, LA, SF; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 96825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 89-0679. Anomalous low-density wolframite and fluid inclusion control of density, evidence from fluid inclusion content of water and carbon dioxide, by G. P. Landis. 1990. 6 p. (NC, Da, M.)

OF 89-0688. ALASKA. Lead isotope data base for sulfide occurrences from Alaska, December, 1989, by J. D. Gaccetta and S. E. Church. 1989. 60 p. (NC, Da, M, A, LA, S, SF; Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709-4699; 701 "C" St., Box 36, Anchorage, AK 99513; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 89-0689. NEVADA. Gold, silver, and mercury rock chemistry for the Adelaide mining district, Sonoma Range, Humboldt County, Nevada, by T. M. Cookro and T. G. Theodore. 1989. 47 p., 4 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, LA, SF, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0026. ARIZONA. Preliminary geologic map of the Pilot Knob Quadrangle, Mohave and Yavapai counties, Arizona, by A. W. Ward and L. D. Nealey. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0054. National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXIX, compiled by M. L. Jacobson. Prepared by participants in the National Earthquake Hazards Reduction Program. 1989. 577 p. (NC, Da, M.)

OF 90-0078. WYOMING. Evolution of porosity in "deep" sandstones of the Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming, by C. J. Schenk. 1990. 18 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0087. NEVADA. Compilation of modal analyses of volcanic rocks from the Nevada Test Site area, Nye County, Nevada, by W. R. Page. Prepared in cooperation with the U.S. Department of Energy. 1990. 179 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, LA, SF, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0093-A. Life of Mars: the water connection, by M. H. Carr; produced by Doug Prose. 1990. 1 p. (NC, Da, M.)

OF 90-0093-B. Life of Mars; the water connection, by M. H. Carr; produced by Doug Prose. 1990. 1 VHS 29-minute videotape. (NC, Da, M.) (The videotape may also be obtained from Videotransform, Inc., 2450 Embarcadero Way, Palo Alto, CA 94303; telephone 415-494-1529.)

OF 90-0096. CALIFORNIA. Mineral summaries; U.S. Bureau of Land Management wilderness study areas in California outside the California desert, edited by M. F. Diggles. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 247 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Third and last volume.)

OF 90-0098. Proceedings of Conference XLVI; the 7th U.S.–Japan seminar on Earthquake prediction, convened by Hiroo Kanamori and Takeshi Mikumo. Sponsored by the International Program of the National Science Foundation, Japan Society for the Promotion of Science, and the U.S. Geological Survey. 1990. 275 p. (NC, Da, M.)

Summary; seventh U.S.–Japan earthquake prediction research seminar; use of real-time earthquake information for hazard warning, by Carl Kisslinger, Takeshi Mikumo and Hiroo Kanamori. p. i-ix.

Regional variation in the seismicity before large shallow earthquakes, by Kiyoo Mogi. p. 1-10.

Relation of aftershock distribution in time and space to the pre-mainshock seismicity pattern, by Carl Kisslinger and E. R. Engdahl. p. 11-14.

Seismotectonic zonation based on the characteristics of active faults in Japan, by Yoshihiro Kinugasa. p. 15-17.

Time dependent peninsula tectonics and earthquake prediction in Japan, by Minoru Tanaka and Tetsuro Imakiire. p. 18-33.

Loci and maximum size of thrust earthquakes and the mechanics of the shallow region of subduction zones, by D. E. Byrne, D. M. Davis and L. R. Sykes. p. 34-58.

Seismic activity in the Tokai area, central Japan, by Harumi Aoki, F. Yamazaki and T. Ooida. p. 59-62.

Recent progress of electromagnetic studies for the earthquake prediction in Japan, by Takesi Yukutake. p. 63-67.

Parkfield, California earthquake prediction experiment; a status report, by W. H. Bakun. p. 68-71.

Classification of earthquake precursors and regularity of precursor appearance, by Kazuo Hamada. p. 72-79.

Conclusions from social science research on earthquake prediction research in the United States for the period of 1974 through 1988, by D. S. Mileti. p. 80-84.

Temporal variations of seismic activity and some precursors before recent intraplate earthquakes in Southwest Japan, by Takeshi Mikumo. p. 85-92.

Prediction of large aftershocks on the basis of quiescence, by R. E. Habermann and F. H. Creamer. p. 93-98.

Coseismic changes in groundwater radon, by Hiroshi Wakita, G. Igarashi, Y. Nakamura, Y. Sano and K. Notsu. p. 99-103.

A more precise chronology of earthquakes produced by the San Andreas Fault in Southern California, by K. E. Sieh, Minze Stuiver and David Brillinger. p. 104.

New directions in the U.S. earthquake prediction program, by R. L. Wesson. p. 105-108.

The outline of the sixth earthquake prediction plan of Japan, by Kazuhiko Otake. p. 109-113.

Rapid determination of source parameters, by A. M. Dziewonski. p. 114.

Earthquake phenomena observation system (EPOS); new JMA system for earthquake prediction and tsunami warning services, by Kenshiro Tsumura. p. 115-124.

On mitigating rapid onset natural disasters; Project THRUST (tsunami hazards reduction utilizing systems technology), by E. N. Bernard, R. R. Behn, G. T. Hebenstreit, F. I. Gonzalez, P. F. Krumpe, J. F. Lander, E. Lorca, P. M. McManamon and H. B. Milburn. p. 125-130.

Deep ocean tsunami and seismic wave observations; three recent Gulf of Alaska events, by F. I. Gonzalez and E. N. Bernard. p. 131-134.

Pasadena very broad-band system and its use for real-time seismology, by Hiroo Kanamori. p. 135-142.

A real-time processing system of Tohoku University seismic network and recent microearthquake activity, by Akira Hasegawa, Norihito Umino and Akio Takagi. p. 143-146.

Seismic monitoring in Southern California; plans for the future and present realities, by T. H. Heaton. p. 147-150.

The application of foreshocks to real-time earthquake hazard assessment in Southern California, by L. M. Jones and P. A. Reasenberg. p. 151-162.

Real-time earthquake warning, by M. N. Toksoz, A. M. Dainty, J. T. Bullitt and Robert Cicerone. p. 163-173.

A model for real time advisories of large earthquakes ($M \geq 7$), by K. C. McNally. p. 174-199.

Earthquake fault slip estimation from geologic, geodetic and seismological observations; implications for earthquake mechanics and prediction research, by Wayne Thatcher and M. G. Bonilla. p. 200-213.

Data collection network system of university group and some recent results of crustal movements, by Hiroshi Ishii. p. 214-218.

Spatial and temporal correlation between coda Q^{-1} and seismicity, by Keiiti Aki. p. 219-220.

Comparative strain measurement of the NRLM tunnel by an interferometer and a distance meter, by Tadanao Oh'ishi and Katuo Seta. p. 221-225.

Repeating earthquakes: characteristics and implications, by W. L. Ellsworth and L. D. Dietz. p. 226-245.

Gravity studies of active faults in Japan, by Yukio Hagiwara. p. 246-250.

Foreshocks, aftershocks and earthquake recurrence, by J. H. Dieterich. p. 251-257.

Implications of fault creep studies for the mechanics of faulting, by R. L. Wesson. p. 258-261.

Observation status of the Japanese geodetic satellite "Ajisai" and precise baseline determination by using the transportable laser ranging station (HTLRS), by Yoshio Kubo and Minoru Sasaki. p. 262-272.

OF 90-0108. CALIFORNIA. Geochemical relations and distribution of selected trace elements in ground water of the northern part of the western San Joaquin Valley, California, by N. M. Dubrovsky, J. M. Neil, M. C. Welker and K. D. Evenson. 1991. 55 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 90-0114. IDAHO. Hydrological, meteorological, and geohydrological data for an unsaturated zone study near the Radioactive Waste Management Complex, Idaho National Engineering Laboratory, Idaho; 1987, by L. C. Davis and J. R. Pittman. Prepared in cooperation with the U.S. Department of Energy. 1990. 208 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0118. OREGON. Statistical summaries of streamflow data in Oregon; Volume 1, Monthly and annual streamflow, and flow-duration values, by R. L. Moffatt, R. E. Wellman and J. M. Gordon. Prepared in cooperation with the Oregon Water Resources Department. 1990. 413 p., 1 over-size sheet, scale 1:750,000 (1 inch = about 12 miles). (NC, Da, M, Wb.)

OF 90-0122. PUERTO RICO. Water resources investigations in Puerto Rico and the U.S. Virgin Islands, 1986-88, edited by T. D. Veve and J. W. Troester. 1990. 39 p. (NC, Da, M, Wb.)

OF 90-0123. MARYLAND, VIRGINIA, DISTRICT OF COLUMBIA. Data on the distribution and abundance of submersed aquatic vegetation in the tidal Potomac River and transition zone of the Potomac Estuary, Maryland, Virginia, and the District of Columbia, 1988, by N. B. Rybicki and M. R. Schening. 1990. 19 p. (NC, Da, M, Wb.)

OF 90-0126. OREGON, WASHINGTON. Ground-water data for the Portland Basin, Oregon and Washington, by K. A. McCarthy and D. B. Anderson. Prepared in cooperation with the City of Portland Bureau of Water Works, Clark County Intergovernmental Resource Center, and Oregon Water Resources Department. 1990. 56 p., 1 over-size sheet. (NC, Da, M, Wb.)

OF 90-0127. TEXAS. Guidelines for collection and field analysis of water-quality samples from streams in Texas, by F. C. Wells, W. J. Gibbons and M. E. Dorsey. 1990. 79 p. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Austin, TX 78753.)

OF 90-0138. CALIFORNIA. Influence of redox potential on selenium distribution in ground water, Mendota, western San Joaquin Valley, California, by N. M. Dubrovsky, J. M. Neil, Roger Fujii, R. S. Oremland and J. T. Hollibaugh. 1990. 24 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234,

2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 90-0140. Methods for collection and processing of surface-water and bed-material samples for physical and chemical analyses, edited by J. R. Ward and C. A. Harr. 1990. 71 p. (NC, Da, M, Wb.)

OF 90-0147. NEW MEXICO. Aquifer-characteristic and water-chemistry data from wells on or near Navajo tribal lands in the Zuni River basin and Whitewater Arroyo drainage, west-central New Mexico, by C. L. Goetz. Prepared in cooperation with the U.S. Bureau of Indian Affairs. 1990. 33 p., 1 over-size sheet. (NC, Da, M, Wb, Db, U; USGS, WRD, 4501 Indian School Rd. NE, Suite 200, Albuquerque, NM 87110.)

OF 90-0149. WISCONSIN. The effect of 1988 drought on water resources in Wisconsin, by B. K. Holmstrom and B. R. Ellefson. 1990. 2 p. (NC, Da, M, Wb, A, Db, F, LA, S, SF, U, Wa.) (Water fact sheet.)

OF 90-0164. PENNSYLVANIA. Large springs in the Valley and Ridge physiographic province of Pennsylvania, by D. A. Saad and D. J. Hippe. 1990. 17 p. (NC, Da, M, Wb.)

OF 90-0166. GEORGIA. Update of flood-flow characteristics of Nancy Creek at Georgia Highway 400 extension near Atlanta, Georgia, by T. C. Stamey. Prepared in cooperation with the Department of Transportation, State of Georgia. 1990. 12 p. (NC, Da, M, Wb; USGS, WRD, 6481 Peachtree Industrial Blvd., Doraville, GA 30360.)

OF 90-0170. IOWA. Statistical summaries of selected Iowa streamflow data through September 30, 1988, by E. E. Fischer, N. B. Melcher and S. P. Kluesner. Prepared in cooperation with the U.S. Army Corps of Engineers, Iowa Department of Natural Resources, and Iowa Department of Transportation. 1990. 641 p. (NC, Da, M, Wb.)

OF 90-0173. Geohydrologic units of the coastal lowlands aquifer system, south-central United States, by J. S. Weiss. 1990. 44 p., 34 over-size sheets. (NC, Da, M, Wb.)

OF 90-0174. Implementation plan for the National Water-Quality Assessment Program, by P. P. Leahy, J. S. Rosenshein and D. S. Knopman. 1990. 10 p. (NC, Da, M, Wb.)

OF 90-0175. TEXAS. Summary of data from the 1981-83 pilot study and 1985-89 operations of the Hueco bolson recharge project, Northeast El Paso, Texas, by D. E. White and G. J. Sladek. 1990. 38 p. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

OF 90-0176. NEW MEXICO. Hydrologic data for the Jemez Mountains, New Mexico, by C. G. Abeyta and B. M. Delaney. Prepared in cooperation with the U.S. Bureau of Indian Affairs and the New Mexico State Engineer Office. 1990. 51 p., 2 over-size sheets. (NC, Da, M, Wb, Db, U; USGS, WRD, 4501 Indian School Rd. NE, Suite 200, Albuquerque, NM 87110.)

OF 90-0177. CALIFORNIA, NEVADA. Surface-water hydrology of Honey Lake valley, Lassen County, California, and Washoe County, Nevada, by G. L. Rockwell. Prepared in cooperation with the California Department of Water Resources and the Nevada Division of Water Resources. 1990. 2 over-size sheets. (NC, Da, M, Wb, SF, LA, U; USGS, WRD, Room 224, Federal Bldg., 705 North Plaza St., Carson City, NV 89701; and Room W-2234, Federal Bldg., 2800 Cottage Way, Sacramento, CA 95825.)

OF 90-0183. A study guide for a beginning course in ground-water hydrology; Part I, Course participants, by O. L. Franke, T. E. Reilly, R. J. Haefner and D. L. Simmons. 1990. 184 p. (NC, Da, M, Wb.)

OF 90-0185. The Water Data Sources Directory of the National Water Data Exchange, southeastern region, by C. D. Blackwell. 1990. 545 p. (NC, Da, M, Wb.)

OF 90-0186. Monthly mean discharge at and between selected streamflow-gaging stations along the Mississippi, Minnesota, and St. Croix rivers, 1932-87, by M. E. Schoenberg and G. B. Mitton. Prepared in cooperation with the U.S. Army Corps of Engineers. 1990. 36 p. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

OF 90-0187. A finite-element model for simulation of two-dimensional steady-state ground-water flow in confined aquifers, by E. L. Kuniansky. 1990. 77 p. (NC, Da, M, Wb; USGS, WRD, Library, 8011 Cameron Rd., Austin, TX 78753.)

OF 90-0188. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1989, by R. T. Burtell. Prepared in cooperation with the St. Johns River Water Management District, South Florida Water Management District, and Southwest Florida Water Management District. 1990. 1 over-size sheet. (NC, Da, M, Wb.)

OF 90-0192. NORTH CAROLINA. Ground-water study of the central coastal plain, North Carolina, by W. L. Lyke. 1990. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 90-0193. WYOMING, COLORADO. Data that describe at-a-point temporal variations in the transport rate and particle-size distribution of bedload; East Fork River, Wyoming, and Fall River, Colorado, by Basil Gomez and W. W. Emmett. 1990. 48 p. (NC, Da, M, Wb.)

OF 90-0195. NEVADA. Selected meteorological data for an arid climate over bare soil near Beatty, Nye County, Nevada, November 1977 through May 1980, by R. G. Brown and W. D. Nichols. 1990. 48 p. (NC, Da, M, Wb.)

OF 90-0197. Importance of return flow as a component of water use, by L. C. Trotta and M. A. Horn. 1990. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.) (Water fact sheet.)

OF 90-0198. National Water Information System user's manual; Volume 2, Chapter 5, Water-Use Data System; Part 1, Site-Specific Water-Use Data System (SSWUDS), compiled by S. B. Mathey. 1990. 470 p. (NC, Da, M, Wb.)

Introduction, by C. F. Merk, J. E. Terry and T. W. Augenstein. p. 1.2-1.7.

Water-Use Data System (WUDS), by C. R. Baxter and J. E. Terry. p. 2.1-2.3.

Site-Specific Water-Use Data System (SSWUDS), by N. E. Williams, J. E. Terry and C. R. Baxter. p. 3.1-3.167.

Site-Specific Water-Use Data System (WUDS) menus, by J. E. Terry, M. L. Fugate and C. R. Baxter. p. 4.1-4.85.

Site-Specific Water-Use Data System (SWUDS) key-to-disk (KEYDISK) data entry program, by T. W. Augenstein. p. 5.1-5.22.

Site-Specific Water-Use Data System (SWUDS) data elements dictionary, by C. F. Merk, C. R. Baxter and J. E. Terry. p. 6.1-6.154.

OF 90-0205. VIRGINIA. Reconnaissance surficial geologic map of the mountainous parts of Loudoun County, Virginia, by R. B. Jacobson, R. C. McDowell, D. J. Milton, W. L. Newell, J. S. Pomeroy, J. S. Schindler and C. S. Southworth. Prepared in cooperation with the Department of Natural Resources, Loudoun County, Virginia. 1990. 16 over-size sheets, scale 1:12,000 (1 inch = 1,000 feet). (NC, Wa; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rds., P.O. Box 3667, Charlottesville, VA 22903.)

OF 90-0212. ARIZONA. Preliminary geologic map of the Burro Mesa Quadrangle, Yavapai County, Arizona, by A. W. Ward and L. D. Nealey. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0234-A. IDAHO. Geochemical stratigraphy of the Yellowjacket Formation (middle Proterozoic) in the area of the Idaho cobalt belt, Lemhi County, Idaho, by J. J. Connor; *with* analytical contributions from A. J. Bartel, E. L. Brandt, P. H. Briggs, S. Danahey, D. L. Fey, D. B. Hatfield, M. J. Malcolm, V. Merritt, G. O. Riddle, S. Roof, K. C. Stewart, J. Storey, J. E. Taggert, Jr., and R. B. Vaughn. 1990. 30 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0234-B. IDAHO. Geochemical stratigraphy of the Yellowjacket Formation (middle Proterozoic) in the area of the Idaho cobalt belt, Lemhi County, Idaho, by J. J. Connor; *with* analytical contributions from A. J. Bartel, E. L. Brandt, P. H. Briggs, S. Danahey, D. L. Fey, D. B. Hatfield, M. J. Malcolm, V. Merritt, G. O. Riddle, S. Roof, K. C. Stewart, J. Storey, J. E. Taggert, Jr., and R. B. Vaughn. 1990. One 5 1/4 inch diskette. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

Geochemical data are provided on one (360K) double-sided, double-density diskette in eight ASCII files suitable for viewing or printing using standard DOS commands. Requirements: IBM PC or compatible; 256K RAM.

OF 90-0240. NEW MEXICO. Geologic map and sections of the Steeple Rock Quadrangle, Grant and Hidalgo counties, New Mexico, by D. C. Hedlund. 1990. 14 p., 2 over-size sheets; sheet 1, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0249. NEVADA. Mineral resources of the Mormon Mountains Wilderness Study Area and Addition, Lincoln and Clark counties, Nevada, by D. R. Shawe, H. R. Blank, Jr., B. P. Wernicke, G. J. Axen, H. N. Barton, G. W. Day and D. C. Scott. 1990. 27 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (Supplement to B 1729-B.) (NC, Da, M, LA, SF, Db, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0252. NEW MEXICO. Preliminary geologic map of the Crookson Peak Quadrangle, Grant County, New Mexico, by D. C. Hedlund. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0279. ALASKA. Stratigraphic correlation and interpretation of exploratory wells, Alaska Peninsula, by R. L. Detterman. 1990. 51 p., 2 over-size sheets. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0289. ALASKA. Geology of east-central Alaska, by J. H. Dover. 1990. 91 p., 5 over-size sheets. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0297. ALASKA. The Sitkoh Bay alkalic plutonic suite; Silurian or older alkalic magmatism on eastern Chichagof Island, southeastern Alaska, by A. B. Ford, D. A. Brew and R. A. Loney. 1990. 41 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0299-A. ALASKA. Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska, by J. E. Gray, D. E. Detra, R. G. Eppinger, R. H. Hill, K. E. Slaughter and S. J. Sutley. 1990. 73 p., 1 over-size sheet. (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, Ak 99513.)

OF 90-0299-B. ALASKA. Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska, by J. E. Gray, D. E. Detra, R. G. Eppinger, R. H. Hill, K. E. Slaughter and S. J. Sutley. 1990. One 5 1/4 inch diskette. (DS/DD IBM compatible.) (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0300-G. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, July 1990, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1990. 16 p. (NC, Da, M, A; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0300-H. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, August 1990, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1990. 20 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr.,

Anchorage, AK 99508-4667; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0300-I. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, September 1990, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1990. 17 p. (NC, Da, M, A; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0300-J. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, October 1990, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1990. 19 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0300-K. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, November 1990, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1990. 18 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0300-L. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, December 1990, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1990. 18 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0313. Sedimentation and tectonics of the Sylhet Trough, northeastern Bangladesh, by S. Y. Johnson and A. M. Alam. 1990. 44 p. (NC, Da, M.)

OF 90-0315. Geology of the Mahd adh Dhahab District, Kingdom of Saudi Arabia, by A. M. Afifi. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 49 p., 1 over-size sheet, scale 1:18,000 (1 inch = 1,500 feet). (NC, Da, M.)

OF 90-0316. Tectonic history of the northern Nabitah fault zone, Arabian Shield, Kingdom of Saudi Arabia, by J. E. Quick and P. S. Bosch. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 87 p., 5 over-size sheets, scales 1:50,000 (1 inch = about 4,200 feet), 1:100,000 (1 inch = about 1.6 miles), 1:142,000 (1 inch = about 2.2 miles). (NC, Da, M.)

OF 90-0319. NEVADA. Dighem^{IV} survey for the U.S. Geological Survey along the Getchell Trend, Humboldt County, Nevada, by D. L. McConnell, with a preface by D. B. Hoover and P. L. Hill. 1990. 45 p., 28 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0327. Electromagnetic, magnetic, and gravimetric surveys at the Bi'r Jarbuah gold prospect, Kingdom of Saudi Arabia, by C. H. Miller, A. A. Showail, M. A. Bazzari, I. A. Khoja and M. O. Hajnur. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 7 p., 1 over-size sheet, scale 1:5,000 (1 inch = about 400 feet). (NC, Da, M.)

OF 90-0330. SOUTH DAKOTA. Total and water extractable selenium in soils and stream sediments, and total selenium in alfalfa from the Marty II study area, South Dakota, by S. A. Wilson, R. C. Severson, K. R. Kennedy, A. R. Shineman and S. A. Kinney. 1990. 37 p. (NC, Da, M, Db; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069.)

OF 90-0331. UTAH, NEVADA. Mineral resources of the Cougar Canyon/Tunnel Spring Wilderness Study Area, Washington County, Utah, and Lincoln County, Nevada, by J. E. Conrad, H. D. King, H. R. Blank, Jr., G. P. Murphy and G. S. Ryan. Prepared by the U.S. Geological Survey and U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 17 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108.)

OF 90-0333. IDAHO. Revised geologic map of the Idaho National Engineering Laboratory and adjoining areas, eastern Idaho, by M. A. Kuntz, Betty Skipp, M. A. Lanphere, W. E. Scott, K. L. Pierce, G. B. Dalrymple, L. A. Morgan, D. E. Champion, G. F. Embree, R. P. Smith, W. R. Hackett, D. W. Rodgers; compiled by W. R. Page. Prepared in cooperation with the U.S. Department of Energy. 1990. 7 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0334. National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXX, compiled by M. L. Jacobson. Prepared by participants in National Earthquake Hazards Reduction Program. 1990. 654 p. (NC, Da, M.)

OF 90-0335. UTAH. Mineral resources of the Mount Ellen-Blue Hills (Addition) Wilderness Study Area, Wayne County, Utah, by R. F. Dubiel and D. D. Gese. 1990. 17 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0336. NEVADA. Preliminary geologic map of the Delamar 3 SW Quadrangle, Lincoln County, Nevada, by W. R. Page, W C Swadley and R. B. Scott. 1990. 17 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, LA, SF, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0337. CALIFORNIA. Reconnaissance geologic map of the southern Sierra Nevada, Kern, Tulare, and Inyo counties, California, by D. C. Ross. 1990. 163 p., 1 over-size sheet, scale 1:125,000 (1 inch = about 2 miles. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0341. Applications of the USGS aftershock sequence model and guidelines for drafting aftershock forecasts, by P. A. Reasenberg. 1990. 92 p. (NC, Da, M.)

OF 90-0342. ALASKA. Density data for drill cores from wells in the National Petroleum Reserve in Alaska, by D. F. Barnes, R. L. Morin, H. A. Gibson and L. L. Tailleur. 1990. 57 p. (NC,

Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0345. HAWAII. Cruise report; GLORIA survey of part of the Hawaiian Exclusive Economic Zone, F1-90-HW, by R. E. Kayen, M. A. Hampton, J. B. Wilson and D. G. Bishop. 1990. 74 p. (NC, Da, M, SF, LA.)

OF 90-0347. Annotated bibliography on research conducted in coastal lagoons and estuaries of the Pacific Coast of the United States, by R. J. Anima. 1990. 223 p. (NC, Da, M.)

OF 90-0351. MISSOURI. Geochemical data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri; 1989-90, by J. G. Schumacher. Prepared in cooperation with the U.S. Department of Energy. 1990 (1991). 47 p. (NC, Da, M, Wb; USGS, WRD, 1400 Independence Rd., Mail Stop 200, Rolla, MO 65401.)

OF 90-0352. Operational guidelines for assistance centers of the National Water Data Exchange, revised by J. S. Burton. 1990. 78 p. (NC, Da, M, Wb.) (Supersedes Open-file report 80-1196.)

OF 90-0353. The U.S. Geological Survey Federal-State Cooperative Water-Resources Program, fiscal year 1989, by B. K. Gilbert and W. B. Mann, IV. 1990. 49 p. (NC, Da, M, Wb.)

OF 90-0354. NEVADA. Drilling and geohydrologic data for test hole USW UZ-1, Yucca Mountain, Nye County, Nevada, by M. S. Whitfield, D. P. Hammermeister, William Thordarson and J. B. Warner. Prepared in cooperation with the U.S. Department of Energy. 1990. 40 p. (NC, Da, M, Wb, Db; USGS, WRD, Box 25046, Mail Stop 421, Denver Federal Ctr., Denver, CO 80225.)

OF 90-0355. NEVADA, CALIFORNIA. Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California, by P. W. McKinley, M. P. Long and L. V. Benson. 1990. 48 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb, Db; USGS, WRD, Box 25046, Mail Stop 421, Denver Federal Ctr., Denver, CO 80225.)

OF 90-0356. CALIFORNIA. Geohydrology and evapotranspiration at Franklin Lake playa, Inyo County, California, by J. B. Czamecki. 1990. 96 p. (NC, Da, M, Wb.)

OF 90-0357. CALIFORNIA. Executive summary: assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt using a simple hydrochemical model, by R. P. Hooper, C. T. West and N. E. Peters. Prepared in cooperation with the California Air Resources Board. 1990. 4 p. (NC, Da, M, Wb; USGS, WRD, 6481 B Peachtree Industrial Blvd., Doraville, GA 30360.)

OF 90-0358. Hydrology of the Mississippi River valley alluvial aquifer, south-central United States, by D. J. Ackerman. 1990. 141 p. (NC, Da, M, Wb.)

OF 90-0360. KENTUCKY. Surface water-quality assessment of the Kentucky River basin, Kentucky; analysis of available water-quality data through 1986, by J. L. Smoot, T. D. Liebermann, R. D. Evaldi, and K. D. White; *with a section on* Biological indicators of water quality by A. D. Bradfield. 1991. 209 p., 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb.)

OF 90-0365. PUERTO RICO. A hydrologic excursion to Puerto Rico's southern plain, led by R. A. Renken, Pedro Díaz, Fernando Gómez-Gómez and Vicente Quiñones-Aponte. 1990. 24 p., 1 over-size sheet. (NC, Da, M, Wb.)

OF 90-0366. IDAHO. Digitized geophysical logs for selected wells on or near the Idaho National Engineering Laboratory, Idaho, by R. C. Bartholomay. Prepared in cooperation with the U.S. Department of Energy. 1990. 347 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0367. IDAHO. Purgeable organic compounds in ground water at the Idaho National Engineering Laboratory, Idaho; 1988 and 1989, by L. J. Mann. Prepared in cooperation with the U.S. Department of Energy. 1990. 17 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Project Office, Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0368. MICHIGAN. Physical and chemical data for ground water in the Michigan Basin, 1986-89, by G. T. Dannemiller and M. A. Baltusis, Jr. 1990. 155 p. (NC, Da, M, Wb; USGS, WRD, 6520 Mercantile Way, Suite 5, Lansing, MI 48911.)

OF 90-0370. SOUTH CAROLINA. Concentrations of metals in bed material in the area of Congaree Swamp National Monument and in water in Cedar Creek, Richland County, South Carolina, by T. W. Cooney. Prepared in cooperation with the National Park Service. 1990. 18 p. (NC Da, M, Wb; USGS, WRD, 1835 Assembly St., Suite 677-A, Columbia, SC 29201.)

OF 90-0372. NORTH CAROLINA. Simulation of ground-water flow in the coastal plain aquifer system of North Carolina, by G. L. Giese, J. L. Eimers and R. W. Coble. 1991. 178 p. (NC, Da, M, Wb; USGS, WRD, Century Postal Station, 300 Fayetteville St. Mall, Raleigh, NC 27602.)

OF 90-0374. A plan for the study of the hydrogeology of bedrock of New England, by W. W. Lapham. 1990. 16 p. (NC, Da, M, Wb; USGS, WRD, 10 Causeway St., Boston, MA 02222-1040.)

OF 90-0375. ILLINOIS, INDIANA, WISCONSIN. Availability and suitability of municipal wastewater information for use in a National Water-Quality Assessment; a case study of the upper Illinois River basin in Illinois, Indiana, and Wisconsin, by J. S. Zogorski, S. F. Blanchard, R. D. Romack and F. A. Fitzpatrick. 1990. 68 p. (NC, Da, M, Wb; USGS, WRD, 102 East Main St., 4th Floor, Urbana, IL 61801.)

OF 90-0378. A literature survey of information on well installation and sample collection procedure used in investigations of ground-water contamination by organic compounds, by D. H. Dumouchelle, E. A. Lynch and T. R. Cummings. Prepared in cooperation with the U.S. Air Force. 1990. 60 p. (NC, Da, M, Wb; USGS, WRD, 6520 Mercantile Way, Suite 5, Lansing, MI 48911.)

OF 90-0379. A protocol for onsite screening of volatile organic compounds using a portable gas chromatograph, by R. D. Brock. 1990. 15 p. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

OF 90-0380. MISSISSIPPI. History of the applications and development section of the Hydrologic Instrumentation Facility, Gulf

Coast Hydroscience Center, Stennis Space Center, Mississippi, by S. E. Rickly. 1991. 66 p. (NC, Da, M, Wb.)

OF 90-0383. ARKANSAS. Ground-water levels in the alluvial aquifer in eastern Arkansas, 1988, by P. W. Westerfield and C. R. Baxter. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission, U.S. Soil Conservation Service, and local conservation districts. 1990. 35 p. (NC, Da, M, Wb.)

OF 90-0386. SOUTH CAROLINA. Storm-tide elevations produced by Hurricane Hugo along the South Carolina coast, September 21-22, 1989, by R. E. Schuck-Kolben. Prepared in cooperation with the Federal Emergency Management Agency. 1990. 45 p., 31 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb; USGS, WRD, 1835 Assembly St., Suite 677A, Columbia, SC 29201.)

OF 90-0387. VIRGINIA. Preliminary investigation of soil and ground-water contamination at a U.S. Army Petroleum Training Facility, Fort Lee, Virginia, September-October 1989, by W. G. Wright and J. D. Powell. Prepared in cooperation with the U.S. Department of Defense, U.S. Army. 1990. 28 p. (NC, Da, M, Wb.)

OF 90-0389. Manual for comparing methods of designing hydrologic-data-collection networks, by M. E. Moss and G. D. Tasker. 1990. 104 p. (NC, Da, M, Wb.)

OF 90-0391. SOUTH DAKOTA. Records of wells and chemical analyses of ground water in Deuel and Hamlin counties, South Dakota, by K. M. Neitzert and D. S. Hansen. Prepared in cooperation with the South Dakota Department of Water and Natural Resources. 1990. 113 p. (NC, Da, M, Wb; USGS, WRD, Room 408, Federal Bldg., 200 4th St SW, Huron, SD 57350.)

OF 90-0392. A computer program for calculating subregional water budgets using results from the U.S. Geological Survey modular three-dimensional finite-difference ground-water flow model, by A. W. Harbaugh. 1990. 46 p. (NC, Da, M, Wb.)

OF 90-0393. CALIFORNIA, NEVADA. Review of water-management models and results of simulations for the Truckee-Carson rivers system, California and Nevada, by E. D. Cobb, A. F. Olson, Otto Moosburner and Alex Pupacko. 1990. 40 p. (NC, Da, M, Wb.)

OF 90-0395. ARIZONA. Chemical, geologic, and hydrologic data from the study of acidic contamination in the Miami Wash-Pinal Creek area, Arizona, water years 1988-89, by J. G. Brown. 1990. 75 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701-1393; 3738 North 16th St., Suite E, Phoenix, AZ 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ.)

OF 90-0398. NORTH CAROLINA, VIRGINIA. Water-quality trends and basin activities and characteristics for the Albemarle-Pamlico estuarine system, North Carolina and Virginia, by D. A. Hamed and M. S. Davenport. Prepared in cooperation with the North Carolina Department of Environment, Health, and Natural Resources. 1990. 164 p. (NC, Da, M, Wb; USGS, WRD, Century Postal Station, 300 Fayetteville St. Mall, Raleigh, NC 27602.)

OF 90-0400-G. New information resources of the U.S. Geological Survey Library System, July 1990. 1990. 63 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 90-0400-H. New information resources of the U.S. Geological Survey Library System, August 1990. 1990. 72 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 90-0400-I. New information resources of the U.S. Geological Survey Library System, September 1990. 1990. 71 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 90-0400-J. New information resources of the U.S. Geological Survey Library System, October 1990. 1990. 72 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 90-0400-K. New information resources of the U.S. Geological Survey Library System, November 1990. 1990. 67 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 90-0400-L. New information resources of the U.S. Geological Survey Library System, December 1990. 1990. 57 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 90-0401. The undiscovered oil and gas of Afghanistan, by John Kingston. 1990. 33 p. (NC, Da, M.)

OF 90-0402. A Cu-Ni-Mn-Zn mineral resource deposit model for the northern Pacific oceanic basin, by J. M. Botbol. 1990. 25 p. (NC, Da, M, SF, LA.)

OF 90-0403. OREGON. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, rock, and soil samples from the Rincon Wilderness Study Area, Harney County, Oregon, by B. M. Adrian, H. D. King, D. L. Fey and P. L. Hageman. 1990. 17 p. (NC, Da, M, LA, SF, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528.)

OF 90-0404. NEVADA. Maps of the thickness of Cenozoic deposits and the isostatic residual gravity over basement for Nevada, by R. C. Jachens and B. C. Moring. 1990. 15 p., 2 over-size sheets, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0405. NEVADA. Preliminary geologic map of the Delamar 3 NW Quadrangle, Lincoln County, Nevada, by R. B. Scott, W. R. Page and W C Swadley. 1990. 15 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0407. MARSHALL ISLANDS. Geological, geochemical, geophysical, and oceanographic data and interpretations of seamounts and Co-rich ferromanganese crusts from the Marshall Islands KORDI-USGS R.V. Farnella Cruise F10-89-CP, by J. R. Hein, Jung-Keuk Kang, M. S. Schulz, Byong-Kwon Park, Herbert Kirschenbaum, Suk-Hoon Yoon, R. L. Olson, V. K. Smith, Dong-Won Park, G. O. Riddle, P. J. Quinterno, Yoon-Oh Lee, A. S. Davis, S. R. Kim, M. S. Pringle, Dong-Lim Choi, L. G. Pickthorn, S. O. Schlanger, F. K. Duennebier, D. D. Bergersen and J. M. Lincoln. 1990. 246 p. (NC, Da, M.)

OF 90-0408. Properties and hazards of 108 selected substances; 1990 edition, by J. E. Lucius, G. R. Olhoeft, P. L. Hill and S. K. Duke. 1990. 559 p. (NC, Da, M.) (Revision of Open-file report 89-491.)

OF 90-0409. Interfacial contact angle measurements of water, mercury, and 20 organic liquids on quartz, calcite, biotite, and Ca-

montmorillonite substrates, by E. F. Ethington. 1990. 18 p. (NC, Da, M.)

OF 90-0410. MONTANA. Mineral resources of the Sleeping Giant Wilderness Study Area, Lewis and Clark County, Montana, by R. G. Tysdal, M. W. Reynolds, R. R. Carlson, M. D. Kleinkopf, L. C. Rowan and T. J. Peters. 1990. 49 p., 1 oversize sheet, scale 1:50,000 (1 inch = about 4,200 feet.) (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0411. CALIFORNIA. Loma Prieta, California, earthquake of October 17, 1989; logs of original and acquired videotapes and release forms, by D. V. Prose. 1990. 45 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (The videotapes are available for purchase from Videotransform, Inc., 2450 Embarcadero Way, Palo Alto, CA 94303; telephone 415-494-1529.)

OF 90-0413. OREGON. Preliminary geologic map of the Neskowin Quadrangle, Lincoln and Tillamook counties, Oregon, by P. D. Snavely, Jr., N. S. MacLeod and D. L. Minasian. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0414. Third international conference on Ground penetrating radar; abstracts of the technical meeting, edited by J. E. Lucius, G. R. Olhoeft and S. K. Duke. 1990. 94 p. (NC, Da, M.)

Investigation of flow distribution in a fracture zone using differential radar measurements, by P. M. Andersson, K. P. Andersson, Erik Gustafsson and Olle Olsson. p. 1.

Experimental results of remote radar sensing of frozen soils, by V. A. Andrianov, V. N. Marchuk, S. D. Nazarenko and D. Y. Shtern. p. 2.

Impact of antenna pattern on survey design and data interpretation, by A. P. Annan and S. W. Cosway. p. 3.

Emulation of a phased array by application of F-K filtering to single fold GPR data, by A. P. Annan and S. W. Cosway. p. 4.

UHF model experiments of airborne short-pulse radar void detection in the HF band, by S. A. Arcone. p. 5.

Airborne radar survey of late winter ice conditions on the White River at Hartford, Vermont, by S. A. Arcone. p. 6.

Ground penetrating radar applications for the purpose of archaeological investigation in Japan, by Mohsen Badiey, Dean Goodman and Tokuo Yamamoto. p. 7.

Extending time average dielectric mixing laws to lower frequencies; the dispersion time average mixing law, by P. L. Baker. p. 8.

Ground penetrating radar for shallow exploration; acquisition rate limitations of a modular GPR, by P. L. Baker and J. P. Cull. p. 9.

Detailed geophysical investigation of a shallow sandy aquifer, by P. D. Bauman, J. P. Greenhouse and J. D. Redman. p. 10.

Evaluation of fractures in silts and clay using ground penetrating radar, by R. C. Benson and L. M. Yuhr. p. 11.

The role of ground penetrating radar in dam safety investigations, by A. R. Blystra. p. 12.

Using ground penetrating radar to evaluate an airport runway, by A. R. Blystra. p. 13.

Electromagnetic tomography of grout penetration in fractures, by William Daily and Abelardo Ramirez. p. 14.

Ground penetrating radar for detecting near-surface fluids, by J. J. Daniels and M. A. Vendl. p. 15.

Microwave antenna arrays for nearfield detection of buried objects, by W. Davis, E. L. Rope, J. T. Nilles and Gus Tricoles. p. 16.

Influence of wavelength, antenna height, and soil roughness in nearfield microwave detection of buried dielectric objects, by W. Davis, E. L. Rope, J. T. Nilles and Gus Tricoles. p. 17.

Determination of erosion channels beneath a dike revetment by ground probing radar, by J. W. de Feijter, Gert Greeuw and J. Eikelboom. p. 18.

Detection of in seam anomalies with a synthetic pulse radar system, by R. S. Dennen and W. P. Stroud. p. 19.

Improving solute sampling protocol in sandy soils by using ground penetrating radar, by S. V. Donohue, X. X. Cheng and K. J. Kung. p. 20-21.

Calibration and forward modeling of ground penetrating radar data, by S. K. Duke and G. R. Olhoeft. p. 22.

Directional antenna for borehole radar measurements, by Lars Falk, Olle Olsson, Eric Sandberg, Olof Forslund and Lars Lundmark. p. 23.

The development of geophysical subsurface radar in the USSR and its practical use, by M. I. Finkelstein. p. 24.

Reverse time migration applied to ground penetrating radar, by Elizabeth Fisher, G. A. McMechan and A. P. Annan. p. 25.

Ground penetrating radar imaging of sequence boundaries and lithofacies variations in a mixed siliciclastic carbonate depositional sequence, by J. M. Forgotson, J. D. Pigott and J. D. Skinner. p. 26.

Modeling and tomographic inversion of cross borehole radar in layered media, by R. J. Greenfield, R. S. Polzer and S. M. Shope. p. 27.

Measurements and modeling of ground penetrating radar field strengths in a large laboratory set up, by Gert Greeuw, W. A. Wensink, J. Hofman and J. K. van Deen. p. 28.

Condition assessment of reinforced concrete using radar, by U. B. Halabe, K. R. Maser and Arash Sotoodehnia. p. 29.

Use of an impulse radar in peat research, by Pauli Hanninen. p. 30.

Attenuation of L-band microwaves by permafrost, by S. D. Wall, T. G. Farr, K. G. Dean and L. R. Sweet. p. 72.

Examples of sinkhole subsurface structure, in Florida, as revealed by ground penetrating radar, by W. L. Wilson. p. 73.

Investigation of Mayan structures at Caracol, Belize, using ground penetrating radar, by W. L. Wilson and D. C. Wilson. p. 74.

Ground penetrating radar system hardware design, by D. L. Wright. p. 75-76.

Amplitude, velocity, and dispersion tomography at the Idaho Springs test facility using a fiber-optic borehole radar and radio-frequency digital data acquisition system, by D. L. Wright and G. R. Olhoeft. p. 77.

Inspection of concrete embankments and measurement of lake bottom sediment thickness; case histories in GPR, by R. J. Yelf. p. 78.

Case histories of GPR in mining and archaeological applications, by R. J. Yelf. p. 79.

Applications of ground radar to coal mining, by R. J. Yelf and Greg Turner. p. 80.

Underground electromagnetic wave method, by Wu Yiren. p. 81.

OF 90-0415. The track of the Yellowstone hotspot; volcanism, faulting, and uplift, by K. L. Pierce and L. A. Morgan. 1990. 70 p. (NC, Da, M.)

OF 90-0416. NEBRASKA. Distribution of the basal clastic unit of the Oligocene Chadron Formation in the Alliance 2-degree Quadrangle, northwestern Nebraska, by K. A. Dickinson. 1990. 6 p., 2 over-size sheets. (NC, Da, M, Db; Conservation and Surv. Div., Institute of Agriculture and Natural Resources, 113 Nebraska Hall, Univ. of Nebraska, Lincoln, NE 68588-0517.)

OF 90-0417. NORTH CAROLINA. Provisional geologic map of the Snow Camp-Saxapahaw area, North Carolina, by R. G. Schmidt, Pablo Gumiel and Alba Payás. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M; Div. of Land Resources, Dep. of Natural Resources and Community Dev., 512 North Salisbury St., P.O. Box 27687, Raleigh, NC 27611.)

OF 90-0418. Follow-up evaluation of fifteen geochemically anomalous areas and evaluation of four prospects in the Farah Garan-Kutam mineral belt, Kingdom of Saudi Arabia, by K. S. Kellogg, Eyad Jannadi and M. B. El Komi. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 21 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M.)

OF 90-0421. An evaluation and geochemical survey of the Farah Garan East Prospect, Southeast Asir, Kingdom of Saudi Arabia, by A. A. Bookstrom, M. B. El Komi, and R. P. Christian; *with a section on* A ground electromagnetic geophysical survey, by M. A. Bazzari. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1990. 15 p., 1 over-size sheet, scale 1:2,000 (1 inch = 167 feet). (NC, Da, M.)

OF 90-0422. A networked computer configuration for seismic monitoring of volcanic eruptions, by G. D. March and J. A. Power. 1990. 19 p. (NC, Da, M.)

OF 90-0423. NEW MEXICO. Preliminary geologic map and sections of the Walker Canyon Quadrangle, Grant and Hidalgo counties, New Mexico, by D. C. Hedlund. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0424-A. SOUTH DAKOTA, WYOMING. Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming, by A. B. Wilson and Ed DeWitt. 1990. 15 p. (NC, Da, M, Db, U; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0424-B. SOUTH DAKOTA, WYOMING. Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming, by A. B. Wilson and Ed DeWitt. 1990. One 5 1/4 inch DS/DD IBM compatible diskette. (NC, Da, M, Db, U; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0425. NEW MEXICO. Geologic map of the Applegate Mountain Quadrangle, Grant County, New Mexico, by D. C. Hedlund. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0426. Data report for O-NYNEX; the 1988 Grenville-Appalachian seismic refraction experiment in Ontario, New York and New England, by J. H. Luetgert, Stephen Hughes, J. J. Cipar, Stephen Mangino, D. A. Forsyth and I. Asudeh. 1990. 51 p., 8 over-size sheets. (NC, Da, M; N.Y. State Geol. Surv., Library, Room 3128, Cultural Education Ctr., Empire State Plaza, Albany, NY 12230.)

OF 90-0427. CALIFORNIA. Quaternary geologic map of the San Jose East Quadrangle, Santa Clara County, California, by E. J. Helley and J. R. Wesling. 1990. 14 p. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0430. NEVADA. Analytical data for stream-sediment and soil samples from the Reno 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0431. CALIFORNIA, NEVADA. Analytical data for stream-sediment and soil samples from the Walker Lake 1° by 2° Quadrangle, California and Nevada, by R. L. Turner. 1990. Three 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada

Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0432. NEVADA. Analytical data for stream-sediment and soil samples from the Wells 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0433. NEVADA. Analytical data for stream and playa sediment samples from the Caliente 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0434. NEVADA. Analytical data for stream-sediment and soil samples from the McDermitt 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0435. NEVADA. Analytical data for stream-sediment and soil samples from the Elko 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0436. NEVADA. Analytical data for stream-sediment samples from the Lund 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0437. NEVADA. Analytical data for stream-sediment and playa-sediment samples from Lovelock 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0438. CALIFORNIA, NEVADA. Analytical data for stream-sediment samples from the Death Valley 1° by 2° Quadrangle, California and Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0439. NEVADA. Analytical data for stream-sediment samples from the Millett 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0440. CALIFORNIA, NEVADA. Analytical data for stream-sediment samples from the Mariposa 1° by 2° Quadrangle, California and Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0441. NEVADA. Analytical data for stream-sediment and soil samples from the Goldfield 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0442. ARIZONA, CALIFORNIA, NEVADA. Analytical data for stream-sediment samples from the Las Vegas 1° by 2° Quadrangle, Arizona, California and Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and

Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0443. NEVADA. Analytical data for stream-sediment and soil samples from the Winnemucca and Ely 1° by 2° quadrangles, Nevada, by R. L. Turner. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0444. ARIZONA, CALIFORNIA, NEVADA. Analytical data for stream and playa sediment samples from the Kingman 1° by 2° Quadrangle, Arizona, California and Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0445. NEVADA. Analytical data for stream-sediment samples from the Tonopah 1° by 2° Quadrangle, Nevada, by R. L. Turner. 1990. Two 5 1/4 inch diskettes. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Requirements: IBM PC or compatible; minimum of 640K RAM and 2MB of storage; math coprocessor. A statistic program (such as STATPAC) and plotting program (such as GSPOST) are desirable but not required.

OF 90-0452-A. McMap; version 2.0 basemap generation for the Apple Macintosh, by H. J. Dowsett. 1990. 26 p. (NC, Da, M.)

OF 90-0452-B. McMap; version 2.0 basemap generation for the Apple Macintosh, by H. J. Dowsett. 1990. Two 3 1/2 inch DS/DD Macintosh compatible diskettes. (NC, Da, M.)

OF 90-0453. UTAH. Mineral resources of the Paria-Hackberry Wilderness Study Area, Kane County, Utah, by Henry Bell, III, A. L. Bush, R. L. Turner, J. W. Cady, S. D. Brown, B. J. Hannigan and J. R. Thompson. 1990. 28 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0454-A. CALIFORNIA. Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms, by D. V. Prose. 1990. 10 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0454-B. CALIFORNIA. Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms, by D. V. Prose. 1990. 5 videotapes. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Videotapes may be purchased from Videotransform, Inc., 2450 Embarcadero Way, Palo Alto, CA 94303; telephone 415-494-1529.)

OF 90-0455. MONTANA. Measured stratigraphic sections of Elko Formation (Middle and Upper Cambrian), and Fairholme Group, Alexo Formation, and Palliser Formation (Upper Devonian), northwestern Montana and southeastern British Columbia, by W. P. Seward and T. S. Dyman. 1990. 21 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0456. OKLAHOMA. Analyses of subsurface Permian rock samples from the Central Oklahoma Aquifer, by E. L. Mosier, P. H. Briggs, J. G. Crock, K. R. Kennedy, D. M. McKown, R. B. Vaughn and E. P. Welsch. 1990. 65 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)

OF 90-0457-A. NEVADA. Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada, by Donald Plouff. 1990. 22 p. (Documentation.) (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0457-B. NEVADA. Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada, by Donald Plouff. 1990. 59 p. (Tables of principal facts.) (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0457-C. NEVADA. Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada, by Donald Plouff. 1990. One 5 1/4 inch DS/DD IBM compatible diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0459-A. DLGGSM; a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base, by G. I. Selner and G. N. Green. 1990. 5 p. (Documentation.) (NC, Da, M.)

OF 90-0459-B. DLGGSM; a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base, by G. I. Selner and G. N. Green. 1990. One 5 1/4 inch DS/DD IBM compatible diskette. (Executable program and test file.) (NC, Da, M.)

OF 90-0460. CALIFORNIA. Temperatures and natural gamma-ray logs obtained in boreholes MLGRAP #1 and #2, Mammoth Lakes, California; data and preliminary interpretations, by W. H. Diment and T. C. Urban. 1990. 132 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0461. NEVADA. Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada, by J. H. Bullock, Jr., J. G. Evans, T. A. Roemer, E. P. Welsch and P. L. Hageman. 1990. 13 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Db, LA, SF, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0462. Selected translations of the Russian literature on the electrogeochemical sampling technique called CHIM (chastichnoe izvlechennye metallov), compiled by D. B. Hoover and D. B. Smith, translated by Eleana Bloomstein, and edited by E. I. Bloomstein. 1990. 172 p. (NC, Da, M.)

The exploration of ore deposits by the CHIM method, by I. S. Gol'dberg, A. V. Ivanova, Yu. S. Ryss, A. A. Veikher, Yu. G. Bakhtin, S. G. Alekseyev, and A. F. Yakovlev. p. 6-88.

Finding buried gold mineralizations, by S. C. Alekseyev, and I. S. Gol'dberg. p. 89-95.

CHIM surface set-up for unipolar extraction, by Yu. S. Ryss and I. S. Gol'dberg. p. 96-107.

Patterns of electrochemical leaching of elements in the simplest physico-chemical system; Report 1, by S. G. Alekseyev, I. S. Gol'dberg, A. A. Veikher, T. R. Gracheva, A. S. Dukhanin, and A. V. Ivanova. p. 108-120.

The movement of ions in rocks under the influence of an electrical current; Report 2, by M. A. Alekseyeva. p. 121-135.

Experience of finding gold deposits in western Uzbekistan using the CHIM method, by A. A. Veikher, A. A. Tazeev, V. A. Gorbunov, and A. I. Memenko. p. 136-147.

Possible uses of the CHIM method for explorations of covered gold deposits, by S. G. Alekseyev, A. A. Veikher, and I. S. Gol'dberg. p. 148-155.

Experience of analysis of CHIM samples for gold, by G. P. Fedorova, G. F. Vasilkova, and A. Yu. Semova. p. 156-164.

Gold exploration in southern Yakutiya using the CHIM method, by A. A. Veikher. p. 165-172.

OF 90-0464. UTAH. Analytical results and sample locality maps of stream-sediment, heavy-mineral-concentrate, and rock samples from the Negro Bill Canyon (UT-060-138) and the Mill Creek Canyon (UT-060-139A) Wilderness Study Areas, Grand County, Utah, by J. H. Bullock, Jr., H. N. Barton, T. A. Roemer, P. L. Hageman and D. L. Fey. 1990. 16 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0465. OREGON. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Hawk Mountain Wilderness Study Area, Harney County, Oregon, by B. M. Adrian, H. D. King, D. L. Fey and P. L. Hageman. 1990. 25 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, SF, LA, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528.)

OF 90-0467. NEW YORK. Preliminary geologic map and cross section of the Ellenville and Kerhonkson quadrangles (in part) and the Napanoch Quadrangle, Ulster and Orange counties, New York, by J. B. Epstein and P. T. Lyttle. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M; New York State Geol. Surv. Library, Room 3128, Cultural Education Ctr., Empire State Plaza, Albany, NY 12230.)

OF 90-0468. Venus; quantitative analyses of terrain units identified from Venera 15/16 data and described in Open-file report 90-24, by G. G. Schaber. Prepared for the National Aeronautics and Space Administration. 1990. 60 p. (NC, Da, M.)

OF 90-0469. MONTANA. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Sleeping Giant Wilderness Study Area (MT-075-111), Lewis and Clark County, Montana, by M. J. Malcolm and R. R. Carlson. 1990. 18 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0470. MONTANA, IDAHO. An assessment of metal endowments in revett-type sediment hosted Cu deposits in the Kootenai National Forest, Montana and Idaho, by G. T. Spanski and G. E. McKelvey. 1990. 44 p. (NC, Da, M, Db, S, U, SF; Idaho Geol. Surv., Univ. of Idaho, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0473. Computer programs in HP 9845 BASIC for modeling and interpreting multiple-layer, plane-interface shallow refraction seismics, by W. P. Hasbrouck. 1990. 56 p. (NC, Da, M.)

OF 90-0477. Integrating petroleum-occurrence information into a basin-classification system, by M. W. Bultman. 1990. 22 p. (NC, Da, M.)

OF 90-0478. Stratigraphy, descriptions, and physical properties of sediments cored in Lake Michigan, by S. M. Colman and D. S. Foster. 1990. 92 p. (NC, Da, M.)

OF 90-0479. DISTRICT OF COLUMBIA. Deterioration of building stones in Washington, DC; a field trip guide, by E. S. McGee. 1990. 16 p. (NC.)

OF 90-0481. CALIFORNIA. Strong-motion records from earthquakes of June 13, 1988, November 10, 1988, and April 3, 1989, on the Calaveras Fault, Central California, by M. J. Salsman and J. C. Switzer. 1990. 36 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0482. Rehydration of desiccated Argonne premium coal samples, by M. R. Krasnow and R. B. Finkelman. 1990. 6 p. (NC, Da, M, U.)

OF 90-0483. CALIFORNIA. The Southern California Network Bulletin, January-December, 1989, by L. A. Wald, D. D. Given, L. M. Jones and L. K. Hutton. 1990. 22 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0484. MONTANA. A preliminary study of thermometry and metal sources of the Spar Lake strata-bound copper-silver deposit, Belt Supergroup, Montana, by T. S. Hayes. 1990. 30 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0487. IDAHO. Lithologic description of the Site E corehole, Idaho National Engineering Laboratory, Butte County, Idaho, by L. A. Morgan. 1990. 7 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0488-A. GSMROSE, a program to plot rose diagrams from linear data in GSDRAW and GSMAP data bases, using a microcomputer (IBM PC or compatible) and plotter, by G. I. Selner and R. B. Taylor. 1990. 15 p. (NC, Da, M.)

OF 90-0488-B. GSMROSE, a program to plot rose diagrams from linear data in GSDRAW and GSMAP data bases, using a microcomputer (IBM PC or compatible) and plotter, by G. I. Selner and R. B. Taylor. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

GSMROSE requires an IBM PC or compatible microcomputer with at least 512K random access memory operating under DOS 2.0 or higher and a math coprocessor chip. A graphics adapter and matching monitor is required for plots to the screen. CGA graphics can be used but lack sufficient resolution for satisfactory graphical results. EGA VGA or Hercules monochrome graphics are desirable. A plotter that uses or emulates the Hewlett Packard Graphics Language (HPGL) at a level at or above that of the HP 7475A is required for hard-copy plots. HPGL files can be generated for use by programs such as QUEIT, or by a variety of proprietary programs. A printer connected to parallel port 1 (LPT:1) is required to make prints of data tables.

OF 90-0489. WYOMING. Moving particules (bacteria?) in fluid inclusions from Yellowstone National Park, Wyoming, by K. E. Bargar and R. O. Fournier. 1990. 16 p., 1 video tape. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0490. NEW MEXICO, ARIZONA. Preliminary geologic map of the Goat Camp Spring Quadrangle, Grant County, New Mexico, and Greenlee County, Arizona, by D. C. Hedlund. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0491. CALIFORNIA. Analytical results and sample locality map of stream-sediment, and panned-concentrate samples from the Hayfork 1:100,000 Quadrangle (northwest quarter of the Redding, California 1:250,000 Quadrangle), Trinity and Humboldt counties, California, by S. M. Smith, M. L. Silberman, R. M. O'Leary and M. S. Erickson. 1990. 46 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0492. Borehole magnetometry: detection of a steel liner from a nearby observation borehole, by P. N. Nelson. 1990. 24 p. (NC, Da, M.)

OF 90-0493. Element levels in selected soils and plants, Wattenmeer National Park, North and East Frisian Islands, Federal Republic of Germany, by R. C. Severson, L. P. Gough and G. van den Boom. Prepared in cooperation with the Bundesanstalt für Geowissenschaften und Rohstoffe, Germany. 1990. 43 p. (NC, Da, M.)

OF 90-0494. UTAH. Preliminary geologic map of the Paragonch Quadrangle, Iron County, Utah, by Florian Maldonado and V. S. Williams. 1991. 13 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0495. UTAH. Preliminary geologic map of the Parawan Gap Quadrangle, Iron County, Utah, by Florian Maldonado and V. S. Williams. 1991. 15 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0496. CALIFORNIA. Maps showing elevation of bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California, by W. H. Hensolt and E. E. Brabb. 1990. 11 p., 2 over-size sheets, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0497. CALIFORNIA, ARIZONA. Preliminary geologic map of the Blythe 30′ by 60′ Quadrangle, California and Arizona, by Paul Stone. 1990. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Db, SF, LA, U; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0499. CALIFORNIA. The Southern California Network Bulletin, January-December, 1988, by L. A. Wald, D. D. Given, J. J. Mori, L. M. Jones and L. K. Hutton. 1990. 45 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0501. ALASKA. Results of inductively coupled plasma-atomic emission spectroscopy analyses of minus 30-mesh stream-sediment samples from within and adjacent to the National Petroleum Reserve Alaska, by K. D. Kelley, K. E. Slaughter and J. M. Motooka. 1990. 19 p., 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, A, LA, S, SF; Jill L. Schneider, Technical Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0502. CALIFORNIA. Cruise Report of R/V S.P. Lee, Leg 4, 1990, California continental borderland, by R. G. Bohannon, S. L. Eittreim and J. R. Childs. 1990. 10 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0504. ARIZONA. Geology, geochemistry, and mineralogy of the Ridenour Mine breccia pipe, Arizona, by K. J. Wenrich, E. R. Verbeek, H. B. Sutphin, P. J. Modreski, B. S. Van Gosen and D. E. Detra. Prepared in cooperation with the Hualapai Tribe. 1990. 66 p. (NC, Da, M, Db, U, SF, LA; Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0505. NEW MEXICO. Preliminary geologic map and sections of part of the Canador Peak 15′ Quadrangle, Grant and Hidalgo counties, New Mexico, by D. C. Hedlund and T. L. Finnell. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0507. HAWAII. Tabulation of CO_2, SO_2, and He concentrations in summit fumarole gases and wind and rainfall data at Kilauea Volcano, Hawaii for the period June 1987–February 1989, by M. E. Hinkle and J. B. Stokes. 1990. 27 p. (NC, Da, M, LA, SF; Division of Water and Land Development, P.O. Box 373, Honolulu, HI 96809.)

OF 90-0508. Workshop on Application of structural geology to mineral and energy resources of the Central region, by C. H. Thorman. 1990. 17 p. (NC, Da, M.)

Introduction to a workshop on Application of structural geology to mineral and energy resources of the Central region, by C. H. Thorman. p. 1.

Tectonic controls on deposition and source-rock properties of the Woodford Shale, Anadarko Basin, Oklahoma; loading, subsidence, and forebulge development, by T. C. Hester, J. W. Schmoker and H. L. Sahl. p. 2.

Microstructures in the Cambrian Bonneterre Formation and Lamotte Sandstone of Southeast Missouri; sulfide occurrence in stylolites and extensional veinlets, by S. F. Diehl and M. B. Goldhaber. p. 2-5.

Ash-flow calderas as structural controls of ore deposits; recent work and future problems, by P. W. Lipman. p. 5.

Audio-magnetotelluric investigation at Turkey Creek Caldera, Chiricahua Mountains, southeastern Arizona, by R. M. Senterfit and D. P. Klein. p. 5-6.

Mesozoic structural control of Tertiary mineralized veins in Champagne Creek area, Butte County, Idaho, by B. A. Skipp and R. G. Worl. p. 6-9.

Influence of crustal structure on the course of Arkansas River, south-central Colorado; some observations, by Kenneth Watson, D. H. Knepper, Jr. and M. W. Webring. p. 10.

Structural and basement lithological implications from gravity and seismic-reflection data in Laramide mountain ranges and basins of Wyoming and Montana, by S. L. Robbins and J. A. Grow. p. 11.

Sequential Laramide deformation of the Rocky Mountain foreland, by W. J. Perry, Jr., T. S. Dyman and D. J. Nichols. p. 11-12.

Structural setting of the Chief mining district, eastern Chief Range, Lincoln County, Nevada, by P. D. Rowley, L. W. Snee, H. H. Mehnert, R. E. Anderson, G. J. Axen, K. J. Burke, F. W. Simonds and R. R. Shroba. p. 12-13.

Geology and high-precision $^{40}Ar/^{39}Ar$ geochronology of Keg Mountain, west-central Utah; implication for volcanic history and mineral deposits, by M. A. Shubat and L. W. Snee. p. 13-14.

Sevier-age structures and their control of Tertiary mineralization at the Drum Mine, west-central Utah, by C. J. Nutt, C. H. Thorman and R. W. Gloyn. p. 14-15.

Geology, age, and origin of fracture-controlled mineral deposits of the Idaho Batholith; importance of Cretaceous mineralization, by L. W. Snee, Karen Lund and C. H. Gammons. p. 15-16.

Seismic reflection data reveal buried late Paleozoic structures beneath the southern Uinta Basin, by C. J. Potter, R. L. Tang and T. J. Hainsworth. p. 16.

Extensional geometries in the northern Grant Range, east-central Nevada; implications for oil occurrences in Railroad Valley, by Karen Lund and L. S. Beard. p. 17.

OF 90-0509-A. FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model, by R. A. Crovelli and R. H. Balay. 1990. 23 p. (NC, Da, M.)

OF 90-0509-B. FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model, by R. A. Crovelli and R. H. Balay. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

Requirements: IBM PC or compatible; minimum 256K RAM; 8087 math coprocessor; MS-DOS 3.1 or equivalent; printer able to print 132 columns.

OF 90-0518. ARIZONA. Mineral resources of the Wabayuma Peak Wilderness Study Area, Mohave County, Arizona, by C. M. Conway, J. R. Hassemer, D. H. Knepper, Jr., J. A. Pitkin, R. C. Jachens and M. L. Chatman. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 73 p. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0521. ARIZONA. Mineral resources of the Swansea Wilderness Study Area, La Paz and Mohave counties, Arizona, by R. M. Tosdal, R. G. Eppinger, H. R. Blank, Jr., D. H. Knepper, Jr., A. J. Gallagher, J. A. Pitkin, S. L. Jones and G. S. Ryan. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 25 p., 1 over-size sheet. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0523. CALIFORNIA. Late Cretaceous pollen from the Salinian(?) suspect terrane at Pigeon Point, San Mateo County, California, by N. O. Frederiksen. 1990. 18 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol.,

660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0524. Chemical and physical characteristics of coal and carbonaceous shale samples from the Salt Range coal field, Punjab Province, Pakistan, by P. D. Warwick, T. Shakoor, Shahid Javed, S. T. Mashhadi, H. Hussain, M. Anwar and M. I. Ghaznavi. Prepared jointly by the Geological Survey of Pakistan and the U.S. Geological Survey. 1990. 44 p. (NC, Da, M.)

OF 90-0525. HAWAII. The Hawaiian Volcano Observatory polling telemetry system for low frequency data acquisition, by G. S. Puniwai, K. T. Honma and A. J. Largo. 1990. 73 p. (NC, Da, M, SF, LA.)

OF 90-0526. U.S. Geological Survey Library classification system, by R. S. Sasscer. 1990. 124 p. (NC, Da, M.)

OF 90-0528. MONTANA. Analytical results for 147 water samples from the Elkhorn Wilderness Study Area, Broadwater and Jefferson counties, Montana, by J. B. McHugh, W. H. Ficklin and W. R. Miller. 1990. 11 p. (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0529. UTAH. Analyses of rock samples from the Central mining and intrusive area, Marysvale, Utah, by J. B. McHugh, R. T. Hopkins, Jr., W. R. Miller and R. E. Tucker. 1990. 22 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0530. FORMATIONTOPS (version 1); a system to retrieve formation tops data, by C. J. Wandrey and R. C. Obuch. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

Requirements: VAX/VMS based computers, Fortran 77 compiler, ISM 6.93, ICT 20, INGRES data base manager version 6.3, and ANSI terminal. The included 5.25 inch low density diskette in IBM PC compatible format contains documentation, source code, and an executable program in ASCII files format and may be uploaded onto a VAX 11/780 computer.

OF 90-0531. HAWAII. Summary of geotechnical and hydrologic data collected through April 30, 1990, for the Alani-Paty Landslide, Manoa Valley, Honolulu, Hawaii, by R. L. Baum, S. R. Spengler, J. D. Torikai and L. A. Liu. Prepared in cooperation with the City and County of Honolulu, Department of Public Works. 1990. 67 p. (NC, Da, M, LA, SF; Div. of Water and Land Dev., P.O. Box 373, Honolulu, HI 96809.)

OF 90-0532. The Central Pacific transect; cruise report of the research vessel Akademik Selskiy, by H. S. Gnibidenko, S. L. Eittreim, C. E. Helsley, P. H. McClellan and H. F. Ryan. 1990. 13 p. (NC, Da, M.)

OF 90-0534. CALIFORNIA. Checklists of Jurassic and Cretaceous macrofauna from U.S. Geological Survey collections within the San Jose 1:100,000 map sheet, California, by W. P. Elder and J. W. Miller. 1990. 28 p., 3 over-size sheets; 1 sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0535. OREGON. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the South Fork and Sand Hollow Wilderness Study Areas, Crook County, Oregon, by B. M. Adrian, H. D. King, D. L. Fey and K. R. Kennedy. 1990. 18 p., 1 over-size sheet. (NC, Da, M, LA, SF, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528.)

OF 90-0536. CALIFORNIA. Ground-water exploration using deep Schlumberger soundings at Edwards-AFB, California; Part I, Graham Ranch and Rogers Lake, by A. A. Zohdy and R. J. Bisdorf. 1990. 95 p. (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0537. Coastal ice and sediment samples; shoreface and ice profiles (southern Lake Michigan, February, December 1989, and February, April 1990), by Michael McCormick, E. C. Hayden, W. S. Weber, P. W. Barnes, Erk Reimnitz and E. W. Kempema. 1990. 196 p. (NC, Da, M; Indiana Geol. Surv., 611 North Walnut Grove, Bloomington, IN 47405.)

OF 90-0538. Origin and ages of mineralization of Bayan Obo, the world's largest rare earth ore deposit, Inner Mongolia, China, by E. C. Chao, Mitsunobu Tatsumoto, R. L. Erickson, J. A. Minkin, J. M. Back, R. V. Buden, P. M. Okita, Hou Zonglin, Meng Qingrun, Ren Yingchen, Sun Weijun, E. H. McKee, B. D. Turrin, Wang Junwen, Li Xibin and C. A. Edwards. 1990. 11 p. map scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M.)

OF 90-0539-A. GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS), by G. I. Selner and J. L. Plesha. 1990. 10 p. (NC, Da, M.)

OF 90-0539-B. GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS), by G. I. Selner and J. L. Plesha. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

GSMGRASS was written and tested using the Microsoft QuickBASIC Compiler Release 4.00b. The program described in this document should execute correctly on IBM PC/XT/AT microcomputers, and requires the following: at least 512 RAM, a hard disk, and a 8087 math co-processor. The program was tested on a Compaq Portable III with 640K of RAM memory and DOS 3.31. The minimum software required to use the program is MS-DOS (or PC-DOS) 2.0 or higher and the Open-File release diskette.

OF 90-0540. ARIZONA. Geologic map of the Purgatory Canyon Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0541. ARIZONA. Geologic map of the Wolf Hole Mountain West Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0542. UTAH, ARIZONA. Preliminary geologic map of the Kanab 30- by 60-minute Quadrangle, Utah-Arizona, by E. G. Sable and Richard Hereford. 1990. 2 over-size sheets, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Db, U, LA, SF; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0543. COLORADO. Measurement of ridge-spreading movements (sackungen) at Bald Mountain, Lake County, Colorado, 1975-1989, by D. J. Varnes, D. H. Radbruch-Hall, K. L. Varnes, W. K. Smith and W. Z. Savage. 1990. 13 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 90-0544-A. MINNESOTA. Preliminary bedrock geologic map of the Roseau 1° × 2° Quadrangle, Minnesota, U.S.A., and Ontario, Canada, by W. C. Day, T. L. Klein and K. J. Schulz. 1991. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)

OF 90-0544-B. MINNESOTA. Preliminary bedrock geologic map of the Roseau 1° × 2° Quadrangle, Minnesota, U.S.A., and Ontario, Canada, by W. C. Day, T. L. Klein and K. J. Schulz. 1991. 3 p., one 5 1/4 inch diskette. (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)

Digital data, GSMAP version 7.0 format, 1.6MB.

OF 90-0545. IDAHO. Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho, by B. M. Adrian, J. A. Erdman, J. H. Bullock, Jr. and P. L. Hageman. 1990. 26 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0546. NEW MEXICO. Preliminary geologic map of the Eagle Peak Quadrangle, Catron County, New Mexico, by D. J. Bove. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 90-0547. CALIFORNIA. Photographs of the October 17th 1989 Loma Prieta, California earthquake, by J. K. Nakata, C. E. Meyer, H. G. Wilshire, J. C. Tinsley, III and W. S. Updegrove. 1990. 16 p., 102 35-mm color slides. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0548. VIRGINIA. Geology of part of the northern Virginia Piedmont, by Louis Pavlides. 1990. 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, Wa; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rd., P.O. Box 3667, Charlottesville, VA 22903.)

OF 90-0549. Bibliography of Gulf Coast lignite geology, by S. J. Tewalt, R. B. Finkelman and R. L. Barnett. 1990. 43 p. (NC, Da, M; Geol. Surv. of Alabama, 420 Hackberry Lane, P.O. Box O, Tuscaloosa, AL 35486-9780; Bur. of Geol., P.O. Box 5348, Jackson, MS 39296.)

OF 90-0550. VIRGINIA. Geologic map of the coastal plain part of the Joplin Quadrangle, Stafford and Prince William counties, Virginia, by R. B. Mixon. 1990. 4 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wa; Virginia Div. of Mineral Resources, Natural Resources Bldg., Alderman and McCormick Rd., P.O. Box 3667, Charlottesville, VA 22903.)

OF 90-0551. Report of the River Master of the Delaware River for the period December 1, 1988 to November 30, 1989, by S. P. Sauer, W. E. Harkness, and B. E. Krejmas; *with a section on* Water quality, by K. E. White. 1990. 89 p. (NC, Da, M, Wb.)

OF 90-0552. MISSOURI. Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990, by M. J. Kleeschulte and P. W. Cross. Prepared in cooperation with the U.S. Department of Energy. 1990. 117 p. (NC, Da, M, Wb.)

OF 90-0553. ARIZONA. Climatic variability and flood frequency of the Santa Cruz River, Pima County, Arizona, by R. H. Webb and J. L. Betancourt. Prepared in cooperation with the Pima County Department of Transportation and Flood Control District. 1990. 69 p. (NC, Da, M, Wb; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ 85016; 1940 South 3rd Ave., Yuma, AZ 85364; and 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ 86001.)

OF 90-0554. Evaluation of selected methods for determining streamflow during periods of ice effect, by N. B. Melcher and J. F. Walker. 1990. 51 p. (NC, Da, M, Wb; USGS, WRD, 6417 Normandy Lane, Madison, WI 53719; and Room 269, Federal Bldg., 400 South Clinton St., Iowa City, IA 52244.)

OF 90-0555. FLORIDA. Potentiometric surface of the intermediate aquifer system, west-central Florida, May 1990, by L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1990. 1 over-size sheet. (NC, Da, M, Wb.)

OF 90-0556. FLORIDA. Potentiometric surface of the upper Floridan Aquifer, west-central Florida, May 1990, by L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1990. 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb.)

OF 90-0557. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, May 1990, by L. C. Murray. 1990. 1 over-size sheet. (NC, Da, M, Wb.)

OF 90-0558. ARKANSAS. Ground-water levels in the alluvial aquifer in eastern Arkansas, 1989, by P. W. Westerfield and C. R. Baxter. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission, the U.S. Soil Conservation Service, and local conservation districts. 1990. 35 p. (NC, Da, M, Wb.)

OF 90-0560. NEVADA, UTAH. Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states, by T. J. Burbey and D. E. Prudic. 1991. 89 p. (NC, Da, M, Wb.)

OF 90-0562. CALIFORNIA. Plankton studies in San Francisco Bay, California; XI, Chlorophyll distribution and hydrographic properties of San Francisco Bay, 1988-89, by S. M. Wienke, B. E. Cole and J. E. Cloern. 1990. 211 p. (NC, Da, M, Wb.)

OF 90-0564. Bibliography on sampling ground water for organic compounds, by Jacob Gibs, T. E. Imbrigiotta and K. S. Turner.

1990. 22 p. (NC, Da, M, Wb; USGS, WRD, Mountain View Office Park, 810 Bear Tavern Rd., Suite 206, West Trenton, NJ 08628.)

OF 90-0565. IDAHO. Nutrients, pesticides, surfactants, and trace metals in ground water from the Howe and Mud Lake areas upgradient from the Idaho National Engineering Laboratory, Idaho, by D. D. Edwards, R. C. Bartholomay and C. M. Bennett. Prepared in cooperation with the U.S. Department of Energy. 1990. 19 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0567. ALABAMA. Water-resources publications for Alabama, 1857-1990, by E. A. Meadows and H. H. Jeffcoat. 1990. 53 p. (NC, Da, M, Wb.)

OF 90-0568. MONTANA. A geographic information system data base for coal and water resources of the Powder River coal region, southeastern Montana, by M. R. Cannon. Prepared in cooperation with the Montana Department of State Lands and the U.S. Bureau of Land Management. 1990. 83 p. (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626.)

OF 90-0570. OKLAHOMA. Geohydrology and water quality of the Roubidoux Aquifer, northeastern Oklahoma, by S. C. Christenson, D. L. Parkhurst and R. W. Fairchild. Prepared in cooperation with the Oklahoma Geological Survey. 1990. 110 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb; USGS, WRD, 215 Dean A. McGee Ave., Oklahoma City, OK 73102.)

OF 90-0572. MARYLAND. Water withdrawal and use in Maryland, 1987, by J. C. Wheeler. Prepared in cooperation with the Maryland Water Resources Administration and the Maryland Geological Survey. 1991. 28 p. (NC, Da, M, Wb; USGS, WRD, 208 Carroll Bldg., 8600 LaSalle Road, Towson, MD 21204.)

OF 90-0573. CALIFORNIA. Calibration of a texture-based model of a ground-water flow system, western San Joaquin Valley, California, by S. P. Phillips and K. R. Belitz. Prepared in cooperation with the San Joaquin Valley Drainage Program. 1990. 30 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, 2800 Cottage Way, Room W-2234, Federal Bldg., Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 90-0575. Archiving on-line data to optical disk, by J. L. Porter, J. L. Kiesler and D. A. Stedfast. 1990. 15 p. (NC, Da, M, Wb.)

OF 90-0577. MONTANA. Annual peak discharges from small drainage areas in Montana through September 1989, by J. A. Hull and R. J. Omang. Prepared in cooperation with the Montana Department of Highways and the U.S. Department of Transportation. 1990. 143 p. (NC, Da, M, Wb, Db, S, U; USGS, WRD, 301 South Park Ave., Helena, MT 59626-0076; and Field Headquarters, Eastern Montana Coll., Box 111, 1500 North 30th, Billings, MT 59101.)

OF 90-0578. NEW MEXICO. Construction, lithologic, and geophysical data from monitoring wells in Albuquerque, Bernalillo County, New Mexico, by S. F. Richey. Prepared in cooperation with the Environmental Health Department, City of Albuquerque. 1991. 83 p. (NC, Da, M, Wb, Db, U; USGS, WRD, 4501 Indian School Rd. NE, Suite 200, Albuquerque, NM 87110.)

OF 90-0579. OKLAHOMA. Hydrogeologic maps of the Central Oklahoma Aquifer, Oklahoma, by S. C. Christenson, R. B. Morton and B. A. Mesander. 1990. 3 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, Wb; USGS, WRD, 202 NW 66th St., Bldg. 7, Oklahoma City, OK 73116.)

OF 90-0581. KANSAS, NEBRASKA. Surface-water-quality assessment of the lower Kansas River basin, Kansas and Nebraska; concentrations of major metals and trace elements in streambed sediments, 1987, by D. Q. Tanner, R. F. Sanzolone and R. B. Zelt. 1990. 73 p. (NC, Da, M, Wb; USGS, WRD, 4821 Quail Pl., Lawrence, KS 66049; 206 Fulton Terrace, Garden City, KS 67846; and Room 406 Federal Bldg., Lincoln, NE 68508.)

OF 90-0582. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the Suwannee River Water Management District, Florida, May 1990, by P. E. Meadows. Prepared in cooperation with the Suwannee River Water Management District. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

OF 90-0583. IOWA. A summary of water-resources activities for the U.S. Geological Survey in Iowa, fiscal year 1990, compiled by R. A. Karsten. 1990. 49 p. (NC, Da, M, Wb.)

OF 90-0584. WASHINGTON. Selected references for the Puget-Willamette Lowland Regional Aquifer-System Analysis, Puget Sound lowland, Washington, by M. A. Jones. 1991. 55 p. (NC, Da, M, Wb, LA, S; USGS, WRD, 1201 Pacific Ave., Suite 600, Tacoma, WA 98402; and Room 656, U.S. Court House, West 920 Riverside Ave., Spokane, WA 99201.)

OF 90-0586. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the Northwest Florida Water Management District, May 1990, by P. E. Meadows. Prepared in cooperation with the Florida Department of Environmental Regulation. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

OF 90-0587. VIRGINIA. Annual maximum stages and discharges of selected streams in Virginia through 1988, by B. J. Pugh, Jr., E. H. Nuckels and C. G. Humphrey. Prepared in cooperation with the Virginia Department of Transportation. 1991. 442 p. (NC, Da, M, Wb; USGS, WRD, Virginia State Office, 3600 West Broad St., Richmond, VA 23230.)

OF 90-0589. UTAH. Water resources activities in Utah by the U.S. Geological Survey, October 1, 1988 to September 30, 1989, compiled by J. S. Gates and S. A. Dragos. 1990. 56 p. (NC, Da, M, Wb.)

OF 90-0590. OHIO. Selected geologic and hydrologic data for the regional carbonate-bedrock and glacial aquifers in western Ohio, by R. A. Sheets. 1991. 43 p. (NC, Da, M, Wb; USGS, WRD, 975 West 3rd Ave., Columbus, OH 43212.)

OF 90-0591. ALASKA. Hydrologic conditions at Anaktuvuk Pass, Alaska, 1989, by H. R. Seitz. Prepared in cooperation with the North Slope Borough. 1991. 13 p. (NC, Da, M, Wb, A; USGS, WRD, 4230 University Dr., Suite 201, Anchorage, AK 99508-4664; and 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 90-0593. NORTH DAKOTA. Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota, by G. J. Wiche, S. K. Jenson, J. V. Baglio and J. O. Domingue.

Prepared in cooperation with the U.S. Bureau of Reclamation. 1990. 39 p., 6 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wb.)

OF 90-0595. NEVADA. Bibliography of selected water-resources publications on Nevada by the U.S. Geological Survey, 1885 through 1990, by R. L. Bunch. 1991. 41 p. (NC, Da, M, Wb, LA, SF, U; USGS, WRD, Room 224, Federal Bldg., 705 North Plaza St., Carson City, NV 89701; and 1500 East Tropicana, Suite 201, Las Vegas, NV 89119.)

OF 90-0596. FLORIDA. Public-supply water use in Florida, 1987, by R. L. Marella. Prepared in cooperation with the Florida Department of Environmental Regulation, Northwest Florida Water Management District, St. Johns River Water Management District, South Florida Water Management District, Southwest Florida Water Management District, and Suwannee River Water Management District. 1990. 39 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

OF 90-0597. IDAHO. Results of test drilling and hydrologic monitoring in the Indian Bathtub area, Owyhee County, southwestern Idaho, January 1989 through September 1990, by H. W. Young, M. L. Jones, D. J. Parliman and A. M. Tungate. Prepared in cooperation with the U.S. Fish and Wildlife Service. 1990. 40 p. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702; and Idaho National Engineering Laboratory, CF-690, Room 164, Idaho Falls, ID 83403.)

OF 90-0599. The Water Data Sources Directory of the NAWDEX, western region, by C. D. Blackwell. 1990. 789 p. (NC, Da, M, Wb.)

OF 90-0600-A. Preliminary determination of epicenters monthly listing January-March 1990, by National Earthquake Information Center. 1990. 92 p. (NC, Da, M.)

OF 90-0600-B. Preliminary determination of epicenters monthly listing April-June 1990, by National Earthquake Information Center. 1990. 96 p. (NC, Da, M.)

OF 90-0600-C. Preliminary determination of epicenters monthly listing July-September 1990, by National Earthquake Information Center. 1990. 100 p. (NC, Da, M.)

OF 90-0600-D. Preliminary determination of epicenters monthly listing October-December 1990, by National Earthquake Information Center. 1990. 88 p. (NC, Da, M.)

OF 90-0603-A. Earthquake data report, March 1990, by National Earthquake Information Center. 1990. 341 p. (NC, Da, M.)

OF 90-0603-B. Earthquake data report, March 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE MR, etc.).

OF 90-0604-A. Earthquake data report, April 1990, by National Earthquake Information Center. 1990. 347 p. (NC, Da, M.)

OF 90-0604-B. Earthquake data report, April 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0605-A. Earthquake data report, May 1990, by National Earthquake Information Center. 1990. 374 p. (NC, Da, M.)

OF 90-0605-B. Earthquake data report, May 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0606-A. Earthquake data report, June 1990, by National Earthquake Information Center. 1990. 313 p. (NC, Da, M.)

OF 90-0606-B. Earthquake data report, June 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0607-A. Earthquake data report, July 1990, by National Earthquake Information Center. 1990. 420 p. (NC, Da, M.)

OF 90-0607-B. Earthquake data report, July 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0608-A. Earthquake data report, August 1990, by National Earthquake Information Center. 1990. 357 p. (NC, Da, M.)

OF 90-0608-B. Earthquake data report, August 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0609-A. Earthquake data report, September 1990, by National Earthquake Information Center. 1990. 266 p. (NC, Da, M.)

OF 90-0609-B. Earthquake data report, September 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0610-A. Earthquake data report, October 1990, by National Earthquake Information Center. 1990. 307 p. (NC, Da, M.)

OF 90-0610-B. Earthquake data report, October 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0611-A. Earthquake data report, November 1990, by National Earthquake Information Center. 1990. 280 p. (NC, Da, M.)

OF 90-0611-B. Earthquake data report, November 1990, by National Earthquake Information Center. 1990. Three 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0612-A. Earthquake data report, December 1990, by National Earthquake Information Center. 1990. 351 p. (NC, Da, M.)

OF 90-0612-B. Earthquake data report, December 1990, by National Earthquake Information Center. 1990. Four 5 1/4 inch diskettes. (NC, Da, M.)

The EDR data are written on 1.2MB, high density, 5 1/4 inch diskettes and are readable by IBM PC or compatible computers running DOS version 2.0 or higher. All files are ASCII and the documentation is given in file AAREADME.DAT on the first disk. Succeeding disks are a continuation of the data file which starts on the first disk. Each disk contains a title page file, named AATPAGEn.DAT, and a data file, OFEDRmmn.DAT, where n is the disk number and mm is a two-character code for the month (JA, FE, MR, etc.).

OF 90-0613. Dinoflagellate-cyst census data from the seabed samples of Wall and others (1977) and Turon (1984), by L. E. Edwards and V. A. Andrle. 1990. 43 p. (NC, Da, M, SF, LA; New York State Geol. Surv., 3136 Cultural Education Ctr., Empire State Plaza, Albany, NY 12230.)

OF 90-0614. Oil and gas resource assessment areas for 1987 assessment, lower 48 states, compiled by K. L. Varnes, D. L. Dolton and R. F. Mast. 1990. 1 over-size sheet, scale 1:5,000,000 (1 inch = about 80 miles). (NC, Da, M.)

OF 90-0615. GEOTRANS; an interface program from GEOPROGRAM to a geographic information system, by S. P. Schilling. 1991. 86 p. (NC, Da, M.)

OF 90-0616-A. SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis, by E. A. du Bray, J. E. Quick, G. I. Selner and J. S. Pallister. 1990. 27 p. (NC, Da, M.)

OF 90-0616-B. SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis, by E. A. du Bray, J. E. Quick, G. I. Selner and J. S. Pallister. 1990. One 5 1/4 inch diskette. (NC, Da, M.)

The software runs on IBM PC, XT, AT, or compatibles with at least 384K RAM and one disk drive. The programs require a graphics adapter to execute. Some require an Enhanced Graphics Adapter. RAM-resident screen printing routines (GRAPHICS.COM and (or) EGAEPSON.COM.) are required to perform screen dumps to printers. All programs run under IBM- or MS-DOS 2.0 or higher and require QuickBASIC module BRUN30.EXE, which is provided. (WordPerfect 5.1)

OF 90-0616-C. SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis, by E. A. du Bray, J. E. Quick, G. I. Selner and J. S. Pallister. 1990. Two 5 1/4 inch diskettes. (NC, Da, M.)

The software runs on IBM PC, XT, AT, or compatibles with at least 384K RAM and one disk drive. The programs require a graphics adapter to execute. Some require an Enhanced Graphics Adapter. RAM-resident screen printing routines (GRAPH-

ICS.COM and (or) EGAEPSON.COM.) are required to perform screen dumps to printers. All programs run under IBM- or MS-DOS 2.0 or higher and require QuickBASIC module BRUN30.EXE, which is provided.

OF 90-0617. Geochemical survey of the Sauk Sequence of the Western United States, by A. T. Miesch and J. J. Connor. 1990. 258 p. (NC, Da, M.)

OF 90-0618. NEVADA. Mineral resources of an addition to the Black Rock Desert Wilderness Study Area, Humboldt County, Nevada, by M. F. Diggles and J. E. Olson. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 12 p. (NC, Da, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0619. NEVADA. Mineral resources of the Queer Mountain Wilderness Study Area, Esmeralda County, Nevada, by M. F. Diggles and A. M. Leszcykowski. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 13 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0620. NEVADA. Mineral resources of the Grapevine Mountain Wilderness Study Area, Esmeralda County, Nevada, by M. F. Diggles and A. M. Leszcykowski. 1990. 12 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0621-A. VERMONT. Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers, by C. A. Baskerville. 1991. 4 p. Map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

OF 90-0621-B. VERMONT. Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

An IBM PC XT or AT or compatible microcomputer with a DOS version 2.1 or higher operating system is required. To obtain a full scale hard copy of the map, a plotter such as the Hewlett Packard Draftmaster I can be used. Documentation is available in paper copy, OF 90-621-A. Executable and data files are available on diskettes, OF 90-621 B-F.

OF 90-0621-C. VERMONT. Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0621-D. VERMONT. Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0621-E. VERMONT. Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0621-F. VERMONT. Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers, by C. A. Baskerville. 1991. One 5 1/4 inch diskette, map scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

For software/hardware requirements see OF 90-621-B.

OF 90-0622. NEVADA. Preliminary geologic map of the Delamar NW Quadrangle, Lincoln County, Nevada, by W C Swadley and R. B. Scott. 1990. 11 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0623. NEVADA. Geology of the Rainier Mesa-Aqueduct Mesa tunnel areas; U12n Tunnel, by D. L. Hoover and J. E. Magner. Prepared in cooperation with the U.S. Department of Energy and the U.S. Defense Nuclear Agency. 1990. 51 p., 5 over-size sheets. (NC, Da, M, S, SF, LA; Geol. and Earth Resour. Div., Dep. of Natural Resources, Olympia, WA 98504; David A. Johnston Cascade Volcano Observatory, 5400 MacArthur Blvd., Vancouver, WA 98661.)

OF 90-0624. UTAH. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples in and adjacent to the Scorpion Wilderness Study Area, Garfield and Kane counties, Utah, by D. E. Detra, J. L. Jones, D. L. Fey and R. B. Vaughn. 1990. 18 p., 1 over-size sheet, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0625. Instructions for use of U.S. Geological Survey standard field note summary form for visit to remote seismograph station, prepared by W. D. Hall. 1990. 12 p. (NC, Da, M.)

OF 90-0626. COLORADO. Stable isotope systematics and magmatic and hydrothermal processes in the Summitville, CO gold deposit, by R. O. Rye, R. E. Stoffregen and P. M. Bethke. 1990. 31 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 90-0627. CALIFORNIA. Exploratory wells drilled in the Los Angeles 1:100,000 Quadrangle, California (to accompany preliminary map of exploratory wells showing bottom-hole geology drilled in the Los Angeles 1:100,000 Quadrangle), by R. F. Yerkes and P. K. Showalter. 1990. 46 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0628. CONNECTICUT. Principal facts for gravity stations in central Connecticut, by D. L. Daniels. 1990. 11 p., one 5 1/4 inch diskette. (NC, Da, M; Natural Resources Ctr., Connecticut Geol. and Natural History Surv., 165 Capitol Ave., Room 553, Hartford, CT 06106.)

Principal facts for 235 new gravity stations are listed on the paper copy and in digital form on one 5 1/4 inch 360K diskette (IBM PC or compatible).

OF 90-0629. CALIFORNIA. Contra Costa County, California; selected earth sciences references, by E. R. White. 1990. 19 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131;

367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0630. CALIFORNIA. Alameda County, California; selected references to the geologic environment, by J. H. Freeberg. 1990. 25 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0631. WASHINGTON. Preliminary geologic map of the Cougar Quadrangle, Cowlitz and Clark counties, Washington, by R. C. Evarts and R. P. Ashley. Prepared in cooperation with the Washington Department of Natural Resources. 1990. 40 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave., Lacey, WA 98503.)

OF 90-0632. WASHINGTON. Preliminary geologic map of the Goat Mountain Quadrangle, Cowlitz County, Washington, by R. C. Evarts and R. P. Ashley. Prepared in cooperation with the Washington Department of Natural Resources. 1990. 47 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave., Lacey, WA 98503.)

OF 90-0634-A. An installation guide to the PC-based time-series data-management and plotting program BOB, by T. L. Murray. 1990. 25 p. (NC, Da, M.) (User's guide is Open-file report 90-56.)

OF 90-0634-B. An installation guide to the PC-based time-series data-management and plotting program BOB, by T. L. Murray. 1990. Two 5 1/4 inch diskettes. (NC, Da, M.) (User's guide is Open-file report 90-56.)

Requirements: IBM XT or compatible; minimum 640K RAM; math coprocessor; minimum 10MB hard drive; Geograf graphics utilities (for device graphics drivers), GeoComp Corp., Concord, MA.

OF 90-0635. Tektites in Cretaceous-Tertiary boundary rocks on Haiti, by G. A. Izett, F. J. Maurrasse, F. E. Lichte, G. P. Meeker and Robin Bates. 1990. 31 p. (NC, Da, M.)

OF 90-0636-A. Neogene time scale, compiled by J. A. Bartow. 1990. 1 over-size sheet. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0637-A. Bibliography of well-log applications; cumulative edition (through 1 September 1990), by S. E. Prensky. 1990. 360 p. (NC, Da, M.) (Supersedes Open-file reports 85-441, 86-170, and 87-16.)

OF 90-0637-B. Bibliography of well-log applications; cumulative edition (through 1 September 1990), by S. E. Prensky. 1990. Three 3 1/2 inch diskettes. (NC, Da, M.) (Supersedes Open-file reports 85-441, 86-170, and 87-16.)

Macintosh version consisting of three text files, each on a separate disk (3 1/2 inch, low density 800K), written in Microsoft Word v4.0.

OF 90-0637-C. Bibliography of well-log applications; cumulative edition (through 1 September 1990), by S. E. Prensky. 1990. Two 5 1/4 inch diskettes. (NC, Da, M.) (Supersedes Open-file reports 85-441, 86-170, and 87-16.)

IBM PC, or compatible, version, consisting of three disks (5 1/4 inch, high density 1.2MB), written in WordPerfect v5.0.

OF 90-0638. NEVADA. Mineral summaries for Nevada; U.S. Bureau of Land Management wilderness study areas, edited by J. E. Conrad. Prepared in cooperation with the U.S. Bureau of Mines. 1990. 373 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0639. VIRGINIA. Geologic map of the northern part of the Rectortown Quadrangle, Virginia, by G. W. Leo. 1990. 3 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Wa; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.)

OF 90-0641. VIRGINIA. Geologic map of the Loudoun County portion of the Middleburg Quadrangle, Virginia, by S. W. Kline, P. T. Lyttle and A. J. Froelich. Prepared in cooperation with the Loudoun County Department of Natural Resources. 1990. 18 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Wa; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.)

OF 90-0642. CALIFORNIA. Tests to explore the utility of gravity anomalies and topographic data as possible predictors of locations of seismicity for two areas in California, by A. M. Sadovskii. 1990. 19 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0643. ARIZONA. Geologic map of the Lizard Point Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0644. ARIZONA. Geologic map of the Wolf Hole Mountain East Quadrangle, northern Mohave County, Arizona, by G. H. Billingsley. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0645. IDAHO. Analytical results and sample locality maps of rock samples from the northwestern Idaho Falls and the northeastern Hailey 1° by 2° quadrangles, Idaho, by J. H. Bullock, Jr., A. B. Wilson and S. J. Soulliere. 1990. 20 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0646. NEVADA. Preliminary geologic map of the Gregerson Basin Quadrangle, Lincoln County, Nevada, by R. B. Scott, W C Swadley, W. R. Page and S. W. Novak. 1990. 21 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0647-A. CALIFORNIA, NEVADA. Geologic map of the Last Chance Quadrangle, California and Nevada, by C. T. Wrucke and K. P. Corbett. 1990. 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA, Db, U; California Dep. of Conservation, Div. of Mines and Geol., 660

Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0647-B. CALIFORNIA, NEVADA. Geologic map of the Last Chance Quadrangle, California and Nevada, by C. T. Wrucke and K. P. Corbett. 1990. 8 over-size sheets. (NC, Da, M, SF, LA, Db, U; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Eight 8 1/2-inch by 14-inch color xerographic prints made from a hand-colored original. These prints can be tiled together to form a multicolor version of the map and explanation in Open-file report 90-647-A.

OF 90-0648. COLORADO. Soil gas radon compared to aerial and ground gamma-ray measurements at study sites near Greeley and Fort Collins, Colorado, by J. S. Duval, G. M. Reimer, R. R. Schumann, D. E. Owen and J. K. Otton. 1990. 42 p. (NC, Da, M, Db, U.)

OF 90-0649-A. WYOMING, MONTANA, IDAHO. Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho, by S. F. Carle, J. M. Glen, V. E. Langenheim, R. B. Smith and H. W. Oliver. 1990. 40 p., 1 over-size sheet, scale 1:125,000 (1 inch = about 2 miles). (NC, Da, M, U, SF, S, Db; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82701.)

OF 90-0649-B. WYOMING, MONTANA, IDAHO. Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho, by S. F. Carle, J. M. Glen, V. E. Langenheim, R. B. Smith and H. W. Oliver. 1990. One 5 1/4 inch diskette. (NC, Da, M, U, SF, S, Db; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82701.)

Requires an IBM PC, XT, AT, or compatible, MS-DOS v. 2.0 or higher. The text is in ASCII format.

OF 90-0650. CALIFORNIA. Geologic map of the Lopez Mountain Quadrangle, San Luis Obispo County, California, by Hugh McLean. 1990. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 109 South Broadway, Los Angeles, CA 90012.)

OF 90-0651. Global summary of volcano-deformation monitoring, by C. M. Stine. 1990. 138 p. (NC, Da, M.)

OF 90-0652. MONTANA. Mineral chemistry of the Pioneer Batholith, Beaverhead County, southwestern Montana; microprobe data tables for feldspar, amphibole, mica, pyroxene, and accessory minerals, by J. M. Hammarstrom. 1990. 193 p. (NC, Da, M, Db, S, U; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 90-0653. IDAHO. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Burnt Creek Wilderness Study Area, Custer County, Idaho, by B. M. Adrian, H. D. King, D. L. Fey and K. R. Kennedy. 1990. 17 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, U, S.)

OF 90-0654. DISTRICT OF COLUMBIA, MARYLAND, VIRGINIA. Geologic map of the coastal plain and upland deposits, Washington West Quadrangle, Washington, D.C., Maryland, and Virginia, by Lucy McCartan. 1990. 16 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M.)

OF 90-0655. IDAHO. Chemical analyses of rock samples collected in east-central Idaho during a study of mineralization in the northern Lemhi Range, Lemhi County, Idaho, by J. J. Connor, K. V. Evans, P. H. Briggs, J. G. Crock, R. T. Hopkins, Jr., K. R. Kennedy, R. M. O'Leary, B. H. Roushey, K. E. Slaughter and E. P. Welsch. 1991. 48 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 90-0656. Abstracts of the U.S. Geological Survey, central region; 1990 poster review, compiled by C. E. Barker and A. B. Coury. 1990. 31 p. (NC, Da, M.)

Permian coal in Transantarctic Mountains; quality and quantity, by D. A. Coates, G. D. Stricker and E. R. Landis. p. 1.

Early diagenetic aerobic degradation of organic matter and sulfides in some Middle and Upper Pennsylvanian marine shales, Midcontinent region, U.S.A., by J. R. Hatch, J. S. Leventhal and G. A. Desborough. p. 2.

Quality of coal from the Paleocene Bara Formation, South Sind, Pakistan, by E. R. Landis, R. A. Khan, P. D. Warwick, C. L. Oman, S. A. Khan and L. J. Bragg. p. 3.

200+ billion tons of low sulfur coal in the Sagavanirktok Formation, North Slope, Alaska, by S. B. Roberts, G. D. Stricker and R. H. Affolter. p. 4.

Alaska has 4.0 trillion tons of low sulfur coal; is there a future for this resource?, by G. D. Stricker. p. 5.

Evidence of sudden late Holocene uplift in the central Puget Lowland, Washington, by R. C. Bucknam and T. P. Bamhard. p. 6.

Fracture studies in the welded Grouse Canyon Tuff; Laser Drift of the G-Tunnel underground facility, Rainier Mesa, Nevada Test Site, Nevada, by S. F. Diehl, M. P. Chornack, H. S. Swolfs and J. K. Odum. p. 7.

There is nothing better than good S, by J. S. Gomberg, K. M. Shedlock and S. W. Roecker. p. 8.

How calderas resurge, by Ken Hon and C. J. Fridrich. p. 9.

Damage and intensity survey of the October 17, 1989 Loma Prieta earthquake, by M. G. Hopper, E. V. Leyendecker, P. C. Thenhaus, C. W. Stover, S. T. Algermissen, B. G.

Reagor, D. M. Perkins, S. L. Hanson, L. R. Brewer and F. W. Baldwin. p. 10.

Seismic deformation in the Pacific Northwest, by K. M. Shedlock, C. S. Weaver, D. H. Oppenheimer and G. C. King. p. 11.

Geochemical expression of poorly exposed metallization in the southeastern Challis volcanic field, Idaho; emphasis on biogeochemical methods, by J. A. Erdman, F. J. Moye and P. K. Theobald. p. 12.

Alteration mineral assemblage and trace-element zoning in the Bodie mining district, Mono County California; a comparison to the "hot spring" model, by P. A. Herrera, M. L. Silberman and L. G. Closs. p. 13.

The Boston Peak fen; a multidisciplinary case study of a uraniferous mountain wetland, by D. E. Owen, J. K. Otton, R. R. Schumann, R. A. Zielinski, J. P. McKee, E. I. Robbins and F. A. Hills. p. 14.

Structurally controlled gold trends imply large gold resources in Nevada, by D. R. Shawe. p. 15.

Acid mine drainage and wetlands, by K. S. Smith and Katherine Walton-Day. p. 16.

A fluid inclusion technique for determining peak temperature and its application to establish a refined calibration for the vitrinite reflectance geothermometer, by C. E. Barker and R. H. Goldstein. p. 17.

Play analysis methodologies for petroleum resource assessment, by R. A. Crovelli and R. H. Balay. p. 18-19.

New information on the Nuwok Member of Sagavanirktok Formation; implications for petroleum geology of the North Slope and Beaufort Sea; evidence from Carter Creek, Arctic National Wildlife Refuge (ANWR), Alaska, by T. D. Fouch, E. M. Brouwers, D. H. McNeil, Louie Marincovich, Jr., K. J. Bird and H. J. Rieck. p. 20-21.

Interactive computer display of exploration through time for petroleum producing regions in the conterminous United States, by D. K. Higley and K. I. Takahashi. p. 22.

Sequential-partial extraction of Pinal Creek aquifer material near Globe, Arizona for SO and PO, by A. H. Love and W. H. Ficklin. p. 23.

Determining source rock maturity using direct measurements vs. predictive modeling; comparison and application of five methods to hydrocarbon generation, by V. F. Nuccio. p. 24.

Geothermometry from smectite and silica diagenesis in the diatomaceous Monterey and Sisquoc formations, Santa Maria Basin, California, by R. M. Pollastro. p. 25.

The influence of pressure on petroleum generation and maturation as suggested by hydrous pyrolysis, by L. C. Price and L. M. Wenger. p. 26.

Stratigraphic framework of the Powder River basin, Wyoming and Montana, utilizing computer-generated isopach and structure contour maps and cross sections, by B. L. Crysdale. p. 27.

Late Cretaceous and Tertiary paleogeographic reconstructions; Uinta and Piceance basins, northeastern Utah and northwestern Colorado, by K. J. Franczyk, T. D. Fouch, R. C. Johnson and C. M. Molenaar. p. 28.

Stratigraphy and provenance of Upper Cretaceous rocks in south-central New Mexico, by C. M. Molenaar, G. H. Mack, B. A. Black and W. A. Cobban. p. 29.

Stratigraphy of Upper Cretaceous rocks in the Zuni Basin, west-central New Mexico, by C. M. Molenaar, W. A. Cobban and D. G. Wolfe. p. 30.

Palynomorphs from Cenomanian, Turonian, and Coniacian marine strata in the Powder River basin, Wyoming, by T. A. Okumura and D. J. Nichols. p. 31.

OF 90-0657. Mineralogy and thermal properties of clay deposits in the Salt Range and Kala Chitta Range, Punjab Province, Pakistan, by C. G. Whitney, S. Q. Abbas and K. J. Esposito. Prepared jointly by the Geological Survey of Pakistan and the U.S. Geological Survey, under the auspices of the U.S. Agency for International Development. 1990. 114 p. (NC, Da, M.)

OF 90-0658. CALIFORNIA. Development of alert criteria for future volcanic unrest in Long Valley Caldera, California, by D. P. Hill. 1990. 15 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0659. NEW MEXICO, COLORADO. Vitrinite reflectance data from Cretaceous and Tertiary rocks, San Juan Basin, New Mexico and Colorado, by B. E. Law. 1990. 18 p. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 90-0661. HAWAII. Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected regularly for 13 months at a site on the summit of Kilauea Volcano, by M. E. Hinkle. 1990. 19 p. (NC, Da, M, LA, SF; Div. of Water and Land Dev., P.O. Box 373, Honolulu, HI 96809.)

OF 90-0662. Sidescan sonograph patterns offshore of the southern Delmarva Peninsula, by R. C. Circé and E. C. Escowitz. 1990. 19 p. (NC.)

OF 90-0663. ALASKA. Wide-angle seismic recordings obtained during the TACT multichannel reflection profiling in the northern Gulf of Alaska, by T. M. Brocher and M. J. Moses. 1990. 40 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0664. CALIFORNIA. Isostatic residual gravity map of Edwards Air Force Base and vicinity, Kern, Los Angeles, and San Bernardino counties, California, by R. L. Morin, John Mariano and R. C. Jachens. 1990. 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0665. CALIFORNIA. Surficial characteristics of the bay floor of South San Francisco, San Pablo, and Suisun bays, California, by J. L. Chin and H. E. Clifton. 1990. 33 p., 3 over-size sheets, scale 1:40,000 (1 inch = about 3,400 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0666. CALIFORNIA. Time-to-failure analysis of seismicity preceding the 1989 Loma Prieta earthquake, by C. G. Bufe and D. J. Varnes. 1990. 18 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.)

OF 90-0667. Jordan seismic system; final project, by R. L. Kovach and J. H. Healy. Prepared in cooperation with the U.S. Agency for International Development. 1990. 138 p. (NC, Da, M.)

OF 90-0668. Quality assurance manual for the Branch of Geochemistry, U.S. Geological Survey, edited by B. F. Arbogast. 1990. 184 p. (NC, Da, M.)

Physical preparation of rock samples, by C. D. Taylor. p. 21-25.

Physical preparation of stream-sediment samples, by T. R. Peacock and C. D. Taylor. p. 26-28.

Physical preparation of soil samples, by T. R. Peacock. p. 29-32.

Physical preparation of heavy-mineral concentrates by heavy liquid and magnetic separation, by C. D. Taylor. p. 33-37.

Trace-level determination of arsenic and selenium using continuous-flow hydride generation atomic absorption spectrophotometry (HG-AAS), by E. P. Welsch, J. G. Crock and R. F. Sanzolone. p. 38-45.

Determination of gold in samples of rock, soil, stream sediment and heavy-mineral concentrate by flame and graphite furnace atomic absorption spectrophotometry following dissolution by HBr-Br_2, by R. M. O'Leary and A. L. Meier. p. 46-51.

Determination of gold, tellurium, and thallium, in rock, stream-sediment, and soil samples by flame, and gold by graphite furnace, atomic absorption spectrophotometry following dissolution by HF, aqua regia, and HBr-Br_2, by R. M. O'Leary and T. T. Chao. p. 52-59.

Determination of mercury in geologic materials by continuous flow-cold vapor-atomic absorption spectrophotometry, by R. M. O'Leary, J. G. Crock and K. R. Kennedy. p. 60-67.

Determination of carbonate carbon in geologic materials by coulometric titration, by E. L. Brandt, P. J. Aruscavage and C. S. Papp. p. 68-72.

Determination of moisture and total water in silicate rocks, by D. R. Norton and C. S. Papp. p. 73-82.

Elemental analysis of geologic materials by inductively coupled plasma-atomic emission spectrometry, by P. H. Briggs. p. 83-91.

Organometallic halide extraction applied to the analysis of geologic materials for 10 elements by inductively coupled plasma-atomic emission spectrometry, by J. M. Motooka. p. 92-96.

Determination of water extractable boron in soil and stream-sediment samples by inductively coupled plasma-atomic emission spectroscopy, by K. C. Stewart. p. 97-99.

Direct-current arc emission spectrographic method for the semiquantitative analysis of rock, stream-sediment, soil, and heavy-mineral-concentrate samples, by B. M. Adrian, B. F. Arbogast, D. E. Detra and R. E. Mays. p. 100-106.

Flame photometric determination of K_2O and Na_2O in rocks and mineral separates, by T. L. Fries, Joe Christie and S. T. Pribble. p. 107-110.

Determination of uranium in geologic materials by UV-fluorescence, by D. M. Hopkins. p. 111-113.

Determination of total carbon in geologic materials by combustion, by K. J. Curry. p. 114-118.

Determination of chloride in geologic materials by ion-selective electrode following $KMNO_4$-H_2SO_4-HF dissolution, by P. J. Aruscavage. p. 119-122.

Determination of fluoride in silicates by ion-selective electrode following $LiBO_4$ fusion and HNO_3 dissolution, by S. T. Pribble. p. 123-126.

Determination of fluoride in rock, soil, and stream-sediment samples by ion-selective electrode following Na_2CO_3-K_2CO_3-KNO_3 fusion and dissolution with citric acid, by R. M. O'Leary and D. M. Hopkins. p. 127-130.

Determination of total sulfur in geologic materials by combustion, by K. J. Curry. p. 131-135.

Determination of sulfur in geologic materials by iodometric titration, by R. M. O'Leary. p. 136-138.

Determination of ferrous oxide in geologic materials by potentiometric titration, by C. S. Papp, P. J. Aruscavage and E. L. Brandt. p. 139-145.

Determination of uranium and thorium in geologic materials by delayed neutron counting, by D. M. McKown and R. J. Knight. p. 146-150.

Instrumental neutron activation of geologic materials by abbreviated count method, by G. A. Wandless and R. J. Knight. p. 151-156.

Determination of tungsten in rock, soil, and stream-sediment samples by visible absorption spectrophotometry, by R. M. O'Leary and E. P. Welsch. p. 157-160.

Determination of 12 selected trace elements in geologic materials by energy-dispersive X-ray fluorescence spectrometry, by Bi-Shia King and J. Lindsay. p. 161-165.

High precision major element analysis of rocks and minerals by wavelength dispersive X-ray fluorescence spectroscopy, by J. E. Taggart, Jr., A. J. Bartel and D. F. Siems. p. 166-172.

Determination of fluoride in silicates and sediments by ion-selective electrode following a sodium carbonate-zinc oxide fusion, by Herbert Kirschenbaum; edited by M. W. Doughten. p. 173-176.

OF 90-0669. Analytical data for bituminous coals and associated rocks from Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma, by S. J. Tewalt and R. B. Finkelman. 1990. 50 p. (NC, Da, M, Db; Kansas Geol. Surv., 1930 Constant Ave., Campus West, Lawrence, KA 66046; Dep. of Natural Resources, Div. of Geol. and Land Surv., 111 Fairgrounds Rd., P.O. Box 250, Rolla, MO 65401.)

OF 90-0670. UTAH. Schlumberger soundings in Tule Valley, Utah, by R. J. Bisdorf. 1990. 105 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 90-0671. OREGON. Temperatures of springs in the vicinity of Crater Lake, Oregon, in relation to air and ground temperatures, by Manuel Nathenson. 1990. 19 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 90-0673. WYOMING. Whole-rock and clay mineralogies of deeply-buried rocks, Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming, by R. M. Pollastro and T. J. Finn. 1990. 17 p. (NC, Da M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 90-0674. USGS Branch of Petroleum Geology bibliography, 1989, compiled by Helen Colburn. 1990. 21 p. (NC, Da, M.)

OF 90-0675. NEW YORK, VERMONT, NEW HAMPSHIRE. Tabulated analytical results, floppy disc, and sample locality maps for nonmagnetic and selected paramagnetic heavy-mineral concentrates from stream sediment, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by G. W. Day, E. P. Welsch, K. C. Watts, Jr. and J. C. Gray, Jr. 1990. 85 p., one 5 1/4 inch diskette, 2 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M; Dep. of Resources and Economic Dev., 117 James Hall, Univ. of New Hampshire, Durham, NH 03824; New York State Geol. Surv., 3136 Cultural Education Ctr., Empire State Plaza, Albany, NY 12230; Office of the State Geologist, 103 South Main St., Center Bldg., Waterbury, VT 05676.)

OF 90-0676. Interactive Macintosh display of petroleum exploration through time across the continental United States, by D. K. Higley, K. I. Takahashi and R. F. Mast. 1990. 2 p., ten 3 1/2 inch diskettes. (NC, Da, M.)

Color animation which shows the type of petroleum produced within adjacent 1 sq. mile areas, or cells, for 49 petroleum provinces across the U.S. Map images are displayed in cumulative 5 year increments for each province. The oil, gas, oil and gas, or nonproduction category of each cell is coded by color with symbols. Hardware requirements to run this program are: 1) a Macintosh II-series computer with color graphics capability, 2) 20MB of disk space for installation (15MB once installed), 3) 5MB (preferably 8) of memory without the Multifinder application, and 4) 13 inch or larger color monitor. The U.S. program is on ten 3.5 inch, 2.0MB diskettes and can be loaded with Apple system software.

OF 90-0678. OKLAHOMA. Mineralogy and petrography of Permian rocks in the Central Oklahoma Aquifer, by G. N. Breit, C. A. Rice, K. J. Esposito and J. L. Schlottmann. 1990. 50 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)

OF 90-0679. NEVADA. Mineral resources of additions to the La Madre Mountains Wilderness Study Area, Clark County, Nevada, by J. E. Conrad, H. R. Blank, Jr. and J. E. Olson. Prepared by the U.S. Geological Survey and the U.S. Bureau of Mines, for the U.S. Bureau of Land Management. 1990. 14 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 90-0680. National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXXI, compiled by M. L. Jacobson. Prepared by participants in the National Earthquake Hazards Reduction Program. 1990. 603 p. (NC, Da, M.)

OF 90-0681. ALASKA. Geochemical results, sample localities, and descriptions of some rocks from the Proterozoic Kilbuck Terrane, Goodnews Quadrangle, southwestern Alaska, by T. P. Frost, J. M. Motooka and Leon Bradley. 1990. 8 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 90-0682. VERMONT. Analyses and descriptions of geochemical samples from the Big Branch and Peru Peak wildernesses and the Wilder Mountain Roadless Area, Rutland and Bennington counties, Vermont, by D. E. Detra, J. D. Peper, D. L. Kelley, Tom Huyck, A. A. Pokorny, L. S. Laudon, R. J. Fairfield and E. P. Welsch. 1990. 20 p. (NC, Da, M.)

OF 90-0683. CALIFORNIA. Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas, by D. L. Carver, K. W. King, Edward Cranswick, D. M. Worley, Paul Spudich and C. S. Mueller. 1990. 204 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0683-A. CALIFORNIA. Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas, by D. L. Carver, K. W. King, Edward Cranswick, D. M. Worley, Paul Spudich and C. S. Mueller. 1990. One compact disk. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012.) (Supplement to Open-file report 90-683.)

OF 90-0684. ARIZONA. Preliminary geologic map of the Mohave Mountains area, Mohave County, western Arizona, by K. A. Howard, J. E. Nielson, H. G. Wilshire, J. K. Nakata, J. W. Goodge, S. L. Reneau, B. E. John and V. L. Hansen. 1990. 56 p., 2 over-size sheets; sheet 1, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0685-A. ARIZONA. Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona, by Viki Bankey and R. E. Braken. 1990. 4 p. (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0685-B. ARIZONA. Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona, by Viki Bankey and R. E. Braken. 1990. One 5 1/4 inch diskette. (NC, Da, M, Db, U, SF, LA; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Diskette is a 5-1/4 inch, high density (1.6MB) diskette in IBM-AT format, and contains gridded aeromagnetic data files in ASCII format.

OF 90-0686. Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected daily for 11 months from 0.3-, 0.6-, 1.2-, and 2.0-m depths, by M. E. Hinkle. 1990. 42 p. (NC, Da, M.)

OF 90-0687. Ground failure associated with the Puget Sound region earthquakes of April 13, 1949, and April 29, 1965, by A. F. Chleborad and R. L. Schuster. 1990. 136 p., 5 over-size sheets; sheets 1-2, scale 1:100,000 (1 inch = 1.6 miles); sheets 3-5, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, SF, LA, S; Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201-5528; Geol. and Earth Resources Div., Dep. of Natural Resources, Olympia WA 98504; David A. Johnston Cascade Volcano Observatory, 5400 MacArthur Blvd., Vancouver, WA 98661.)

OF 90-0688. CALIFORNIA. Preliminary map of landslide features and coseismic fissures, in the Summit Road area of the Santa Cruz Mountains, triggered by the Loma Prieta earthquake of October 17, 1989, compiled by T. E. Spittler and E. L. Harp. Also released as California Division of Mines and Geology Open-file report 90-6. 1990. 31 p., 3 over-size sheets, scale 1:4,800 (1 inch = 400 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 90-0689. NEW JERSEY. Petrographic and geochemical data for Jurassic basalt from eight cores, Newark Basin, New Jersey, by R. P. Tollo, D. P. Hawkins and David Gottfried. 1990. 32 p. (NC, Da, M.)

OF 90-0690-A. WASHINGTON. Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington, by J. M. Thompson. 1990. 16 p. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

OF 90-0690-B. WASHINGTON. Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington, by J. M. Thompson. 1990. One 5 1/4 inch diskette. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

The report is also available for Macintosh computers on a 3 1/2 inch (1.44MB), double sided, 135 TPI diskette or for IBM PCs or compatibles on a 5 1/4 inch (360K) double-sided, double-density, 48 TPI diskette. Both diskettes were formatted using Microsoft Word.

OF 90-0690-C. WASHINGTON. Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington, by J. M. Thompson. 1990. One 3 1/2 inch diskette. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

The report is also available for Macintosh computers on a 3 1/2 inch (1.44MB), double sided, 135 TPI diskette or for IBM PCs or compatibles on a 5 1/4 inch (360K) double-sided, double-density, 48 TPI diskette. Both diskettes were formatted using Microsoft Word.

OF 90-0691. Natural hazards associated with Lake Kivu and adjoining areas of the Birunga volcanic field, Rwanda and Zaire, Central Africa; final report, by M. L. Tuttle, J. P. Lockwood and W. C. Evans. 1990. 37 p. (NC, Da, M.)

OF 90-0697. PENNSYLVANIA. Coal quality and compositional characteristics of the upper Freeport coal bed, Pennsylvania, source of the Argonne Premium sample, by B. S. Pierce and R. W. Stanton. 1990. 28 p. (NC, Da, M.)

OF 90-0698. NEVADA. Rock-Eval pyrolysis data for petroleum-potential evaluation based on well cuttings and core samples from eastern Nevada collected during 1990, by C. E. Barker, R. C. Johnson, F. G. Poole, T. A. Daws and C. N. Threlkeld. 1990. 15 p. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0702-A. NEVADA. Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada, by J. T. Nash, D. L. Fey, J. M. Motooka and D. F. Siems. 1990. 69 p., 1 over-size sheet. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 90-0702-B. NEVADA. Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada, by J. T. Nash, D. L. Fey, J. M. Motooka and D. F. Siems. 1990. One 5 1/4 inch diskette. (NC, Da, M, SF, LA, U, Db; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

Five tables of geochemical results in DBF format. Diskette in MS-DOS format for IBM PC or compatible running DOS 2.0 or higher.

OF 90-0704-A. ARIZONA. Arizona radiometric ages, HyperCard stack, by C. A. Carlson and S. J. Reynolds. 1990. 5 p. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

OF 90-0704-B. ARIZONA. Arizona radiometric ages, HyperCard stack, by C. A. Carlson and S. J. Reynolds. 1990. One 3 1/2 inch diskette. (NC, Da, M, Db, SF, LA, U; Arizona Bur. of Geol. and Mineral Technol., 845 North Park Ave., Tucson, AZ 85719.)

Macintosh diskette containing the HyperCard stack in compressed form, the UnStuffIt utility for decompressing the stack, and a TEXT file version of the paper copy. Requirements: The stack will run on any Macintosh with at least 2MB of RAM; a Macintosh II is recommended. A hard disk and HyperCard are required.

OF 90-0706. GEORGIA. Ground-water conditions in Georgia, 1989, by M. F. Peck, C. N. Joiner, J. S. Clarke and A. M. Creesler. Prepared in cooperation with the Georgia Department of

Natural Resources; Albany Water, Gas, and Light Commission; City of Brunswick; Glynn County; Savannah-Chatham County Metropolitan Planning Commission; and City of Valdosta. 1990. 125 p. (NC, Da, M, Wb.)

OF 90-0709. FLORIDA. Assessment of hydrogeologic conditions with emphasis on water quality and wastewater injection, Southwest Sarasota and West Charlotte counties, Florida, by C. B. Hutchinson. Prepared in cooperation with the Southwest Florida Water Management District. 1991. 103 p. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301.)

OF 90-0721. IDAHO. Anomalous chlorine in iron-rich strata, Yellowjacket Formation, Lemhi County, Idaho; analytical data and discussion, by J. T. Nash, J. J. Connor, K. J. Currey and C. S. Papp. 1990. 36 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0001-A. GSMAP system version 7.0; graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates, by G. I. Selner and R. B. Taylor. 1991. 151 p., 1 over-size sheet. (NC, Da, M.) (Supersedes Open-file report 89-373-A.)

OF 91-0001-B. GSMAP system version 7.0; graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates, by G. I. Selner and R. B. Taylor. 1991. Four 5 1/4 inch DS/DD IBM compatible diskettes. (NC, Da, M.) (Supersedes Open-file report 89-373-B.)

OF 91-0002. Technical manual for a UNIX-based device-independent vector graphic system, by G. I. Evenden. 1991. 50 p. (NC, Da, M.)

OF 91-0003. CALIFORNIA. Chemical analyses of the water from the GTA-1 Well, Parkfield, California, and other nearby spring and well waters, by J. M. Thompson and L. D. White. 1991. 26 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0004-A. CALIFORNIA. Updated principal facts for gravity data compiled for the Fresno 1 by 2 degree sheet, California, by K. S. Kirchoff-Stein and V. E. Langenheim. 1991. 70 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0004-B. CALIFORNIA. Updated principal facts for gravity data compiled for the Fresno 1 by 2 degree sheet, California, by K. S. Kirchoff-Stein and V. E. Langenheim. 1991. One 5 1/4 inch diskette. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Requirements: IBM PC (or compatible) using DOS 2.0 or higher versions.

OF 91-0005. CALIFORNIA. Seasonal and spatial biogeochemical trends for chaparral vegetation and soil geochemistry in the Santa Monica Mountains National Recreation Area, CA, by L. L. Jackson and L. P. Gough. 1991. 113 p. (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0011-A. Some industrial mineral deposit models; descriptive deposit models, edited by G. J. Orris and J. D. Bliss. 1991. 73 p. (NC, Da, M.) (Extension of B 1693.)

Descriptive model of diamond-bearing kimberlite pipes, by T. C. Michalski and P. J. Modreski. p. 1-4.

Descriptive model of wollastonite skarn, by G. J. Orris. p. 5-6.

Descriptive model of amorphous graphite, by D. M. Sutphin. p. 7-8.

Descriptive model of lithium in smectites of closed basins, by Sigrid Asher-Bolinder. p. 9-10.

Descriptive model of fumarolic sulfur, by K. R. Long. p. 11-12.

Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of open hydrologic systems, by R. A. Sheppard. p. 13-15.

Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of saline, alkaline-lake deposits, by R. A. Sheppard. p. 16-18.

Descriptive model of epigenetic vein barite, by S. H. Clark and G. J. Orris. p. 19-20.

Descriptive model of exhalative barite, by S. H. Clark and G. J. Orris. p. 21-22.

Descriptive model of lacustrine diatomite, by J. D. Shenk. p. 23-25.

Descriptive model of potash-bearing bedded salt, by Sherilyn Williams-Stroud. p. 26-28.

Descriptive model of bedded salt; deposit subtype, marine evaporite salt, by O. B. Raup. p. 29-30.

Descriptive model of salt domes; deposit subtype, diapiric salt structures, by O. B. Raup. p. 31-33.

Descriptive model of bedded gypsum; deposit subtype, marine evaporite gypsum, by O. B. Raup. p. 34-35.

Descriptive model of naturally occurring iodine brines, by Sherilyn Williams-Stroud. p. 36-37.

Descriptive model of naturally occurring bromine brines, by Sherilyn Williams-Stroud. p. 38-39.

Descriptive model of sodium carbonate in bedded lacustrine evaporites; deposit subtype, Green River, by J. R. Dyni. p. 40-44.

Descriptive model of iodine-bearing nitrate, by Sherilyn Williams-Stroud. p. 45-46.

Descriptive model of lithium-rich playa brine, by Sigrid Asher-Bolinder. p. 47-48.

Descriptive model of disseminated flake graphite, by D. M. Sutphin. p. 49-51.

Descriptive model of graphite veins, by D. M. Sutphin. p. 52-54.

OF 91-0012. WYOMING. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Oregon Buttes Wilderness Study Area (WY-040-324), Sweetwater County, Wyoming, by J. H. Bullock, Jr., H. N. Barton, R. B. Vaughn, R. M. O'Leary and D. L. Fey. 1991. 14 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 91-0013. CALIFORNIA. Benthic foraminifera from the Laurel Quadrangle, California, by Kristin McDougall. 1991. 66 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0016. CALIFORNIA. Uptake and physiological antagonism of selenium and sulfur in alfalfa and wheat under field conditions, San Joaquin Valley, California, by R. C. Severson, L. P. Gough, J. G. Crock, D. L. Fey, P. L. Hageman, A. H. Love and T. R. Peacock. 1991. 42 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0017. Notes on a method to transform digitized coordinates to geographic coordinates, by G. I. Evenden. 1991. 5 p. (NC, Da, M.)

OF 91-0020. Great Lakes coastal mapping workshop, edited by C. F. Polloni. 1990. 48 p. (NC, Da, M.)

Development of a GIS for the U.S. Great Lakes shoreline, by R. L. Gauthier. p. 1-2.

Great Lakes states GIS, by F. J. Horvath. p. 3-4.

GIS data interchange in Michigan, by W. R. Enslin. p. 5-6.

NOAA mapping systems, by Christian Andreasen. p. 7-8.

Promoting the spatial data transfer standard, by K. A. Irby. p. 9-10.

Great Lakes CoastWatch data distribution, by G. A. Leshkevich. p. 11-12.

Ontario Province data distribution, by M. N. Law. p. 13-14.

GIS production applications in Ontario, by D. E. Coleman. p. 15-16.

Canadian Centre for Inland Waters, GIS applications, by Laurie Maynard. p. 17-20.

CD ROM atlas production, by R. A. Ambroziak. p. 21.

The USGS/NOAA Joint Office structure, by Christian Andreasen. p. 22.

Hazard/damage assessment model for the Great Lakes, by Will Knauss. p. 23.

Electronic charting in an inertial navigation system, by Richard Gregory-Allen. p. 24.

Data management systems for the Great Lakes mapping program, by C. F. Polloni. p. 25.

OF 91-0021. Preliminary interpretation of the high-resolution seismic stratigraphy beneath Lake Michigan, by D. S. Foster and S. M. Colman. 1991. 42 p., 2 over-size sheets. (NC, Da, M.)

OF 91-0022. WEST VIRGINIA, VIRGINIA, MARYLAND. Preliminary geologic map of the Winchester 30 × 60 Minute Quadrangle, West Virginia, Virginia and Maryland, compiled by R. C. McDowell. 1991. 18 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, WA; Virginia Div. of Mineral Resources, P.O. Box 3667, Charlottesville, VA 22903.)

OF 91-0023-A. ALASKA. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° × 3° Quadrangle, Alaska, by B. F. Arbogast, G. K. Lee and T. D. Light. 1991. 121 p., 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0023-B. ALASKA. Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° × 3° Quadrangle, Alaska, by B. F. Arbogast, G. K. Lee and T. D. Light. 1991. One 5 1/4 inch diskette. (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

This report contains digital geochemical data including sample site localities in decimal degree format and text documentation on a 5 1/4 inch, 360K diskette. The text file is in ASCII format and the data file is in STATPAC format (.STP). A conversion program STP2DAT is included on the diskette so that the .STP data file may be changed to a number of other forms including telecommunications (.cmn), Lotus 1-2-3 (.dif), and database (.dbf) files. Requirements: an IBM compatible computer using MS DOS, and a 5 1/4 inch, 360K drive.

OF 91-0024. WASHINGTON, IDAHO. Preliminary geologic map of the Orwig Hump area, Washington and Idaho, by F. K. Miller. 1990. 20 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, S, SF, LA, U; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0025. IDAHO. Preliminary geologic map of the Wigwams area, Bonner and Boundary County, Idaho, by F. K. Miller. 1990. 14 p., 1 over-size sheet, scale 1:48,000 (1 inch = 4,000 feet). (NC, Da, M, U, SF, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0026. CALIFORNIA. Santa Clara County, California, environmental geology; selected references, by J. H. Freeberg. 1991. 24 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA

95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0027-A. COLORADO. ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado, by A. B. Wilson and E. J. LaRock. 1991. 22 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 91-0027-B. COLORADO. ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado, by A. B. Wilson and E. J. LaRock. 1991. One 5 1/4 inch diskette. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

Documentation and database, 360K floppy diskette.

OF 91-0028-A. MONTANA, IDAHO. Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho; Part A, Geological interpretation, by J. J. Connor. 1991. 47 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 91-0028-B. MONTANA, IDAHO. Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho; Part B, Geochemical data, by J. J. Connor. 1991. 6 p., one 5 1/4 inch diskette. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

ASCII geochemical data files, 360K floppy diskette.

OF 91-0029. ALASKA. Metamorphic facies map of southeastern Alaska; distribution, facies, and ages of regionally metamorphosed rocks, by Cynthia Dusel-Bacon, D. A. Brew and S. L. Douglass. Prepared in cooperation with the State of Alaska Department of Natural Resources, Division of Geological and Geophysical Surveys. 1991. 48 p., 2 over-size sheets, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0030. CALIFORNIA. Aeromagnetic gridded data for a portion of the San Jose 1° × 2° Quadrangle, California, by G. A. Abrams, R. P. Kucks and R. E. Bracken. 1991. 5 p., one 3 1/2 inch diskette, one 35-mm slide. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Binary data and programs to transpose grid from binary to ASCII and vice versa; these executables work with any IBM-PC-AT clone with mathprocessor; 3 1/2 inch high density (1.44 M bytes) diskette in IBM-AT/DOS format.

OF 91-0031. The Cascade volcanoes; monitoring history and current land management, by R. D. Norris. 1991. 89 p. (NC, Da, M.)

OF 91-0033. ALASKA. Simple Bouguer gravity anomaly maps of the Nenana Basin area, Alaska, by Z. C. Valin, J. W. Bader, D. F. Barnes, M. A. Fisher and R. G. Stanley. 1991. 5 over-size sheets. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0034. ALASKA. Preliminary lithostratigraphy of piston cores from the Beaufort Sea continental slope off northeastern Alaska, by R. L. Phillips, Arthur Grantz, M. W. Mullen and J. M. White. 1991. 2 over-size sheets. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0035. MINNESOTA. Lithologic descriptions of bedrock core from the Roseau 1° × 2° Quadrangle, northern Minnesota, by T. L. Klein. Prepared in cooperation with the Minnesota Department of Natural Resources. 1991. 10 p. (NC, Da, M.)

OF 91-0036-A. ALASKA. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska, by S. K. McDanal, B. F. Arbogast and J. B. Cathrall. 1991. 122 p., 2 over-size sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 794 University Ave., Fairbanks, AK 99709-3645; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 91-0036-B. ALASKA. Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska, by S. K. McDanal, B. F. Arbogast and J. B. Cathrall. 1991. One 5 1/4 inch diskette. (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 794 University Ave., Fairbanks, AK 99709-3645; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS, College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

DS/HD IBM compatible diskette. Requires: MS-DOS 2.0 or higher, 512K RAM, and a coprocessor for the conversion program.

OF 91-0037. UTAH. Preliminary geologic map of the Hatch 7.5 minute Quadrangle, Garfield County, southwestern Utah, by R. A. Kurlich, III and J. J. Anderson. 1991. 7 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 91-0038. CALIFORNIA. Southern California Seismographic Network; report to the U.S. Geological Survey, August 21, 1990, by Egill Hauksson, L. M. Jones, J. J. Mori, R. W. Clayton, T. H. Heaton, Hiroo Kanamori and D. V. Helmberger. 1991. 68 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0039. Reconnaissance geochemical survey of the Farah Garan-Kutam mineral belt, Kingdom of Saudi Arabia, by R. M.

Samater, P. R. Johnson and A. A. Bookstrom. Prepared by the U.S. Geological Survey in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1991. 25 p., 2 over-size sheets, scale 1:50,000 (1 inch = about 4,200 feet). (NC, Da, M.)

OF 91-0040. USGS Library/SIGCAT CD-ROM compendium, by I. S. Bridgett and T. R. Miller. 1991. 171 p. (NC, Da, M.)

OF 91-0044. MINNESOTA. Neutron activation analytical results and sample locality map of drill-cuttings from wells in northwestern Minnesota, by R. J. Knight and J. R. Clark. 1991. 12 p. (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)

OF 91-0045. FLORIDA. Listing of coral cores and slabs at the United States Geological Survey Coastal Center, 600 4th St. South, St. Petersburg FL 33701, (813)893-3684, compiled by A. J. Joseph, J. H. Hudson and R. B. Halley. 1990. 7 p. (NC, Da, M.)

OF 91-0047. CALIFORNIA. Waveform data from aftershocks of the 1990 Upland, California earthquake recorded on a small-aperture seismic array, by J. J. Mori and Christopher Dietel. 1991. 47 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0048. Estimating trajectories of supersonic objects using arrival times of sonic booms, by J. J. Mori and Hiroo Kanamori. 1991. 15 p. (NC, Da, M.)

OF 91-0050. CALIFORNIA. Conglomerate stratigraphy and tectonics in the Franciscan assemblage of Northern California and implications for Cordilleran tectonics, by V. M. Seiders. 1991. 21 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0051. TENNESSEE. Water-resources investigations in Tennessee; programs and activities of the U.S. Geological Survey, 1990-91, by Ferdinand Quiñones-Marquez and B. H. Balthrop. 1991. 76 p. (NC, Da, M, Wb; USGS, WRD, A-413 Federal Bldg., Nashville, TN 37203.)

OF 91-0052. GEORGIA. Geohydrology and evaluation of water-resource potential of the upper Floridan Aquifer in the Albany area, southwestern Georgia, by L. J. Torak, G. S. Davis, G. A. Strain and J. G. Herndon. Prepared in cooperation with the City of Albany, Water, Gas, and Light Commission. 1991. 86 p., 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 6481-B Peachtree Industrial Blvd., Doraville, GA 30360.)

OF 91-0053. The Water Data Sources Directory of the National Water Data Exchange, central region, by C. D. Blackwell. 1991. 682 p. (NC, Da, M, Wb.)

OF 91-0054. U.S. Geological Survey, Department of Interior; National Water-Quality Assessment Program, by P. P. Leahy and W. G. Wilber. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0055. MICHIGAN. Ground-water data for Michigan, 1989, by G. C. Huffman and C. R. Whited. Prepared in cooperation with the Michigan Department of Natural Resources, Geological Survey Division. 1991. 51 p. (NC, Da, M, Wb; USGS, WRD, 6520 Mercantile Way, Suite 5, Lansing, MI 48911.)

OF 91-0056. WYOMING. Hydrologic and water-quality data for selected sites, Grand Teton National Park, Wyoming, September 1988 through September 1990, by H. W. Young, D. J. Parliman, M. L. Jones and M. A. Stone. Prepared in cooperation with the National Park Service. 1991. p. 23. (NC, Da, M, Wb; USGS, WRD, 230 Collins Rd., Boise, ID 83702.)

OF 91-0058. NEVADA. Unpublished letter from U.S. Geological Survey scientists to the editor of the New York Times Magazine regarding William J. Broads' November 18, 1990 article on Yucca Mountain, by W. W. Dudley, Jr., A. J. Buono, M. D. Carr, J. S. Downey, E. M. Ervin, K. F. Fox, Jr., E. D. Gutentag, L. R. Hayes, B. F. Jones, R. R. Luckey, D. R. Muhs, Z. E. Peterman, M. C. Reheis, R. W. Spengler, J. S. Stuckless, E. M. Taylor, J. W. Whitney, W. E. Wilson and I. J. Winograd. 1991. 4 p. (NC, Da, Db, M, Wb; USGS, WRD, Yucca Mountain Project Branch Library, Room H-2726, Bldg. 53, Box 25046, Mail Stop 421, Denver Federal Ctr., Denver, CO 80225-0046; U.S. Dep. of Energy Technical Library, 2753 South Highland Dr., Las Vegas, NV.)

OF 91-0059. Work plan for regional reconnaissance for selected herbicides and nitrate in ground water of the Mid-continental United States, 1991, by D. W. Kolpin and M. R. Burkart. 1991. 18 p. (NC, Da, M, Wb.)

OF 91-0060. ALASKA. Location maps and list of U.S. Geological Survey reports on water resources in Alaska, 1950 to 1990, compiled by E. F. Snyder. 1991. 44 p. (NC, Da, M, Wb, A, LA, S, SF; USGS, WRD, 4230 University Dr., Suite 201, Anchorage, AK 99508-4664; 800 Yukon Dr., College, AK 99775-5160; and Room 441, Federal Bldg., 710 West 9th Ave., Juneau, AK 99801.) (Supersedes Open-file report 88-344.)

OF 91-0061. MINNESOTA. Selected data for stream subbasins in the Watonwan River basin, south-central Minnesota, by D. L. Lorenz and G. A. Payne. Prepared in cooperation with the Minnesota Department of Transportation and the U.S. Army Corps of Engineers. 1990. 7 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

OF 91-0062. MINNESOTA. Selected data for stream subbasins in the Le Sueur River basin, south-central Minnesota, by D. L. Lorenz and G. A. Payne. Prepared in cooperation with the Minnesota Department of Transportation and the U.S. Army Corps of Engineers. 1990. 8 p., 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 702 Post Office Bldg., St. Paul, MN 55101.)

OF 91-0063. IOWA. Hydrologic data for the Big Spring basin, Clayton County, Iowa, water year 1989, by S. J. Kalkhoff and R. L. Kuzniar. Prepared in cooperation with the Iowa Department of Natural Resources, Geological Survey Bureau. 1991. 66 p. (NC, Da, M, Wb; USGS, WRD, P.O. Box 1230, Room 269, Federal Bldg., 400 South Clinton St., Iowa City, IA 52244.)

OF 91-0064. TEXAS. Hydrology of the Texas Gulf Coast aquifer systems, by P. D. Ryder and A. F. Ardis. 1991. 147 p. (NC, Da, M, Wb; USGS, WRD, 8011 Cameron Rd., Bldg. 1, Austin, TX 78753.)

OF 91-0066. Regional stratigraphy and subsurface geology of Cenozoic deposits, Gulf Coastal Plain, south-central United States,

by R. L. Hosman. 1991. 43 p., 33 over-size sheets. (NC, Da, M, Wb.)

OF 91-0068. CALIFORNIA, NEVADA. Documentation of model input and output values for the ground-water resources of Honey Lake valley, Lassen County, California, and Washoe County, Nevada, by H. T. Mitten and C. J. Londquist. 1991. 4 p., one 5 1/4 inch diskette. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; Room 224, Federal Bldg., Carson City, NV 89701; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.) (Supplement to WRI 90-4050.)

The ASCII files require about 1.05MB of disk space on an IBM-compatible microcomputer.

OF 91-0074. CALIFORNIA. Water-quality data, San Joaquin Valley, California, April 1987 to September 1988, by L. R. Shelton and L. K. Miller. Prepared in cooperation with the San Joaquin Valley Drainage Program. 1991. 189 p. (NC, Da, M, Wb, LA, SF; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 91-0076. A primer on sediment-trace element chemistry, by A. J. Horowitz. 1991. 136 p. (NC, Da, M, Wb.)

OF 91-0077. NORTH CAROLINA. U.S. Geological Survey: North Carolina's water resources; a partnership with state, Federal, and local agencies, by M. D. Winner, Jr. 1991. 2 over-size sheets. (NC, Da, M, Wb.)

OF 91-0078. FLORIDA. Water resources activities in Florida, 1990-91, edited by M. E. Glenn. 1991. 84 p. (NC, Da, M, Wb.)

OF 91-0080. ALASKA. Short papers on water supplies and engineering geology, Alaska Highway, 1943-1944, by C. V. Theis. Prepared in cooperation with the U.S. Corps of Engineers. 1991. 61 p. (NC, Da, M, Wb.)

Well water supply at Namao, by C. V. Theis. p. 1-3.

Possible sources of water supply at Namao, by C. V. Theis. p. 4-7.

Further drilling at Namao, by C. V. Theis. p. 8.

Water supply at Namao, by C. V. Theis. p. 9-10.

Use of wells to dispose of effluent from the sewage treatment plant at Namao, by C. V. Theis. p. 11-12.

Sites to be drilled for water in the Fairbanks District, by C. V. Theis. p. 13-15.

Ground water conditions at Fort Nelson Airport, by C. V. Theis. p. 16-21.

Water supplies for relay and repeater stations on the Alaska Highway, by C. V. Theis. p. 22-28.

Water supplies for maintenance stations in the Dawson Creek District, by C. V. Theis. p. 29-35.

Water well for fire protection on the Canadian side of Watson Lake Airfield, by C. V. Theis. p. 36-37.

Survey of permafrost conditions at Koidern Repeater Station, by C. V. Theis. p. 38-41.

Pumping test on well at N-0, by C. V. Theis. p. 42.

Grande Prairie Air Base water supply, by C. V. Theis. p. 43.

Study of water supply for the Alaska Wing stations, by C. V. Theis. p. 44-50.

Foundation movement at Northway Repeater Station, by C. V. Theis. p. 51-53.

Installation of underground gasoline storage tanks, by C. V. Theis. p. 54.

Foundation conditions at Northway Hanger, by C. V. Theis. p. 55-59.

Foundation conditions at the power house (Building No. 116) at Northway Airport, by C. V. Theis. p. 60-61.

OF 91-0081. NEW MEXICO. Short papers on water resources in New Mexico, 1937-57, by C. V. Theis and others. Prepared in cooperation with the State Engineer of New Mexico, U.S. Corps of Engineers, U.S. Army, Defense Plant Corp., and U.S. Atomic Energy Commission. 1991. 77 p. (NC, Da, M, Wb.)

Tentative computation of recharge of Pecos Valley shallow-water basin and of effect of pumping by present holders of water rights, by C. V. Theis. p. 1-5.

Ground-water conditions near Deming, New Mexico, by C. V. Theis. p. 16-18.

Outline of ground-water conditions at Albuquerque, New Mexico, by C. V. Theis. p. 19-22.

Ground-water conditions near Wingate Ordnance Depot, by C. V. Theis. p. 23-27.

Memorandum on water supply for the proposed airbase near Hobbs, New Mexico, by C. V. Theis. p. 28-31.

Ground-water supplies in the vicinity of Clovis, New Mexico, by C. V. Theis. p. 32-34.

The availability of irrigation water at the Alamogordo Air Base, by C. V. Theis. p. 35-38.

Ground-water supplies near Cerillos, New Mexico, by A. M. Morgan and C. V. Theis. p. 39-41.

Ground-water conditions near Separ, New Mexico, by C. V. Theis. p. 42-44.

Ground-water conditions near Wilna, New Mexico, by C. R. Murray and C. V. Theis. p. 45-46.

Ground-water conditions near Cambray, Luna County, New Mexico, by C. R. Murray and C. V. Theis. p. 47-48.

Memorandum No. 3 on the pumping test of the Army test well on Mracek land near Silver City, New Mexico, by C. V. Theis. p. 49-51.

Ground-water conditions near Belen, New Mexico, by C. V. Theis and A. M. Morgan. p. 52-56.

Ground-water conditions in the vicinity of Orogrande, New Mexico, by C. V. Theis. p. 57-59.

Memorandum No. 2 on ground-water supplies in the vicinity of Ft. Bayard, New Mexico, by C. V. Theis. p. 60-62.

Preliminary report on ground-water conditions southwest of Portales, by C. V. Theis. p. 63-65.

Memorandum on ground-water supplies near Valmont, New Mexico, by C. V. Theis. p. 66.

Memorandum on the water supply of Alamogordo, New Mexico, by C. V. Theis. p. 67-69.

Ground-water supplies near Carlsbad, New Mexico, by C. V. Theis and W. E. Hale. p. 70-72.

Memorandum No. 2 concerning magnesium brine wells of the Emro Corporation near Carlsbad, New Mexico, by C. V. Theis and W. E. Hale. p. 73-76.

Note on use of producing well as a monitoring well, with special reference to a proposed well at Sandia Corporation, Albuquerque, New Mexico, by C. V. Theis. p. 77.

OF 91-0083. The Water Data Sources Directory of the National Water Data Exchange, northeastern region, by C. D. Blackwell. 1991. 1,081 p. (NC, Da, M, Wb.)

OF 91-0084. Streamgaging cableways, by C. R. Wagner. 1991. 89 p. (NC, Da, M, Wb.)

OF 91-0085. The Water Data Sources Directory of the National Water Data Exchange; foreign organizations, by C. D. Blackwell. 1991. 80 p. (NC, Da, M, Wb.)

OF 91-0087. FLORIDA. Potentiometric surface of the intermediate aquifer system, west-central Florida, September 1990, by R. A. Mularoni and L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1991. 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb.)

OF 91-0088. U.S. Geological Survey Toxic Substances Hydrology Program; abstracts of the technical meeting, Monterey, California, March 11-15, 1991, compiled by G. E. Mallard and D. A. Aronson. 1991. 133 p. (NC, Da, M, Wb.)

Overview of research at the Cape Cod site; field and laboratory studies of hydrologic, chemical, and microbiological processes affecting transport in a sewage-contaminated sand and gravel aquifer, by S. P. Garabedian and D. R. LeBlanc. p. 1.

Background aqueous chemistry of shallow ground water in a sewage-contaminated glacial outwash aquifer, Cape Cod, Massachusetts, by R. W. Lee. p. 2.

Effect of the geochemical environment on heavy-metal transport in ground water, by J. A. Davis, D. B. Kent, B. A. Rea, S. P. Garabedian and L. D. Anderson. p. 3.

Biogeochemical fate of organic compounds in sewage contaminated ground water, Cape Cod, Massachusetts, by L. B. Barber, II, E. M. Thurman, J. A. Field, J. A. Leenheer, D. R. LeBlanc, R. L. Smith and R. W. Harvey. p. 4.

Effects of denitrification on nitrogen geochemistry in a nitrate-contaminated sand and gravel aquifer, Cape Cod, Massachusetts, by R. L. Smith, B. L. Howes and J. H. Duff. p. 5.

The role of physical and chemical heterogeneity in the interpretation of small-scale tracer tests involving microorganisms, by R. W. Harvey, S. P. Garabedian, R. L. Smith, L. B. Barber, II, D. W. Metge and M. A. Scholl. p. 6.

Research in fractured-rock hydrogeology; characterizing fluid movement and chemical transport in fractured rock at the Mirror Lake drainage basin, New Hampshire, by A. M. Shapiro and P. A. Hsieh. p. 7.

Comparing geophysical logs to core and cross-hole flow logging in the Mirror Lake drainage basin, by F. L. Paillet. p. 8.

Examination of head data in a fractured and layered system, Rock Springs, Wyoming, by K. M. Ogle. p. 9.

Geographic and temporal distribution of herbicides in surface waters of the upper Midwestern United States, 1989-90, by D. A. Goolsby, E. M. Thurman and D. W. Kolpin. p. 10.

Source of atrazine, desethylatrazine, metolachlor in a selected reach of the Cedar River, Iowa, during base-flow conditions, by P. J. Squillace, E. M. Thurman, E. E. Fischer and P. J. Soenksen. p. 11.

The effect of surface-water and ground-water exchange on the transport and storage of atrazine in the Cedar River, Iowa, by M. J. Liszewski and P. J. Squillace. p. 12.

Dissipation of starch encapsulated herbicides; a field comparison with powdered herbicides, by M. S. Mills, E. M. Thurman, R. E. Wing and P. L. Barnes. p. 13.

Spatial variability in hydraulic conductivity of a silt-loam soil near Topeka, Kansas, by D. A. Eckhardt and P. L. Barnes. p. 14.

Integrated hydrologic research at the Northern Cornbelt Sand-Plain management system evaluation area, Minnesota, by G. N. Delin. p. 15.

Estimates of gas-phase photolysis for atrazine, simazine, alachlor, and metolachlor from effective absorption cross-section measurements, by P. M. Gates, W. T. Foreman, W. G. DeGiacomo and L. G. Anderson. p. 16.

Literature review of vapor pressure data for some chlorinated triazine and acetamide herbicides, by W. T. Foreman and W. G. DeGiacomo. p. 17.

Relation of selected water-quality constituents to river stage in the Cedar River, Iowa, by P. M. Schulmeyer. p. 13.

Photolytic degradation of atrazine in the Cedar River, Iowa, and its tributaries, by M. C. Goldberg, K. M. Cunningham and P. J. Squillace. p. 19.

Movement of nitrogen species and herbicides on claypan soils at the management systems evaluation area in Missouri, by D. W. Blevins. p. 20.

Isolation and characterization of autotrophic, hydrogen-oxidizing, denitrifying bacteria from ground water as potential agents for bioremediation of nitrate contamination, by R. L. Smith and M. L. Ceazan. p. 21.

Use of variation in solute concentrations to identify interactions of the substream zone with instream transport, by K. E. Bencala, B. A. Kimball and D. M. McKnight. p. 53.

Predictive modeling of copper, cadmium, and zinc partitioning between streamwater and bed sediment from a stream receiving acid-mine drainage, St. Kevin Gulch, Colorado, by K. S. Smith, J. F. Ranville and D. L. Macalady. p. 54.

Phosphate uptake by algae in a stream contaminated by acid mine drainage, St. Kevin Gulch, Leadville, Colorado, by C. M. Tate, D. M. McKnight and S. A. Spaulding. p. 55.

Transition metal geochemistry of the upper Arkansas River, Colorado, by E. C. Callender, B. A. Kimball and E. V. Axtmann. p. 56.

Use of a multi-level sampler to determine vertical concentration gradients of volatile aromatic hydrocarbons in ground water, Galloway Township, New Jersey, by Jacob Gibs, G. A. Brown and K. S. Turner. p. 57.

Use of a mathematical programming coupled with a transport model to optimize the design of vapor-extraction systems, by Claire Welty, A. L. Baehr, C. J. Joss and J. J. Dillow. p. 58.

Gas-chromatographic methods for determining the composition of the vapor phase in gasoline-contaminated soils, by R. J. Baker, J. M. Fischer, N. P. Smith, S. A. Koehnlein and A. L. Baehr. p. 59.

Distribution of organic and inorganic constituents in ground water at Galloway Township, New Jersey, by M. J. Baedecker, I. M. Cozzarelli and Curtis Phinney. p. 60.

Non-Fickian vapor transport in sand columns contaminated with volatile organic compounds, by C. J. Bruell, C. D. Gilbert and A. L. Baehr. p. 61.

Method for the systematic evaluation of organic chemical retention of solid-phase-extraction columns, by P. D. Capel and D. S. Barbeau. p. 62.

Wet atmospheric deposition of herbicides in Minnesota, by P. D. Capel. p. 63.

Relations between water discharge and herbicide concentrations in the Minnesota River, Minnesota, by S. P. Schottler, S. J. Eisenreich and P. D. Capel. p. 64.

Triazine herbicides in selected streams in Illinois during storm events, spring 1990, by R. H. Coupe and G. P. Johnson. p. 65.

Distribution of selected anthropogenic organic compounds on suspended sediment in the Mississippi River, by C. E. Rostad and W. E. Pereira. p. 66.

Plans for research of nonpoint-source ground-water contamination in the coastal plain of northeastern United States, by A. S. Navoy, E. F. Vowinkel, H. T. Buxton and P. E. Stackelberg. p. 67.

Preliminary analysis of water-quality data from the shallow, intermediate, and deep zones of five land-use areas on Long Island, New York, by P. E. Stackelberg and E. T. Oaksford. p. 68.

Investigation of water quality, bottom sediment, and biota associated with irrigation drainage from the Angostura Reclamation Unit area, southwestern South Dakota, 1988, by E. A. Greene. p. 69.

Use of environmental variables to estimate metal loads in streams, upper Arkansas River basin, Colorado, by G. A. Wetherbee and B. A. Kimball. p. 70.

Comparison of rates of hydrologic and chemical processes in a stream affected by acid mine drainage, by B. A. Kimball, R. E. Broshears, K. E. Bencala and D. M. McKnight. p. 71.

Preliminary investigation of the effect of hillslope hydrology on the mechanics of solute exchange between streams and subsurface gravel zones, by J. W. Harvey, K. E. Bencala and G. W. Zellweger. p. 72.

Chemical composition of the wetland vegetation receiving the acid mine-drainage waters of St. Kevin Gulch, Leadville, Colorado, by B. M. Erickson, P. H. Briggs, K. R. Kennedy and T. R. Peacock. p. 73.

Effect of organic matter coprecipitation and sorption with hydrous iron oxides on electrophoretic mobility of particles in acid-mine drainage, by J. F. Ranville, K. S. Smith, D. M. McKnight, D. L. Macalady and T. F. Rees. p. 74.

Particulate and colloidal organic material and associated trace metals in Pueblo Reservoir, Colorado, by D. M. McKnight, J. F. Ranville and R. A. Harnish. p. 75.

Benthic insects as indicators of large-scale trace metal contamination in the Clark Fork River, Montana, by D. J. Cain and S. N. Luoma. p. 76.

The Globe, Arizona, research site; contaminants related to copper mining in a hydrologically integrated environment, by J. H. Eychaner. p. 77.

Particle tracking analysis of flow in the stream-aquifer system in Pinal Creek basin, Arizona, by J. G. Brown. p. 78.

Two geochemical mass transport codes: PHREEQM and MST1D, their use and limitations at the Pinal Creek toxic-waste site, by P. D. Glynn, Peter Engesgaard and K. L. Kipp. p. 79.

Trace-element trends at Pinal Creek, Arizona, by L. M. Faires and J. H. Eychaner. p. 80.

Isolation of multiple classes of pesticides from large-volume water samples using solid phase extraction cartridges, by W. T. Foreman and G. D. Foster. p. 81.

Calculation of conservative-tracer and flume-discharge measurements on a small mountain stream, by G. W. Zellweger and W. S. Maura. p. 82.

Chemical modeling of acid mine waters in the Western United States, by D. K. Nordstrom. p. 83.

A new method for determining soil macroporosity, by R. W. Healy, G. M. Reimer, J. M. Been and S. L. Szarzi. p. 84.

Chlorofluoromethanes (CCl_3F and CCl_2F_2); use as an age-dating tool and hydrologic tracer in shallow ground-water systems, by Eurybiades Busenberg and L. N. Plummer. p. 85.

Simulation of reactive multispecies transport in two-dimensional ground-water-flow systems, by Mary Martin. p. 122.

The chemistry of silica-organic complexation in a petroleum-contaminated aquifer, by P. C. Bennett. p. 123.

Evolution of physical properties and composition of crude oil at a spill site, by M. K. Landon and M. F. Hult. p. 124.

Kinetics of crude-oil biodegradation by bacteria indigenous to sediment and ground water, by F. H. Chang, Hai Wang, Brenda Denzin and Julie Bullert. p. 125.

Factors controlling mass transfer at an organic-liquid/ground water interface, by H. O. Pfannkuch, L. F. Guo and M. F. Hult. p. 126.

Quantitative statistical description of subsurface heterogeneities with ground penetrating radar at Bemidji, Minnesota, by G. R. Olhoeft. p. 127.

Sources in crude oil of nonvolatile organic acids downgradient from an oil body at Bemidji, Minnesota, by K. A. Thorn and G. R. Aiken. p. 128.

Reductive dechlorination of trichloroethylene in anoxic aquifer material from Picatinny Arsenal, New Jersey, by B. H. Wilson, T. A. Ehlke, T. E. Imbrigiotta and J. T. Wilson. p. 129.

Comparison of four methods for sampling and analyzing unsaturated-zone water for trichloroethylene at Picatinny Arsenal, New Jersey, by J. A. Smith, H. J. Cho, P. R. Jaffé, C. L. MacLeod and S. A. Koehnlein. p. 130.

Simulation of ground-water flow at Picatinny Arsenal, New Jersey, by L. M. Voronin. p. 131.

Design of a field experiment to study the dynamics of trichloroethylene vapors in the unsaturated zone during an infiltration event, by H. J. Cho, P. R. Jaffé and J. A. Smith. p. 132.

Characterization of high molecular weight colored compounds in ground water at Picatinny Arsenal, New Jersey, by R. L. Wershaw, G. R. Aiken and T. E. Imbrigiotta. p. 133.

OF 91-0089. MISSOURI. Technique for estimating the magnitude and frequency of Missouri floods, by L. D. Hauth. Prepared in cooperation with the Missouri State Highway Department and the U.S. Department of Transportation, Federal Highway Administration. 1974. 20 p. (NC, Da, M, Wb.)

OF 91-0090. FLORIDA. Potentiometric surface of the Upper Floridan Aquifer, west-central Florida, September 1990, by R. A. Mularoni and L. A. Knochenmus. Prepared in cooperation with the Southwest Florida Water Management District. 1991. 1 oversize sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M, Wb.)

OF 91-0091. SOUTH DAKOTA. Water-resources activities of the U.S. Geological Survey in South Dakota; fiscal years 1989-90, compiled by E. M. Decker. 1991. 77 p. (NC, Da, M, Wb; USGS, WRD, Room 408, Federal Bldg., 200 4th St. SW, Huron, SD 57350.)

OF 91-0092. Monthly climatic time series data for the Pacific Ocean and western Americas, by D. R. Cayan, D. R. McLain, W. D. Nichols and J. S. Dileo-Stevens. 1991. 393 p., one 5 1/4 inch diskette. (NC, Da, M, Wb.)

Disk compatibility: IBM, PC-DOS; disk density: high density, 1.2MB; disk contents: ASCII data files containing the original data used to prepare all graphs in the data report.

OF 91-0093. Cooperative activities of the U.S. Geological Survey with Historically Black Colleges and Universities, fiscal years 1983-90, edited by A. E. Hall and J. C. Scott. 1991. 19 p. (NC, Da, M, Wb; USGS, WRD, Broadway Executive Park, Bldg. 7, 202 Northwest 66th, Oklahoma City, OK 73116.)

OF 91-0096. OHIO. Current water-resources activities in Ohio, 1991, compiled by S. M. Hindall and L. D. Camp. 1991. 71 p. (NC, Da, M, Wb.)

OF 91-0097. NEBRASKA. National Water-Quality Assessment Program; the central Nebraska basins, by T. L. Huntzinger. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0101. A comparison of stationary and continuous gamma-ray spectral data with cores in granites, by Ulrich Schimschal. 1991. 22 p. (NC, Da, M.)

OF 91-0102. Preliminary bibliography of the geology and mineral deposits of Honduras, by H. A. Pierce and J. C. Rivera Montes. 1991. 47 p. (NC, Da, M.)

OF 91-0103. CALIFORNIA. Principal facts for more than 700 new gravity stations in the San Francisco North and San Francisco South quadrangles, California, by C. W. Roberts. 1991. 29 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0104. CALIFORNIA. Mineralogical and geochemical analyses of three Paleosols from the Merced Formation, near San Francisco, California, by Gretchen Luepke. 1991. 13 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0106. CALIFORNIA. Complete Bouguer anomaly and isostatic gravity maps of the Fresno 1° × 2° Quadrangle, California, by V. E. Langenheim and K. S. Kirchoff-Stein. 1991. 2 oversize sheets, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0107-A. ALASKA. Bibliography of Quaternary geology, Copper River basin and adjacent areas, south-central Alaska, by O. J. Ferrians, Jr. 1991. 20 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0107-B. ALASKA. Bibliography of Quaternary geology, Copper River basin and adjacent areas, south-central Alaska, by O. J. Ferrians, Jr. 1991. One 5 1/4 inch diskette. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior,

Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

Requires an IBM PC, XT, AT, or compatible, MS-DOS v. 2.0 or higher. The text is in Microsoft Word format.

OF 91-0108. Four contributions to 2nd seminar on Landslide hazards, Cosenza, Italy; March 5-6, 1990, by G. F. Wieczorek, R. L. Schuster, E. L. Harp, R. W. Fleming, R. L. Baum and A. M. Johnson. 1991. 27 p. (NC, Da, M.)

Directions of the USGS landslide hazards reduction program, by G. F. Wieczorek. p. 1-10.

Landslide dams; hazards and mitigation, by R. L. Schuster. p. 11-14.

Instrumental shaking thresholds for seismically induced landslides and preliminary report on landslides triggered by the October 17, 1989, Loma Prieta, California earthquake, by E. L. Harp. p. 15-20.

Deformation of landslide surfaces as indicators of movement processes, by R. W. Fleming, R. L. Baum and A. M. Johnson. p. 21-27.

OF 91-0109. CALIFORNIA. Preliminary geologic map of Tepusquet Canyon and Manzanita Mtn. quadrangles, California, by J. G. Vedder, D. G. Howell, Hugh McLean, R. G. Stanley and T. J. Wiley. 1991. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0111. ARIZONA. Analytical results for total and partial metal extractions in aquifer material, Pinal Creek, Globe, Arizona, by W. H. Ficklin, A. H. Love and P. K. Briggs. 1991. 33 p. (NC, Da, M, Db, U, SF, LA; Arizona Geol. Surv., 845 North Park Ave., Tucson, AZ 85719.)

OF 91-0112. Upper Paleocene foraminiferal biostratigraphy and paleoenvironments of the Salt Range, Punjab, Pakistan, by T. G. Gibson. 1990. 52 p. (NC, Da, M.)

OF 91-0113. MONTANA. Preliminary geologic map of the Beartooth Mountain Quadrangle, Lewis and Clark County, Montana, by G. D. Robinson and M. E. McCallum. 1991. 1 oversize sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, U, S; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701.)

OF 91-0115-A. Make your own paper model of a volcano, by T. R. Alpha and L. C. Gordon. 1991. 3 p. (NC, Da, M.)

OF 91-0115-B. Make your own paper model of a volcano, by T. R. Alpha and L. C. Gordon. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

Requires an Apple Macintosh Plus, Classic, SE or II series of computers and HyperCard 2.0 software.

OF 91-0116. Porphyry gold; a supplement to U.S. Geological Survey Bulletin 1693, by J. J. Rytuba and D. P. Cox. 1991. 7 p. (NC, Da, M.)

OF 91-0117. Preliminary report on geologic features of Shey-Phoksumdo National Park, Dolpa, Nepal, by D. A. Brew. Prepared in cooperation with the Kingdom of Nepal, Department of National Parks and Wildlife Conservation. 1991. 14 p. (NC, Da, M.)

OF 91-0118. CALIFORNIA. Seasonal occurrences of ostracodes in lakes and streams of the San Francisco Peninsula, California, by Claire Carter. Prepared in cooperation with the U.S. Department of Energy, Nevada Operations Office. 1991. 63 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0119. WASHINGTON. Are hydrocarbon source rocks buried beneath volcanic flows in the southern Washington Cascades?, by W. D. Stanley, W. J. Gwilliam, Gary Latham and Keith Westhusing. 1991. 32 p. (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, Olympia, WA 98504; Cascade Volcano Observatory, 5400 MacArthur Blvd., Vancouver, WA 98661.)

OF 91-0120. 16th cruise of the R/V Akademik Boris Petrov (Leg 1) (October 5–November 15, 1990); Soviet-U.S. collaborative geological and geophysical survey of the Mid-Atlantic Ridge between 30°N and 34°N; cruise report, by S. A. Silant'yev, K. D. Klitgord, J. F. Casey, S. M. Agar and W. B. Bryan. 1991. 35 p. (NC, Da, M.)

OF 91-0121. WYOMING. Composition of gas seeps in northwestern Wyoming, by T. D. Lorenson, K. A. Kvenvolden, B. R. Simoneit and R. N. Leif. 1991. 35 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 91-0122. CALIFORNIA. Santa Cruz County, California; selected earth science references, by E. R. White. 1991. 16 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0123. Bibliography of publications containing major, minor, and trace element data from the National Coal Resources Data System, by A. C. Finkelman, C. J. Wong, A. C. Cheng and R. B. Finkelman. 1991. 19 p. (NC, Da, M.)

OF 91-0125. NEVADA. U.S. Geological Survey Committee for the Advancement of Science in the Yucca Mountain Project, symposium on Fractures, hydrology, and Yucca Mountain; abstracts and summary, edited by J. S. Gomberg. 1991. 39 p. (NC, Da, M, SF, LA, U, Db.)

Statement of objectives, by D. L. Galloway. p. 1.

Summary of talks, posters, discussions, and outstanding issues, by J. S. Gomberg. p. 2-5.

Fractal scaling of fracture networks in rock, by C. C. Barton. p. 9.

Some general properties of joints and joint networks in horizontally layered sedimentary and volcanic rocks; an overview, by E. R. Verbeek and M. A. Grout. p. 10-12.

Seismic imaging for fracture characterization and structural definition, by E. L. Majer, J. E. Peterson, L. R. Myer, T. M. Daley, Kenzi Karasaki and T. V. McEvilly. p. 13.

Regional-scale velocity anisotropy inferred from Nevada Test Site nuclear test P-arrivals, by S. C. Harmsen. p. 14.

Fracture counts from borehole logs, by P. H. Nelson, R. Snyder and J. E. Kibler. p. 15.

Fracture studies in the welded Grouse Canyon Tuff:Laser Drift of the G-tunnel underground facility, Rainier Mesa, Nevada Test Site, Nevada, by S. F. Diehl, M. P. Chornack, H. S. Swolfs and J. K. Odum. p. 16-17.

Distribution of fracture-lining minerals at Yucca Mountain, by B. H. Carlos, D. L. Bish and S. J. Chipera. p. 18-19.

Stress field at Yucca Mountain and in surrounding regions, by J. M. Stock. p. 20.

Field description and measurement of mesoscopic faults with application to kinematic and paleostress analyses, by S. A. Minor. p. 21-22.

Rhyolite flow fields as barriers to paleohydrologic flow in eastern Nevada and western Utah between latitudes 37°30'N and 38°N, by R. E. Anderson and T. P. Barnhard. p. 23-24.

Saturated-zone ground-water flow at Yucca Mountain, Nevada; can fracture flow be adequately characterized?, by J. B. Czarnecki and A. L. Geldon. p. 25-26.

Modeling of flow and transport in fracture networks, by Kenzi Karasaki, Amy Davey, J. E. Peterson, Kevin Hestir and Jane Long. p. 27.

Fluid flow in rough-walled fractures, by R. W. Zimmerman, Sunil Kumar and G. S. Bodvarsson. p. 28.

Modeling of flow and solute transport through a variable aperture partially saturated fracture, by R. W. Healy and E. M. Kwicklis. p. 29-30.

Flow through variable aperture fractures, by J. L. Smoot. p. 31.

Void structure and flow in single fractures, by L. R. Myer. p. 32-33.

OF 91-0126. COLORADO. Analytical results for sedge samples collected on the wetland receiving acid mine drainage waters from St. Kevin Gulch, Leadville, Colorado, by B. M. Erickson, P. H. Briggs, K. R. Kennedy and T. R. Peacock. 1991. 83 p. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Office of the State Engineer, Ground Water Section, Room 818, 1313 Sherman St., Denver, CO 80203.)

OF 91-0127. HAWAII. Cruise report, Hawaiian GLORIA Cruise F12-89-HW, by M. E. Torresan, D. A. Clague and C. L. Jacobs. 1991. 67 p. (NC, Da, M, SF, LA.)

OF 91-0129. HAWAII. Map showing the distribution of debris flows during the New Year's Eve storm of 1987-1988 in southeastern Oahu, Hawaii, by S. D. Ellen, R. M. Everson and T. C. Pierson. Prepared in cooperation with the City and County of Honolulu. 1991. 1 over-size sheet, scale 1:20,000 (1 inch = 1,667 feet). (NC, Da, M, SF, LA.)

OF 91-0130. CALIFORNIA. Geochemical investigation of an oil spill in San Francisco Bay, California, by F. D. Hostettler, J. B. Rapp and K. A. Kvenvolden. 1991. 25 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0131-A. How to construct four paper models that describe island coral reefs, by T. R. Alpha. 1991. 19 p. (NC, Da, M.)

OF 91-0131-B. How to construct four paper models that describe island coral reefs, by T. R. Alpha. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

Requires an Apple Macintosh Plus, Classic, SE or II series of computers and HyperCard 2.0 software.

OF 91-0133-A. HAWAII. Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii, by R. I. Tilling and B. F. Jones. 1991. 27 p. (NC, Da, M, SF, LA.)

OF 91-0133-B. HAWAII. Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii, by R. I. Tilling and B. F. Jones. 1991. One 3 1/2 inch diskette. (NC, Da, M, SF, LA.)

The diskette version requires an Apple II or Macintosh II; the text, which includes inserted graphics (Figs. 1-3), is in Microsoft Word, v. 4.0.

OF 91-0134. ALASKA. Preliminary geochemistry of volcanic rocks from the McHugh Complex and Kachemak Terrane, southern Alaska, by S. W. Nelson and C. D. Blome. 1991. 14 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0135. NEVADA. Geologic map of the Chief Mountain Quadrangle, Lincoln County, Nevada, by P. D. Rowley, R. R. Shroba, F. W. Simonds, K. J. Burke, G. J. Axen and S. D. Olmore. 1991. 34 p., 3 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, Db, LA, SF, U; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

OF 91-0136. Bathymetric map of southern Northwind Ridge and vicinity, Arctic Ocean, by M. W. Mullen and Arthur Grantz. 1991. 1 over-size sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M.)

OF 91-0137. Preliminary results of the 1986 Sea Cliff dive program, Escanaba Trough, by R. A. Zierenberg, J. L. Morton, C. A. Reiss and M. L. Holmes. 1991. 176 p. (NC, Da, M.)

OF 91-0138. An analysis of a unique seismic anomaly in Georges Bank Basin, Atlantic continental margin, by M. W. Lee, W. F. Agena and B. A. Swift. 1991. 25 p. (NC, Da, M; Coastal Zone Management, 100 Cambridge St., 20th Floor, Boston, MA 02202.)

OF 91-0140. Report of a workshop on the Correlation of marine and terrestrial records of climate changes in the Western U.S., by J. V. Gardner, A. M. Sarna-Wojcicki, D. P. Adam, W. E.

Dean, J. P. Bradbury and H. J. Rieck. 1991. 48 p. (NC, Da, M.)

OF 91-0141. Geology of the Venezuelan Guayana Shield and its relation to the entire Guayana Shield, by G. B. Sidder and Vicente Mendoza S. Prepared in cooperation with the Corporación Venezolana de Guayana-Compañia Tecnica Minera. 1991. 59 p., 2 over-size sheets. (NC, Da, M.)

OF 91-0142. ALASKA. Biogeochemical studies of gold in a placer deposit, Livengood, Alaska, by R. J. Coel, J. G. Crock and J. R. Kyle. 1991. 51 p. (NC, Da, M, A, LA, S, SF; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709-4699; U.S. Dep. of Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 91-0143. ALASKA. Geologic map of the Anchorage B-8 SW Quadrangle, Alaska, by L. A. Yehle, H. R. Schmoll and Ernest Dobrovolny. 1991. 30 p., 2 over-size sheets; sheet 1, scale 1:25,000 (1 inch = about 2,000 feet). (NC, Da, M, A, LA, SF, S; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaska Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510.)

OF 91-0144. COLORADO. Geology of a fault-controlled cave in Precambrian crystalline rocks in Clear Creek canyon, Jefferson County, Colorado, by J. C. Reed, Jr. 1991. 7 p., 1 over-size sheet. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Donald Fawcett, Office of the State Engineer, Ground Water Section, 1313 Sherman St., Room 818, Denver, CO 80203.)

OF 91-0145. CALIFORNIA. Pollution studies of Drakes Estero, and Abbotts Lagoon; Point Reyes National Seashore, California, USA, by R. J. Anima. 1991. 178 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0146. CALIFORNIA. Mass properties of conventional core samples from the Monterey Formation, Union-Humble Bell Fee 156, West Cat Canyon oil field, Santa Maria Basin, California, by L. A. Beyer and C. M. Isaacs. 1991. 13 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0148. Age and petrology of the Tertiary As Sarat volcanic field, southwestern Saudi Arabia, by E. A. du Bray, D. B. Stoeser and E. H. McKee. Prepared in cooperation with the Deputy Ministry for Mineral Resources, Saudi Arabia. 1991. 36 p. (NC, Da, M.)

OF 91-0149. CALIFORNIA. Ground-squirrel mounds and related patterned ground along the San Andreas Fault in Central California, by R. E. Wallace. 1991. 25 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0152. GEORGIA, FLORIDA. National Water-Quality Assessment Program; the Georgia-Florida coastal plain, by I. H. Kantrowitz. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0154. NEVADA. National Water-Quality Assessment program; Nevada Basin and Range, by H. E. Bevans and K. C. Kilroy. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0156. National Water-Quality Assessment Program; the Albemarle-Pamlico drainage, by O. B. Lloyd, Jr., C. R. Barnes and M. D. Woodside. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0157. National Water-Quality Assessment Program; the Potomac River basin, by J. M. Gerhart. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0159. National Water-Quality Assessment Program; the Connecticut River and Long Island Sound coastal rivers, by S. J. Grady and S. P. Garabedian. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0165. National Water-Quality Assessment Program; the upper Snake River basin, by W. H. Low. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA S, SF, U.) (Water fact sheet.)

OF 91-0168. National Water-Quality Assessment Program; the lower Susquehanna River basin, by K. J. Breen, R. A. Hainly and S. A. Hoffman. 1991. 2 p. (NC, Da, M, Wb, A, Db, LA, S, SF, U.) (Water fact sheet.)

OF 91-0170. NEVADA. Yucca Mountain as a nuclear-waste repository; neither myth nor millennium, by I. J. Winograd. 1991. 25 p. (NC, Da, M, Wb.)

OF 91-0171. IOWA. Floods in the Nishnabotna River basin, Iowa, by D. A. Eash and A. J. Heinitz. Prepared in cooperation with the Iowa Department of Transportation, Highway Division. 1991. 118 p. (NC, Da, M, Wb.)

OF 91-0176. TENNESSEE. Ground-water use by public-supply systems in Tennessee in 1988, by S. S. Hutson. Prepared in cooperation with the Tennessee Department of Health and Environment. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 7777 Walnut Grove Rd., Suite LLB2, Memphis, TN 38119.)

OF 91-0177. MISSISSIPPI. Tritium in ground water in Mississippi, 1989-90, by L. J. Slack and W. T. Oakley. Prepared in cooperation with the Mississippi Department of Environmental Quality, Office of Pollution Control. 1991. 12 p. (NC, Da, M, Wb.)

OF 91-0179. Lower Colorado River Accounting System (LCRAS) computer program and documentation, by B. K. von Allworden, S. J. Owen-Joyce, J. D. Sandoval and L. H. Raymond. Prepared in cooperation with the U.S. Bureau of Reclamation. 1991. 199 p. (NC, Da, M, Wb, F; USGS, WRD, Room 5A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 1545 West University, Tempe, AZ 85281; and 1940 South 3rd Ave., Yuma, AZ 85364.)

OF 91-0183. User's manual for WATEQ4F, with revised thermodynamic data base and test cases for calculating speciation of major, trace, and redox elements in natural waters, by J. W. Ball

and D. K. Nordstrom. 1991. 193 p., one 5 1/4 inch diskette. (NC, Da, M, Wb.)

The WATEQ4F software package consists of one high density (1.2MB) diskette and requires an IBM PC or compatible with DOS version 2.1 or higher. A hard disk is not absolutely required, but is highly recommended, as your use of the software will be significantly restricted in the absence of the large amount of storage space that a hard disk provides.

OF 91-0186. KANSAS. Geohydrologic data for the South Fork Ninnescah River valley and adjacent uplands in Pratt and Kingman counties, south-central Kansas, by J. B. Gillespie, G. D. Hargadine, N. C. Myers and D. A. Hargadine. Prepared in cooperation with the Kansas Water Office, the City of Wichita, and Sedgwick County. 1991. 55 p. (NC, Da, M, Wb; USGS, WRD, 4821 Quail Place, Lawrence, KS 66049; and 206 Fulton Terrace, Garden City, KS 67846.)

OF 91-0188. NORTH DAKOTA. Water-resources activities, North Dakota District, fiscal year 1990, compiled by C. R. Martin. 1991. 99 p. (NC, Da, M, Wb; USGS, WRD, 821 East Interstate Ave., Bismarck, ND 58501-1199.)

OF 91-0190. FLORIDA. Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1990, by R. M. Spechler, L. C. Murray, L. A. Bradner and G. G. Phelps. Prepared in cooperation with the St. Johns River Water Management District, South Florida Water Management District, and the Southwest Florida Water Management District. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, Suite 3015, 227 North Bronough St., Tallahassee, FL 32301; Suite 1006, 224 West Center St., Altamonte Springs, FL 32714; Suite 222, 3728 Phillips Hwy., Jacksonville, FL 32207; Suite 107, 9100 Northwest 36 St., Miami, FL 33178; and Suite B-5, 4710 Eisenhower Blvd., Tampa, FL 33634.)

OF 91-0191. MONTANA. Water-resources activities of the U.S. Geological Survey in Montana, October 1989 through September 1991, by C. J. Harksen and K. S. Midtlyng. Prepared in cooperation with the State of Montana and other agencies. 1991. 77 p. (NC, Da, M, Wb, Db, S, U; USGS, WRD, 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., Box 111, 1500 North 30th, Billings, MT 59101.)

OF 91-0193. CALIFORNIA. Evaluation of selected data to assess the causes of subsidence in the Sacramento-San Joaquin Delta, California, by S. A. Rojstaczer, R. E. Hamon, S. J. Deverel and C. A. Massey. Prepared in cooperation with the California Department of Water Resources. 1991. 16 p. (NC, Da, M, Wb, SF, LA; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

OF 91-0194. MONTANA. Quality-assurance plan for water-resources activities of the U.S. Geological Survey in Montana; 1991, by J. A. Moreland. 1991. 30 p. (NC, Da, M, Wb, Db, S; USGS, WRD, 428 Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., 1500 North 30th, Billings, MT 59101.)

OF 91-0196. ARIZONA, NEW MEXICO. Historic water-quality data, Puerco River basin, Arizona and New Mexico, by Laurie Wirt, P. C. Van Metre and B. O. Favor. Prepared in cooperation with the Office of Navajo and Hopi Indian Relocation, U.S. Bureau of Indian Affairs, Navajo Nation, Arizona Department of Water Resources, Arizona Department of Environmental Quality, and New Mexico Environmental Improvement Division. 1991. 339 p., 2 over-size sheets. (NC, Da, M, Wb; USGS, WRD, 375 South Euclid Ave., Tucson, AZ 85719; USGS, 1545 West University Dr., Tempe, AZ 85281; USGS, WRD, 1940 South 3rd Ave., Yuma, AZ 85364; and Flagstaff, AZ 86001.)

OF 91-0198. The U.S. Geological Survey Federal-State Cooperative Water-Resources Program, fiscal year 1990, by B. K. Gilbert and W. B. Mann, IV. 1991. 39 p. (NC, Da, M, Wb.)

OF 91-0199. RHODE ISLAND. Ground-water resources of Rhode Island, by E. C. Trench. Prepared in cooperation with the Rhode Island Department of Environmental Management. 1991. 169 p. (NC, Da, M, Wb.)

OF 91-0201. LOUISIANA. Water-resources activities of the Louisiana District, 1988-89, compiled by L. F. Farrar. 1991. 38 p. (NC, Da, M, Wb; USGS, WRD, 6554 Florida Blvd., Baton Rouge, LA 70896.)

OF 91-0203. ARKANSAS. Summary of reported water use for Arkansas counties, 1989, by N. T. Baker and C. A. Manning. Prepared in cooperation with the Arkansas Soil and Water Conservation Commission. 1991. 19 p. (NC, Da, M, Wb.)

OF 91-0210. COLORADO. Summary of water-resources activities of the U.S. Geological Survey in Colorado; fiscal year 1991, compiled by P. A. Griffith. 1991. 72 p., 1 over-size sheet, scale 1:1,000,000 (1 inch = about 16 miles). (NC, Da, M, Wb, Db; USGS, WRD, Room H-2101, Bldg. 53, Box 25046, Mail Stop 415, Denver Federal Ctr., Denver, CO 80225-0046.)

OF 91-0214. PENNSYLVANIA. Water-resources investigations in Pennsylvania; programs and activities of the U.S. Geological Survey, 1990-91, by L. O. McLanahan. 1991. 73 p. (NC, Da, M, Wb; USGS, WRD, 840 Market St., Lemoyne, PA 10743-1586.)

OF 91-0216. MONTANA. Quality assurance for water-quality activities of the U.S. Geological Survey in Montana, by J. R. Knapton and D. A. Nimick. 1991. 41 p. (NC, Da, M, Wb, Db, U, S; USGS, WRD, Room 428, Federal Bldg., 301 South Park Ave., Helena, MT 59626-0076; and Eastern Montana Coll., 1500 North 30th, Billings, MT 59101.)

OF 91-0218. Software quality assurance in the National Water Information System, by G. R. Dempster, Jr. and C. F. Merk. 1991. 17 p. (NC, Da, M, Wb.)

OF 91-0224. WRD project and report management guide, by J. H. Green. 1991. 152 p. (NC, Da, M, Wb.)

OF 91-0227. CALIFORNIA. Transport and transformation of dissolved rice pesticides in the Sacramento River delta, California, by J. L. Domagalski and K. M. Kuivila. 1991. 5 p. (NC, Da, M, Wb, S, LA; USGS, WRD, Room W-2234, Federal Bldg., 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Road, Suite O, San Diego, CA 92123.)

OF 91-0256-A. NEVADA. Principal facts for 133 gravity stations, with color maps of Bouguer and isostatic residual gravity anomalies on the Winnemucca 1° by 2° Quadrangle, Nevada, by R. F. Sikora. 1991. 40 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 91-0256-B. NEVADA. Principal facts for gravity stations on the Winnemucca 1° by 2° Quadrangle, Nevada, by R. F. Sikora. 1991. One 3 1/2 inch diskette. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

Double-sided, high-density (1.44MB) diskette, containing files in ASCII format. Requirements: IBM PC or compatible, DOS v. 2.0 or higher, with a 3 1/2 inch disk drive or a Macintosh with a Super Drive and Apple File Exchange software to convert from PC to MAC.

OF 91-0257. The stable isotope geochemistry of acid-sulfate alteration and vein forming alunite, by R. O. Rye, P. M. Bethke and M. D. Wasserman. 1991. 59 p. (NC, Da, M.)

OF 91-0258. WYOMING. The Laramie Mountains, Wyoming, earthquake of 18 October 1984; a report on its aftershocks and seismotectonic setting, by C. J. Langer, R. A. Martin, C. K. Wood, G. L. Snyder and G. A. Bollinger. 1991. 41 p. (NC, Da, M, Db, U; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071.)

OF 91-0259-A. IDAHO. Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho, by J. J. Connor. 1991. 25 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0259-B. IDAHO. Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho, by J. J. Connor. 1991. One 5 1/4 inch diskette. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

360K double-sided, double-density diskette; IBM PC or compatible with 512K RAM using DOS 2.0 or higher. Two non-ASCII files contain the same data readable by the USGS system of STATPAC programs. Use of the STATPAC programs requires a mathematical coprocessor.

OF 91-0260. Gold deposits along the Río Madera, northern Bolivia, by G. E. McKelvey. 1991. 27 p. (NC, Da, M.)

OF 91-0262. An RSX-11M/M-Plus device driver for the Advanced Computer Communications ACP 5100/6100 communications interface, by L. M. Baker. 1991. 28 p. (NC, Da, M.) (Supersedes Open-file report 88-515.)

OF 91-0269. OKLAHOMA. Density and magnetic susceptibility measurements of rocks in the Wichita Uplift and Slick Hills, southwestern Oklahoma, by Lee-Ann Bradley and Meridee Jones-Cecil. 1991. 31 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)

OF 91-0270. CALIFORNIA. Response plans for volcanic hazards in the Long Valley Caldera and Mono Craters area, California, by D. P. Hill, M. J. Johnston, J. O. Langbein, S. R. McNutt, C. D. Miller, C. E. Mortensen, A. M. Pitt and S. A. Rojstaczer. Prepared in cooperation with the California Division of Mines and Geology. 1991. 65 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.) (Supersedes Open-file report 84-500.)

OF 91-0271. CALIFORNIA. Analytical results and sample locality map of stream-sediment and panned-concentrate samples from the Garberville 1:100,000 Quadrangle (southwest quarter of the Redding, California 1:250,000 Quadrangle), Humboldt, Trinity, Shasta, Tehama, and Mendocino counties, California, by S. M. Smith, M. L. Silberman, R. M. O'Leary and R. T. Hopkins, Jr. 1991. 86 p., 1 over-size sheet, scale 1:100,000 (1 inch = about 1.6 miles). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0272. LOUISIANA. Cartographic production for the Louisiana barrier island erosion study; 1, Processing land features, by D. A. Hopkins and J. H. List. 1991. 22 p. (NC, Da, M.)

OF 91-0275. VERMONT. Reconnaissance bedrock geologic map of the Randolph Center Quadrangle, Vermont, by N. L. Hatch, Jr. 1991. 8 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M.)

OF 91-0276. LOUISIANA. Louisiana barrier island erosion study; correction for the effect of relative sea level change on historical bathymetric survey comparisons, Isles Dernieres area, Louisiana, by B. E. Jaffe, J. H. List, A. H. Sallenger, Jr. and K. T. Holland. 1991. 33 p. (NC, Da, M.)

OF 91-0277. OREGON. Preliminary geologic map of the Dolph Quadrangle, Lincoln, Tillamook, and Yamhill counties, Oregon, by P. D. Snavely, Jr., N. S. MacLeod and D. L. Minasian. 1991. 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland OR 97201.)

OF 91-0278. CALIFORNIA. Geologic map of the Gilroy 7.5 minute Quadrangle, California, by E. J. Helley and J. K. Nakata. 1991. 10 p., 1 over-size sheet. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0279. OREGON. Cruise report, 1990 Oregon placer mineral research cruise (A1 90WO), September 21–October 3, 1990, by H. E. Clifton, G. G. Connard, Joe Fisher, David Fox, C. L. Mardock, G. R. McMurray, R. J. O'Brien, C. D. Peterson, Rick Starr and J. R. Woolsey. 1991. 81 p. (NC, Da, M, S, LA, SF; Oregon Dep. of Geol. and Mineral Industries, 910 State Office Bldg., Portland, OR 97201.)

OF 91-0280. IDAHO. The Putnam Thrust, northern Portneuf Range, southeastern Idaho; structural complexities caused by upper-plate imbricate thrusting and Neogene block rotation, by K. S. Kellogg. 1991. 37 p. (NC, Da, M, SF, U, S; Idaho Geol. Surv., Univ. of Idaho Campus, Morrill Hall, Room 332, Moscow, ID 83843.)

OF 91-0281. COLORADO. Investigation of foundation problems related to heaving of soils and weathered bedrock in the Pierre Shale southwest of Denver, Colorado, by T. C. Nichols, Jr., *with sections on* Clay mineralogy, by D. D. Eberl, and Seismic-reflection data interpretation, by R. A. Williams and K. W. King. 1991. 40 p. (NC, Da, M, Db, U; John W. Rold, Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203; Donald Fawcett, Office of the State Engineer, Ground Water Section, Room 818, 1313 Sherman St., Denver, CO 80203.)

OF 91-0283-A. ALASKA. Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska, by D. M. Hopkins, J. E. Gray, P. L. Hageman, C. M. McDougal and K. E. Slaughter. 1991. 37 p., 1 oversize sheet, scale 1:250,000 (1 inch = about 4 miles). (NC, Da, M, LA, SF, S, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510.)

OF 91-0283-B. ALASKA. Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska, by D. M. Hopkins, J. E. Gray, P. L. Hageman, C. M. McDougal and K. E. Slaughter. 1991. One 5 1/4 inch diskette. (NC, Da, M, LA, SF, S, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160; Alaska Div. of Geol. and Geophys. Surv., P.O. Box 7028, Anchorage, AK 99510.)

The text file is in ASCII format and the data file is in STATPAC format (.STP). A conversion program STP2DAT is included on the diskette so that the .STP data file may be changed to a number of other forms including telecommunications (.cmn), Lotus 1-2-3 (.dif), and database (.dbf) files. Requirements: an IBM compatible computer using MS DOS, and a 5 1/4 inch, 360K drive.

OF 91-0284. 3rd annual southern Lake Michigan coastal erosion study workshop, edited by D. W. Folger, S. M. Colman and P. W. Barnes. 1991. 80 p. (NC, Da, M.)

Lake ice influence on the coastal profile and sediment transport, and overlooked processes in southern Lake Michigan, by P. W. Barnes, E. W. Kempema, Erk Reimnitz and Michael McCormick. p. 14-16.

Analysis of possible effects of summer storm waves on Lake Michigan lakebed properties in the Illinois Beach State Park nearshore zone, by J. S. Booth and W. J. Winters. p. 17-18.

Late Holocene coastal evolution of the central Chicago lakeshore and model for related evolution of the Chicago River, by M. J. Chrzastowski. p. 19-21.

Rates of sedimentation in southern Lake Michigan and their relation to changing lake levels, by S. M. Colman. p. 22-23.

Indiana Shoals; a dynamic sedimentary environment, by D. W. Folger, J. S. Schlee, D. S. Foster, C. F. Polloni, B. A. Seekins, C. L. Brown and A. C. Olson. p. 24.

Holocene history of Lake Michigan; the ostracode record, by R. M. Forester. p. 25-26.

The Chippewa unconformity and the preservation of low lake-level features; observations from high-resolution seismic-reflection profiles, by D. S. Foster and S. M. Colman. p. 27-28.

Nearshore dynamics, ice formation, and sediment transport, by J. W. Haines. p. 29-30.

Video monitoring of ice processes, by R. A. Holman. p. 31.

A 115-year record of bluff recession along the Lake Michigan shoreline in Illinois, by R. W. Jibson and J. G. Staude. p. 32.

Relative lake level changes in the upper Great Lakes; reconstructing the pattern of postglacial warping with accuracy, by C. E. Larsen. p. 33-40.

Eolian sand transport in the backshore–foredune portion of the Lake Michigan shoreline, Indiana, by G. A. Olyphant, S. W. Bennett, G. S. Fraser and T. A. Thompson. p. 41.

CD ROM archive and atlas production; vehicles from data integration, by C. F. Polloni. p. 42.

Geochemical, paleomagnetic, and magnetic-petrologic studies of Holocene sediments in southern Lake Michigan; records of depositional conditions, by R. L. Reynolds, J. W. King, S. M. Colman, A. Nicholson and M. B. Goldhaber. p. 43-45.

Preliminary survey of littoral drift sand deposits along the Illinois shore of Lake Michigan from Waukegan to Evanston, by C. W. Shabica, F. A. Pranschke and M. J. Chrzastowski. p. 46.

Mathematical trends in the erosional evolution of a logarithmic-spiral bay on the Illinois shore, by P. D. Terpstra and M. J. Chrzastowski. p. 47-48.

Preservation of patterns of shoreline behavior in the southern part of the Lake Michigan basin, by T. A. Thompson. p. 49-50.

Modeling beach and nearshore profile response to lake level change and storm wave forcing, by W. L. Wood. p. 51-52.

OF 91-0286. Mineral deposits and occurrences of the Bolivian Altiplano and Cordillera Occidental, compiled by U.S. Geological Survey and Servicio Geólogico de Bolivia. Prepared in cooperation with the U.S. State Department, Trade Development Program. 1991. 328 p. (NC, Da, M.)

OF 91-0287. WYOMING, MONTANA, SOUTH DAKOTA. Principal facts for 1040 gravity stations in the Gillette and Sheridan 1×2 degree quadrangles, and Crow Indian Reservation, Wyoming, Montana, and South Dakota, by Courteney Williamson and S. L. Robbins. 1991. 59 p. (NC, Da, M, Db, U, S; Geol. Surv. of Wyoming, P.O. Box 3008, University Station, Laramie, WY 82071; Montana Bur. of Mines and Geol., Montana Coll. of Mineral Sci. and Technol., Butte, MT 59701; Dep. of Water and Natural Resources, South Dakota Geol. Surv., Sci. Ctr., Univ. of South Dakota, Vermillion, SD 57069.)

OF 91-0288. CALIFORNIA. Preliminary geologic map of the Thousand Oaks 7.5′ Quadrangle, Southern California, by R. F. Yerkes and P. K. Showalter. 1991. 10 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0289. WASHINGTON. Preliminary geologic map of the Lakeview Peak Quadrangle, Cowlitz County, Washington, by R. C. Evarts and R. P. Ashley. Prepared in cooperation with the Washington Department of Natural Resources. 1991. 35 p., 1 over-size sheet, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

OF 91-0290. NEVADA, CALIFORNIA. Late Cenozoic stratigraphy and tectonics of Fish Lake valley, Nevada and California; road log and contributions to the field trip guidebook, 1991 Pacific Cell,

Friends of the Pleistocene, by M. C. Reheis, A. M. Sarna-Wojcicki, C. E. Meyer, E. H. McKee, J. L. Slate, D. M. Burbank, T. L. Sawyer and E. G. Pendall. 1991. 93 p. (NC, Da, M, SF, LA, U, Db; California Dep. of Conservation, Div. of Mines and Geol., Room 1341, Resources Bldg., 1416 9th St., Sacramento, CA 95814; 367 Civic Dr., Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Room 1065, Los Angeles, CA 90012; Nevada Bur. of Mines and Geol., Univ. of Nevada-Reno, Reno, NV 89557-0088.)

Road log for field trip in Fish Lake valley, California-Nevada, by M. C. Reheis, T. L. Sawyer, E. G. Pendall and J. L. Slate. p. 2-25.

Late Cenozoic history of slip on the Fish Lake valley fault zone, Nevada and California, by M. C. Reheis and E. H. McKee. p. 26-45.

The late Cenozoic section at Willow Wash, east-central California; a tephrochronologic rosetta stone, by M. C. Reheis, A. M. Sarna-Wojcicki, D. M. Burbank and C. E. Meyer. p. 46-66.

An early Pleistocene pluvial lake in Fish Lake valley, Nevada-California; ringside resort for the eruption of the Bishop Tuff, by M. C. Reheis, J. L. Slate, A. M. Sarna-Wojcicki and C. E. Meyer. p. 67-93.

OF 91-0291. NEVADA. Soil formation on the Trail Canyon alluvial fan, Fish Lake valley, Nevada, by J. W. Harden, J. L. Slate, P. J. Lamothe, O. A. Chadwick, E. G. Pendall and A. R. Gillespie. 1991. 29 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 91-0292. ALASKA. Biogeochemistry of selected plant materials, Alaska, by L. P. Gough, R. C. Severson, T. F. Harms, C. S. Papp and H. T. Shacklette. 1991. 30 p. (NC, Da, M, LA, S, SF, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 91-0293. MINNESOTA. Gold contents of 469 outcrop and 1466 B-horizon soil samples from the northwestern part of the Duluth Complex, northeastern Minnesota, by J. B. McHugh and H. V. Alminas. 1991. 26 p. (NC, Da, M; Minnesota Geol. Surv., 2642 University Ave., St. Paul, MN 55114-1057.)

OF 91-0294. PSTRANS; a Macintosh II program to convert ARC/INFO postscript to Adobe Illustrator format, by R. K. Mark. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

ARC/INFO ARCPLOT postscript files need to be converted to Adobe Illustrator art files to permit editing and annotating on the Macintosh platform using Illustrator 3.0. The program PSTRANS will convert ARC/INFO 5.0 ARCPLOT postscript files into Adobe Illustrator art files on a Macintosh SE/30 or Macintosh II class machine.

OF 91-0296. NEVADA. Pedogenic isotopic indicators of climate and carbon cycling in Fish Lake valley, Nevada, by E. G. Pendall, J. W. Harden and S. E. Trumbore. 1991. 18 p. (NC, Da, M, Db, U, SF, LA; Nevada Bur. of Mines and Geol., Univ. of Nevada, Reno, NV 89557.)

OF 91-0299. CALIFORNIA. Map of earthquake epicenters in the San Francisco Bay area, California; 1972-1989, by J. A. Olson and P. K. Showalter. 1991. 1 over-size sheet. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0300-A. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, January 1991, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1991. 18 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 91-0300-B. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, February 1991, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1991. 17 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol. 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 91-0300-C. ALASKA. Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, March 1991, by J. B. Townshend, R. V. O'Connell and C. A. Varner. Prepared in cooperation with the Geophysical Institute of the University of Alaska. 1991. 20 p. (NC, Da, M, A; Jill L. Schneider, Tech. Data Unit, USGS, Branch of Alaskan Geol., 4200 University Dr., Anchorage, AK 99508-4667; USGS College Observatory, 800 Yukon Dr., Fairbanks, AK 99775-5160.)

OF 91-0301. Multifractals in image processing and process imaging, by Lee De Cola. 1991. 23 p. (NC, Da, M, F.)

OF 91-0302. NEW MEXICO. Vitrinite reflectance values of coal from drill-hole cuttings, San Juan Basin, New Mexico, by M. J. Pawlewicz, V. F. Nuccio and J. E. Fassett. 1991. 10 p. (NC, Da, M, Db, U; New Mexico Bur. of Mines and Mineral Resources, Campus Station, Socorro, NM 87801.)

OF 91-0303-A. A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections, by J. J. Miller. 1991. 25 p. (NC, Da, M.)

OF 91-0303-B. A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections, by J. J. Miller. 1991. 2 p., one 5 1/4 inch diskette. (NC, Da, M.)

Program package VELPACK (version 1.2) is designed to create digitized, line-drawing interpretations from time-migrated seismic sections, to transform the interpretation from a time-section to a depth-section by means of ray-tracing techniques (vertical- or image-ray), and to modify the velocity models used for the depth transformation in various ways. MS-DOS programs: The MS-DOS programs were developed using Microsoft Fortran version 5.0 and Microsoft BASIC version 7.1 on a Kaypro 286i microcomputer having an Intel-80286 CPU, enhanced keyboard, math coprocessor and MS-DOS v3.21 operating system. The programs may be run on PC, XT, and AT microcomputers using MS-DOS (PC-DOS) v2.0 or greater. The programs will use a math coprocessor if one is available, otherwise they will use software emulation. Those programs that use on-screen graphics (ISOEDIT, PLOTSEC and DEPTHRAY) will automatically detect and use the highest possible video resolution from the

following: VGA, EGA, CGA (color or monochrome), or Hercules (monochrome). Graphics capability for DEPTHRAY is optional; its output can be stored in files for display on other computers equipped with graphics capability. VAX-programs: The VAX programs are designed to be used with proprietary DISCO seismic data processing software and were developed using Fortran-77 on a DEC VAX 11/780 minicomputer having an FPS-120B array processor, a VERSATEC electrostatic plotter (22-inch wide, black and white), an HSR-11 rasterizer, and VMS v5.1 operating system. The programs that modify velocities are compatible with the DISCO seismic data processing system's database, version 6.0 and above. Proprietary subroutines that access the array processor, Calcomp-equivalent graphics, and Seisdata database were provided by Cogniseis Development Corporation. The array processor is required only for program VSMOOTH; the plotter and rasterizer are used only in programs PLOTSEC and DEPTHRAY. The plotter and rasterizer are optional for DEPTHRAY; its output can be stored in files for display on other computers equipped with such devices. The required input and output files are in standard ASCII format and are 100% compatible between the VAX and MS-DOS computers and should be compatible with other hardware that can utilize ASCII-format files. Both the MS-DOS and VAX version of the digitizing program SECDIG, assume a Summagraphics digitizer having either a 13-key cursor pad (gray key, keys 0-9, #, and keys) or 4-key cursor pad (Z, 1, 2, and 3 keys) and access through the serial port. The source code can be modified and recompiled to accept input for other digitizers. This open-file report is available in paper copy, OF 91-303-A. The executable files for the MS-DOS programs are available on a diskette, OF 91-303-B; the source code for both the VAX and MS-DOS programs is available on diskette, OF 91-303-C. The source code for the proprietary subroutines mentioned above is not provided; only the calling syntax for those subroutines is included. All diskettes are 5 1/4 inches and formatted for 1.2MB capacity.

OF 91-0303-C. A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections, by J. J. Miller. 1991. 2 p., one 5 1/4 inch diskette. (NC, Da, M.)

For software/hardware requirements see OF 91-303-B.

OF 91-0304. Conversion of raster image data to vector cartographic data, by V. F. Paskevich. 1991. 15 p. (NC, Da, M.)

OF 91-0305. LOUISIANA. Cartographic production for the Louisiana barrier island erosion study; 4, Processing contours for color fill, by D. A. Hopkins and J. H. List. 1991. 25 p. (NC, Da, M.)

OF 91-0306. Fluvial gold placers and basin-margin rotation, by E. R. Force. 1991. 14 p. (NC, Da, M.)

OF 91-0309. Pliocene planktic foraminifer census data from Deep Sea Drilling Project Hole 603C, by R. Z. Poore. 1991. 7 p. (NC, Da, M.)

OF 91-0311. CALIFORNIA. A compilation of the geology and measured and estimated shear-wave velocity profiles at strong-motion stations that recorded the Loma Prieta, California, earthquake, by T. E. Fumal. 1991. 163 p. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0314. WASHINGTON. Geologic map of the Tower Rock Quadrangle, southern Cascade Range, Washington, by D. A. Swanson. 1991. 26 p., 2 over-size sheets, scale 1:24,000 (1 inch = 2,000 feet). (NC, Da, M, S, SF, LA; Geol. and Earth Resources Div., Dep. of Natural Resources, 4224 6th Ave. SE, Lacey, WA 98503.)

OF 91-0317. ALASKA. Multichannel seismic-reflection profiles collected in 1980 from southern Bering Sea, Alaska, by A. K. Cooper, M. S. Marlow, E. L. Geist and G. L. Smith. 1991. 4 p. (NC, Da, M, A, S, SF, LA; Alaska Div. of Geol. and Geophys. Surv., 3700 Airport Way, Fairbanks, AK 99709; U.S. Dep. of the Interior, Alaska Resource Library, 701 "C" St., Box 36, Anchorage, AK 99513.)

OF 91-0318. UTAH. Chemical analyses including gold for 373 rock and stream-sediment samples from the Richfield 1° × 2° Quadrangle, Utah, by J. B. McHugh, R. T. Hopkins, Jr., W. R. Miller and D. L. Fey. 1991. 42 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 91-0321. MASSACHUSETTS. Verification of geophysically determined depths to saltwater near the Herring River (Cape Cod National Seashore), Wellfleet, Massachusetts, by D. V. Fitterman and K. F. Dennehy. 1991. 49 p. (NC, Da, M; Coastal Zone Management, 100 Cambridge St., 20th Floor, Boston, MA 02202.)

OF 91-0324. UTAH. Preliminary lithologic and mineralogical data from the Delhi-Taylor Oil Company, Cane Creek No. 1 corehole, Grand County, Utah, by O. B. Raup and R. J. Hite. 1991. 24 p. (NC, Da, M, Db, U; Utah Geol. and Mineral Surv., 606 Black Hawk Way, Salt Lake City, UT 84108-1280.)

OF 91-0325. Pliocene planktic foraminifer census data from Deep Sea Drilling Project holes 502A,B,C, by L. B. Wiggs and R. Z. Poore. 1991. 15 p. (NC, Da, M.)

OF 91-0328. Fortran benchmark programs WetC3D and 3DModel4; user's guide, by L. M. Baker. 1991. 28 p. (NC, Da, M.)

OF 91-0329. Parity Fixer (PFX); an RSX-11M/M-Plus utility for creating memory parity error regions in system-controlled partitions, by L. M. Baker and G. L. Maxwell. 1991. 8 p. (NC, Da, M.)

OF 91-0330. COLORADO. Acid-insoluble residue/carbonate content of the Upper Cretaceous Niobrara Formation, Berthoud Field, Denver Basin, Colorado; a key factor for understanding natural fracturing in chalks?, by R. M. Pollastro. 1991. 16 p. (NC, Da, M, Db, U; Colorado Geol. Surv., 1313 Sherman St., Room 715, Denver, CO 80203.)

OF 91-0331. MASSACHUSETTS. Polluted sediments in Boston Harbor–Massachusetts Bay; progress report on the Boston Harbor data management file, by F. T. Manheim and J. C. Hathaway. 1991. 27 p. (NC, Da, M.)

OF 91-0336. CALIFORNIA. Aeromagnetic map of Palo Alto and vicinity, California, by G. A. Abrams, R. P. Kucks and R. E. Bracken. 1991. 1 over-size sheet, scale 1:62,500 (1 inch = about 1 mile). (NC, Da, M, LA, SF; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

OF 91-0338. CALIFORNIA. Computer programs and data bases useful for prediction of ground motion resulting from earthquakes in California and the conterminous United States, by J. F. Evernden. 1991. 56 p., two 3 1/2 inch diskettes. (NC, Da, M, SF, LA; California Dep. of Conservation, Div. of Mines and Geol., 660 Bercut Dr., Sacramento, CA 95814-0131; 367 Civic Dr., Suite 16, Pleasant Hill, CA 94523-1997; and State Office Bldg., 107 South Broadway, Los Angeles, CA 90012.)

Minimum requirement is an IBM PC AT or compatible with math coprocessor; minimum of 640K RAM and 20MB of hard-disk storage; VGA monitor with Screen 12 characteristics (640 × 480 pixel, 16 color); ability to read double-sided high-density (DSHD) 1.4MB diskettes. A 25-MHz, 80386 machine with math coprocessor is recommended.

OF 91-0345. E2MCOD; a program to determine and list digital line graph (DLG) line attributes from a CD-ROM titled 1:2,000,000-scale digital line graph (DLG) and E2MGSM; a program to retrieve DLG line data from a CD-ROM titled 1:2,000,000-scale digital line graph and convert those data to a GSMAP database, by G. I. Selner and J. D. Hoffman. 1991. 14 p., one 5 1/4 inch diskette. (NC, Da, M.)

Requires an IBM-PC compatible microcomputer running PC-DOS or MS-DOS 2.0 or later with at least 512K RAM. To use the DLG CD-ROM, you need a CD-ROM drive, and CD-ROM system software. If you want to view the DLG data on the monitor using the display software on the DLG CD-ROM, the minimum display requirements are an EGA monitor and adapter card.

OF 91-0346. Planktic foraminifer census data from Northwind Ridge Core 5, Arctic Ocean, by K. M. Foley and R. Z. Poore. 1991. 6 p. (NC, Da, M.)

OF 91-0347. OKLAHOMA. Sequential extraction analyses of drill core samples, Central Oklahoma Aquifer, by E. L. Mosier, C. S. Papp, J. M. Motooka, K. R. Kennedy and G. O. Riddle. 1991. 41 p. (NC, Da, M; Oklahoma Geol. Surv., Univ. of Oklahoma, 830 Van Vleet Oval, Room 163, Norman, OK 73019.)

OF 91-0350. An automatic, quasi-absolute, geomagnetic calibration system, by E. A. Sauter. 1991. 11 p. (NC, Da, M.)

OF 91-0351. Magnetometer calibration device, by E. A. Sauter. 1991. 9 p. (NC, Da, M.)

OF 91-0390. Slide set describing aspects of the origin of coal, coal mining, and peat formation, by R. W. Stanton and B. S. Pierce. 1991. 4 p., 30 35-mm color slides.

OF 91-0400-A. New information resources of the U.S. Geological Survey Library System, Number 57, January 1991. 1991. 93 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 91-0400-B. New information resources of the U.S. Geological Survey Library System, Number 58, February 1991. 1991. 70 p. (NC, Da, M, A, Db, LA, S, U, SF, Wa.)

OF 91-0463. State water-data reports; a digital representation of the hydrologic records of the United States for water-year 1990, by D. F. Alt. 1991. 1 CD-ROM. (NC, Da, M, Wb.)

OF 91-0479. NEVADA, UTAH. Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states, by D. H. Schaefer. 1991. 4 p., one 5 1/4 inch diskette. (NC, Da, M, Wb, LA, SF, U; USGS, WRD, 705 North Plaza St., Room 224, Carson City, NV 89701; and 1500 East Tropicana, Suite 201, Las Vegas, NV 89119.)

This open-file report is contained on a 5 1/4 inch, high-density diskette. The files are written in American Standard Code for Information Interchange (ASCII) format. These ASCII input, output, and text files require approximately 220,000 bytes of disk space on an IBM-compatible microcomputer using the MS-DOS operating system, 3.3 or greater.

OF 91-0482. CALIFORNIA. Documentation of model input and output values for the geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California, by H. T. Mitten and C. J. Londquist. 1991. 5 p., one 5 1/4 inch diskette. (NC, Da, M, Wb, SF; USGS, WRD, Federal Bldg., Room W-2234, 2800 Cottage Way, Sacramento, CA 95825; and 5735 Kearny Villa Rd., Suite O, San Diego, CA 92123.)

The high-density, double-sided, soft-sectored diskette has a capacity of 1.2MB. Files on the diskette were created on an IBM compatible microcomputer using MS-DOS version 3.3.

OF 91-0576. MacLwfTiff; Scitex Hanshake/LWF to compressed TIFF, by R. K. Mark and P. C. Doherty. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

MacLwfTiff (version 1.0) will convert Scitex Hanshake LWF files to compressed 1-bit TIFF files on a Macintosh SE/30 or Macintosh II class machine. This permits editing of Scitex-scanned linework with Macintosh software. Executable diskette.

OF 91-0577. MacTiffLwf; uncompressed TIFF Scitex Hanshake LWF, by R. K. Mark and P. C. Doherty. 1991. One 3 1/2 inch diskette. (NC, Da, M.)

MacTiffLwf (version 1.0) will convert uncompressed 1-bit TIFF files to Scitex Hanshake LWF files on a Macintosh SE/30 or Macintosh II class machine. This permits vectorizing of bitmapped linework with Scitex software. Executable diskette.

Reports Available Only Through Certain Geological Survey Field Offices

For information on availability and price of these reports, write to the address indicated by a dagger (†) in the listing for the report.

OF 85-0410. ARIZONA. Annual summary of ground-water conditions in Arizona, spring 1983 to spring 1984. 1985. 2 sheets. (NC, Da, M, Wb; USGS, WRD, Room 5-A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ; 2255 North Gemini Dr., Bldg. 3, Flagstaff, AZ; and 1940 South Third Ave., Yuma, AZ.) †USGS, WRD, Federal Bldg., FB-44, 300 West Congress St., Tucson, AZ 85701.

OF 86-0422-W. ARIZONA. Annual summary of ground-water conditions in Arizona, spring 1984 to spring 1985. 1986. 2 p. (NC, Da, M, Wb; USGS, WRD, Room 5-A Federal Bldg., 300 West Congress St., Tucson, AZ 85701; 3738 North 16th St., Suite E, Phoenix, AZ; 2255 North Gemini Dr., Bldg. E, Flagstaff, AZ; and 1940 South Third Ave., Yuma, AZ.) †USGS, WRD, Federal Bldg., FB-44, 300 West Congress St., Tucson, AZ 85701.)

OF 91-0079. HAWAII. Distribution of ground-water recharge, Oahu, Hawaii, by P. J. Shade. 1991. 1 over-size sheet. (NC, Da, M, Wb; USGS, WRD, 677 Ala Moana Blvd., Suite 415,

Honolulu, HI 96813.) †USGS, WRD, 677 Ala Moana Blvd., Suite 415, Honolulu, HI 96813.

OF 91-0128. UTAH. Earthquakes in Utah, 1884-1989, by S. K. Goter. 1991. 1 over-size sheet, scale 1:500,000 (1 inch = about 8 miles). (NC, Da, M.) †Susan Goter, USGS, Denver Federal Ctr., Mail Stop 967, Box 25046, Denver, CO 80225; telephone 303-236-1602.

MAPS

GEOLOGIC QUADRANGLE MAPS

Multicolor geologic maps on topographic bases in 7 1/2- or 15-minute quadrangle units; scales mainly 1:24,000 or 1:62,500; show bedrock, surficial, or engineering geology. Maps are accompanied by brief texts and some maps by structure and columnar sections also.

GQ-1638. PENNSYLVANIA. Geologic map of the Saylorsburg Quadrangle, Monroe and Northampton counties, Pennsylvania, by J. B. Epstein. 1990. Lat 40°52′30″, to 41°, long 75°15′ to 75°22′30″. Scale 1:24,000 (1 inch = 2000 feet). Sheet 56 by 40 inches (in color).

GQ-1646. NEW MEXICO. Geologic map of the Todilto Park Quadrangle, McKinley County, New Mexico, by R. E. Thaden. 1990. Lat 35°52′30″ to 36°, long 108°52′30″ to 109°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 32 1/2 inches (in color).

GQ-1662. NEW YORK. Bedrock geologic map of the Poughquag Quadrangle, New York, by N. M. Ratcliffe and W. C. Burton. 1990. Lat 41°30′ to 41°37′30″, long 73°37′30″ to 73°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 57 by 41 inches (in color).

GQ-1668. WEST VIRGINIA, VIRGINIA. Geologic map of the Anawalt Quadrangle, West Virginia–Virginia, by V. A. Trent and F. D. Spencer. 1990. Lat 37°15′ to 37°22′30″, long 81°22′30″ to 81°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 32 inches (in color).

GQ-1674. TENNESSEE. Geologic map of part of the Jellico East Quadrangle, Campbell and Claiborne counties, Tennessee, by C. L. Rice and W. L. Newell. 1990. Lat 36°30′ to 36°37′30″, long 84° to 84°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 32 inches (in color).

GQ-1677. MASSACHUSETTS, NEW HAMPSHIRE. Surficial geologic map of the Townsend Quadrangle, Middlesex and Worcester counties, Massachusetts, and Hillsborough County, New Hampshire, by Carl Koteff and B. D. Stone. 1990. Lat 42°37′30″ to 42°45′, long 71°37′30″ to 71°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 51 by 33 inches (in color).

GQ-1684. ARIZONA. Geologic map of the Vicksburg Quadrangle, La Paz County, Arizona, by D. R. Sherrod, R. D. Koch and M. J. Grubensky. 1990. Lat 33°30′ to 33°45′, long 113°45′ to 114°. Scale 1:62,500 (1 inch = about 1 mile). Sheet 32 by 27 inches (in color).

GQ-1685. NEW MEXICO. Geologic map of the Horse Mountain West Quadrangle, Catron County, New Mexico, by J. C. Ratté, W. C. McIntosh and B. B. Houser. 1991. Lat 33°52′30″ to 34°, long 108°07′30″ to 108°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 34 inches (in color). (Supersedes Open-file report 89-210.)

GQ-1687. VERMONT. Bedrock geologic map of the Woodford Quadrangle, Vermont, by W. C. Burton. 1991. Lat 42°52′30″ to 43°, long 73° to 73°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 40 inches (in color).

GQ-1689. COLORADO. Geologic map of the Gothic Quadrangle, Gunnison County, Colorado, by D. L. Gaskill, F. E. Mutschler, J. H. Kramer, J. A. Thomas and S. G. Zahony. 1991. Lat 38°52′30″ to 39°, long 106°52′30″ to 107°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 34 inches (in color). (Accompanied by 8-page text.)

GQ-1691. MAINE. Bedrock geologic map of the Orland Quadrangle, Hancock and Penobscot counties, Maine, by D. R. Wones. 1991. Lat 44°30′ to 44°45′, long 68°30′ to 68°45′. Scale 1:62,500 (1 inch = about 1 mile). Sheet 27 by 25 inches (in color).

GQ-1692. MAINE. Bedrock geologic map of the Bucksport Quadrangle, Waldo, Hancock, and Penobscot counties, Maine, by D. R. Wones. 1991. Lat 44°30′ to 44°45′, long 68°45′ to 69°. Scale 1:62,500 (1 inch = 1 mile). Sheet 26 by 25 inches (in color).

GQ-1695. UTAH, COLORADO. Geologic map of the Hoy Mountain Quadrangle, Daggett and Uintah counties, Utah, and Moffat County, Colorado, by W. R. Hansen and P. D. Rowley. 1991. Lat 40°37′30″ to 40°45′, long 109° to 109°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 31 inches (in color).

GQ-1698. MASSACHUSETTS. Bedrock geologic map of the Ipswich Quadrangle, Essex County, Massachusetts, by W. H. Dennen. 1991. Lat 42°37′30″ to 42°45′, long 70°45′ to 70°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 40 by 34 inches (in color).

GQ-1701. NEVADA. Geologic map of the Indian Cove Quadrangle, Lincoln County, Nevada, by P. D. Rowley and R. R. Shroba. 1991. Lat 37°37′30″ to 37°45′, long 114°22′30″ to 114°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 36 by 33 inches (in color). (Supersedes Open-file report 90-224.)

GQ-1704. MONTANA. Geologic map of the Hansen Ranch Quadrangle, Beaverhead County, Southwest Montana, by J. W. M'Gonigle, M. A. Kirschbaum and J. N. Weaver. 1991. Lat 44°52′30″ to 45°, long 113° to 113°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 34 inches (in color).

GEOPHYSICAL INVESTIGATIONS MAPS

Maps on topographic or planimetric bases; various scales; show results of surveys using geophysical techniques, such as gravity, magnetic, seismic, or radioactivity, which reflect subsurface structures that are of economic or geologic significance. Many maps are correlated with the geology.

GP-0988. WASHINGTON. Gravity anomaly and terrain maps of Washington, by C. A. Finn, W. M. Phillips and D. L. Williams. 1991. Five sheets. Sheet 1, lat 46° to 49°, long 117° to 126°; sheet 2, lat 45°30′ to 49°, long 121°30′ to 126°; sheet 3, lat 46° to 49°, long 117° to 121°30′; sheets 4 and 5, lat 46° to 49°, long 117° to 126°. Sheet 1, scale 1:1,000,000 (1 inch = about 16 miles); sheets 2 and 3, scale 1:500,000 (1 inch = about 8 miles); sheets 4 and 5, scale 1,000,000 (1 inch = about 16 miles). Sheet 1, 31 1/2 by 44 inches; sheets 2 and 3, 32 by 40 inches; sheets 4 and 5, 32 by 38 inches (all in color).

GP-0992. ALASKA. Aeromagnetic map of Alaska from lat 65°-68°N, long 141°-162°W; color-shaded relief, by J. W. Cady.

1990. Two sheets. Sheet 1, lat 65° to 68°, long 151°30′ to 162°; sheet 2, lat 65° to 68°, long 141° to 151°30′. Each sheet, scale 1:500,000 (1 inch = about 8 miles). Each sheet 43 by 40 inches (all in color).

GP-1001. NEVADA. Geophysical logs and core measurements for forty boreholes at Yucca Mountain, Nevada, by P. N. Nelson, D. C. Muller, Ulrich Schimschal and J. E. Kibler. 1991. 10 sheets. Lat 36°47′ to 36°53′, long 116°24′ to 116°28′. Scale 1:1,200 (1 inch = 100 feet). Sheet 1, 43 by 41 1/2 inches; sheet 2, 55 1/2 by 43 1/2 inches; sheet 3, 57 by 40 1/2 inches; sheet 4, 57 by 40 inches; sheet 5, 57 by 38 1/2 inches; sheet 6, 47 by 34 inches; sheet 7, 34 by 53 1/2 inches; sheet 8, 36 1/2 by 54 inches; sheet 9, 35 1/2 by 56 inches; sheet 10, 57 by 29 inches. (Accompanied by 64-page text.)

MISCELLANEOUS INVESTIGATIONS SERIES MAPS

Maps on planimetric or topographic bases; regular and irregular areas; various scales; a wide variety of format and subject matter. The series also includes 7 1/2-minute quadrangle photogeologic maps on planimetric bases which show geology as interpreted from aerial photographs. Series also includes maps of Mars and the Moon.

I-1310-H. NEW MEXICO, ARIZONA. Petrochemistry of igneous rocks, Silver City 1° × 2° Quadrangle, New Mexico and Arizona, by W. N. Sharp. 1991. Two sheets. Sheet 1, lat 32° to 33°, long 108° to 110°. Sheet 1, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 50 by 32 inches; sheet 2, 48 by 32 inches (all in color). (Accompanied by 7-page text.)

I-1745. WASHINGTON. Surficial geologic map of the Skykomish and Snoqualmie rivers area, Snohomish and King counties, Washington, by D. B. Booth. 1990. Two sheets. Sheet 1, lat 47°30′ to 48°, long 121°30′ to 122°. Sheet 1, scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 32 by 50 inches; sheet 2, 18 by 26 inches (all in color). (Accompanied by 22-page text.) (Supersedes Open-file report 84-213.)

I-1802-A,B,C. Geologic maps of the western equatorial, eastern equatorial and polar regions of Mars, by D. H. Scott, K. L. Tanaka, Ronald Greeley and J. E. Guest. Prepared for the National Aeronautics and Space Administration. 1987 (1991). Three sheets. Sheet 1, lat -57° to 57°; long 0° to 180°; sheet 2, lat -57° to 57°, long 180° to 360°; sheet 3, North Pole and South Pole. Sheets 1 and 2, scale 1:15,000,000 (1 mm = 15 km) at 0° lat; sheet 3, scales 1:9,203,425 (1 mm = 9.2 km) at ±90° lat and 1:8,418,000 (1 mm = 8.418 km) at ±56° lat. Sheet 1, 54 by 40 inches; sheets 2 and 3, 51 1/2 by 40 inches (all in color). (Sheets 1 and 2, Mercator projection; sheet 3, Polar stereographic projections.) (Reprint.)

I-1803-F. IDAHO, MONTANA. Maps showing mineral resource assessment for placer gold and silver, Dillon 1° × 2° Quadrangle, Idaho and Montana, by R. C. Pearson, J. S. Loen, C. M. Trautwein, U.S. Geological Survey; E. T. Ruppel, Montana Bureau of Mines and Geology; and S. H. Moll, TGS, Inc. 1991. Lat 45° to 46°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 52 by 41 1/2 inches (in color).

I-1824. COLORADO. Surficial geologic map of the Walden 30′ × 60′ Quadrangle, Jackson, Larimer, and Routt counties, Colorado, by R. F. Madole. 1991. Lat 40°30′ to 41°, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 31 inches (in color).

I-1825. COLORADO. Surficial geologic map of the Steamboat Springs 30′ × 60′ Quadrangle, Grand, Jackson, and Routt counties, Colorado, by R. F. Madole. 1991. Lat 40° to 40°30′, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 56 by 31 inches (in color).

I-1882. IDAHO. Geologic map of the Bayhorse area, central Custer County, Idaho, by S. W. Hobbs, W. H. Hays and D. H. McIntyre. 1991. Lat 44°07′30″ to 44°30′, long 114° to 114°32′30″. Scale 1:62,500 (1 inch = about 1 mile). Sheet 58 by 41 1/2 inches (in color). (Accompanied by 14-page text.)

I-1891. OREGON. Geologic map of a part of the Cascade Range between latitudes 43°-44°, central Oregon, by D. R. Sherrod. 1991. Lat 43° to 44°, long 122° to 122°30′. Scale 1:25,000 (1 inch = about 2,000 feet). Sheet 32 by 41 inches (in color). (Accompanied by 14-page text.)

I-1923-B. WYOMING. Complete Bouguer anomaly gravity map of the Buffalo 30′ × 60′ Quadrangle, Johnson and Campbell counties, Wyoming, by S. L. Robbins. 1991. Lat 44° to 44°30′, long 106° to 107°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 40 by 31 1/2 inches (in color).

I-1929. ALASKA. Reconnaissance geologic map of the De Long Mountains A-3 and B-3 quadrangles and parts of the A-4 and B-4 quadrangles, Alaska, by C. F. Mayfield, S. M. Curtis, Inyo Ellersieck and I. L. Tailleur. 1990. Two sheets. Sheet 1, lat 68° to 68°30′, long 163°12′ to 164°09′07″; sheet 2, lat 68° to 68°35′, long 162° to 164°09′07″. Sheet 1, scale 1:63,360 (1 inch = 1 mile). Sheet 1, 40 by 54 inches; sheet 2, 40 by 34 inches (all in color). (Supersedes Open-file report 83-183.)

I-1930. ALASKA. Reconnaissance geologic map of the De Long Mountains A-1 and B-1 quadrangles and part of the C-1 quadrangle, Alaska, by S. M. Curtis, Inyo Ellersieck, C. F. Mayfield and I. L. Tailleur. 1990. Two sheets. Sheet 1, lat 68° to 68°35′, long 162° to 162°36′; sheet 2, lat 68° to 68°35′, long 162° to 164°09′07″. Sheet 1, scale 1:63,360 (1 inch = 1 mile). Sheet 1, 38 by 54 inches; sheet 2, 40 by 39 inches (all in color). (Supersedes Open-file report 83-185.)

I-1931. ALASKA. Reconnaissance geologic map of the De Long Mountains A-2 and B-2 quadrangles and part of the C-2 quadrangle, Alaska, by Inyo Ellersieck, S. M. Curtis, C. F. Mayfield and I. L. Tailleur. 1990. Two sheets. Sheet 1, lat 68° to 68°35′, long 162°36′ to 163°12′; sheet 2, lat 68° to 68°35′, long 162° to 164°09′07″. Sheet 1, scale 1:63,360 (1 inch = 1 mile). Sheet 1, 38 by 54 inches; sheet 2, 40 by 43 inches (all in color). (Supersedes Open-file report 83-184.)

I-1937. UTAH. Geologic map of the Nephi 30′ × 60′ Quadrangle, Carbon, Emery, Juab, Sanpete, Utah, and Wasatch counties, Utah, by I. J. Witkind and M. P. Weiss. 1991. Lat 39°30′ to 40°, long 111° to 112°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 55 by 41 1/2 inches (in color). (Accompanied by 16-page text.) (Supersedes Open-file report 85-466.)

I-1944. UTAH, WYOMING. Geologic map of the Salt Lake City 30′ × 60′ Quadrangle, north-central Utah, and Uinta County, Wyoming, by Bruce Bryant, *with a section on* Palynologic data from Cretaceous and lower Tertiary rocks in the Salt Lake City 30′ × 60′ Quadrangle, by D. J. Nichols and Bruce Bryant. 1990. Two sheets. Lat 40°30′ to 41°, long 111° to 112°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 1, 56 by 41 inches (in color); sheet 2, 36 by 28 inches.

I-1947-C. IDAHO. Geologic maps and profiles of the north wall of the Snake River canyon, Thousand Springs and Niagara Springs quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1991. Lat 42°38′15″ to 42°45′, long 114°37′30″ to 114°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 45 by 34 inches (in color).

I-1947-D. IDAHO. Geologic map and profiles of the north wall of the Snake River canyon, Jerome, Filer, Twin Falls, and Kimberly quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1991. Lat 42°32′30″ to 42°40′, long 114°15′ to 114°37′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 53 by 38 1/2 inches (in color).

I-1947-E. IDAHO. Geologic map and profile of the north wall of the Snake River canyon, Eden, Murtaugh, Milner Butte, and Milner quadrangles, Idaho, by H. R. Covington and J. N. Weaver. 1990. Lat 42°27′30″ to 42°35′, long 114° to 114°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 50 by 30 inches (in color).

I-1959-A. MONTANA, WYOMING. Cross sections showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the northern and central Powder River basin, Montana and Wyoming, by M. W. McLellan, L. R. Biewick, C. L. Molnia and F. W. Pierce. 1990. Two sheets. Lat 42°30′ to 47°, long 103°45′ to 108°15′. Scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 37 by 46 inches; sheet 2, 56 by 40 1/4 inches (all in color).

I-1959-C. WYOMING. Cross sections showing coal stratigraphy of the southwestern Powder River basin, Wyoming, by J. K. Hardie. 1991. Lat 42°40′ to 46°, long 104° to 107°25′. Scale 1:500,000 (1 inch = about 8 miles). Sheet 53 by 34 inches (in color).

I-1959-E. MONTANA. Cross section showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the central Powder River basin from Decker to Bear Skull Mountain, Montana, by M. W. McLellan. 1991. Sheet 28 1/2 by 24 inches (in color).

I-1975. ALASKA. Mineralogical maps showing distribution of ore-related minerals in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska, by R. B. Tripp and D. J. Madden. 1991. Lat 61° to 62°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 46 by 42 inches (in color).

I-1976. ALASKA. Geochemical maps showing distribution of anomalously abundant elements in stream-sediment and glacial-moraine samples from the Anchorage 1° × 3° Quadrangle, southern Alaska, by D. J. Madden. 1991. Lat 61° to 62°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 56 by 41 inches (in color).

I-1977. ALASKA. Geochemical maps showing distribution of anomalously abundant elements in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska, by D. J. Madden. 1991. Lat 61° to 62°, long 147° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 56 by 42 inches (in color).

I-1978. NEW MEXICO, COLORADO. Geologic map emphasizing the surficial deposits of the Farmington 30′ × 60′ Quadrangle, New Mexico and Colorado, by A. W. Ward. 1990. Lat 36°30′ to 37°, long 108° to 109°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 49 3/4 by 32 inches (in color).

I-1979. UTAH. Surficial geologic map of the Brigham City Segment and adjacent parts of the Weber and Collinston segments, Wasatch fault zone, Box Elder and Weber counties, Utah, by S. F. Personius. 1990. Lat 41°17′30″ to 41°45′, long 111°52′30″ to 112°08′11″. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 43 by 41 1/2 inches (in color). (Supersedes MF-2042.)

I-1982. NEW JERSEY. Orientation, movement history, and cataclastic rocks of Ramapo Fault based on core drilling and trenching along the western margin of the Newark Basin near Bernardsville, New Jersey, by N. M. Ratcliffe, W. C. Burton and M. J. Pavich. 1990. Lat 40°37′30″ to 40°45′, long 74°22′30″ to 74°37′30″. Sheet 56 by 40 inches (in color).

I-1985. NEVADA. Geologic map of the northwest quarter of the Bullfrog 15-minute Quadrangle, Nye County, Nevada, by Florian Maldonado. 1990. Lat 36°52′30″ to 37°, long 116°52′30″ to 117°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 1/2 inches by 31 1/2 inches (in color).

I-1993. ARIZONA. Lithologic map of the western part of the Springerville volcanic field, east-central Arizona, by C. D. Condit. 1991. Three sheets. Sheets 1 and 3, lat 33°57′30″ to 34°32′30″, long 109°45′ to 110°07′30″. Sheets 1 and 3, scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 36 by 56 inches; sheet 2, 37 by 56 inches; sheet 3, 41 by 56 inches (all in color).

I-2001. Geologic maps of science study area 3, Olympus Rupes, Mars (special MTM 15132 Quadrangle), by E. C. Morris, Harold Masursky, D. J. Applebee and M. E. Strobell. 1991. Two sheets. Lat 12.5° to 17.5°, long 130° to 135°. Each sheet, scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 1, 44 by 37 inches; sheet 2, 56 by 30 inches (all in color). (Transverse Mercator projection.)

I-2007. Geologic map of São Miguel, Azores, by R. B. Moore. 1991. Lat 37°41′52.5″N to 37°52′41.2″N, long 25°08′23.1″W to 25°51′56.1″N. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 58 by 42 inches (in color).

I-2010. Geologic map of the Valles Marineris region, Mars (east half and west half), by N. E. Witbeck, K. L. Tanaka and D. H. Scott. 1991. Two sheets. Sheet 1, lat -15° to 0°, long 67.5° to 112.5°; sheet 2, lat -20° to 0°, long 22.5° to 67.5°. Each sheet, scale 1:2,000,000 (1 mm = 2 km) at -27.3° lat. Sheet 1, 50 by 41 inches; sheet 2, 50 by 40 inches (all in color). (Mercator projection.)

I-2011. WYOMING. Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Piney Canyon NE and Piney Canyon NW quadrangles, Campbell and Weston counties, southeastern Powder River basin, Wyoming, by F. W. Pierce and E. A. Johnson. 1991. Lat 43°42′30″, long 105°05′ to 105°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 43 by 32 inches.

I-2013. WYOMING. Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Coal Bank Draw and Dugout Creek North quadrangles, Converse County, southeastern Powder River basin, Wyoming, by E. A. Johnson and F. W. Pierce. 1991. Sheet 40 by 29 inches.

I-2029. MISSOURI. Bedrock geologic map of the Springfield 1° × 2° Quadrangle, Missouri, by M. A. Middendorf, Missouri Geological Survey; K. C. Thomson, Southwest Missouri State University; G. L. Easson and H. S. Sumner, Missouri Geological

Survey. 1991. Lat 37° to 38°, long 92° to 94°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 30 inches (in color). (Supersedes MF-1830-D.)

I-2050-B. MONTANA. Map showing the association of linear features with metallic mines and prospects in the Butte 1° × 2° Quadrangle, Montana, by L. C. Rowan, C. M. Trautwein and T. L. Purdy. 1991. Lat 46° to 47°, long 112° to 114°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 40 by 30 inches (in color). (Accompanied by 12-page text.)

I-2051. PENNSYLVANIA. Surficial geologic map of parts of Union and Snyder counties, Pennsylvania, by D. E. Marchand and G. H. Crowl. 1991. Lat 40°37′30″ to 41°07′30″, long 76°45′ to 77°22′30″. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 44 by 33 inches (in color).

I-2053. Atlas of the U.S. Exclusive Economic Zone, Bering Sea, by Bering Sea EEZ-Scan Scientific Staff. 1991. 147 bound pages, 19 by 22 inches (in color).

I-2054. Atlas of the U.S. Exclusive Economic Zone, Atlantic continental margin, by EEZ-Scan 87 Scientific Staff. 1991. 174 p. (19 by 22 inches) (in color).

I-2055. Geologic map of the Lerna region (Ji-4) of Io, by J. L. Whitford-Stark, P. J. Mouginis-Mark and J. W. Head. 1991. Polar region, lat 45° to 90°, long 0° to 380°. Scale 1:5,000,000 (1 mm = 5 km) at -90° lat (1 inch = about 80 miles). Sheet 40 by 37 inches (in color).

I-2058. MAINE. Geologic map of the Kennebago Lake Quadrangle, Franklin County, Maine, by E. L. Boudette. 1991. Lat 45° to 45°15′, long 70°30′ to 70°45′. Scale 1:62,500 (1 inch = about 1 mile). Sheet 40 by 34 inches (in color). (Accompanied by 12-page text.)

I-2077. CALIFORNIA. Geologic map of the northwestern Caliente Range, San Luis Obispo County, California, by J. A. Bartow. 1991. Two sheets. Sheet 1, lat 35°15′ to 35°22′30″, long 119°52′30″ to 120°07′30″. Sheet 1, scale 1:36,000 (1 inch = 3,000 feet). Sheet 1, 45 1/2 by 38 inches; sheet 2, 40 by 24 inches (all in color). (Supersedes Open-file report 88-691.)

I-2083. COLORADO, NEW MEXICO. Geologic and structure contour map of the Ute Mountain Ute Indian Reservation and adjacent areas, Southwest Colorado and Northwest New Mexico, by S. M. Condon. 1991. Lat 36°51′02″ to 37°22′30″, long 108°10′55″ to 109°. Scale 1:100,000 (1 inch = about 1.6 miles). Sheet 44 by 31 inches (in color).

I-2084. Geologic map of science study area 6, Memnonia region of Mars, by D. H. Scott and M. G. Chapman. 1991. Lat -12.5° to -7.5°, long 170° to 175°. Scale 1:502,000 (1 mm = 502 m) at 170° long (1 inch = about 8 miles). Sheet 46 by 41 inches (in color). (Transverse Mercator projection.) (MTM-10172.)

I-2086. NEVADA. Geologic map of the southern Sheep Range, Fossil Ridge, and Castle Rock area, Clark County, Nevada, by Florian Maldonado and D. L. Schmidt. 1990. Lat 36°22′30″ to 36°30′, long 115°10′ to 115°20′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 by 31 1/2 inch (in color).

I-2087. Geologic map of science study area 1B, West Mangala Valles region of Mars, by M. G. Chapman, Harold Masursky and A. L. Dial, Jr. 1991. Lat -11° to -6°, long 155° to 160°. Scale 1:502,000 (1 mm = 502 m) at 150° long (1 inch = about 8 miles). Sheet 50 by 41 inches (in color). (Transverse Mercator projection.) (MTM-08157.)

I-2088. UTAH, COLORADO. Geologic map of the northwestern part of the Uncompahgre Uplift, Grand County, Utah, and Mesa County, Colorado, with emphasis on Proterozoic rocks, by J. E. Case. 1991. Two sheets. Lat 38°48′30″ to 39°05′, long 109° to 109°13′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 33 1/2 by 51 inches; sheet 2, 32 1/2 by 55 inches. (Accompanied by 16-page text.)

I-2092. NEW HAMPSHIRE, VERMONT. Map of potential tin resources in the White Mountain Plutonic-Volcanic Suite in northern New Hampshire and Vermont, by L. J. Cox. 1990. Lat 43°45′ to 45°, long 70°51′ to 72°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 48 1/2 by 40 1/2 inches (in color). (Supersedes Open-file report 84-888.)

I-2094-A. MONTANA, WYOMING. Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming, by N. M. Denson and C. T. Pierson. 1991. Lat 44° to 45°30′, long 104°30′ to 107°30′. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 56 by 42 inches (in color).

I-2094-B. WYOMING. Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the south half of the Powder River basin, northeastern Wyoming, by N. M. Denson and C. T. Pierson. 1991. Lat 42°30′ to 44°, long 104° to 107°. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 57 by 40 inches (in color).

I-2098. Topographic map of the Arabia Northeast Quadrangle (MC-12 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

I-2099. Topographic map of the Arabia Southeast Quadrangle (MC-12 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 30 1/2 inches.

I-2100. Topographic map of the Arabia Southwest Quadrangle (MC-12 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 30 1/2 inches.

I-2101. Topographic map of the Arabia Northwest Quadrangle (MC-12 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

I-2102. Topographic map of the Iapygia Northeast Quadrangle (MC-21 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 270° to 292.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

I-2103. Topographic map of the Iapygia Southeast Quadrangle (MC-21 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 270° to 292.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

I-2104. Topographic map of the Iapygia Southwest Quadrangle (MC-21 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1990. Lat -30° to -15°, long 292.5° to 315°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

I-2105. Topographic map of the Iapygia Northwest Quadrangle (MC-21 NW) of Mars. Prepared for the National Aeronautics and Space Adminstration. 1991. Lat -15° to 0°, long 292.5° to 315°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat (1 inch = about 32 miles); scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat (1 inch = about 36 miles). Sheet 26 by 31 1/2 inches.

I-2108. UTAH. Geologic map of Bryce Canyon National Park and vicinity, southwestern Utah, by W. E. Bowers. 1990. Lat 37°27′30″ to 37°45′, long 112°05′ to 112°17′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 1/4 by 58 inches (in color). (Accompanied by 17-page text.)

I-2109. Topographic map of the Memnonia Southeast Quadrangle (MC-16 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 135° to 157.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2110. Topographic map of the Memnonia Southwest Quadrangle (MC-16 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 157.5° to 180°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2111. Topographic map of the Tharsis Northeast Quadrangle (MC-9 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 90° to 112.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2112. Topographic map of the Tharsis Southeast Quadrangle (MC-9 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 90° to 112.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2113. Topographic map of the Tharsis Southwest Quadrangle (MC-9 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 112.5° to 135°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2114. Topographic map of the Mare Tyrrhenum Northeast Quadrangle (MC-22 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2115. Topographic map of the Mare Tyrrhenum Southeast Quadrangle (MC-22 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2116. Topographic map of the Mare Tyrrhenum Southwest Quadrangle (MC-22 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2117. Topographic map of the Mare Tyrrhenum Northwest Quadrangle (MC-22 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2118. Topographic map of the Aeolis Northeast Quadrangle (MC-23 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2119. Topographic map of the Aeolis Southeast Quadrangle (MC-23 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2120. Topographic map of the Aeolis Southwest Quadrangle (MC-23 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2121. Topographic map of the Aeolis Northwest Quadrangle (MC-23 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2122. Topographic map of the Sinus Sabaeus Northeast Quadrangle (MC-20 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2123. Topographic map of the Sinus Sabaeus Southeast Quadrangle (MC-20 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 315° to 337.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2124. Topographic map of the Sinus Sabaeus Southwest Quadrangle (MC-20 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2125. Topographic map of the Sinus Sabaeus Northwest Quadrangle (MC-20 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -15° to 0°, long 337.5° to 360°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2126. Topographic map of the Elysium Northeast Quadrangle (MC-15 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2127. Topographic map of the Elysium Southeast Quadrangle (MC-15 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 180° to 202.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2128. Topographic map of the Elysium Southwest Quadrangle (MC-15 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2129. Topographic map of the Elysium Northwest Quadrangle (MC-15 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 202.5° to 225°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2130. MONTANA. Bedrock geologic map of part of the Disturbed Belt south and east of Glacier National Park, Montana, by M. R. Mudge and R. L. Earhart. 1991. Lat 48°15′ to 48°30′, long 112°52′30″ to 113°15′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 39 by 33 inches (in color). (Supersedes Open-file report 82-1030.)

I-2131-A. MONTANA, WYOMING. Geologic map showing total thickness of coal in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming, by N. M. Denson and B. L. Crysdale. 1991. Lat 44° to 45°30′, long 104°30′ to 107°30′. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 58 by 40 inches (in color).

I-2131-B. WYOMING. Geologic map showing total thickness of coal in the south half of the Powder River basin, northeastern Wyoming, by N. M. Denson and B. L. Crysdale. 1991. Lat 42°30′ to 44°, long 104° to 107°. Scale 1:200,000 (1 inch = about 3.2 miles). Sheet 58 by 40 inches (in color).

I-2132. Topographic map of the Phoenicis Lacus Southeast Quadrangle (MC-17 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 90° to 112.5°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2133. Topographic map of the Phoenicis Lacus Southwest Quadrangle (MC-17 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -30° to -15°, long 112.5° to 135°. Scale 1:2,000,000 (1 mm = 2 km) at -27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches. (Mercator projection.)

I-2134. Topographic map of the Amenthes Northeast Quadrangle (MC-14 NE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2135. Topographic map of the Amenthes Southeast Quadrangle (MC-14 SE) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 225° to 247.5°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2136. Topographic map of the Amenthes Southwest Quadrangle (MC-14 SW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 0° to 15°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2137. Topographic map of the Amenthes Northwest Quadrangle (MC-14 NW) of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 15° to 30°, long 247.5° to 270°. Scale 1:2,000,000 (1 mm = 2 km) at 27.476° lat; scale 1:2,251,800 (1 mm = 2.25 km) at 0° lat. Sheet 26 by 32 inches (Mercator projection.)

I-2139. ARIZONA. Gravity and aeromagnetic anomaly maps of the Ajo and Lukeville 1° × 2° quadrangles, southwestern Arizona, by D. P. Klein and R. P. Kucks. 1991. Three sheets. Sheet 1, lat 32° to 33°, long 112° to 114°; sheets 2 and 3, lat 31°45′ to 33°, long 112° to 114°. Each sheet, scale 1:250,000 (1 inch = about 4 miles). Sheet 1, 42 by 32 inches; sheets 2 and 3, 41 by 29 inches (all in color).

I-2140. MONTANA. Geologic map of the Elk Ridge Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°37′30″ to 45°45′, long 105°45′ to 105°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).

I-2141. MONTANA. Geologic map of the Samuelson Ranch Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°30′ to 45°37′30″, long 105°45′ to 105°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).

I-2142. MONTANA. Geologic map of the Home Creek Butte Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W. Olive. 1991. Lat 45°30′ to 45°37′30″, long 105°52′30″ to 106°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches (in color).

I-2143. MONTANA. Geologic map of the Stacey Quadrangle, Powder River County, Montana, by M. W. McLellan and W. W.

Olive. 1991. Lat 45°37′30″ to 45°45′, long 105°52′30″ to 106°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 36 by 28 inches (in color).

I-2144. NEW MEXICO. Geologic map of the Big Hatchet Mountains, Hidalgo County, New Mexico, by Harald Drewes. 1991. Lat 31°30′ to 31°40′, long 108°15′ to 108°25′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 37 by 57 inches (in color). (Accompanied by 9-page text.)

I-2146. IDAHO. Geologic map of the Stricker 2 Quadrangle, Twin Falls and Cassia counties, Idaho, by P. L. Williams, H. R. Covington and J. W. Mytton. 1991. Lat 42°15′ to 42°30′, long 114°15′ to 114°30′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 28 by 28 inches (in color).

I-2149. CALIFORNIA. Oblique map of Yosemite Valley, Yosemite National Park, central Sierra Nevada, California, by T. R. Alpha. 1991. Sheet 35 1/2 by 36 inches (in color).

I-2151. WYOMING. Chart showing correlations of Upper Cretaceous Fox Hills Sandstone and Lance Formation, and lower Tertiary Fort Union, Wasatch, and Green River formations, from the eastern flank of the Washakie Basin to the southeastern part of the Great Divide Basin, Wyoming, by R. D. Hettinger, J. G. Honey and D. J. Nichols. 1991. Lat 41° to 41°44′, long 107°30′ to 107°55′. Sheet 57 by 42 inches.

I-2152. WYOMING. Chart showing correlations of some Upper Cretaceous and lower Tertiary rocks, from the east flank of the Washakie Basin to the east flank of the Rock Springs Uplift, Wyoming, by R. D. Hettinger and M. A. Kirschbaum. 1991. Lat 41°23′ to 41°43′, long 107°43′ to 108°40′. Sheet 57 by 39 inches.

I-2160. Topographic maps of the polar, western, and eastern regions of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Three sheets. Sheet 1, South polar region to North polar region; sheet 2, lat -57° to 57°, long 0° to 180°; sheet 3, lat -57° to 57°, long 180° to 360°. Sheet 1, scale 1:9,203,425 (1 mm = 9.2 km) at ±90° lat; sheets 2 and 3, scale 1:15,000,000 (1 mm = 15 km) at 0° lat. Sheet 1, 40 by 28 inches (in color); sheet 2, 30 by 38 inches (in color); sheet 3, 30 by 38 inches. (Sheet 1, Polar stereographic projection, contour interval 1000 m; sheets 2 and 3, Mercator projection, contour interval 1000 m.) (Accompanies the book Mars, edited by H. H. Kieffer, B. M. Jakosky, Conway Snyder and M. S. Matthews; Space Science Series, edited by Tom Gehrels, Univ. of Arizona Press, Tucson, 1992.)

I-2161-A. NEW YORK, VERMONT, NEW HAMPSHIRE. Isopleth maps showing regional variations in pH of stream water and ground water in relation to geologic setting and known mineral deposits, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire, by K. C. Watts, Jr. 1991. Lat 43° to 44°, long 72° to 74°. Sheet 44 by 34 inches (in color).

I-2162. Geologic map of the major Quaternary eolian features, northern and central coastal Peru, by E. M. Haney and M. J. Grolier. 1991. Lat 16°S to 4°S, long 75° to 81°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 40 by 56 inches (in color).

I-2163. Preliminary tectonostratigraphic terrane map of the Central and Southern Appalachians, by J. W. Horton, Jr., A. A. Drake, Jr., D. W. Rankin and R. D. Dallmeyer. 1991. Lat 27° to 41°, long 70° to 90°. Scale 1:2,000,000 (1 inch = about 32 miles). Sheet 54 by 40 inches (in color).

I-2170-A. VIRGINIA, WEST VIRGINIA. Map showing surficial and generalized bedrock geology and accompanying side-looking airborne radar image of the Radford 30′ × 60′ Quadrangle, Virginia and West Virginia, by A. P. Schultz, M. J. Bartholomew and S. E. Lewis. 1991. Two sheets. Lat 37° to 37°30′, long 80° to 81°. Each sheet, scale 1:100,000 (1 inch = about 1.6 miles). Sheet 1, 54 by 40 inches; sheet 2, 38 by 28 inches (all in color).

I-2171. Controlled photomosaic of the MTM 10122 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -12.5° to -7.5°, long 120° to 125°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 26 1/2 by 38 inches. (Transverse Mercator projection.)

I-2172. Controlled photomosaic of the MTM 10127 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -12.5° to -7.5°, long 125° to 130°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)

I-2177. ARIZONA. Geologic map of the Swisshelm Mountains, and a description of the development of the Swisshelm and Pedregosa Mountains, Cochise County, Arizona, by Harald Drewes. 1991. Lat 31°35′ to 31°45′, long 109°30′ to 109°35′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 41 1/2 by 55 inches (in color).

I-2178. Indexes of Mars topographic maps published by the U.S. Geological Survey; June 1, 1990. Prepared for the National Aeronautics and Space Administration. 1990. Sheet 26 by 36 inches.

I-2179. Topographic map of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -57° to 57°, long 180°E to 180°W. Scale 1:25,000,000 (1 mm = 25 km) at 0° lat (1 inch = about 395 miles). Sheet 36 by 33 inches (in color). (Mercator projection.)

I-2181. MONTANA. Geologic map of the Bob Marshall and Great Bear wildernesses and adjacent study areas, northwestern Montana, by M. R. Mudge and R. L. Earhart. 1991. Lat 47° to 48°30′, long 112°45′ to 114°. Scale 1:125,000 (1 inch = about 2 miles). Sheet 41 by 58 inches (in color).

I-2183. NEVADA. Geologic map of late Cenozoic deposits and faults in the western part of the Rhyolite Ridge 15′ Quadrangle, Esmeralda County, Nevada, by M. C. Reheis. 1991. Lat 37°45′ to 38°, long 117°52′30″ to 118°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 50 inches (in color.)

I-2184-A. COLORADO, UTAH. Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line A-A′, Uinta and Piceance Basin area; Eagle Basin, Colorado, to eastern Basin and Range area, Utah, by S. Y. Johnson and R. C. Johnson. 1991. Two sheets. Sheet 1, 57 1/2 by 40 1/2 inches; sheet 2, 57 by 38 inches (all in color).

I-2184-B. UTAH, COLORADO. Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line B-B′, Uinta and Piceance basin area; west-central Uinta Basin, Utah to eastern Piceance Basin, Colorado, by R. C. Johnson and S. Y. Johnson. 1991. Two sheets. Each sheet, 1:500,000 (1 inch = about 8 miles). Sheet 1, 43 by 40 inches; sheet 2, 38 by 30 inches (all in color).

I-2184-C. UTAH. Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line C-C′, Uinta and Piceance basin area, southern Uinta Mountains to northern Henry Moun-

tains, Utah, by K. J. Franczyk. 1991. Two sheets. Each sheet, scale 1:500,000 (1 inch = about 8 miles). Sheet 1, 37 by 50 inches; sheet 2, 46 by 40 inches (all in color).

I-2186. LOUISIANA. Shoreline changes of the Isles Dernieres barrier island arc, Louisiana, from 1853 to 1989, by R. A. McBride, Shea Penland, B. E. Jaffe, S. J. Williams, A. H. Sallenger, Jr. and K. A. Westphal. 1991. Lat 29°01′ to 29°07′, long 90°30′ to 90°59′. Scale 1:75,000 (1 inch = about 6,000 feet). Sheet 38 by 50 inches (in color).

I-2188. Controlled photomosaic of the MTM 45067 Quadrangle, Tempe Fossae region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 42.5° to 47.5°, long 65° to 70°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 21 by 38 inches. (Transverse Mercator projection.)

I-2189. Controlled photomosaic of the MTM 50063 Quadrangle, Tempe Fossae region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 47.5° to 52.5°, long 60° to 66.6°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 24 by 38 inches. (Transverse Mercator projection.)

I-2190. Controlled photomosaic of the MTM 35082 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 32.5° to 37.5°, long 80° to 85°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 24 by 38 inches. (Transverse Mercator projection.)

I-2191. Controlled photomosaic of the MTM 35087 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 32.5° to 37.5°, long 85° to 90°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 23 by 38 inches. (Transverse Mercator projection.)

I-2192. Controlled photomosaic of the MTM 35092 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 32.5° to 37.5°, long 90° to 95°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 23 by 38 inches. (Transverse Mercator projection.)

I-2193. Controlled photomosaic of the MTM 40082 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 37.5° to 42.5°, long 80° to 85°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 22 by 38 inches. (Transverse Mercator projection.)

I-2194. Controlled photomosaic of the MTM 40087 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 37.5° to 42.5°, long 85° to 90°. Scale 1:502,000 (1 mm = 502 m) at 90° long. Sheet 22 by 38 inches. (Transverse Mercator projection.)

I-2195. Controlled photomosaic of the MTM 40092 Quadrangle, Mareotis/Tempe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 37.5° to 42.5°, long 90° to 95°. Scale 1:502,000 (1 mm = 50 m) at 90° long. Sheet 22 by 37 1/2 inches.

I-2196. MONTANA. Geologic map of the Portage Quadrangle, Cascade and Chouteau counties, Montana, by E. K. Maughan and R. W. Lemke. 1991. Lat 47°30′ to 47°45′, long 111° to 111°15′. Scale 1:31,680 (1 inch = one-half mile). Sheet 34 by 40 inches (in color).

I-2197. Geologic map of Tecuamburro Volcano and surrounding area, Guatemala, by W. A. Duffield, G. H. Wohletz, L. W. Maasen, Gabriel Dengo and Oscar Pinzón. 1991. Lat 14°10′ to 14°20′, long 90°20′ to 90°30′. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 49 1/2 by 38 inches (in color). (English and Spanish.)

I-2206. Landforms of the conterminous United States: a digital shaded-relief portrayal, by G. P. Thelin and R. J. Pike. 1991. Scale 1:3,500,000 (1 inch = about 55 miles). Sheet 55 by 35 1/2 inches. (Accompanied by 16-page text.)

I-2211. WYOMING, COLORADO. Correlation and oil-shale assays of measured sections of the LaClede Bed of the Laney Member of the Green River Formation in outcrops along the western margins of Washakie Basin, Wyoming, and Sand Wash Basin, Colorado, by H. W. Roehler. 1991. Sheet 1, 40 by 32 inches; sheet 2, 42 by 32 inches.

I-2212. COLORADO. Geologic map of the East Portal Quadrangle, Boulder, Gilpin, and Grand counties, Colorado, by E. J. Young. 1991. Lat 39°52′30″ to 40°, long 105°37′30″ to 105°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 30 inches (in color).

I-2213. HAWAII. Geologic map of Hualalai Volcano, Hawaii, by R. B. Moore and D. A. Clague. 1991. Two sheets. Sheet 1, lat 19°30′ to 19°52′30″, long 155°45′ to 156°07′30″. Scale 1:50,000 (1 inch = about 4,200 feet). Sheet 1, 54 by 37 inches; sheet 2, 56 by 39 inches (all in color).

I-2214. Precambrian basement map of the Trans-Hudson Orogen and adjacent terranes, Northern Great Plains, U.S.A., compiled by P. K. Sims, Z. E. Peterman, T. G. Hildenbrand and S. A. Mahan. Prepared in cooperation with the geological surveys of Minnesota, Montana, Nebraska, North Dakota, South Dakota, and Wyoming. 1991. Lat 41° to 49°, long 96° to 106°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 44 by 40 inches (in color). (Accompanied by 53-page text.)

I-2216. Controlled photomosaic of the MTM 05117 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -7.5° to -2.5°, long 115° to 120°. Scale 1:502,000 (1 mm = 502 m) at 110° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)

I-2217. Controlled photomosaic of the MTM 05122 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -7.5° to -2.5°, long 120° to 125°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)

I-2218. Controlled photomosaic of the MTM 05127 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -7.5° to -2.5°, long 125° to 130°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)

I-2219. Controlled photomosaic of the MTM 10102 Quadrangle, Ascraeus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 7.5° to 12.5°, long 100° to 105°. Scale 1:502,000 (1 mm = 502 m) at 110° long (1 inch = about 8 miles). Sheet 27 by 38 inches. (Transverse Mercator projection.)

I-2220. Controlled photomosaic of the MTM 10107 Quadrangle, Ascraeus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 7.5° to 12.5°, long

105° to 110°. Scale 1:502,000 (1 mm = 502 m) at 110° long. Sheet 26 by 37 inches. (Transverse Mercator projection.)

I-2221. Controlled photomosaic of the MTM 10117 Quadrangle, Arsia Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -12.5° to -7.5°, long 115° to 120°. Scale 1:502,000 (1 mm = 502 m) at 110° long. Sheet 26 by 38 inches. (Transverse Mercator projection.)

I-2222. Controlled photomosaic of the MTM 20252 Quadrangle, Tyrrhena Patera region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -22.5° to -17.5°, long 250° to 255°. Scale 1:502,000 (1 mm = 502 m) at 250° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)

I-2223. Controlled photomosaic of the MTM 20257 Quadrangle, Tyrrhena Patera region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -22.5° to -17.5°, long 255° to 260°. Scale 1:502,000 (1 mm = 502 m) at 250° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)

I-2224. Controlled photomosaic of the MTM 25257 Quadrangle, Tyrrhena Patera region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -27.5° to -22.5°, long 255° to 260°. Scale 1:502,000 (1 mm = 502 m) at 250° long. Sheet 24 by 38 inches. (Transverse Mercator projection.)

I-2225. HAWAII. Geologic map of the lower east rift zone of Kilauea Volcano, Hawaii, by R. B. Moore and F. A. Trusdell. 1991. Lat 19°22′30″ to 19°37′30″, long 154°48′10″ to 155°. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 42 by 57 1/2 inches (in color). (Supersedes Open-file reports 81-947 and 85-715.)

I-2226. WYOMING. Correlation and depositional analysis of oil shale and associated rocks in the Eocene Green River Formation, greater Green River basin, Southwest Wyoming, by H. W. Roehler. 1991. Two sheets. Sheet 1, 52 1/2 by 42 inches; sheet 2, 46 by 42 inches.

I-2227. Controlled photomosaic of the MTM 15132 Quadrangle, Olympus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 12.5° to 17.5°, long 130° to 135°. Scale 1:502,000 (1 mm = 502 m) at 130° long (1 inch = about 8 miles). Sheet 27 by 37 1/2 inches. (Transverse Mercator projection.)

I-2228. Controlled photomosaic of the MTM 15127 Quadrangle, Olympus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 12.5° to 17.5°, long 125° to 130°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 26 by 37 inches. (Transverse Mercator projection.)

I-2229. Controlled photomosaic of the MTM 10137 Quadrangle, Olympus Mons region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 7.5° to 12.5°, long 135° to 140°. Scale 1:502,000 (1 mm = 502 m) at 130° long. Sheet 27 by 38 inches. (Transverse Mercator projection.)

I-2269. Controlled photomosaic of the Southern Polar area (MTM 90000; revised), Planum Australe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Scale 1:503,000 (1 mm = 503 m) at -90° lat; 1:500,000 (1 mm = 500 m) at -87.5° lat. Sheet 27 by 38 inches. (Polar stereographic projection.) (Supersedes I-1917.)

I-2270. Controlled photomosaic of the MTM 85080 Quadrangle (revised), Planum Australe region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat -87.5° to -82.5°, long 60° to 100°. Scale 1:500,000 (1 mm = 500 m) at -87.5° lat. Sheet 26 1/2 by 38 inches. (Polar stereographic projection.) (Supersedes I-1845.)

I-2277. NEBRASKA. Geologic map showing configuration of the bedrock surface, North Platte 1° × 2° Quadrangle, Nebraska, by R. F. Diffendal, Jr., Nebraska Geological Survey. 1991. Lat 41° to 42°, long 100° to 102°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 41 by 25 inches (in color).

I-2278. NEW MEXICO. Geologic map of the Twin Buttes Quadrangle, McKinley County, New Mexico, by M. L. Millgate. 1991. Lat 35°22′30″ to 35°30′, long 108°45′ to 108°52′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 38 by 28 inches (in color).

I-2292. Controlled photomosaic of the MTM 25062 Quadrangle (revised), Kasei Vallis region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 22.5° to 27.5°, long 60° to 65°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 26 by 38 inches. (Transverse Mercator projection.) (Supersedes I-1870.)

I-2293. Controlled photomosaic of the MTM 25067 Quadrangle (revised), Lunae Planum region of Mars. Prepared for the National Aeronautics and Space Administration. 1991. Lat 22.5° to 27.5°, long 65° to 70°. Scale 1:502,000 (1 mm = 502 m) at 70° long. Sheet 25 by 38 inches. (Transverse Mercator projection.) (Supersedes I-1587.)

MISCELLANEOUS INVESTIGATIONS SERIES MAPS—QUATERNARY GEOLOGICAL ATLAS OF THE UNITED STATES

I-1420 (NJ-16). Quaternary geologic map of the Louisville 4° × 6° Quadrangle, United States. State compilations by H. H. Gray, N. K. Bleuer, J. A. Linebacker, W C Swadley, G. M. Richmond, R. A. Miller, R. P. Goldthwait, and R. A. Ward. Edited and integrated by G. M. Richmond and D. S. Fullerton. 1991. Lat 36° to 40°, long 84° to 90°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 38 by 56 inches (in color).

I-1420 (NJ-17). Quaternary geologic map of the Blue Ridge 4° × 6° Quadrangle, United States. State compilations by A. D. Howard, R. E. Behling, W. H. Wheeler, R. B. Daniels, W C Swadley, G. M. Richmond, R. P. Goldthwait, D. S. Fullerton, W. D. Sevon, and R. A. Miller. Edited and integrated by G. M. Richmond, D. S. Fullerton, and A. C. Christiansen. 1991. Lat 36° to 40°, long 78° to 84°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 55 1/2 by 33 inches (in color).

I-1420 (NK-15). Quaternary geologic map of the Des Moines 4° × 6° Quadrangle, United States. State compilations by G. R. Hallberg, J. A. Lineback, D. M. Mickelson, J. C. Knox, J. E. Goebel, H. C. Hobbs, J. W. Whitfield, R. A. Ward, J. D. Boellstorf, J. B. Swinehart, and V. H. Dreeszen. Edited and integrated by G. M. Richmond, D. S. Fullerton, and A. C. Christiansen. 1991. Lat 40° to 44°, long 90° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 54 by 37 inches (in color).

I-1420 (NK-17). Quaternary geologic map of the Lake Erie 4°× 6° Quadrangle, United States and Canada. State and province compi-

lations by D. S. Fullerton, W. R. Cowan, W. D. Sevon, R. P. Goldthwait, W. R. Farrand, E. H. Muller, R. E. Behling, and J. A. Stravers. Edited and integrated by D. S. Fullerton and G. M. Richmond. 1991. Lat 40° to 44°, long 78° to 84°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 56 by 38 inches (in color). (Accompanied by 8-page text.)

I-1420 (NK-19). Quaternary geologic map of the Boston 4° × 6° Quadrangle, United States and Canada. State and province compilations by J. H. Hartshorn, W. B. Thompson, W. F. Chapman, R. F. Black, G. M. Richmond, D. R. Grant, and D. S. Fullerton. Edited and integrated by G. M. Richmond and D. S. Fullerton. 1991. Lat 40° to 44°, long 66° to 72°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 54 by 30 inches (in color).

CIRCUM-PACIFIC MAP SERIES

Multicolor equal-area maps at scales of 1:10,000,000 for the Northwest, Northeast, Southwest, Southeast quadrants of the Pacific and the Arctic and Antarctic regions, and of 1:17,000,000 for the whole Pacific Basin. The series consists of base, geographic, geodynamic, plate-tectonic, geologic, tectonic, mineral-resources, and energy-resources maps, as well as other miscellaneous maps.

CP-0037. Tectonic map of the Circum-Pacific region, southwest quadrant, by Erwin Scheibner, Geological Survey of New South Wales; Tadashi Sato, Tsukuba University; and Campbell Craddock, University of Wisconsin-Madison. Prepared in cooperation with the Circum-Pacific Council for Energy and Mineral Resources and the Geological Survey of New South Wales. 1991. Lat 70°S to 16°N, long 160°W to 90°E. Scale 1:10,000,000 (1 inch = about 160 miles). Sheet 64 by 41 inches (in color). (Accompanied by 59-page text.)

CP-0038. Geodynamic map of the Circum-Pacific region, by G. W. Moore, Oregon State University; M. G. Bonilla, U.S. Geological Survey; R. H. Rapp, Ohio State University; W. A. Rinehart, National Oceanic and Atmospheric Administration; Lee Siebert, Tom Simkin, Smithsonian Institution; D. R. Soller, and M. L. Zoback, U.S. Geological Survey. 1990. Lat 65°N at long 15°E to 26°N at 165°W. Scale 1:10,000,000 (1 inch = 158 miles). Sheet 54 by 41 inches (in color). (Accompanied by 12-page text.) (Lambert azimuthal equal-area projection centered at 70°N, 165°W.)

CP-0039. Energy-resources map of the Circum-Pacific region, southeast quadrant, by M. R. Yrigoyen, Trend Argentina; José Corvalán D., Servicio Nacional de Geología y Minería, Chile; and T. R. Swint-Iki, U.S. Geological Survey. 1991. Two sheets. Sheet 1, lat 70°S to 16°N, long 58°W to 160°W; sheet 2, lat 50°S to 10°N, long 60°W to 80°W. Each sheet, scale 1:10,000,000 (1 inch = about 160 miles). Each sheet 54 by 41 inches (all in color). (Accompanied by 64-page text.)

COAL INVESTIGATIONS MAPS

Geologic maps on topographic or planimetric bases; various scales; show bedrock geology, stratigraphy, and structural relations in certain coal-resource areas.

C-0133. UTAH. Map and cross sections of coal zones in the Upper Cretaceous Neslen Formation, north-central part of the Westwater 30′ × 60′ Quadrangle, Grand and Uintah counties, Utah, by J. L. Gualtieri. 1991. Three sheets. Sheet 1, lat 39°15′ to 39°22′30″, long 109°07′30″ to 109°20′. Sheet 1, scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 43 by 41 inches (in color); sheet 2, 46 by 40 inches; sheet 3, 48 by 41 inches.

C-0134. COLORADO, UTAH. Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah, by J. L. Gualtieri. 1991. Three sheets. Sheet 1, Lat 39°21′54″ to 39°30′, long 108°57′30″ to 109°12′30″. Sheet 1, scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 54 by 41 inches (in color); sheet 2, 54 by 37 inches; sheet 3, 51 by 38 inches.

C-0137. UTAH. Geologic map and coal deposits of the Horse Mountain Quadrangle, Kane County, Utah, by W. E. Bowers. 1991. Lat 37°22′30″ to 37°30′, long 111°37′30″ to 111°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 33 by 36 inches (in color).

C-0138. COLORADO. Coal geology and preliminary coal zone correlations in the Fruitland Formation, western part of the Southern Ute Indian Reservation, La Plata County, Colorado, by L. N. Roberts and Jane Uptegrove. 1991. Lat 37° to 37°07′30″, long 108° to 108°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 52 by 36 inches (in color).

C-0139-A. ALASKA. Subsurface cross section showing coal beds in the Sagavanirktok Formation, vicinity of Prudhoe Bay, east-central North Slope, Alaska, by S. B. Roberts. 1991. Sheet 50 by 35 inches.

C-0139-B. ALASKA. Stratigraphy and chemical analyses of coal beds in the Upper Cretaceous and Tertiary Sagavanirktok Formation, east-central North Slope, Alaska, by S. B. Roberts, G. D. Stricker and R. H. Affolter. 1991. Sheet 58 by 41 inches.

C-0140. UTAH. Geologic map of the Fourmile Bench Quadrangle, Kane County, Utah, by W. E. Bowers. 1991. Lat 37°15′ to 37°22′30″, long 111°37′30″ to 111°45′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 33 inches (in color).

OIL AND GAS INVESTIGATIONS CHARTS

Charts show stratigraphic information for certain oil and gas fields and other areas having hydrocarbon potential.

OC-0134. UTAH, COLORADO. Correlation of Middle Jurassic San Rafael Group and related rocks from Kane Springs, Utah to Uravan, Colorado, by R. B. O'Sullivan. 1991. Sheet 43 by 32 inches.

OIL AND GAS INVESTIGATIONS MAPS

OM-0221. CALIFORNIA. Lithofacies and petrofacies map of upper Mesozoic rocks near Coalinga in the southern Diablo Range, California, by C. F. Mansfield. 1991. Lat 36°05′ to 36°20′, long 120°25′ to 120°40′. Scale 1:62,500 (1 inch = about 1 mile). Sheet 30 by 35 inches (in color).

MISCELLANEOUS FIELD STUDIES MAPS

Multicolor or black and white maps on topographic or planimetric bases; quadrangle or irregular areas; various scales. Pre-1971 maps show bedrock geology in relation to specific mining or mineral-deposit problems; the majority of post-1971 maps are preliminary black and white maps on various subjects such as environmental studies or Wilderness mineral investigations.

MF-0916. Preliminary map of young faults in the United States as a guide to possible fault activity, by K. A. Howard, J. M. Aaron, E. E. Brabb, M. R. Brock, H. D. Gower, S. J. Hunt, D. J. Milton, W. R. Muehlberger, J. K. Nakata, George Plafker, D. C. Prowell, R. E. Wallace and I. J. Witkind. 1978 (1991). Two sheets. Sheet 1, lat 23° to 48°, long 73° to 119°; sheet 2, Alaska, Hawaii, and Puerto Rico. Sheet 1, scale 1:5,000,000 (1 inch = about 80 miles). Sheet 1, 41 by 30 inches; sheet 2, 41 1/2 by 32 inches. (Reprint.)

MF-1060. GEORGIA. Seismicity map of the State of Georgia, by B. G. Reagor, C. W. Stover, S. T. Algermissen and L. T. Long. 1979 (1991). Lat 31° to 35°, long 81° to 85°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 37 by 29 inches. (Reprint.)

MF-1199. CALIFORNIA. Maps showing geology and liquefaction potential of northern Monterey and southern Santa Cruz counties, California, by W. R. Dupré and J. C. Tinsley, III. 1980 (1991). Two sheets. Lat 36°37′30″ to 37°, long 121°30′ to 121°52′30″. Each sheet, scale 1:62,500 (1 inch = about 1 mile). Sheet 1, 37 by 34 inches; sheet 2, 30 1/2 by 34 inches. (Reprint.)

MF-1226. WEST VIRGINIA. Seismicity map of the State of West Virginia, by B. G. Reagor, C. W. Stover and S. T. Algermissen. 1980 (1990). Lat 38° to 40°, long 78° to 82°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 33 by 22 inches. (Reprint.)

MF-1281. DELAWARE, MARYLAND. Seismicity map of the states of Delaware and Maryland, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1981 (1990). Lat 38° to 39°, long 75° to 79°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 33 by 22 inches. (Reprint.)

MF-1284. MAINE. Seismicity map of the State of Maine, by C. W. Stover, L. M. Barnhard, B. G. Reagor and S. T. Algermissen. 1981 (1990). Lat 43° to 47°, long 67° to 71°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 39 1/2 by 29 1/2 inches. (Reprint.)

MF-1324. IOWA. Seismicity map of the State of Iowa, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1981 (1991). Lat 41° to 43°, long 91° to 96°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 24 by 31 1/2 inches. (Reprint.)

MF-1350. NEBRASKA. Seismicity map of the State of Nebraska, by B. G. Reagor, C. W. Stover and S. T. Algermissen. 1981 (1991). Lat 40° to 43°, long 96° to 104°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 41 by 28 inches. (Reprint.)

MF-1645-H. ALASKA. Map showing geologic interpretation of aeromagnetic data for the Chugach National Forest, Alaska, by D. F. Barnes. 1991. Lat 60° to 61°, long 144° to 150°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 60 inches (in color). (Accompanied by 8-page text.)

MF-1712. Estimated maximum regional seismic intensities associated with an ensemble of great earthquakes that might occur along the New Madrid seismic zone, east-central United States, by S. T. Algermissen and M. G. Hopper. 1984 (1990). Lat 30° to 40°, long 80° to 95°. Sheet 29 1/2 by 24 inches (in color). (Reprint.)

MF-1835-F. Map showing distribution of alkaline igneous rocks and associated carbonatites and peridotites in the northern Midcontinent, U.S.A., by F. A. Hills, R. W. Scott, Jr., T. J. Armbrustmacher and Pieter Berendsen. 1991. Lat 36° to 46°, long 88° to 100°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 43 by 56 inches. (Accompanied by 15-page text.)

MF-1835-G. Lithologic cross sections of Phanerozoic rocks in the northern Midcontinent, U.S.A., compiled by D. N. Mugel and W. P. Pratt. 1991. Seven sheets. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 49 by 28 inches; sheet 2, 46 by 39 1/2 inches; sheet 3, 49 by 39 inches; sheet 4, 49 by 34 inches; sheet 5, 54 by 40 inches; sheet 6, 56 by 34 inches; sheet 7, 49 by 28 inches. (Accompanied by 7-page text.)

MF-1857. IDAHO. Seismicity map of the State of Idaho, by C. W. Stover, B. G. Reagor and S. T. Algermissen. 1986 (1991). Lat 42° to 49°, long 111° to 117°. Scale 1:1,000,000 (1 inch = about 16 miles). Sheet 30 by 40 inches. (Accompanied by 25-page text.) (Reprint.)

MF-1996-C. ALASKA. Map showing locations of metalliferous lode and placer mineral occurrences, mineral deposits, prospects, and mines, Mount Hayes Quadrangle, eastern Alaska Range, Alaska, by W. J. Nokleberg, I. M. Lange, R. C. Roback, W. E. Yeend and S. R. Silva. 1991. Lat 63° to 64°, long 144° to 147°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 39 1/2 by 41 inches. (Accompanied by 42-page text.)

MF-2080. Map showing the distribution of uranium deposit clusters in the Colorado Plateau uranium province, by W. I. Finch. 1991. Lat 33° to 42°, long 106° to 115°. Sheet 54 by 38 inches (in color).

MF-2081-B. UTAH. Aeromagnetic anomaly map and related geophysical maps of the Delta 1° × 2° Quadrangle, Utah, by R. P. Kucks. 1991. Lat 39° to 40°, long 112° to 114°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 49 by 40 inches (in color).

MF-2083-A. GLORIA sidescan-sonar imagery and geologic interpretation of the central Cayman Trough, northwestern Caribbean Sea, by N. T. Edgar, W. P. Dillon, L. M. Parson, K. M. Scanlon, C. L. Jacobs and T. L. Holcombe. 1991. Three sheets. Lat 18° to 19°, long 80° to 83°. Each sheet, scale 1:402,000 at lat 18°30′N. Sheet 1, 45 by 38 inches (in color); sheet 2, 54 by 34 inches (in color); sheet 3, 50 by 27 inches. (Mercator projection.)

MF-2097-A. Map showing free-air gravity anomalies in parts of the western Caribbean Sea, by D. W. Folger, B. J. Irwin, J. R. McCullough, J. E. Dodd, R. M. Bouse, C. O. Bowin, C. F. Polloni, W. J. Strahle, J. T. Gann and Charles Gilbert. 1990. Lat 13°N to 21°N, long 75°W to 88°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 50 by 29 1/2 inches.

MF-2097-B. Map showing free-air gravity anomalies off the coasts of Venezuela and Trinidad-and-Tobago, by D. W. Folger, B. J. Irwin, J. R. McCullough, W. J. Strahle, C. O. Bowin and C. F. Polloni. 1990. Lat 8°N to 14°N, long 58°W to 72°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 53 by 23 inches.

MF-2098-E. Map showing free-air gravity anomalies off the southern coast of west-central Africa; Liberia to Ghana, by D. W. Folger, B. J. Irwin, J. R. McCullough, R. W. Rowland and C. F. Polloni. 1990. Lat 2°N to 10°N, long 2°E to 11°W. Scale 1:500,000 (1 inch = about 8 miles). Sheet 50 by 28 1/2 inches.

MF-2120. Probabilistic earthquake acceleration and velocity maps for the United States and Puerto Rico, by S. T. Algermissen, D. M. Perkins, P. C. Thenhaus, S. L. Hanson and B. L. Bender.

1990 (1991). Two sheets. Lat 25° to 50°, long 65° to 125°. Each sheet, scale 1:7,500,000 (1 inch = about 118 miles). Sheet 1, 35 1/2 by 45 inches; sheet 2, 28 by 42 inches. Both sheets include inserts for Puerto Rico (lat 18°, long 67°), Alaska (lat 50° to 70, long 130°W to 170°E), Hawaii (lat 19° to 22°, long 155° to 160°). (Reprint.)

MF-2125-A. KANSAS, MISSOURI. Summary geochemical maps of the Joplin 1° × 2° Quadrangle, Kansas and Missouri, by R. L. Erickson, E. L. Mosier, H. W. Folger, J. H. Bullock, Jr., U.S. Geological Survey; Pieter Berendsen and Mary Daly, Kansas Geological Survey. 1990. Lat 37° to 38°, long 94° to 96°. Map A, scale 1:250,000 (1 inch = about 4 miles); maps B-E, scale 1:500,000 (1 inch = about 8 miles). Sheet 37 by 50 inches (in color). (Accompanied by 82-page text.)

MF-2125-B. KANSAS, MISSOURI. Maps showing industrial mineral resources of the Joplin 1° × 2° Quadrangle, Kansas and Missouri, by D. A. Grisafe, Kansas Geological Survey; and A. W. Rueff, Missouri Division of Geology and Land Survey. 1991. Lat 37° to 38°, long 94° to 96°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 29 by 40 inches.

MF-2135. ARKANSAS, MISSOURI. Reconnaissance seismic-reflection surveys in the New Madrid seismic zone, Northeast Arkansas and Southeast Missouri, by E. A. Luzietti and S. T. Harding. 1991. Three sheets. Sheet 1, 43 by 35 inches; sheet 2, 54 by 41 1/2 inches; sheet 3, 46 by 35 inches.

MF-2139. TENNESSEE, NORTH CAROLINA. Magnetic, gravity, and radiometric maps of the Chattanooga 1° × 2° Quadrangle, Tennessee and North Carolina, by E. R. King. 1990. Lat 35° to 36°, long 84° to 85°45′. Scale 1:500,000 (1 inch = about 8 miles). Sheet 52 by 38 inches (in color).

MF-2140-C. WYOMING, MONTANA. Map showing structure contours on the top of the Upper Jurassic Morrison Formation, Powder River basin, Wyoming and Montana, by B. L. Crysdale. 1991. Lat 43° to 45°, long 104° to 107°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 41 by 36 inches.

MF-2140-D. WYOMING, MONTANA. Map showing contours on top of the Upper Cretaceous Mowry Shale, Powder River basin, Wyoming and Montana, by B. L. Crysdale. 1991. Lat 43° to 45°, long 104° to 107°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 40 by 35 inches.

MF-2145. Three-dimensional perspective diagrams of the Morococala volcanic field, west-central Bolivia, by R. G. Luedke and W. J. Bawiec. 1991. Sheet 45 1/2 by 26 inches (in color).

MF-2146. ALASKA. Geologic map of Long Island and southern and central Dall Island, southeastern Alaska, by G. E. Gehrels. 1991. Lat 54° to 55°, long 132°40′ to 133°10′. Scale 1:63,360 (1 inch = 1 mile). Sheet 40 1/2 by 38 1/2 inches.

MF-2147. MAINE. Cores from marine geologic features in the western Gulf of Maine, by R. N. Oldale and G. B. Edwards. 1990. Two sheets. Sheet 1, 43 by 32 inches; sheet 2, 39 by 38 inches.

MF-2148. GEORGIA. Geologic map of the Campbell Mountain Quadrangle, Lumpkin County, Georgia, by A. E. Nelson. 1991. Lat 34°30′ to 34°37′30″, long 84° to 84°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 44 1/2 by 40 1/2 inches.

MF-2151. ALASKA. The use of heavy-mineral concentrate data to show geochemical favorability for zinc-lead-silver and copper-(cobalt) mineral occurrences in the Baird Mountains Quadrangle, Northwest Alaska, by R. J. Goldfarb, E. A. Bailey, P. F. Folger and J. M. Schmidt. 1991. Lat 67° to 68°, long 159° to 162°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 51 by 33 inches (in color).

MF-2152. COLORADO. Mine maps of silver-lead-zinc epithermal deposits in the Lake City area, Hinsdale County, San Juan Mountains, southwestern Colorado, by R. F. Sanford, Patty Rehn, A. R. Kirk, J. F. Slack and D. J. Bove. 1991. Three sheets. Sheet 1, lat 37°55′ to 38°02′30″, long 107°17′30″ to 107°32′30″. Sheet 1, scale 1:24,000 (1 inch = 2,000 feet). Sheet 1, 44 by 34 inches; sheet 2, 55 by 40 inches; sheet 3, 28 by 26 inches.

MF-2153. Map showing mineral deposits of the Midcontinent Rift, Lake Superior region, United States and Canada, by W. F. Cannon and T. A. McGervey. 1991. Lat 46° to 49°15′, long 84° to 92°30′. Scale 1:500,000 (1 inch = about 8 miles). Sheet 54 by 41 inches (in color).

MF-2154-A. NEVADA, CALIFORNIA. Geologic map of the Reno 1° by 2° Quadrangle, Nevada and California, by R. C. Greene, J. H. Stewart, D. A. John, R. F. Hardyman, N. J. Silberling and M. L. Sorensen. 1991. Lat 39° to 40°, long 118° to 120°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 36 inches.

MF-2154-B. NEVADA, CALIFORNIA. Map showing mines and prospects in the Reno 1° by 2° Quadrangle, Nevada and California, by D. A. John and M. G. Sherlock. 1991. Lat 39° to 40°, long 118° to 120°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 29 by 37 inches. (Accompanied by 17-page text.)

MF-2155-A. ALASKA. Generalized geologic map of the Port Moller, Stepovak Bay, and Simeonof Island quadrangles, Alaska Peninsula, Alaska, by F. H. Wilson, R. L. Detterman and E. E. Harris. 1991. Lat 54°45′ to 56°, long 158°30′ to 162° Scale 1:250,000 (1 inch = about 4 miles). Sheet 44 1/4 by 33 inches.

MF-2156. OREGON. Geologic map of the Sand Hollow Quadrangle, Crook County, Oregon, by J. A. Ach and J. T. Bateson. 1991. Lat 43°52′30″ to 44°, long 120° to 120°07′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 34 inches.

MF-2157. NEVADA. Geologic map of the High Rock Lake Quadrangle, Washoe and Humboldt counties, Nevada, by J. A. Ach, J. T. Bateson, B. D. Turrin, W. J. Keith, D. C. Noble and C. C. Swisher. 1991. Lat 41°15′ to 41°22′30″, long 119°15′ to 119°22′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 36 inches.

MF-2158. WYOMING. Identification of oil shale and trona beds and their geophysical log responses in the Energy Research and Development Administration Blacks Fork No. 1 corehole, Eocene Green River Formation, Southwest Wyoming, by H. W. Roehler. 1991. Sheet 27 by 37 1/2 inches.

MF-2159. WYOMING. West-east stratigraphic correlations of surface and subsurface sections of the intertongued Eocene Wasatch and Green River formations, Wyoming, by H. W. Roehler. 1991. Sheet 42 by 34 inches.

MF-2160-A. IDAHO. Aeromagnetic map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho, by A. E. McCafferty and G. A. Abrams. 1991. Lat 43° to 44°, long 113° to 116°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 33 inches.

MF-2160-B. IDAHO. Complete Bouguer gravity anomaly map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho, by G. A. Abrams. 1991. Lat 43° to 44°, long 113°30′ to 116°. Scale 1:250,000 (1 inch = about 4 miles). Sheet 42 by 30 inches.

MF-2161. WASHINGTON. Geologic map of Vashon and Maury islands, King County, Washington, by D. B. Booth. 1991. Lat 47°20′30″ to 47°30′, long 122°22′30″ to 122°30′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 41 inches. (Accompanied by 6-page text.)

MF-2162. IDAHO. Reconnaissance geologic map of Elkhorn Peak Quadrangle, Bannock and Oneida counties, Idaho, by S. S. Oriel, L. B. Platt and R. W. Allmendinger. 1991. Lat 42°15′ to 42°22′30″, long 112°15′ to 112°22′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 25 by 28 1/2 inches.

MF-2164. WASHINGTON. East-west surface and subsurface correlations of the intertongued Eocene Wasatch and Green River formations, Washakie Basin, Southwest Wyoming, by H. W. Roehler. 1991. Lat 41° to 41°30′, long 107°30′ to 108°30′. Sheet 21 by 36 inches.

MF-2165. COLORADO. Maps showing hydrostatic levels and general ground-water quality for an area near Conifer, Colorado, by E. P. Lawrence, R. B. Wanty and P. H. Briggs. 1991. Lat 39°30′ to 39°32′30″, long 105°20′ to 105°22′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 31 by 26 inches.

MF-2166. COLORADO. Northwest-southeast surface and subsurface correlations of the intertongued Wasatch and Green River formations, Sand Wash Basin, Northwest Colorado, by H. W. Roehler. 1991. Lat 40° to 41°, long 108° to 109°. Sheet 20 by 30 inches.

MF-2167. OREGON. Geologic map of the Lower Owyhee Canyon Wilderness Study Area, Malheur County, Oregon, by J. G. Evans. 1991. Lat 42°55′ to 43°15′, long 117°30′ to 117°50′. Scale 1:48,000 (1 inch = 4,000 feet). Sheet 27 by 46 inches.

MF-2168. COLORADO. Reconnaissance geologic map of parts of the Zapata Ranch and Mosca Pass quadrangles, Alamosa and Huerfano counties, Colorado, by R. M. Bruce and B. R. Johnson. 1991. Lat 37°37′30″ to 37°45′, long 105°27′30″ to 105°32′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 32 by 28 inches.

MF-2169. COLORADO. Reconnaissance geologic map of parts of the Twin Peaks and Blanca Peak quadrangles, Alamosa, Costilla, and Huerfano counties, Colorado, by B. R. Johnson and R. M. Bruce. 1991. Lat 37°32′30″ to 37°37′30″, long 105°27′30″ to 105°35′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 28 1/2 inches.

MF-2170. CALIFORNIA. Geologic map of the Cholame Quadrangle, San Luis Obispo County, California, by J. D. Sims and J. C. Hamilton. 1991. Lat 35°37′30″ to 35°45′, long 120°15′ to 120°22′30″. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 35 by 46 inches.

MF-2171. OREGON. Geologic map showing part of the May Creek Schist and related rocks, Jackson County, Oregon, by M. M. Donato. 1991. Lat 42°30′ to 42°45′, long 122°55′ to 123°10′. Scale 1:62,500 (1 inch = about 1 mile). Sheet 27 by 38 inches. (Accompanied by 10-page text.)

MF-2172. ARIZONA. Preliminary geologic map of the Fairbank Quadrangle, Cochise County, Arizona, by R. B. Moore. 1991. Lat 31°37′30″ to 31°45′, long 110°07′30″ to 110°15′. Scale 1:24,000 (1 inch = 2,000 feet). Sheet 34 by 32 1/2 inches.

MF-2185. WYOMING. Measured sections of Ramsey Ranch Member of Wasatch Formation, greater Green River basin, Southwest Wyoming, by H. W. Roehler. 1991. Lat 41° to 43°, long 107° to 111°. Sheet 54 by 41 inches.

MF-2188. WYOMING. Chart showing identification of oil shale and trona beds and their geophysical log responses in the Union Pacific Railroad Company El Paso corehole No. 44-3, Eocene Green River Formation, Southwest Wyoming, by H. W. Roehler. 1991. Sheet 40 by 54 inches.

GEOLOGIC MAP INDEXES

VIRGINIA. Geologic map index of Virginia, revised and updated by H. K. Fuller, G. B. Gunnells, E. A. Buffa, and R. C. Orndorff, 1990, from original compilation by W. L. McIntosh and M. F. Eister. 1976. Six sheets. Lat 37° to 39°, long 76° to 83°. Each sheet at scales smaller than 1:24,000 (1 inch = 2,000 feet) through 1:63,360 (1 inch = 1 mile). Each sheet 17 by 11 inches. (Accompanied by 16-page text.)

HYDROLOGIC INVESTIGATIONS ATLASES

Multicolored or black and white maps on topographic or planimetric bases presenting a wide range of geohydrologic data; both regular and irregular areas.

HA-0711-I. MISSOURI. Areal extent, stratigraphic relation, and geohydrologic properties of regional geohydrologic units in southern Missouri, by J. L. Imes and B. J. Smith. 1990. Three sheets. Sheets 1 and 3, lat 36° to 39°, long 90° to 94°. Sheet 1, scale 1:750,000 (1 inch = about 12 miles); sheet 3, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 37 by 27 inches; sheet 2, 31 by 27 inches; sheet 3, 41 by 27 inches (all in color).

HA-0711-J. Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes and J. V. Davis. 1990. Lat 35° to 39°, long 92° to 95°. Scale 1:750,000 (1 inch = about 12 miles). Sheet 36 by 30 inches (in color).

HA-0711-K. Water type and concentration of dissolved solids, chloride, and sulfate in water from the Ozark Aquifer in Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes and J. V. Davis. 1991. Four sheets. Lat 35° to 39°, long 89° to 96°. Each sheet, scale 1:750,000 (1 inch = about 12 miles). Each sheet 40 by 35 inches (all in color).

HA-0711-L. Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma, by J. L. Imes and J. V. Davis. 1990. Two sheets. Lat 35° to 39°, long 92° to 95°. Each sheet, scale 1:750,000 (1 inch = about 12 miles). Each sheet 44 by 34 inches (all in color).

HA-0719. MISSOURI. Geohydrology and water quality of Cenozoic and Mesozoic units in Southeast Missouri, by T. O. Mesko. 1990. Two sheets. Lat 36° to 37°, long 90°. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 39 by 30 inches (all in color).

HA-0720-B. Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah, by C. R. Thorn, G. W. Levings, S. D. Craigg, W. L. Dam and J. M. Kernodle. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 43 by 34 inches; sheet 2, 39 by 34 1/2 inches (all in color).

HA-0720-D. Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by W. L. Dam, J. M. Kernodle, C. R. Thorn, G. W. Levings and S. D. Craigg. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Sheet 1, 43 by 34 inches; sheet 2, 39 by 34 inches (all in color).

HA-0720-F. Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah, by G. W. Levings, S. D. Craigg, W. L. Dam, J. M. Kernodle and C. R. Thorn. 1990. Two sheets. Lat 34°45′ to 37°45′, long 106°30′ to 109°30′. Each sheet, scale 1:1,000,000 (1 inch = about 16 miles). Each sheet 44 by 36 inches (all in color).

HA-0722-A. KANSAS. Geohydrologic systems in Kansas with emphasis on systems in Upper Cambrian through Lower Cretaceous rocks, by R. J. Wolf, C. V. Hansen, H. E. McGovern and J. M. Spinazola. 1990. Two sheets. Lat 37° to 40°, long 95° to 102°. Sheet 1, scale 1:500,000 (1 inch = about 8 miles); sheet 2, scale 1:2,000,000 (1 inch = about 32 miles). Sheet 1, 39 by 33 inches; sheet 2, 41 by 47 inches (all in color).

HA-0730-G. Ground water atlas of the United States; Segment 6, Alabama, Florida, Georgia, and South Carolina, by J. A. Miller. 1989. 28 p., 18 by 24 inches.

HYDROLOGIC UNIT MAPS

TENNESSEE. Hydrologic unit map. 1974. State of Tennessee. Prepared in cooperation with the Interagency Advisory Committee on Water Data. Lat 35° to 36°45′, long 82° to 90°. Scale 1:500,000 (1 inch = about 8 miles). Sheet 65 by 21 inches (in color). (Reprint.)

OUTSIDE PUBLICATIONS

ARTICLES AND REPORTS

Articles by Geological Survey personnel in non-Geological Survey publications that came to our attention in 1991. Non-Geological Survey personnel who share authorship in articles with U.S. Geological Survey personnel are indicated by an asterisk (*) immediately following the name. **These publications are not available from the U.S. Geological Survey.**

OP-1. T. A. Abrajano, Jr.*, N. C. Sturchio*, B. M. Kennedy*, G. L. Lyon*, Karlis Muehlenbachs* and J. K. Bohlke. Geochemistry of reduced gas related to serpentinization of the Zambales Ophiolite, Philippines. Applied Geochemistry, *in* Water-rock interactions. (Y. K. Kharaka, editor and others). v. 5, no. 5-6, December 1990. p. 625-630.

OP-2. M. C. Adams*, L. L. Mink*, J. N. Moore*, L. D. White and A. A. Caicedo*. Geochemistry and hydrology of the Zunil geothermal system, Guatemala. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 837-844.

OP-3. J. C. Adamski. MARYLAND. Factors affecting well productivity in the fractured rocks of the Maryland Piedmont. Ground Water Management, *in* Proceedings of the FOCUS conference on Eastern regional ground water issues. 3, 1990. unpaginated.

OP-4. C. M. Ager, N. M. Milton, B. A. Eiswerth, M. S. Power and S. A. Hauck*. MINNESOTA. Spectral response of vegetation to metallic elements in northeastern Minnesota. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 173-178.

OP-5. D. C. Agnew* and L. M. Jones. Prediction probabilities from foreshocks. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 7, July 10, 1991. p. 11,959-11,971.

OP-6. G. R. Aiken and A. H. Gillam*. Determination of molecular weights of humic substances by colligative property measurements, *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 515-544.

OP-7. G. R. Aiken, D. M. McKnight and R. A. Harnish. Chemical characteristics of aquatic fulvic acid isolated from Lake Fryxell, Antarctica. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 190-192.

OP-8. G. R. Aiken, D. M. McKnight, R. L. Wershaw and L. G. Miller. Evidence for the diffusion of aquatic fulvic acid from the sediments of Lake Fryxell, Antarctica, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 75-88.

OP-9. Keiiti Aki*, Arthur Frankel and L. G. Wennerberg. CALIFORNIA. Microearthquake spectra from the Anza, California seismic network; site response and source scaling; discussion and replies. Bulletin of the Seismological Society of America. v. 80, no. 04, August 1990. p. 1034-1042.

OP-10. B. N. Aldridge. ARIZONA. Effects of vegetation on floods at four Arizona sites. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 392-397.

OP-11. J. N. Aleinikoff, D. L. Winegarden and Marianne Walter. U-Pb ages of zircon rims; a new analytical method using the air-abrasion technique. Chemical Geology; Isotope Geoscience Section. v. 80, no. 4, October 1, 1990. p. 351-363.

OP-12. R. B. Alley*, E. S. Saltzman*, K. M. Cuffey* and J. J. Fitzpatrick. Summertime formation of depth hoar in central Greenland. Geophysical Research Letters. v. 17, no. 13, December 1990. p. 2393-2396.

OP-13. W. M. Alley and Philip Cohen. A scientifically based nationwide assessment of groundwater quality in the United States. Environmental Geology and Water Sciences. v. 17, no. 1, February 1991. p. 17-22.

OP-14. W. M. Alley and P. M. Warmerdam* (reporters). Hydrological research basins and the environment. Eos, Transactions, American Geophysical Union. v. 72, no. 5, January 29, 1991. p. 42.

OP-15. T. R. Alpha. Perspective physiographic diagram of Vanuatu. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 29-33.

OP-16. L. W. Anderson*, R. C. LaForge*, C. M. Wentworth and M. D. Zoback*. CALIFORNIA. The style of late Cenozoic deformation at the eastern front of the California Coast Ranges; discussion and reply. Tectonics. v. 9, no. 5, October 1990. p. 1263-1268.

OP-17. O. J. Anderson*, S. G. Lucas*, D. W. Love*, C. H. Maxwell and R. M. Chamberlin*. NEW MEXICO. Third-day road log, from Gallup to Upper Nutria, Ramah, El Morro and Grants. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 49-66.

OP-18. W. L. Anderson. Fast evaluation of radial and vertical magnetic fields near a rectangular loop source on a layered Earth. Geophysical Transactions = Geofizikai Közlemények = Geofizicheskiy Byulletin'. v. 31, no. 4, 1985. p. 339-357.

OP-19. W. L. Anderson. Approximate inversion of high-frequency electromagnetic soundings using complex image theory. Geophysics. v. 56, no. 7, July 1991. p. 1087-1092.

OP-20. W. L. Anderson and N. B. Christensen*. Optimized fast Hankel transform filters; discussion and reply. Geophysical Prospecting. v. 39, no. 3, April 1991. p. 445-450.

OP-21. B. J. Andraski. NEVADA. Water movement and trench stability at a simulated arid burial site for low-level radioactive waste near Beatty, Nevada, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 166-173.

OP-22. S. S. Anthony. Techniques for appraisal of ground-water resources on atoll islands; case studies from Micronesia. American Water Resources Association Technical Publication Series TPS, *in* Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress. (J. H. Krishna, editor and others). 90-2, 1990. p. 291-300.

OP-23. R. C. Antweiler. The hydrolysis of Suwannee River fulvic acid, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 163-177.

OP-24. Masahiro Aoki* and M. T. Thompson. The Osorezan hydrothermal system, Japan; gold-bearing hot springs. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1365-1369.

OP-25. A. K. Armstrong and L. D. Holcomb*. NEW MEXICO. Stratigraphy, facies and paleotectonic history of Mississippian rocks in the San Juan Basin of northwestern New Mexico and adjacent areas. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 159-166.

OP-26. R. L. Armstrong* and P. L. Ward. Evolving geographic patterns of Cenozoic magmatism in the North American Cordillera; the temporal and spatial association of magmatism and metamorphic core complexes. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,201-13,224.

OP-27. F. E. Arteaga. NEVADA. Mathematical model analysis of the Eagle Valley ground-water basin, west-central Nevada. Water Resources Bulletin (Carson City). Report no. 45, 1986. 53 p.

OP-28. Yemane Asmerom*, P. E. Damon*, Muhammad Shafiqullah*, W. R. Dickinson* and R. E. Zartman. Resetting of Rb-Sr ages of volcanic rocks by low-grade burial metamorphism. Chemical Geology; Isotope Geoscience Section. v. 87, no. 3-4, October 10, 1991. p. 167-173.

OP-29. B. F. Atwater, Minze Stuiver* and D. K. Yamaguchi*. WASHINGTON. Radiocarbon test of earthquake magnitude at the Cascadia subduction zone. Nature (London). v. 353, no. 6340, September 12, 1991. p. 156-158.

OP-30. B. F. Atwater and D. K. Yamaguchi*. WASHINGTON. Sudden, probably coseismic submergence of Holocene trees and grass in coastal Washington State. Geology (Boulder). v. 19, no. 7, July 1991. p. 706-709.

OP-31. W. R. Aucott and G. K. Speiran. SOUTH CAROLINA. Geohydrology and water quality of the coastal plain aquifers of South Carolina, *in* Proceedings of the Symposium on Ground water and environmental hydrogeology in South Carolina. (H. J. McGill, editor and others). Columbia, SC: S.C. Dep. Health and Environ. Control. 1985. p. 26-50.

OP-32. Z. Aunzo*, C. Laky*, B. Steingrimsson*, G. S. Bodvarsson*, M. J. Lippmann*, A. H. Truesdell, Carlos Escobar*, A. Quintanilla* and G. Cuellar*. Pre-exploitation state of the Ahuachapán geothermal field, El Salvador. Geothermics. v. 20, no. 1-2, 1991. p. 1-22.

OP-33. R. C. Averett and G. R. Marzolf. Water quality. Environmental Science & Technology, ES & T. v. 21, no. 9, 1987. p. 827.

OP-34. E. V. Axtmann and S. N. Luoma. MONTANA. Large-scale distribution of metal contamination in the fine-grained sediments of the Clark Fork River, Montana, U.S.A. Applied Geochemistry. v. 6, no. 1, 1991. p. 75-88.

OP-35. R. A. Ayuso and M. L. Bevier*. Regional differences in Pb isotopic compositions of feldspars in plutonic rocks of the northern Appalachian Mountains, U.S.A., and Canada; a geochemical method of terrane correlation. Tectonics. v. 10, no. 1, February 1991. p. 191-212.

OP-36. William Back and J. D. Hem. Presentation of the O. E. Meinzer Award to John D. Hem. Geological Society of America Bulletin. v. 103, no. 4, April 1991. p. 586-588.

OP-37. William Back and J. S. Herman*. Significance of chemical boundaries to ground-water management of coastal aquifers. American Water Resources Association Technical Publication Series TPS, *in* Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress. (J. H. Krishna, editor and others). 90-2, 1990. p. 31-38.

OP-38. C. R. Bacon. OREGON. Geologic map of Mount Mazama, Crater Lake, Oregon. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1377-1379.

OP-39. C. R. Bacon, H. L. Foster and J. G. Smith. ALASKA. Rhyolitic calderas of the Yukon-Tanana Terrane, east central Alaska; volcanic remnants of a Mid-Cretaceous magmatic arc. Journal of Geophysical Research, B, Solid Earth and Planets. v. 95, no. 13, December 10, 1990. p. 21,451-21,461.

OP-40. G. C. Bacuta, Jr.*, R. W. Kay*, A. K. Gibbs* and B. R. Lipin. Platinum-group element abundance and distribution in chromite deposits of the Acoje Block, Zambales ophiolite complex, Philippines. Journal of Geochemical Exploration, *in* Geochemistry of platinum-group elements. (C. E. Dunn, editor and others). v. 37, no. 1, March 1990. p. 113-145.

OP-41. R. A. Bailey and D. P. Hill. CALIFORNIA. Magmatic unrest at Long Valley Caldera, California, 1980-1990. Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 175-179.

OP-42. E. S. Bair, R. A. Sheets and S. M. Eberts. Particle-tracking analysis of flow paths and traveltimes from hypothetical spill sites within the capture area of a wellfield. Ground Water. v. 28, no. 6, December 1990. p. 884-892.

OP-43. R. A. Baker (editor). Organic substances and sediments in water; Volume 1, Humics and soils. Chelsea, MI: Lewis Publ. 1991. 367 p.

OP-44. J. G. Baldauf* and J. A. Barron. Evolution of biosiliceous sedimentation patterns, Eocene through Quaternary; paleoceanographic response to polar cooling. NATO Advanced Study Institutes Series. Series C; Mathematical and Physical Sciences, *in* Proceedings of the 1988 NATO advanced research workshop on Geological history of the polar oceans; Arctic versus Antarctic. (Ulrich Bleil, editor and others). 1990. p. 575-607.

OP-45. W. S. Baldridge*, F. V. Perry*, D. T. Vaniman*, L. D. Nealey, B. D. Leavy*, A. W. Laughlin*, P. R. Kyle*, Yosef Bartov*, Gideon Steinitz* and E. S. Gladney*. NEW MEXICO, ARIZONA. Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting. Tectonophysics, *in* World rift systems. (A. F. Gangi, editor). v. 197, no. 2-4, 1991. p. 327-354.

OP-46. J. D. Bales. Land drainage and estuarine salinity response. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 200-205.

OP-47. P. F. Ballance*, D. W. Scholl, T. L. Vallier, A. J. Stevenson, H. F. Ryan and R. H. Herzer*. Subduction of a Late Cretaceous seamount of the Louisville Ridge at the Tonga Trench; a model of normal and accelerated tectonic erosion. Tectonics. v. 8, no. 5, October 1989. p. 953-962.

OP-48. J. F. Banfield*, B. F. Jones and D. R. Veblen*. OREGON. An AEM-TEM study of weathering and diagenesis, Abert Lake, Oregon; II, Diagenetic modification of the sedimentary assemblage. Geochimica et Cosmochimica Acta. v. 55, no. 10, October 1991. p. 2795-2810.

OP-49. J. F. Banfield*, B. F. Jones and D. R. Veblen*. OREGON. An AEM-TEM study of weathering and diagenesis, Abert Lake, Oregon; I, Weathering reactions in the volcanics. Geochimica et Cosmochimica Acta. v. 55, no. 10, October 1991. p. 2781-2793.

OP-50. K. E. Barger. Fluid inclusions and preliminary studies of hydrothermal alteration in core hole PLTG-1, Platanares geothermal area, Honduras. Journal of Volcanology and Geothermal Research, *in* Honduras; a geothermal investigation. (Fraser Goff, editor). v. 45, no. 1-2, March 1991. p. 147-160.

OP-51. C. E. Barker. IOWA. Reconnaissance fluid inclusion study, Amoco Eischeid #1 well, Defiance Basin, Mid-continent rift system, Iowa. Special Report Series - Iowa Geological Survey, *in* The Amoco M.G. Eischeid #1 deep petroleum test; Carroll County, Iowa; preliminary investigations. (R. R. Anderson). Report no. 2, April 1990. p. 169-173.

OP-52. C. E. Barker and R. H. Goldstein*. Fluid-inclusion technique for determining maximum temperature in calcite and its comparison to the vitrinite reflectance geothermometer: Reply. Geology (Boulder). v. 19, no. 12, December 1991. p. 1242.

OP-53. Fred Barker. A-type granites revisited; assessment of a residual-source model: Comment. Geology (Boulder). v. 19, no. 11, November 1991. p. 1151.

OP-54. J. S. Barker*, S. H. Hartzell, L. J. Burdick* and D. V. Helmberger*. NEVADA. Analysis of local seismic waveforms from underground nuclear explosions; forward modeling for effective source functions at Pahute Mesa. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 6, June 10, 1991. p. 10,129-10,143.

OP-55. P. M. Barlow. Ground water modeling and particle tracking analysis of recharge areas to public water supply wells in stratified drift aquifers, *in* Conference proceedings; Protecting ground water from the bottom up; local responses to wellhead protection. (Underground Injection Practices Council). Report no. W91-03921, 1989. p. 145-164.

OP-56. D. F. Barnes. ALASKA. Gravity; gravity-change and other geophysical measurements in Glacier Bay National Park and Preserve, *in* Proceedings of the Second Glacier Bay science symposium. (A. M. Milner, editor and others). Washington, DC: U.S. Gov. Print. Off. 1990. p. 12-18.

OP-57. J. L. Barringer. NEW JERSEY. Corrosive groundwater in the New Jersey coastal plain. Annual Field Conference - Geological Association of New Jersey, *in* Aspects of groundwater in New Jersey; Seventh annual meeting of the Geological Association of New Jersey. (R. L. Kroll, compiler and others). 7, 1990. p. C1.

OP-58. J. L. Barringer, R. L. Ulery and G. R. Kish. NEW JERSEY. A methodology for relating regions of corrosive ground water to hydrogeologic variables in the New Jersey coastal plain, *in* International geographic information systems (IGIS) symposium, the research agenda; proceedings. (R. T. Aangeenbrug, editor and others). NASA, June 1988. p. III.73-III.86.

OP-59. J. A. Bartow and T. H. Nilsen*. CALIFORNIA. Review of the Great Valley Sequence, eastern Diablo Range and northern San Joaquin Valley, Central California. Field Trip Guidebook - Pacific Section, Society of Economic Paleontologists and Mineralogists, *in* Structure, stratigraphy and hydrocarbon occurrences of the San Joaquin Basin, California. (J. G. Kuespert, editor and others). 64, June 1, 1990. p. 253-265.

OP-60. A. R. Basu*, Wang Junwen*, Huang Wankang*, Xie Guanghong* and Mitsunobu Tatsumoto. Major element, REE, and Pb, Nd and Sr isotopic geochemistry of Cenozoic volcanic rocks of Eastern China; implications for their origin from suboceanic-type mantle reservoirs. Earth and Planetary Science Letters. v. 105, no. 1-3, July 1991. p. 149-169.

OP-61. A. L. Bates, P. G. Hatcher, H. E. Lerch, III, C. B. Cecil, S. G. Neuzil and Supardi*. Studies of a peatified angiosperm log cross section from Indonesia by nuclear magnetic resonance spectroscopy and analytical pyrolysis. Organic Geochemistry. v. 17, no. 1, 1991. p. 37-45.

OP-62. R. M. Batson. Digital planetary cartography. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 286-287.

OP-63. R. M. Batson. Map formats and projections used in planetary cartography. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 261-274.

OP-64. R. M. Batson. Cartography. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 60-95.

OP-65. R. M. Batson, E. A. Whitaker* and D. E. Wilhelms. History of planetary cartography. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 12-59.

OP-66. R. L. Baum and R. W. Fleming. Use of longitudinal strain in identifying driving and resisting elements of landslides; with Suppl. Data 91-19. Geological Society of America Bulletin. v. 103, no. 8, August 1991. p. 1121-1132.

OP-67. D. E. Bazemore and C. R. Hupp. Bottomland sedimentation near highway crossings. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 4.48-4.54.

OP-68. D. W. Beaty*, C. G. Cunningham, W. J. Harrison*, G. P. Landis, J. S. Merchant*, C. W. Naeser and R. F. Wendlandt*. COLORADO. Origin of the ore deposits at Gilman, Colorado; Part VI, Discussion and genetic model. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 255-260.

OP-69. D. W. Beaty* and G. P. Landis. COLORADO. Origin of the ore deposits at Gilman, Colorado; Part IV, Stable isotope geochemistry. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 228-244.

OP-70. D. W. Beaty*, G. P. Landis and T. B. Thompson*. COLORADO. Carbonate-hosted sulfide deposits of the central Colorado mineral belt; introduction, general discussion, and summary. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 1-18.

OP-71. D. W. Beaty*, G. P. Landis and T. B. Thompson* (editors). COLORADO. Carbonate-hosted sulfide deposits of the central Colorado mineral belt. Economic Geology Monograph. 7, 1990. 424 p.

OP-72. S. L. Beck* and S. P. Nishenko. Variations in the mode of great earthquake rupture along the central Peru subduction zone. Geophysical Research Letters. v. 17, no. 11, October 1990. p. 1969-1972.

OP-73. Keir Becker*, G. N. Foss*, A. G. Graham*, J. C. Alt*, A. J. Magenheim*, Robert Gable*, R. H. Morin, B. G. Christaras*, G. K. Bayhurst*, Anton Krammer* and R. D. Solbau*. Hole 504B reclaimed for future drilling; Leg 137 Scientific Drilling Party. Eos, Transactions, American Geophysical Union. v. 72, no. 34, August 20, 1991. p. 361, 365.

OP-74. Keir Becker*, Hitoshi Sakai*, R. B. Merrill*, A. C. Adamson*, J. M. Alexandrovich*, J. C. Alt*, R. N. Anderson*, Daniel Bideau, Robert Gable*, P. M. Herzig*, S. D. Houghton*, Hideo Ishizuka*, Hodaka Kawahata*, Hajimu Kinoshita*, M. A. Lovell*, John Malpas*, Harue Masuda*, R. H. Morin, M. J. Mottl*, J. E. Pariso*, P. A. Pezard*, J. D. Phillips*, J. W. Sparks* and Stefan Uhlig*. Costa Rica Rift; covering Leg 111 of the cruises of the drilling vessel JOIDES Resolution, Bridgetown, Barbados, to Callao, Peru, sites 504, 677, and 678, 16 August 1986-20 October 1986. Proceedings of the Ocean Drilling Program, Scientific Results. 111, December 1989. 344 p.

OP-75. J. C. Behrendt. Recent geophysical and geological research in Antarctica related to the assessment of petroleum resources and potential environmental hazards to their development. Antarctic Research Series, *in* Mineral resources potential of Antarctica. (J. F. Splettstoesser, editor and others). 51, 1990. p. 163-174.

OP-76. J. C. Behrendt. Multichannel seismic reflection surveys over the Antarctic continental margin relevant to petroleum resource studies. AAPG Studies in Geology, *in* Antarctica as an exploration frontier; hydrocarbon potential, geology, and hazards. (Bill St. John, editor). 31, 1990. p. 69-75.

OP-77. J. C. Behrendt and A. K. Cooper. Evidence of rapid Cenozoic uplift of the shoulder escarpment of the Cenozoic West Antarctic rift system and a speculation on possible climate forcing. Geology (Boulder). v. 19, no. 4, April 1991. p. 315-319.

OP-78. M. J. Belton*, P. J. Gierasch*, M. D. Smith*, C. P. Helfenstein*, P. J. Schinder*, J. B. Pollack*, K. A. Rages*, A. P. Ingersoll*, K. P. Klaasen*, Joseph Veverka*, C. D. Anger*, M. H. Carr, C. R. Chapman*, M. E. Davies*, F. P. Fanale*, Ronald Greeley*, Richard Greenberg*, J. W. Head*, David Morrison*, Gerhard Neukum* and C. B. Pilcher*. Images from

Galileo of the Venus cloud deck. Science. v. 253, no. 5027, September 27, 1991. p. 1531-1536.

OP-79. L. V. Benson and Harold Klieforth*. NEVADA. Stable isotopes in precipitation and ground water in the Yucca Mountain region, southern Nevada; paleoclimatic implications. Geophysical Monograph, *in* Aspects of climate variability in the Pacific and the western Americas. (D. H. Peterson, editor). 55, 1989. p. 41-59.

OP-80. L. V. Benson, P. A. Meyers* and R. J. Spencer*. NEVADA. Change in the size of Walker Lake during the past 5000 years. Palaeogeography, Palaeoclimatology, Palaeoecology. v. 81, no. 3-4, January 1991. p. 189-214.

OP-81. L. V. Benson and F. L. Paillet. The use of total lake-surface area as an indicator of climatic change; examples from the Lahontan Basin. Quaternary Research (New York). v. 32, no. 3, November 1989. p. 262-275.

OP-82. H. M. Benz, R. B. Smith* and W. D. Mooney. Crustal structure of the northwestern Basin and Range Province from the 1986 Program for Array Seismic Studies of the Continental Lithosphere seismic experiment. Journal of Geophysical Research, B, Solid Earth and Planets. v. 95, no. 13, December 10, 1990. p. 21,823-21,842.

OP-83. Milan Beres, Jr. and F. P. Haeni. Application of ground-penetrating-radar methods in hydrogeologic studies. Ground Water. v. 29, no. 3, June 1991. p. 375-386.

OP-84. B. R. Berger and W. C. Bagby. The geology and origin of carlin-type gold deposits, *in* Gold metallogeny and exploration. (R. P. Foster). Glasgow: Blackie and Son, 1991. p. 210-248.

OP-85. W. R. Berkas. MISSOURI. Sediment in Lake Taneycomo, Missouri, 1913 to 1987. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. PS.1-PS.8.

OP-86. J. L. Bischoff. Densities of liquids and vapors in boiling NaCl-H_2O solutions; a PVTx summary from 300° to 500°C. American Journal of Science. v. 291, no. 4, April 1991. p. 309-338.

OP-87. J. L. Bischoff and J. A. Fitzpatrick. U-series dating of impure carbonates; an isochron technique using total-sample dissolution. Geochimica et Cosmochimica Acta. v. 55, no. 2, February 1991. p. 543-554.

OP-88. J. L. Bischoff, D. B. Herbst* and R. J. Rosenbauer. CALIFORNIA. Gaylussite formation at Mono Lake, California. Geochimica et Cosmochimica Acta. v. 55, no. 6, June 1991. p. 1743-1747.

OP-89. R. J. Blakely and R. C. Jachens. NEVADA. Regional study of mineral resources in Nevada; insights from three-dimensional analysis of gravity and magnetic anomalies. Geological Society of America Bulletin. v. 103, no. 6, June 1991. p. 795-803.

OP-90. P. J. Blanchard. UTAH. Ground-water conditions in the Grand County area, Utah, with emphasis on the Mill Creek-Spanish Valley area. Technical Publication - State of Utah, Department of Natural Resources. Report no. 100, 1990. 69 p.

OP-91. M. L. Blanpied, D. A. Lockner and J. D. Byerlee. Fault stability inferred from granite sliding experiments at hydrothermal conditions. Geophysical Research Letters. v. 18, no. 4, April 1991. p. 609-612.

OP-92. D. W. Blevins and D. T. Chafin. MISSOURI. Determination of chemical processes in coal mine spoil in west-central Missouri using sulfur and oxygen isotopes, *in* Proceedings; 1988 symposium on Mining, hydrology, sedimentology, and reclamation. (D. H. Graves, editor and others). Lexington, KY: Univ. Ky., Coll. Eng., Off. Eng. Serv. December 1988. p. 53-57.

OP-93. J. C. Blodgett. CALIFORNIA. Monitoring scour at the State Route 32 bridge across the Sacramento River at Hamilton City, California, *in* Proceedings of the Bridge scour symposium. (Dah-Cheng Woo, chairperson and others). Report no. FHWA-RD-90-035, December 1989. p. 211-226. *Available from:* U.S. Dep. Transp., Fed. Highw. Adm., McLean, VA, United States.

OP-94. J. C. Blodgett, Iraj Nasseri* and A. L. Elliott*. CALIFORNIA. Urban hydrology in the desert, Antelope Valley, California, *in* Proceedings of the International symposium on Hydraulics/hydrology of arid lands (H^2AL). (R. H. French, editor). New York, NY: Am. Soc. Civ. Eng. 1990. p. 96-101.

OP-95. R. B. Blodgett, D. M. Rohr* and A. J. Boucot*. Early and Middle Devonian gastropod biogeography. Memoir - Geological Society of London, *in* Palaeozoic palaeogeography and biogeography. (W. S. McKerrow, editor and others). 12, 1990. p. 277-284.

OP-96. C. D. Blome and M. K. Nestell*. OREGON. Evolution of a Permo-Triassic sedimentary mélange, Grindstone Terrane, east-central Oregon; with Suppl. Data 91-21. Geological Society of America Bulletin. v. 103, no. 10, October 1991. p. 1280-1296.

OP-97. R. J. Bodnar* and R. C. Burruss. Fluid-inclusion technique for determining maximum temperature in calcite and its comparison to the vitrinite reflectance geothermometer: Comment. Geology (Boulder). v. 19, no. 12, December 1991. p. 1241-1242.

OP-98. R. G. Bohannon and S. L. Eittreim. Tectonic development of passive continental margins of the southern and central Red Sea with a comparison to Wilkes Land, Antarctica. Tectonophysics, *in* Red Sea; birth and early history of a new oceanic basin. (Jannis Makris, editor and others). v. 198, no. 2-4, 1991. p. 129-154.

OP-99. S. R. Bohlen. On the formation of granulites. Journal of Metamorphic Geology. v. 9, no. 3, May 1991. p. 223-229.

OP-100. S. R. Bohlen, Art Montana* and D. M. Kerrick*. Precise determinations of the equilibria kyanite-sillimanite and kyanite-andalusite and a revised triple point for Al_2SiO_5 polymorphs. American Mineralogist. v. 76, no. 3-4, April 1991. p. 677-680.

OP-101. D. M. Boore and G. M. Atkinson*. Notes on the prediction of ground motion and response spectra at hard-rock sites in eastern North-America, *in* Proceedings; Earthquake ground-motion estimation in eastern North America. (R. K. McGuire, editor and others). Report no. EPRI NP-5875, 1988. p. 16:1-16. *Available from:* Risk Eng., Golden, CO, United States.

OP-102. R. D. Borcherdt and G. M. Glassmoyer. OHIO. On the aftershock sequence for the earthquake of January 31, 1986 in

northeastern Ohio; effects of bandwidth and local geology on observed high-frequency ground motion, *in* Proceedings; Earthquake ground-motion estimation in eastern North America. (R. K. McGuire, editor and others). Report no. EPRI NP-5875, 1988. p. 8:1-42. *Available from:* Risk Eng., Golden, CO, United States.

OP-103. N. H. Bostick, W. J. Betterton, H. J. Gluskotter* and M. N. Islam*. Petrography of Permian "Gondwana" coals from boreholes in northwestern Bangladesh, based on semiautomated reflectance scanning. Organic Geochemistry, *in* Collected papers from the Sixth annual meeting of the Society for Organic Petrology. (R. D. Harvard and others). v. 17, no. 4, 1991. p. 399-413.

OP-104. Gary Bowersox*, L. W. Snee, E. E. Foord and R. R. Seal, II. Emeralds of the Panjshir Valley, Afghanistan. Gems and Gemology. v. 27, no. 1, 1991. p. 26-39.

OP-105. J. R. Bowman* and J. W. Dewey. Relocation of teleseismically recorded earthquakes near Tennant Creek, Australia; implications for midplate seismogenesis. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 7, July 10, 1991. p. 11,973-11,979.

OP-106. T. M. Bown. Passing the field, or passing it up?. Evolutionary Theory. v. 9, no. 2, June 1990. p. 317-327.

OP-107. T. M. Bown and J. H. Laza*. A Miocene termite nest from southern Argentina and its paleoclimatological implications. Ichnos - An International Journal for Plant and Animal Traces. v. 1, no. 2, 1990. p. 73-79.

OP-108. D. C. Bradley. Taconic plate kinematics as revealed by foredeep stratigraphy, Appalachian Orogeny. Tectonics. v. 8, no. 5, October 1989. p. 1037-1049.

OP-109. D. C. Bradley and W. S. Kidd*. Flexural extension of the upper continental crust in collisional foredeeps; with Suppl. Data 91-27. Geological Society of America Bulletin. v. 103, no. 11, November 1991. p. 1416-1438.

OP-110. A. G. Brady. CALIFORNIA. Initial overview of the San Francisco Bay and Santa Cruz Mountains ground motion. National Bureau of Standards Special Publication, *in* Wind and seismic effects; proceedings of the 22nd joint meeting of the U.S.-Japan cooperative program in natural resources. (N. J. Raufaste, editor). 796, September 1990. p. 283-288.

OP-111. J. C. Brannon*, F. A. Podosek*, J. G. Viets, D. L. Leach, M. B. Goldhaber and E. L. Rowan*. MISSOURI. Strontium isotopic constraints on the origin of ore-forming fluids of the Viburnum Trend, Southeast Missouri. Geochimica et Cosmochimica Acta. v. 55, no. 5, May 1991. p. 1407-1419.

OP-112. J. D. Bredehoeft and R. A. Young*. Risk aversion in conjunctive water use, *in* Efficiency in irrigation; the conjunctive use of surface and groundwater resources. (G. T. O'Mara, editor). Washington, DC: World Bank, 19??. p. 155-167.

OP-113. G. N. Breit and R. B. Wanty. Vanadium accumulation in carbonaceous rocks; a review of geochemical controls during deposition and diagenesis. Chemical Geology, *in* Trace metals in petroleum geochemistry. (J. F. Branthaver, editor and others). v. 91, no. 2, August 20, 1991. p. 83-97.

OP-114. D. A. Brew. ALASKA. Plate-tectonic setting of Glacier Bay National Park and Preserve and of Admiralty Island National Monument, southeastern Alaska, *in* Proceedings of the Second Glacier Bay science symposium. (A. M. Milner, editor and others). Washington, DC: U.S. Gov. Print. Off. 1990. p. 1-5.

OP-115. D. A. Brew, A. B. Ford* and G. R. Himmelberg*. ALASKA. Evolution of the western part of the Coast plutonic metamorphic complex, south-eastern Alaska, USA; a summary. Geological Society Special Publications, *in* Evolution of metamorphic belts; proceedings of the 1987 joint meeting of the Metamorphic Studies Group and IGCP project 235. (J. S. Daly, editor and others). 43, 1989. p. 447-452.

OP-116. D. A. Brew, S. M. Karl, D. F. Barnes, R. C. Jachens, A. B. Ford and R. B. Horner*. ALASKA. A northern Cordilleran ocean–continent transect; Sitka Sound, Alaska, to Atlin Lake, British Columbia. Canadian Journal of Earth Sciences = Journal Canadien des Sciences de la Terre, *in* Contributions to the geology and geophysics of northwestern British Columbia and southeastern Alaska—Contributions à la géologie et à la géophysique du nord-ouest de la Colombie-Britannique et du sud-est de l'Alaska. (R. G. Anderson, editor). v. 28, no. 6, June 1991. p. 840-853.

OP-117. T. M. Brocher and N. I. Christensen*. ALASKA. Seismic anisotropy due to preferred mineral orientation observed in shallow crustal rocks in southern Alaska: Reply. Geology (Boulder). v. 19, no. 8, August 1991. p. 859-860.

OP-118. T. M. Brocher, M. L. Crawford*, J. B. Diebold*, L. S. Hollister*, S. Lewis, Susan McGeary*, T. L. Pavlis*, J. B. Saleeby*, A. M. Tréhu* and E-an Zen*. ACCRETE; a study of continental growth. Eos, Transactions, American Geophysical Union. v. 72, no. 28, July 9, 1991. p. 297, 301, 304.

OP-119. T. M. Brocher and P. E. Hart. Comparison of Vibroseis and explosive source methods for deep crustal seismic reflection profiling in the Basin and Range Province. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 11, October 10, 1991. p. 18,197-18,213.

OP-120. T. M. Brocher, W. J. Nokleberg, N. I. Christensen*, W. J. Lutter, E. L. Geist and M. A. Fisher. ALASKA. Seismic reflection/refraction mapping of faulting and regional dips in the eastern Alaska Range. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 6, June 10, 1991. p. 10,233-10,249.

OP-121. J. M. Brooks*, M. E. Field and M. C. Kennicutt, II*. CALIFORNIA. Observations of gas hydrates in marine sediments, offshore Northern California. Marine Geology. v. 96, no. 1-2, January 1991. p. 103-109.

OP-122. Marc Brouxel and Mitsunobu Tatsumoto. The Estherville Mesosiderite; U-Pb, Rb-Sr, and Sm-Nd isotopic study of a polymict breccia. Geochimica et Cosmochimica Acta. v. 55, no. 4, April 1991. p. 1121-1133.

OP-123. R. D. Brown. Geology and land use. Networks (Oakland, CA). v. 5, no. 2, 1990. p. 5.

OP-124. R. G. Brown. MINNESOTA. Effects of wetland channelization on storm runoff in Lamberts Creek, Ramsey County, Minnesota. ASWM Technical Report, *in* Proceedings of the National wetland symposium; Wetland hydrology. (J. A. Kusler,

chairperson and others). Report no. 6, December 1988. p. 130-136.

OP-125. R. G. Brown and J. R. Stark. MINNESOTA. Hydrologic and water-quality characteristics of a wetland receiving wastewater effluent in St. Joseph, Minnesota. Wetlands (Wilmington, NC). v. 9, no. 2, 1989. p. 191-206.

OP-126. R. G. Brown, J. R. Stark and G. L. Patterson. MINNESOTA, WISCONSIN. Ground-water and surface-water interactions in Minnesota and Wisconsin wetlands, *in* The ecology and management of wetlands; Volume 1, Ecology of wetlands. (D. D. Hook, editor and others). Portland, OR: Timber Press, 1988. p. 176-180.

OP-127. T. M. Brown and K. C. Beard*. WYOMING. Systematic lateral variation in the distribution of fossil mammals in alluvial Paleosols, lower Eocene Willwood Formation, Wyoming. Special Paper - Geological Society of America, *in* Dawn of the age of mammals in the northern part of the Rocky Mountain interior, North America. (T. M. Brown, editor and others). 243, 1990. p. 135-151.

OP-128. T. M. Brown and K. D. Rose* (editors). Dawn of the age of mammals in the northern part of the Rocky Mountain interior, North America. Special Paper - Geological Society of America. 243, 1990. 241 p.

OP-129. C. J. Bryan* and C. E. Johnson. HAWAII. Block tectonics of the island of Hawaii from a focal mechanism analysis of basal slip. Bulletin of the Seismological Society of America. v. 81, no. 2, April 1991. p. 491-507.

OP-130. Bruce Bryant, C. W. Naeser and J. E. Fryxell. ARIZONA. Implications of low-temperature cooling history of a transect across the Colorado Plateau–Basin and Range boundary, west central Arizona. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,375-12,388.

OP-131. Bruce Bryant, C. W. Naeser and R. J. Stegen*. COLORADO. Reconnaissance fission-tract geochronology of the Aspen mining district, central Colorado. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 301-307.

OP-132. Binyamin Buchbinder* and R. B. Halley. Source-rock evaluation of outcrop samples from Vanuatu; Malakula, Espiritu Santo, Maewo, and Pentecost. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 255-265.

OP-133. K. E. Budding, D. P. Schwartz and D. H. Oppenheimer. CALIFORNIA. Slip rate, earthquake recurrence, and seismogenic potential of the Rogers Creek fault zone, Northern California; initial results. Geophysical Research Letters. v. 18, no. 3, March 1991. p. 447-450.

OP-134. E. F. Bugliosi. OHIO, INDIANA. Ohio-Indiana carbonate-bedrock and glacial regional aquifer system analysis; plan of study. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 135-148.

OP-135. R. C. Burruss, B. A. Blakeney*, R. A. Castle* and K. C. Kirkby*. COLORADO. Petroleum source rock quality and thermal maturation of the Mississippian Spergen and Pennsylvanian Morrow Formation, *in* Morrow Sandstones of Southeast Colorado and adjacent areas. (S. A. Sonnenberg, editor and others). Denver, CO: Rocky Mt. Assoc. Geol. 1990. p. 59-66.

OP-136. M. A. Bussell*, C. N. Alpers, Ulrich Petersen*, T. J. Shepherd*, Carlos Bermudez* and A. N. Baxter*. The Ag-Mn-Pb-Zn vein, replacement, and skarn deposits of Uchucchacua, Peru; studies of structure, mineralogy, metal zoning, Sr isotopes, and fluid inclusions. Economic Geology and the Bulletin of the Society of Economic Geologists, *in* A special issue devoted to the mineral deposits of Peru. (B. J. Skinner). v. 85, no. 7, November 1990. p. 1348-1383.

OP-137. G. K. Butch. NEW YORK. Measurement of scour at selected bridges in New York. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 2.113-2.120.

OP-138. D. K. Butler*, J. L. Liopis*, T. L. Dobecki*, M. J. Wilt*, R. F. Corwin* and G. R. Olhoeft. Comprehensive geophysics investigation of an existing dam foundation: engineering geophysics research and development. Geophysics: The Leading Edge of Exploration. v. 9, no. 9, September 1990. p. 44-53.

OP-139. H. T. Buxton, T. E. Reilly, D. W. Pollock and D. A. Smolensky. NEW YORK. Particle tracking analysis of recharge areas on Long Island, New York. Ground Water. v. 29, no. 1, 1991. p. 63-71.

OP-140. J. D. Byerlee. Friction, overpressure and fault normal compression. Geophysical Research Letters. v. 17, no. 12, November 1990. p. 2109-2112.

OP-141. G. J. Calderone and R. F. Butler*. The effects of noise due to random undetected tilts and paleosecular variation on regional paleomagnetic directions. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 3973-3977.

OP-142. K. W. Campbell. Summary comments; practical ground motion estimates, *in* Proceedings; Earthquake ground-motion estimation in eastern North America. (R. K. McGuire, editor and others). Report no. EPRI NP-5875, 1988. p. 20:1-5. *Available from:* Risk Eng., Golden, CO, United States.

OP-143. W. H. Campbell. Differences in geomagnetic Sq field representations due to variations in spherical harmonic analysis techniques. Journal of Geophysical Research, A, Space Physics. v. 95, no. 12, December 1, 1990. p. 20,923-20,936.

OP-144. W. F. Cannon, A. G. Green*, D. R. Hutchinson, M. W. Lee, Bernd Milkereit*, J. C. Behrendt*, H. C. Halls*, J. C. Green*, A. B. Dickas*, G. B. Morey*, Richard Sutcliffe* and Carl Spencer*. The North American Midcontinent Rift beneath Lake Superior from GLIMPCE seismic reflection profiling. Tectonics. v. 8, no. 2, April 1989. p. 305-332.

OP-145. W. F. Cannon, M. W. Lee, W. J. Hinze*, K. J. Schulz and A. G. Green*. Deep crustal structure of the Precambrian basement beneath northern Lake Michigan, Midcontinent North America. Geology (Boulder). v. 19, no. 3, March 1991. p. 207-210.

OP-146. C. A. Carlson. Spatial distribution of ore deposits. Geology (Boulder). v. 19, no. 2, February 1991. p. 111-114.

OP-147. D. H. Carlson*, R. J. Fleck, F. J. Moye* and K. F. Fox, Jr. WASHINGTON. Geology, geochemistry, and isotopic character of the Colville igneous complex, northeastern Washington. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,313-13,333.

OP-148. P. R. Carlson, T. R. Bruns and M. A. Fisher. ALASKA. Development of slope valleys in the glacimarine environment of a complex subduction zone, northern Gulf of Alaska. Geological Society Special Publications, *in* Glacimarine environments; processes and sediments. (J. A. Dowdeswell, editor and others). 53, 1990. p. 139-153.

OP-149. P. R. Carlson, R. D. Powell*, D. M. Rearic and P. J. Quinterno. ALASKA. Channel-forming processes active in Queen Inlet, Glacier Bay, Alaska, *in* Proceedings of the Second Glacier Bay science symposium. (A. M. Milner, editor and others). Washington, DC: U.S. Gov. Print. Off. 1990. p. 41-46.

OP-150. R. W. Carlson*, K. H. Baines*, Thérèse Encrenaz*, F. W. Taylor*, P. Drossart*, L. W. Kamp*, J. B. Pollack*, Emmanuel Lellouch*, A. D. Collard*, S. B. Calcutt*, D. H. Grinspoon*, P. R. Weissman*, W. D. Smythe*, A. C. Ocampo*, G. E. Danielson*, F. P. Fanale*, T. V. Johnson*, H. H. Kieffer, D. L. Matson*, T. B. McCord* and L. A. Soderblom. Galileo infrared imaging spectroscopy measurements at Venus. Science. v. 253, no. 5027, September 27, 1991. p. 1541-1548.

OP-151. M. H. Carr. Mars, *in* The new solar system. (J. K. Beatty, editor and others). Cambridge: Cambridge Univ. Press, 1990. p. 53-64.

OP-152. V. P. Carter and R. P. Novitzki. Some comments on the relation between ground water and wetlands, *in* The ecology and management of wetlands; Volume 1, Ecology of wetlands. (D. D. Hook, editor and others). Portland, OR: Timber Press, 1988. p. 68-86.

OP-153. J. E. Case, W. D. MacDonald* and P. J. Fox*. Caribbean crustal provinces; seismic and gravity evidence, *in* The Caribbean region. (Gabriel Dengo, editor and others), *in the collection* The geology of North America. Boulder, CO: Geol. Soc. Am. H, 1990. p. 15-36.

OP-154. J. E. Case, Reginald Shagam* and R. F. Giegengack*. Geology of the Northern Andes; an overview, *in* The Caribbean region. (Gabriel Dengo, editor and others), *in the collection* The geology of North America. Boulder, CO: Geol. Soc. Am. H, 1990. p. 177-200.

OP-155. R. D. Catchings and W. D. Mooney. NEVADA. Basin and Range crustal and upper mantle structure, northwest to central Nevada. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6247-6267.

OP-156. Vladimir Cermak* and J. H. Sass (editors). Forward and inverse techniques in geothermal modelling. Tectonophysics. v. 194, no. 4, August 10, 1991. p. 307-428.

OP-157. E. F. Chacho, Jr.*, R. C. Burrow* and W. W. Emmett. Detection of coarse sediment movement using radio transmitters. The Northern Engineer. v. 22, no. 3, 1990. p. 5-9.

OP-158. W. W. Chadwick, Jr., T. De Roy* and A. Carrasco*. The September 1988 intracaldera avalanche and eruption at Fernandina Volcano, Galapagos Islands. Bulletin of Volcanology. v. 53, no. 4, May 1991. p. 276-286.

OP-159. W. W. Chadwick, Jr. and K. A. Howard. The pattern of circumferential and radial eruptive fissures on the volcanoes of Fernandina and Isabela islands, Galapagos. Bulletin of Volcanology. v. 53, no. 4, May 1991. p. 259-275.

OP-160. R. M. Chamberlin*, O. J. Anderson*, S. G. Lucas*, C. H. Maxwell and D. W. Love*. NEW MEXICO. Second-day road log, from Grants to El Malpais, Fence Lake, Zuni Pueblo and Gallup. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 25-48.

OP-161. C. Y. Chang, J. S. Kuwabara and S. P. Pasilis. CALIFORNIA, NEVADA. Trace metal concentrations of three streams to Lake Tahoe, California and Nevada, *in* Proceedings; International mountain watershed symposium; subalpine processes and water quality. (I. G. Poppoff, editor and others). South Lake Tahoe, CA: Tahoe Resour. Conserv. Dist. 1988. p. 103-115.

OP-162. F. H. Chapelle and P. B. McMahon. SOUTH CAROLINA. Geochemistry of dissolved inorganic carbon in a coastal plain aquifer; 1, Sulfate from confining beds as an oxidant in microbial CO_2 production. Journal of Hydrology. v. 127, no. 1-4, October 1991. p. 85-108.

OP-163. Dominique Chapellier*, D. V. Fitterman, D. S. Parasnis* and Pierre Valla* (editors). Application of geophysics to water prospecting in arid and semi-arid areas; proceedings of the 1990 international symposium. Geoexploration. v. 27, no. 1-2, February 1991. 212 p.

OP-164. T. E. Chase and B. A. Seekins. Submarine topography of the Vanuatu and southeastern Solomon Islands region. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 35-36.

OP-165. P. S. Chavez, Jr., J. A. McSweeney and D. R. Binnie. Digital processing techniques and film density calibration for printing image data. Proceedings of the Annual William T. Pecora Memorial Symposium on Remote Sensing, *in* Proceedings; 11th Pecora symposium; Satellite land remote sensing; current programs and a look to the future. (L. Pressler, chairperson). 11, 1987. p. 293-302.

OP-166. Cheng-lung Chen. Discharge and depth behind a partially breached dam, *in* Hydraulic engineering; proceedings of the 1987 national conference on Hydraulic engineering. (R. M. Ragan, editor). New York, NY: Am. Soc. Civ. Eng. 1987. p. 648-654.

OP-167. Cheng-lung Chen, Chi-Hai Ling and Chyan-Deng Jan*. Rheological model for ring-shear type debris flows. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991, p. 5.1-5.8.

OP-168. R. T. Cheng, Feng Shizuo* and Xi Pangen*. On intertidal transport equation, *in* Estuarine circulation. (B. J. Neilson, editor and others). Clifton, NJ: Humana Press, 1989. p. 133-156.

OP-169. R. N. Cherry and G. G. Patterson. Real-time hydrologic data. Hydrological Science and Technology Short Papers. v. 4, no. 1-4, December 1988. p. 236-237.

OP-170. Yu-Ping Chin*, W. J. Weber, Jr.* and C. T. Chiou. A thermodynamic partition model for binding of nonpolar organic compounds by organic colloids and implications for their sorption to soils and sediment, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 251-273.

OP-171. C. T. Chiou. Partition and adsorption on soil and mobility of organic pollutants and pesticides. Ecological Studies, *in* Toxic organic chemicals in porous media. (Z. Gerstl, editor and others). 73, 1989. p. 163-175.

OP-172. C. T. Chiou and Milton Manes*. Temperature dependence of the aqueous solubilities of highly chlorinated dibenzo-p-dioxins; discussion. Environmental Science & Technology, ES & T. v. 24, no. 11, November 1990. p. 1755-1756.

OP-173. I-Ming Chou and G. L. Cygan. Quantitative redox control and measurement in hydrothermal experiments. Special Publication - Geochemical Society, *in* Fluid-mineral interactions; a tribute to H. P. Eugster. (R. J. Spenser, editor and others). 2, 1990. p. 3-15.

OP-174. B. A. Chouet and H. R. Shaw. HAWAII. Fractal properties of tremor and gas piston events observed at Kilauea Volcano, Hawaii. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 6, June 10, 1991. p. 10,177-10,189.

OP-175. D. A. Clague and J. G. Moore. HAWAII. Geology and petrology of Mahukona Volcano, Hawaii. Bulletin of Volcanology. v. 53, no. 3, April 1991. p. 159-172.

OP-176. D. A. Clague and J. G. Moore. HAWAII. Mahukona; the missing Hawaiian volcano: Comment. Geology (Boulder). v. 19, no. 10, October 1991. p. 1049-1050.

OP-177. D. A. Clague, W. S. Weber and J. E. Dixon*. HAWAII. Picritic glasses from Hawaii. Nature (London). v. 353, no. 6344, October 10, 1991. p. 553-556.

OP-178. A. H. Clark*, R. M. Tosdal, Edward Farrar* and Armando Plazolles V.*. Geomorphologic environment and age of supergene enrichment of the Cuajone, Quellaveco, and Toquepala porphyry copper deposits, southeastern Peru. Economic Geology and the Bulletin of the Society of Economic Geologists, *in* A special issue devoted to the mineral deposits of Peru. (B. J. Skinner). v. 85, no. 7, November 1990. p. 1604-1628.

OP-179. D. W. Clark, C. L. Appel, P. M. Lambert and R. L. Puryear. UTAH. Ground-water resources and simulated effects of withdrawals in the East Shore area of Great Salt Lake, Utah. Technical Publication - State of Utah, Department of Natural Resources. Report no. 93, 1990. 150 p.

OP-180. R. N. Clark. Fully automated analysis of reflectance spectra to identify and map minerals using imaging spectrometers. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Sixth thematic conference on Remote sensing for exploration geology; applications, technology, economics. (R. H. Rogers, chairperson). 6, Vol. 2, 1988. p. 633.

OP-181. S. H. Clark and J. F. Slack. VERMONT. Paleotectonic setting and genesis of some sediment-hosted, stratabound base-metal sulfide deposits in Vermont and southeastern Quebec, *in* North American conference on Tectonic control of ore deposits and the vertical and horizontal extent of ore systems, Proceedings volume. (Geza Kisvarsanyi, editor and others). Rolla, MO: Univ. Mo. 1988. p. 521-530.

OP-182. J. L. Clayton and G. E. Michael. Controls on porphyrin concentrations of Pennsylvanian organic-rich shales, western U.S.A. Energy & Fuels, *in* ACS symposium on Porphyrin geochemistry; the quest for analytical reliability. (D. H. Freeman, editor). v. 4, no. 6, December 1990. p. 644-646.

OP-183. J. L. Clayton, D. D. Rice and G. E. Michael*. NEW MEXICO, COLORADO. Oil-generating coals of the San Juan Basin, New Mexico and Colorado, U.S.A. Organic Geochemistry, *in* Selected papers from the symposium on Coal and terrestrial organic matter as a source rock for petroleum; 199th ACS national meeting. (P. K. Mukhopadhyay, editor and others). v. 17, no. 6, 1991. p. 735-742.

OP-184. J. L. Clayton, C. W. Spencer, I. Koncz* and A. Szalay*. Origin and migration of hydrocarbon gases and carbon dioxide, Bekes Basin, southeastern Hungary. Organic Geochemistry. v. 15, no. 3, 1990. p. 233-247.

OP-185. M. A. Clynne and L. J. Muffler. CALIFORNIA. Geologic map of the Lassen region, Cascade Range, USA. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1387-1389.

OP-186. D. A. Coates, G. D. Stricker and E. R. Landis. Coal geology, coal quality, and coal resources in Permian rocks of the Beacon Supergroup, Transantarctic Mountains, Antarctica. Antarctic Research Series, *in* Mineral resources potential of Antarctica. (J. F. Splettstoesser, editor and others). 51, 1990. p. 133-162.

OP-187. E. D. Cobb. Peak-flow data-collection methods for streams in arid areas. Transportation Research Record. 1201, 1988. p. 30-36.

OP-188. W. A. Cobban. NEW MEXICO. Sciponoceras gracile (Shumard); common Upper Cretaceous guide fossil in New Mexico. New Mexico Geology. v. 12, no. 4, November 1990. p. 90-91.

OP-189. W. A. Cobban and S. C. Hook*. NEW MEXICO. Mid-Cretaceous molluscan record from west-central New Mexico. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 247-264.

OP-190. P. D. Collar and Senén Guzmán-Ríos. PUERTO RICO. Sedimentation rates and capacity restoration options, Lago Loiza, Puerto Rico. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 15.17-15.25.

OP-191. Jean-Yves Collot* and M. A. Fisher. Crustal structure, from gravity data, of a collision zone in the central New Hebrides

island arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 125-139.

OP-192. Jean-Yves Collot* and M. A. Fisher. The collision zone between the North d'Entrecasteaux Ridge and the New Hebrides island arc; 1, Sea Beam morphology and shallow structure. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 4457-4478.

OP-193. M. T. Colucci*, M. A. Dungan*, K. M. Ferguson*, P. W. Lipman and Stephen Moorbath*. COLORADO. Precaldera lavas of the Southeast San Juan volcanic field; parent magmas and crustal interactions. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,413-13,434.

OP-194. J. A. Commeau and P. C. Valentine. A method for the concentration of fine-grained rutile (TiO_2) from sediment and sedimentary rocks by chemical leaching. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 86, no. 4, July 1991. p. 878-882.

OP-195. S. M. Condon. NEW MEXICO. Modifications to Middle and Upper Jurassic nomenclature in the southeastern San Juan Basin, New Mexico. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 231-238.

OP-196. C. S. Conover, John Vecchioli* and D. W. Foose. FLORIDA. Ground-water sources and 1985 withdrawals in Florida. Map Series (Tallahassee). 124, 1989. 1 sheet.

OP-197. Jim Constantz and Fred Murphy. The temperature dependence of ponded infiltration under isothermal conditions. Journal of Hydrology. v. 122, no. 1-4, January 1991. p. 119-128.

OP-198. A. K. Cooper, F. J. Davey* and Karl Hinz*. Geology and hydrocarbon potential of the Ross Sea, Antarctica. AAPG Studies in Geology, *in* Antarctica as an exploration frontier; hydrocarbon potential, geology, and hazards. (Bill St. John, editor). 31, 1990. p. 47-67.

OP-199. J. A. Cooper* and R. M. Flores. Shoreline deposits and diagenesis resulting from two late Pleistocene highstand near +5 and +6 metres, Durban, South Africa. Marine Geology. v. 97, no. 3-4, April 1991. p. 325-343.

OP-200. L. E. Cordell, Y. A. Zorin* and R. G. Keller*. The decompensative gravity anomaly and deep structure of the region of the Rio Grande Rift. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6557-6568.

OP-201. Stuart Crampin*, D. C. Booth*, Russ Evans*, Sheila Peacock*, J. B. Fletcher, R. C. Aster*, P. M. Shearer* and Jon Berger*. CALIFORNIA. Quantitative measurements of shear wave polarizations at the Anza seismic network, Southern California; implications for shear wave splitting and earthquake prediction; discussion and reply. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6403-6419.

OP-202. Edward Cranswick, K. W. King, D. L. Carver, D. M. Worley, R. A. Williams, Paul Spudich and Robert Banfill*. CALIFORNIA. Site response across downtown Santa Cruz, California. Geophysical Research Letters, *in* The Loma Prieta California earthquake of October 17, 1989; III. v. 17, no. 10, September 1990. p. 1793-1796.

OP-203. A. J. Crawford*, H. G. Greene and N. F. Exon*. Geology, petrology and geochemistry of submarine volcanoes around Epi Island, New Hebrides island arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 301-327.

OP-204. R. E. Criss* and R. J. Fleck. IDAHO. Oxygen isotope map of the giant metamorphic-hydrothermal system around the northern part of the Idaho Batholith, U.S.A. Applied Geochemistry, *in* Water-rock interactions. (Y. K. Kharaka, editor and others). v. 5, no. 5-6, December 1990. p. 641-655.

OP-205. R. E. Criss*, R. J. Fleck and H. P. Taylor, Jr.*. Tertiary meteoric hydrothermal systems and their relation to ore deposition, northwestern United States and southern British Columbia. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,335-13,356.

OP-206. A. J. Crone. Studying prehistoric earthquakes may help reduce hazards of future earthquakes. Earth in Space. v. 1, no. 5, January 1989. p. 5-8.

OP-207. A. J. Crone. Earthquakes in aseismic zones. Nature (London). v. 352, no. 6336, August 15, 1991. p. 570.

OP-208. A. J. Crone and K. M. Haller. IDAHO, MONTANA. Segmentation and the coseismic behavior of Basin and Range normal faults; examples from east-central Idaho and southwestern Montana, USA. Journal of Structural Geology, *in* Characteristics of active faults. (P. L. Hancock, editor and others). v. 13, no. 2, 1991. p. 151-164.

OP-209. T. M. Cronin. Late Neogene marine Ostracoda from Tjornes, Iceland. Journal of Paleontology. v. 65, no. 5, September 1991. p. 767-794.

OP-210. T. M. Cronin and Noriyuki Ikeya*. Tectonic events and climatic change; opportunities for speciation in Cenozoic marine Ostracoda, *in* Causes of evolution; a paleontological perspective. (R. M. Ross, editor and others). Chicago, IL: Univ. Chicago Press, 1990. p. 210-248.

OP-211. R. A. Crovelli and R. H. Balay*. A microcomputer program for energy assessment and aggregation using the triangular probability distribution. Computers & Geosciences. v. 17, no. 2, 1991. p. 197-225.

OP-212. J. K. Crowley. Visible and near-infrared (0.4-2.5 μm) reflectance spectra of playa evaporite minerals. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,231-16,240.

OP-213. J. K. Crowley, D. W. Brickley and L. C. Rowan. MONTANA. Airborne imaging spectrometer data for the Ruby Mountains, Montana; mineral identification by remote sensing in a vegetated metamorphic terrain. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Sixth thematic conference on Remote sensing for exploration geology; applications, technology, economics. (R. H. Rogers, chairperson). 6, Vol. 1, 1988. p. 225-226.

OP-214. J. K. Crowley and Norma Vergo. Visible and near-infrared (0.4- to 2.5 μm) reflectance spectra of selected mixed-layer clays and related minerals. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Sixth thematic conference on Remote sensing for exploration geology; applications, technology, economics. (R. H. Rogers, chairperson). 6, Vol. 2, 1988. p. 597-606.

OP-215. B. L. Crysdale and C. E. Barker. COLORADO. Thermal and fluid migration history in the Niobrara Formation, Berthoud oil field, Denver Basin, Colorado, *in* Applications of thermal maturity studies to energy exploration. (V. F. Nuccio, editor and others). Denver, CO: Eastwood Print. and Publ. September 1990. p. 153-160.

OP-216. C. G. Cunningham, James McNamee*, José Pinto Vásquez* and G. E. Ericksen. A model of volcanic dome-hosted precious metal deposits in Bolivia. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 86, no. 2, April 1991. p. 415-421.

OP-217. V. D. Cvetkovic* and A. M. Shapiro. Mass arrival of sorptive solute in heterogeneous porous media. Water Resources Research. v. 26, no. 9, September 1990. p. 2057-2067.

OP-218. G. L. Cygan and I-Ming Chou. The assemblage WO_2+H_2O as a steady-state hydrogen source in moderately reduced hydrothermal experiments. American Mineralogist. v. 75, no. 11-12, December 1990. p. 1399-1405.

OP-219. G. K. Czamanske, M. L. Zientek and C. E. Manning*. MONTANA. Low-K granophyres of the Stillwater Complex, Montana. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1646-1661.

OP-220. G. B. Dalrymple. The importance of "small" science. Eos, Transactions, American Geophysical Union. v. 72, no. 1, January 1, 1991. p. 1,4.

OP-221. G. B. Dalrymple and J. P. Lockwood. $^{40}Ar/^{39}Ar$ laser probe evidence concerning the age and associated hazards of the Lake Nyos maar, Cameroon. Natural Hazards. v. 3, no. 4, 1990. p. 373-378.

OP-222. E. J. Daniels*, S. P. Altaner*, Stephen Marshak* and J. R. Eggleston. PENNSYLVANIA. Hydrothermal alteration in anthracite from eastern Pennsylvania; implications for mechanisms of anthracite formation: Reply. Geology (Boulder). v. 19, no. 2, February 1991. p. 189.

OP-223. W. R. Danskin. The role of ground water in ameliorating long-term water scarcity. Report - California Water Resources Center, *in* Coping with water scarcity; the role of ground water; Seventeenth biennial conference on ground water; proceedings. (J. J. De Vries, editor). 72, May 1990. p. 79-89.

OP-224. A. S. Davis, D. A. Clague, M. S. Schulz and J. R. Hein. Low sulfur content in submarine lavas; an unreliable indicator of subaerial eruption. Geology (Boulder). v. 19, no. 7, July 1991. p. 750-753.

OP-225. J. A. Davis and D. B. Kent. Surface complexation modeling in aqueous geochemistry. Reviews in Mineralogy, *in* Mineral-water interface geochemistry. (M. F. Hochella, Jr., editor and others). 23, 1990. p. 177-260.

OP-226. P. A. Davis, K. F. Mullins, G. L. Berlin*, A. M. Al-Farasani* and S. M. Dini. Phosphorite exploration in the Thaniyat and Sanam districts, Kingdom of Saudi Arabia, using Landsat thematic mapper data. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 1205-1221.

OP-227. C. R. Demas, D. K. Demcheck and P. B. Curwick*. Sediment transport in the Lower Mississippi River, 1983-1985. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 4.79-4.86.

OP-228. Gabriel Dengo* and J. E. Case (editors). The Caribbean region, *in the collection* The geology of North America. Boulder, CO: Geol. Soc. Am. H, 1990. 588 p.

OP-229. R. P. Denlinger. WASHINGTON. A model for dome eruptions at Mount St. Helens, Washington based on subcritical crack growth, *in* Lava flows and domes; emplacement mechanisms and hazard implications. (J. H. Fink, editor). Berlin: Springer Verlag, 1990. p. 70-87.

OP-230. D. P. Dethier*, Nils Halverson*, Lisa Marrack*, Mark Meagher*, E. H. Oelkers*, C. D. Harrington*, A. M. Sama-Wojcicki and C. E. Meyer. NEW MEXICO. Occurrence of the Lava Creek B tephra layer in the northwestern Espanola Basin, New Mexico. New Mexico Geology. v. 12, no. 4, November 1990. p. 77-82.

OP-231. J. W. Dewey. The 1954 and 1980 Algerian earthquakes; implications for the characteristic-displacement model of fault behavior. Bulletin of the Seismological Society of America. v. 81, no. 2, April 1991. p. 446-467.

OP-232. Ed DeWitt and A. B. Wilson. SOUTH DAKOTA, WYOMING. Metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming. Guidebook Series, *in* Metallogeny of gold in the Black Hills, South Dakota; guidebook prepared for Society of Economic Geologists field conference. (C. J. Paterson, editor and others). 7, 1990. p. 20-30.

OP-233. Massimo DiBona* and John Boatwright. Single-station decomposition of seismograms for subevent time histories. Geophysical Journal International, *in* Seismic reflections from the Earth's crust; comparative studies of tectonic patterns. (Rolf Meissner, prefacer and others). v. 105, no. 1, April 1991. p. 103-117.

OP-234. J. R. Dine. MARYLAND. Use of stream base-flow data to infer geohydrologic characteristics of drainage basins and regional ground water recharge and quality, Frederick and Washington counties, Maryland. Ground Water Management, *in* Proceedings of the FOCUS conference on Eastern regional ground water issues. 3, 1990. p. 147-160.

OP-235. J. R. Dingler and T. E. Reiss. LOUISIANA. Controls on the location of the sand/mud contact beneath a barrier island; central Isles Dernieres, Louisiana. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 349-354.

OP-236. J. E. Dixon*, D. A. Clague and E. M. Stolper*. HAWAII. Degassing history of water, sulfur, and carbon in submarine lavas from Kilauea Volcano, Hawaii. Journal of Geology. v. 99, no. 3, May 1991. p. 371-394.

OP-237. M. R. Dobson*, D. W. Scholl and A. J. Stevenson. ALASKA. Interplay between arc tectonics and sea-level changes as revealed by sedimentation patterns in the Aleutians. Special Publication of the International Association of Sedimentologists, *in* Sedimentation, tectonics and eustasy; sea-level changes at active margins. (D. I. Macdonald, editor). 12, 1991. p. 151-163.

OP-238. J. L. Domagalski*, H. P. Eugster* and B. F. Jones. NEVADA, CALIFORNIA, UTAH. Trace metal geochemistry of Walker, Mono and Great Salt lakes. Special Publication - Geochemical Society, *in* Fluid-mineral interactions; a tribute to H. P. Eugster. (R. J. Spenser, editor and others). 2, 1990. p. 315-353.

OP-239. M. M. Donato. OREGON. Geochemical recognition of a captured back-arc basin metabasaltic complex, southwestern Oregon. Journal of Geology. v. 99, no. 5, September 1991. p. 711-728.

OP-240. J. M. Donnelly-Nolan. CALIFORNIA. Geology of Medicine Lake Volcano, Northern California Cascade Range. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1395-1396.

OP-241. M. W. Doughten and J. R. Gillison. Determination of selected elements in whole coal and in coal ash from the eight Argonne Premium Coal samples by atomic absorption spectrometry, atomic emission spectrometry, and ion-selective electrode. Energy & Fuels, *in* American Chemical Society annual meeting; Symposium on research with Argonne Premium Coal samples. (J. W. Larsen, editor). v. 4, no. 5, 1989. p. 426-430.

OP-242. H. J. Dowsett. The development of a long-range foraminifer transfer function and application to the late Pleistocene North Atlantic climatic extremes. Paleoceanography. v. 6, no. 2, April 1991. p. 259-273.

OP-243. Pal Draskovits*, Jozsef Hobot*, Laslo Vero* and B. D. Smith. Induced-polarization surveys applied to evaluation of groundwater resources, Pannonian Basin, Hungary. Investigations in Geophysics, *in* Induced polarization; applications and case histories. (J. B. Fink, editor and others). 4, 1990. p. 379-396.

OP-244. L. J. Drew. Oil and gas forecasting; reflections of a petroleum geologist. Studies in Mathematical Geology. 2, 1990. 252 p.

OP-245. E. A. du Bray and J. S. Pallister. ARIZONA. An ash flow caldera in cross section; ongoing field and geochemical studies of the mid-Tertiary Turkey Creek Caldera, Chiricahua Mountains, SE Arizona. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,435-13,457.

OP-246. E. A. du Bray, D. B. Stoeser and E. H. McKee. Age and petrology of the Tertiary As Sarat volcanic field, southwestern Saudi Arabia. Tectonophysics, *in* Red Sea; birth and early history of a new oceanic basin. (Jannis Makris, editor and others). v. 198, no. 2-4, 1991. p. 155-180.

OP-247. R. F. Dubiel. NEW MEXICO, ARIZONA. Sedimentology and revised nomenclature for the upper part of the Upper Triassic Chinle Formation and the Lower Jurassic Wingate Sandstone, northwestern New Mexico and northeastern Arizona. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 213-223.

OP-248. W. A. Duffield and E. A. du Bray. NEW MEXICO. Temperature, size, and depth of the magma reservoir for the Taylor Creek Rhyolite, New Mexico. American Mineralogist. v. 75, no. 9-10, October 1990. p. 1059-1070.

OP-249. M. T. Duigon* and J. R. Dine. MARYLAND. Water resources of Washington County, Maryland. Bulletin - Maryland Geological Survey. Report no. 36, 1991. 109 p.

OP-250. C. E. Dunn*, G. C. Curtin and G. E. Hall* (editors). Geochemistry of platinum-group elements. Journal of Geochemical Exploration. v. 37, no. 1, March 1990. 169 p.

OP-251. E. M. Durrance*, E. M. Galimov*, M. E. Hinkle, G. M. Reimer, Ryuichi Sugisaki* and S. S. Augustithis*. Geochemistry of gaseous elements and compounds. Athens: Theophrastus Publ. 1990. 533 p.

OP-252. R. J. Durrheim* and W. D. Mooney. Archean and Proterozoic crustal evolution; evidence from crustal seismology. Geology (Boulder). v. 19, no. 6, June 1991. p. 606-609.

OP-253. J. T. Dutro, Jr. Occurrence of fossils in rocks. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 6-13.

OP-254. J. T. Dutro, Jr. Correspondence and papers of U.S. Geological Survey paleontologists placed in Smithsonian archives. Journal of Paleontology. v. 65, no. 1, January 1991. p. 172.

OP-255. J. T. Dutro, Jr. and T. W. Henry. Fossil invertebrate collections moved from National Museum. Journal of Paleontology. v. 65, no. 1, January 1991. p. 171.

OP-256. J. S. Duval. Modern aerial gamma-ray spectrometry and regional potassium map of the conterminous United States. Journal of Geochemical Exploration, *in* International geochemical mapping. (A. G. Darnley, editor and others). v. 39, no. 1-2, December 1990. p. 249-253.

OP-257. J. S. Duval. Radiometrics in geology. Symposium on the Application of Geophysics to Engineering and Environmental Problems, *in* Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems. (D. V. Fitterman, chairperson). 2, 1989. p. 1-61.

OP-258. J. J. Dvorak. HAWAII. Geometry of the September 1971 eruptive fissure at Kilauea Volcano, Hawaii. Bulletin of Volcanology. v. 52, no. 7, September 1990. p. 507-514.

OP-259. J. J. Dvorak and Giovanna Berrino*. Recent ground movement and seismic activity in Campi Flegrei, southern Italy; episodic growth of a resurgent dome. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 2, February 10, 1991. p. 2309-2323.

OP-260. J. Dvorak, J. Matahelumual*, A. T. Okamura, H. Said*, T. J. Casadevall and D. Mulyadi*. Recent uplift and hydrothermal activity at Tangkuban Parahu Volcano, West Java,

Indonesia. Bulletin of Volcanology. v. 53, no. 1, December 1990. p. 20-28.

OP-261. Daniel Dzurisin, J. M. Donnelly-Nolan, J. R. Evans and S. R. Walter. CALIFORNIA. Crustal subsidence, seismicity, and structure near Medicine Lake Volcano, California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,319-16,333.

OP-262. Wynn Eakins* and M. S. Ellis. COLORADO. Coal resources of the Castle Rock 1/2°×1° Quadrangle and adjacent area, Colorado. Resource Series - Colorado Geological Survey, Department of Natural Resources, State of Colorado. Report no. 25, 1987. 135 p.

OP-263. R. L. Earhart. Report on exploration of the Wadi Yiba copper prospect, Tihamat Ash Sham Quadrangle, Kingdom of Saudi Arabia. Saudi Arabian Project Report. Report no. SA(IR)-108, 1969. 42 p.

OP-264. L. B. Ebert*, E. I. Robbins, K. D. Rose*, R. V. Kastrup*, J. C. Scanlon*, L. A. Gebhard* and A. R. Garcia*. Chemistry and palynology of carbon seams and associated rocks from the Witwatersrand goldfields, South Africa. Ore Geology Reviews, *in* Palynology of ore deposits. (E. I. Robbins, editor). v. 5, no. 5-6, October 1990. p. 423-444.

OP-265. C. F. Eble and W. C. Grady*. Paleoecological interpretation of a Middle Pennsylvanian coal bed in the central Appalachian Basin, USA. International Journal of Coal Geology. v. 16, no. 4, December 30, 1990. p. 255-286.

OP-266. D. A. Eckhardt and D. R. Helsel. NEW YORK. Statistical methods for a regional ground-water quality appraisal in different land-use areas, Long Island, New York. Preprints of Papers, *in* American Chemical Society, 75 years of progress; Division of Environmental Chemistry; preprints of papers presented at the 196th ACS national meeting. v. 28, no. 2, September 1988. p. 5-7.

OP-267. L. E. Edwards. Peridinialean dinoflagellate plate patterns, labels and homologies. Review of Palaeobotany and Palynology, *in* The proceedings of the 7th international palynological congress; Part II. (E. M. Truswell, editor and others). v. 65, no. 1-4, October 30, 1990. p. 293-303.

OP-268. J. F. Elder. Factors affecting wetland retention of nutrients, metals, and organic materials. ASWM Technical Report, *in* Proceedings of the National wetland symposium; Wetland hydrology. (J. A. Kusler, chairperson and others). Report no. 6, December 1988. p. 178-184.

OP-269. W. P. Elder. Soft-bottom paleocommunity dynamics in the Cenomanian-Turonian boundary extinction interval of the Western Interior, United States. Special Publication (Paleontological Society), *in* Paleocommunity temporal dynamics; the long-term development of multispecies assemblies. (William Miller, III, editor). 5, 1990. p. 210-235.

OP-270. W. P. Elder. Mytiloides hattini n. sp.; a guide fossil for the base of the Turonian in the Western Interior of North America. Journal of Paleontology. v. 65, no. 2, March 1991. p. 234-241.

OP-271. W. P. Elder. Molluscan paleoecology and sedimentation patterns of the Cenomanian-Turonian extinction interval in the southern Colorado Plateau region. Special Paper - Geological Society of America, *in* Stratigraphy, depositional environments, and sedimentary tectonics of the western margin, Cretaceous Western Interior Seaway. (J. D. Nations, editor and others). 260, 1991. p. 113-137.

OP-272. M. J. Ellis, G. V. Steele and P. B. Wigley*. NEVADA. Groundwater levels in Nebraska, 1989. Nebraska Water Survey Paper. Report no. 67, December 1990. 82 p.

OP-273. W. L. Ellsworth. CALIFORNIA. Loma Prieta earthquake; putting the pieces together. Nature (London). v. 349, no. 6308, January 31, 1991. p. 371-372.

OP-274. W. L. Ellsworth. To capture an earthquake. Earth in Space. v. 3, no. 3, November 1990. p. 8-9, 14.

OP-275. D. P. Elston and R. A. Young*. ARIZONA. Cretaceous-Eocene (Laramide) landscape development and Oligocene-Pliocene drainage reorganization of transition zone and Colorado Plateau, Arizona. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,389-12,406.

OP-276. R. W. Embley*, S. L. Eittreim, C. H. McHugh*, W. R. Normark, G. H. Rau*, B. Hecker*, A. E. DeBevoise*, H. G. Greene, W. B. Ryan*, C. Harrold* and Charles Baxter*. Geological setting of chemosynthetic communities in the Monterey Fan Valley system. Deep-Sea Research. Part A: Oceanographic Research Papers. v. 37, no. 11, November 1990. p. 1651-1667.

OP-277. E. T. Endo, Daniel Dzurisin and D. A. Swanson. WASHINGTON. Geophysical and observational constraints for ascent rates of dacitic magma at Mount Saint Helens, *in* Magma transport and storage. (M. P. Ryan, editor). Chichester: John Wiley & Sons, 1990. p. 317-334.

OP-278. E. R. Engdahl, J. E. Vidale* and V. F. Cormier*. Wave propagation in subducted lithospheric slabs. Ettore Majorana International Science Series. Physical Sciences, *in* Digital seismology and fine modeling of the lithosphere. (Roberto Cassinis, editor and others). 42, 1989. p. 139-155.

OP-279. P. C. England* and R. E. Wells. Neogene rotations and quasicontinuous deformation of the Pacific Northwest continental margin. Geology (Boulder). v. 19, no. 10, October 1991. p. 978-981.

OP-280. R. G. Eppinger and L. G. Closs*. Variation of trace elements and rare earth elements in fluorite; a possible tool for exploration. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 85, no. 8, December 1990. p. 1896-1907.

OP-281. J. B. Epstein and P. F. Buis*. PENNSYLVANIA. The second Lehigh Tunnel; geology and the New Austrian Tunnelling Method. Pennsylvania Geology. v. 22, no. 1, 1991. p. 2-9.

OP-282. G. E. Ericksen, R. G. Luedke, R. L. Smith, R. P. Koeppen and Fernando Urquidi-Barrau*. Peraluminous igneous rocks of the Bolivian tin belt. Episodes. v. 13, no. 1, March 1990. p. 3-8.

OP-283. R. L. Erickson, Barbara Chazin, M. S. Erickson, E. L. Mosier and H. A. Whitney. Tectonic and stratigraphic control of regional subsurface geochemical patterns, Midcontinent, U.S.A., *in* North American conference on Tectonic control of ore deposits and the vertical and horizontal extent of ore systems, Proceedings

volume. (Geza Kisvarsanyi, editor and others). Rolla, MO: Univ. Mo. 1988. p. 435-446.

OP-284. J. R. Evans, G. A. Sellers, R. G. Johnson, D. V. Vivit and Judith Kent. Analysis of eight Argonne Premium Coal samples by X-ray fluorescence spectrometry. Energy & Fuels, *in* American Chemical Society annual meeting; Symposium on research with Argonne Premium Coal samples. (J. W. Larsen, editor). v. 4, no. 5, 1989. p. 440-442.

OP-285. D. A. Falvey* and H. G. Greene. Origin and evolution of the sedimentary basins of the New Hebrides arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 413-442.

OP-286. C. D. Farrar and D. L. Lyster*. CALIFORNIA. Monitoring the hydrologic system for potential effects on geothermal and ground-water development in the Long Valley Caldera, Mono County, California, U.S.A. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 669-674.

OP-287. J. E. Fassett. Coal-bed methane; a contumacious, free-spirited bride; the geologic handmaiden of coal beds, *in* Energy frontiers in the Rockies. (J. C. Lorenz, editor and others). Albuquerque, NM: Albuquerque Geol. Soc. 1989. p. 131-146.

OP-288. J. E. Fassett. Coal resources of the San Juan Basin. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 303-307.

OP-289. H. R. Feltz, R. A. Engberg and M. A. Sylvester. Investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Western United States. IAHS-AISH Publication, *in* The hydrological basis for water resources management. (Uri Shamir, editor and others). 197, 1990. p. 119-130.

OP-290. Valerie Ferrazzini*, Keiiti Aki* and B. A. Chouet. HAWAII. Characteristics of seismic waves composing Hawaiian volcanic tremor and gas-piston events observed by a near-source array. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6199-6209.

OP-291. Valerie Ferrazzini*, B. A. Chouet, M. C. Fehler* and Keiiti Aki*. NEW MEXICO. Quantitative analysis of long-period events recorded during hydrofracture experiments at Fenton Hill, New Mexico. Journal of Geophysical Research, B, Solid Earth and Planets. v. 95, no. 13, December 10, 1990. p. 21,871-21,884.

OP-292. R. H. Fickies* and E. E. Brabb. NEW YORK. Landslide inventory map of New York. Map and Chart Series - New York State Museum and Science Service. Report no. 52, 1989. 1 sheet.

OP-293. M. E. Field and J. V. Gardner. Valencia Gorge; possible Messinian refill channel for the western Mediterranean Sea. Geology (Boulder). v. 19, no. 11, November 1991. p. 1129-1132.

OP-294. R. B. Finkelman. What we don't know about the occurrence and distribution of the trace elements in coal. The Journal of Coal Quality, *in* Proceedings of the international conference on Trace elements in coal. (George Vourvopoulos, chairperson). v. 8, no. 3-4, December 1989. p. 63-66.

OP-295. R. B. Finkelman, C. A. Palmer, M. R. Krasnow, P. J. Aruscavage, G. A. Sellers and F. T. Dulong. Combustion and leaching behavior of elements in the Argonne Premium coal samples. Energy & Fuels. v. 4, no. 6, December 1990. p. 755-766.

OP-296. R. B. Finkelman and S. J. Tewalt. Summary of analytical data from coals of the western region of the Interior Coal Province, *in* Coal geology of the Interior Coal Province, western region. (J. L. Bostic and others). Reston, VA: Environ. and Coal Assoc. October 1990. p. 200-228.

OP-297. C. A. Finn. U.S. west coast revisited; an aeromagnetic perspective: Comment. Geology (Boulder). v. 19, no. 9, September 1991. p. 950.

OP-298. G. T. Fisher. Geographic information system/watershed model interface. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 851-856.

OP-299. M. A. Fisher. Petroleum geology of the central New Hebrides arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 279-283.

OP-300. M. A. Fisher, Jean-Yves Collot* and E. L. Geist. The collision zone between the North d'Entrecasteaux Ridge and the New Hebrides island arc; 2, Structure from multichannel seismic data. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 4479-4495.

OP-301. M. A. Fisher, D. A. Falvey* and G. L. Smith. Seismic stratigraphy of the summit basins of the New Hebrides island arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 201-223.

OP-302. D. V. Fitterman (chairperson). Proceedings of the Symposium on the Application of geophysics to engineering and environmental problems. Symposium on the Application of Geophysics to Engineering and Environmental Problems. 2, 1989. 489 p.

OP-303. D. V. Fitterman, R. S. Bell*, Jack Corbett*, Clark Davenport*, S. E. Hulse* and Chuck Bierley* (conveners). Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. Soc. Eng. and Miner. Explor. Geophys. 1988. 848 p.

OP-304. D. V. Fitterman, F. C. Frischknecht, A. T. Mazzella* and W. L. Anderson. Example of transient electromagnetic soundings in the presence of oil field pipes. Investigations in Geophysics, *in* Geotechnical and environmental geophysics; Volume 2, Environmental and groundwater. (S. H. Ward, editor). 5, 1991. p. 79-88.

OP-305. D. V. Fitterman, C. M. Menges, A. M. Al Kamali* and F. E. Jama*. Electromagnetic mapping of buried paleochannels in eastern Abu Dhabi Emirate, U.A.E. Geoexploration, *in* Application of geophysics to water prospecting in arid and semi-arid areas; proceedings of the 1990 international symposium.

(Dominique Chapellier, editor and others). v. 27, no. 1-2, February 1991. p. 111-133.

OP-306. J. J. Fitzpatrick and D. R. Muhs. Borax in the supraglacial moraine of the Lewis Cliff, Buckley Island Quadrangle; first Antarctic occurrence. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 63-65.

OP-307. J. J. Fitzpatrick, D. R. Muhs and A. J. Jull*. Saline minerals in the Lewis Cliff ice tongue, Buckley Island Quadrangle, Antarctica. Antarctic Research Series. 50, 1990. p. 57-69.

OP-308. Katherine Fitzpatrick-Lins, E. F. Doughty, M. B. Shasby*, T. R. Loveland* and S. P. Benjamin*. ALASKA. Producing Alaska interim land cover maps from Landsat digital and ancillary data. Proceedings of the Annual William T. Pecora Memorial Symposium on Remote Sensing, *in* Proceedings: 11th Pecora symposium: Satellite land remote sensing; current programs and a look to the future. (L. Pressler, chairperson). 11, 1987. p. 339-347.

OP-309. R. J. Fleck and M. D. Carr. NEVADA. The age of the Keystone Thrust; laser-fusion $^{40}Ar/^{39}Ar$ dating of foreland basin deposits, southern Spring Mountains, Nevada. Tectonics. v. 9, no. 3, June 1990. p. 467-476.

OP-310. W. B. Fleck and J. M. Wilson*. MARYLAND. Geology and hydrologic assessment of coastal plain aquifers in the Waldorf area, Charles County, Maryland; Part 2, Water-supply potential of the aquifers. Report of Investigations - Maryland Geological Survey. Report no. 53, 1990. p. 39-137.

OP-311. R. W. Fleming and D. J. Varnes. Slope movements, *in* The heritage of engineering geology: the first hundred years. (G. A. Kiersch), *in the collection* Centennial special volume. Boulder, CO: Geol. Soc. Am. 3, 1991. p. 201-218.

OP-312. J. B. Fletcher, T. E. Fumal, Hsi-Ping Liu and L. C. Carroll. CALIFORNIA. Near-surface velocities and attenuation at two boreholes near Anza, California, from logging data. Bulletin of the Seismological Society of America. v. 80, no. 04, August 1990. p. 807-831.

OP-313. R. M. Flores. COLORADO. Transverse and longitudinal gilbert-type deltas, Tertiary Coalmont Formation, North Park Basin, Colorado, USA. Special Publication of the International Association of Sedimentologists, *in* Coarse-grained deltas. (Albina Colella, editor and others). 10, 1990. p. 223-233.

OP-314. R. M. Flores, J. C. Hohman* and F. G. Ethridge*. NEW MEXICO. Heterogeneity of Upper Cretaceous Gallup Sandstone regressive facies, Gallup Sag, New Mexico. Special Paper - Geological Society of America, *in* Stratigraphy, depositional environments, and sedimentary tectonics of the western margin, Cretaceous Western Interior Seaway. (J. D. Nations, editor and others). 260, 1991. p. 189-209.

OP-315. E. R. Force. Geology of titanium-mineral deposits. Special Paper - Geological Society of America. 259, 1991. 112 p.

OP-316. A. B. Ford. The Dufek Intrusion of Antarctica. Antarctic Research Series, *in* Mineral resources potential of Antarctica. (J. F. Splettstoesser, editor and others). 51, 1990. p. 15-32.

OP-317. S. L. Forman*, A. R. Nelson and J. P. McCalpin*. UTAH. Thermoluminescence dating of fault-scarp-derived colluvium; deciphering the timing of paleoearthquakes on the Weber Segment of the Wasatch fault zone, north central Utah. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 2, January 10, 1991. p. 595-605.

OP-318. C. B. Foster*, E. I. Robbins and Yvonne Bone*. Organic tissues, graphite, and hydrocarbons in host rocks of the Rum Jungle uranium field, northern Australia. Ore Geology Reviews, *in* Palynology of ore deposits. (E. I. Robbins, editor). v. 5, no. 5-6, October 1990. p. 509-523.

OP-319. R. O. Fournier. The interpretation of Na-K-Mg relations in geothermal waters. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1421-1425.

OP-320. R. O. Fournier. The transition from hydrostatic to greater than hydrostatic fluid pressure in presently active continental hydrothermal systems in crystalline rock. Geophysical Research Letters, *in* Crustal-scale fluid transport; magnitude and mechanisms. (Thomas Torgersen, prefacer). v. 18, no. 5, May 1991. p. 955-958.

OP-321. R. O. Fournier. Geochemistry in geothermal exploration and production. Proceedings of Pacific Geothermal Conference, *in* Proceedings of the Pacific geothermal conference 1982; incorporating the 4th New Zealand geothermal workshop; Parts 1 and 2. (New Zealand, University of Auckland Geothermal Institute). 4, 1982. p. 209-245.

OP-322. R. O. Fournier, J. M. Thompson, C. G. Cunningham and R. A. Hutchinson*. WYOMING. Conditions leading to a recent small hydrothermal explosion at Yellowstone National Park. Geological Society of America Bulletin. v. 103, no. 8, August 1991. p. 1114-1120.

OP-323. Arthur Frankel. High-frequency spectral falloff of earthquakes, fractal dimension of complex rupture, b value, and the scaling of strength on faults. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6291-6302.

OP-324. Arthur Frankel. NEW YORK, CALIFORNIA. Mechanisms of seismic attenuation in the crust; scattering and anelasticity in New York State, South Africa, and Southern California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6269-6289.

OP-325. B. E. Freeman*, S. K. Donovan*, J. F. Genise* and T. M. Bown. A reassessment of the ichnofossil Chubutolithes gaimanensis Bowen and Ratcliffe; discussion and reply. Journal of Paleontology. v. 65, no. 4, July 1991. p. 702-706.

OP-326. C. J. Fridrich*, R. P. Smith*, Ed DeWitt and E. H. McKee. COLORADO. Structural, eruptive, and intrusive evolution of the Grizzly Peak Caldera, Sawatch Range, Colorado. Geological Society of America Bulletin. v. 103, no. 9, September 1991. p. 1160-1177.

OP-327. G. M. Friedman*, L. J. Poppe, R. C. Circé and A. K. Vuletich. A dolomitized shelfedge hardground in the northern Gulf of Mexico; discussion and reply. Sedimentary Geology. v. 68, no. 4, October 1990. p. 307-310.

OP-328. D. C. Froehlich. Local scour at bridge abutments. Hydraulic Engineering: Proceedings of the National Conference on

Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 13-18.

OP-329. D. C. Froehlich. Peak outflow from a breached embankment dam. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 136-141.

OP-330. D. C. Froehlich and R. E. Trent. NEW YORK. Hydraulic analysis of the Schoharie Creek Bridge. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 887-892.

OP-331. S. G. Fryberger*, L. F. Krystinik* and C. J. Schenk. Modern and ancient eolian deposits; petroleum exploration and production. Denver, CO: Soc. Econ. Palaeontol. and Mineral. 1990. 223 p.

OP-332. G. S. Fuis, E. L. Ambos, W. D. Mooney, N. I. Christensen* and E. L. Geist. ALASKA. Crustal structure of accreted terranes in southern Alaska, Chugach Mountains and Copper River basin, flow seismic refraction results. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 4187-4227.

OP-333. G. S. Fuis and George Plafker. ALASKA. Evolution of deep structure along the Trans-Alaska Crustal Transect, Chugach Mountains and Copper River basin, southern Alaska. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 4229-4253.

OP-334. J. M. Fulford. Urban watershed data for the United States. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 522-527.

OP-335. Robert Gable*, R. H. Morin and Keir Becker*. Geothermal state of Hole 504B, ODP Leg 111 overview. Proceedings of the Ocean Drilling Program, Scientific Results, *in* Costa Rica Rift; covering Leg 111 of the cruises of the drilling vessel JOIDES Resolution, Bridgetown, Barbados, to Callao, Peru, sites 504, 677, and 678, 16 August 1986-20 October 1986. (Keir Becker and others). 111, December 1989. p. 87-96.

OP-336. Cyril Galvin*, E. A. Shinn, B. H. Lidz and C. W. Holmes. FLORIDA. High-energy carbonate-sand accumulation, the Quicksands, Southwest Florida Keys; discussion and reply. Journal of Sedimentary Petrology. v. 61, no. 5, September 1991. p. 860-862.

OP-337. J. V. Gardner, M. E. Field, H. J. Lee, B. E. Edwards, D. G. Masson*, N. H. Kenyon* and R. B. Kidd*. Ground-truthing 6.5 kHz side scan sonographs; what are we really imaging?. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 5955-5974.

OP-338. G. E. Gehrels*, W. C. McClelland*, S. D. Samson*, P. J. Patchett* and D. A. Brew. ALASKA. U-Pb geochronology of Late Cretaceous and early Tertiary plutons in the northern Coast Mountains Batholith. Canadian Journal of Earth Sciences = Journal Canadien des Sciences de la Terre, *in* Contributions to the geology and geophysics of northwestern British Columbia and southeastern Alaska—Contributions à la géologie et à la géophysique du nord-ouest de la Colombie-Britannique et du sud-est de l'Alaska. (R. G. Anderson, editor). v. 28, no. 6, June 1991. p. 899-911.

OP-339. J. W. Geissman*, Michael Jackson, S. S. Harlan* and Rob Van der Voo*. NEW MEXICO. Paleomagnetism of latest Cambrian-Early Ordovician and latest Cretaceous-early Tertiary rocks of the Florida Mountains, Southwest New Mexico. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6053-6071.

OP-340. A. C. Gellis. PUERTO RICO. Construction effects on sediment for two basins in Puerto Rico. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 4.72-4.78.

OP-341. A. C. Gellis, Richard Hereford, S. A. Schumm* and B. R. Hayes*. Channel evolution and hydrologic variations in the Colorado River basin; factors influencing sediment and salt loads. Journal of Hydrology. v. 124, no. 3-4, May 1991. p. 317-344.

OP-342. T. M. Gerlach. Natural sources of greenhouse gases; carbon dioxide emissions from volcanoes. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 639-641.

OP-343. T. M. Gerlach. Volcanology; Etna's greenhouse pump. Nature (London). v. 351, no. 6325, May 30, 1991. p. 352-353.

OP-344. T. M. Gerlach, David Graham* and Philippe Sarda*. Mid-ocean ridge popping rocks; implications for degassing at ridge crests; discussion and reply. Earth and Planetary Science Letters. v. 105, no. 4, August 1991. p. 566-573.

OP-345. T. D. Gilmore. Selected examples of historical height changes in the southern Great Basin, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 335.

OP-346. E. J. Gilroy. Uncertainty in estimates of suspended sediment load. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 9.17-9.23.

OP-347. E. J. Gilroy, R. M. Hirsch and T. A. Cohn. Mean square error of regression-based constituent transport estimates. Water Resources Research. v. 26, no. 9, September 1990. p. 2069-2077.

OP-348. G. M. Glassmoyer and R. D. Borcherdt. OHIO. Source parameters and effects of bandwidth and local geology on high-frequency ground motions observed for aftershocks of the northeastern Ohio earthquake of 31 January 1986. Bulletin of the Seismological Society of America. v. 80, no. 04, August 1990. p. 889-912.

OP-349. A. F. Glazner*, G. L. Farmer*, W. T. Hughes*, J. L. Wooden and W. J. Pickthorn. CALIFORNIA. Contamination of basaltic magma by mafic crust at Amboy and Pisgah craters, Mojave Desert, California. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism;

plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,673-13,691.

OP-350. Per Gloersen* and W. J. Campbell. Recent variations in Arctic and Antarctic sea-ice covers. Nature (London). v. 352, no. 6330, July 4, 1991. p. 33-36.

OP-351. G. D. Glysson. Criteria for a sediment data set. *in* Proceedings of the international symposium on Sediment transport modeling. (S. S. Wang). New York, NY: Am. Soc. Civ. Eng. 1989. p. 675-680.

OP-352. G. D. Glysson. One hundred years of sedimentation study by the US Geological Survey, *in* Proceedings of the international symposium on Sediment transport modeling. (S. S. Wang). New York, NY: Am. Soc. Civ. Eng. 1989. p. 260-265.

OP-353. Fraser Goff*, J. N. Gardner*, R. D. Solbau*, Andrew Adams*, W. C. Evans, D. R. Lippert*, Ron Jacobson*, G. K. Bayhurst*, P. E. Frujillo, Jr.*, Dale Coume* and Paul Dixon*. NEW MEXICO. The "art" of in situ fluid sampling and the remarkable compositional variations in the wellbore fluid of VC-2B, Valles Caldera, New Mexico. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 403-410.

OP-354. Sue Goff*, G. Heiden*, W. A. Duffield, Fraser Goff*, L. Martinelli*, O. Castaneda* and J. N. Gardner*. Tecuamburro Volcano, Guatemala; geothermal gradient core hole drilling, operations, and preliminary results. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1427-1430.

OP-355. Margaret Golan-Bac and K. A. Kvenvolden. Hydrocarbon gases in surface sediments of the South Aoba Basin, Vanuatu. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 275-278.

OP-356. R. J. Goldfarb, D. L. Leach and W. J. Pickthorn. ALASKA. Accretionary tectonics, fluid migration, and gold genesis in the Pacific Border Ranges and Coast Mountains, southern Alaska, *in* North American conference on Tectonic control of ore deposits and the vertical and horizontal extent of ore systems, Proceedings volume. (Geza Kisvarsanyi, editor and others). Rolla, MO: Univ. Mo. 1988. p. 67-79.

OP-357. R. J. Goldfarb, R. J. Newberry*, W. J. Pickthorn and C. A. Gent. ALASKA. Oxygen, hydrogen, and sulfur isotope studies in the Juneau gold belt, southeastern Alaska; constraints on the origin of hydrothermal fluids. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 86, no. 1, February 1991. p. 66-80.

OP-358. R. J. Goldfarb, L. W. Snee, L. D. Miller* and R. J. Newberry*. Rapid dewatering of the crust deduced from ages of mesothermal gold deposits. Nature (London). v. 354, no. 6351, November 28, 1991. p. 296-298.

OP-359. M. B. Goldhaber, B. S. Hemingway, A. Mohagheghi, R. L. Reynolds and H. R. Northrop. Origin of coffinite in sedimentary rocks by a sequential adsorption-reduction mechanism. Bulletin de Minéralogie, *in* Les mécanismes de concentration de l'uranium dans les environnements géologiques; colloque international (Mechanisms of uranium concentration in the geologic environment; international colloquium). v. 110, no. 2-3, 1987. p. 131-144.

OP-360. M. B. Goldhaber and R. L. Reynolds. TEXAS. Relations among hydrocarbon reservoirs, epigenetic sulfidization, and rock magnetization; examples from the South Texas coastal plain. Geophysics. v. 56, no. 6, June 1991. p. 748-757.

OP-361. M. B. Goldhaber, R. B. Wanty, G. P. Landis, R. L. Reynolds, R. I. Grauch, C. G. Whitney and R. O. Rye. UTAH. Genesis of the tabular-type vanadium-uranium deposits of the Henry Basin, Utah; reply. Economic Geology and the Bulletin of the Society of Economic Geologists, *in* A special issue devoted to gold deposits in the Chilean Andes. (R. H. Sillitoe, prefacer and others). v. 86, no. 6, October 1991. p. 1353-1355.

OP-362. Peter Goldstein and R. J. Archuleta*. Deterministic frequency-wavenumber methods and direct measurements of rupture propagation during earthquakes using a dense array: theory and methods. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6173-6185.

OP-363. J. S. Gomberg. NEVADA, CALIFORNIA. Seismicity and shear strain in the southern Great Basin of Nevada and California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,383-16,399.

OP-364. J. S. Gomberg. NEVADA, CALIFORNIA. Seismicity and detection/location threshold in the Southern Great Basin Seismic Network. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,401-16,414.

OP-365. J. S. Gomberg, K. M. Shedlock and S. W. Roecker*. The effect of S-wave arrival times on the accuracy of hypocenter estimation. Bulletin of the Seismological Society of America. v. 80, no. 6, December 1990. p. 1605-1628.

OP-366. Basil Gomez*, W. W. Emmett and D. W. Hubbell. Comments on sampling bedload in small rivers. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 2.65-2.72.

OP-367. Basil Gomez* and D. C. Marron. SOUTH DAKOTA. Neotectonic effects on sinuosity and channel migration, Belle Fourche River, western South Dakota. Earth Surface Processes and Landforms. v. 16, no. 3, May 1991. p. 227-235.

OP-368. D. J. Goode and L. F. Konikow. Reevaluation of large-scale dispersivities for a waste chloride plume; effects of transient flow. IAHS-AISH Publication, *in* ModelCARE 1990: calibration and reliability in groundwater modelling. (Karel Kovar, editor). 195, 1990. p. 417-426.

OP-369. D. J. Goode and L. F. Konikow. Apparent dispersion in transient groundwater flow. Water Resources Research. v. 26, no. 10, October 1990. p. 2339-2351.

OP-370. D. J. Goode, A. M. Shapiro and A. J. Desbarats*. Macrodispersion in sand-shale sequences; discussion and reply. Water Resources Research. v. 27, no. 1, January 1991. p. 135-143.

OP-371. D. J. Goode, A. M. Shapiro, L. Moreno*, Y. W. Tsang* and C. F. Tsang*. Flow and tracer transport in a single fracture; a stochastic model and its relation to some field observations; discussion and reply. Water Resources Research. v. 27, no. 1, January 1991. p. 129-134.

OP-372. L. B. Goodwin* and G. B. Haxel. ARIZONA. Structural evolution of the southern Baboquivari Mountains, south central Arizona and north central Sonora. Tectonics. v. 9, no. 5, October 1990. p. 1077-1095.

OP-373. S. M. Gorelick. A review of groundwater management models, *in* Efficiency in irrigation; the conjunctive use of surface and groundwater resources. (G. T. O'Mara, editor). Washington, DC: World Bank, 1977. p. 103-121.

OP-374. David Gottfried, A. J. Froelich, Norma Rait and P. J. Aruscavage. PENNSYLVANIA. Fractionation of palladium and platinum in a Mesozoic diabase sheet, Gettysburg Basin, Pennsylvania; implications for mineral exploration. Journal of Geochemical Exploration, *in* Geochemistry of platinum-group elements. (C. E. Dunn, editor and others). v. 37, no. 1, March 1990. p. 75-89.

OP-375. J. B. Graf, R. H. Webb and Richard Hereford. UTAH, ARIZONA. Relation of sediment load and flood-plain formation to climatic variability, Paria River drainage basin, Utah and Arizona. Geological Society of America Bulletin. v. 103, no. 11, November 1991. p. 1405-1415.

OP-376. R. I. Grauch. Rare earth elements in metamorphic rocks. Reviews in Mineralogy, *in* Geochemistry and mineralogy of rare earth elements. (B. R. Lipin, editor and others). 21, 1989. p. 147-167.

OP-377. J. E. Gray, R. J. Goldfarb, D. E. Detra and K. E. Slaughter. ALASKA. Geochemistry and exploration criteria for epithermal cinnabar and stibnite vein deposits in the Kuskokwim River region, southwestern Alaska. Journal of Geochemical Exploration. v. 41, no. 3, November 1991. p. 363-386.

OP-378. Ronald Greeley* and R. M. Batson. Introduction. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 1-11.

OP-379. Ronald Greeley* and R. M. Batson (editors). Planetary mapping. Cambridge Planetary Science Series. 6, 1990. 296 p.

OP-380. E. A. Greene. SOUTH DAKOTA. Use of electronic data-logging equipment to monitor hydrologic parameters in a humid cave environment in Wind Cave National Park, South Dakota. The NSS Bulletin, *in* Black Hills symposium. (James Pisarowicz). v. 51, no. 2, December 1989. p. 129-131.

OP-381. H. G. Greene and Jean-Yves Collot*. Documenting twin-ridge collision arc deformation. Geotimes. v. 36, no. 5, May 1991. p. 23-25.

OP-382. H. G. Greene, Jean-Yves Collot*, Laura Stokking*, Kazumi Akimoto*, M. V. Ask*, P. E. Baker*, Louis Briqueu*, Thierry Chabernaud*, Massimo Coltorti*, M. A. Fisher, Margaret Goud*, Toshiaki Hasenaka*, M. A. Hobart*, Anton Krammer*, John Leonard*, J. B. Martin*, J. I. Martinez-Rodriguez*, Stefan Menger*, Martin Meschede*, Bernard Pelletier*, R. C. Perembo*, T. M. Quinn*, Pamela Reid*, W. R. Riedel*, Pierrick Roperch*, T. S. Staerker*, F. W. Taylor* and XiXi Zhao*. Ocean Dilling Program Leg 134; Vanuatu (New Hebrides). Preliminary Report - Ocean Drilling Program. 34, February 1991. 60 p.

OP-383. H. G. Greene, Joan Gardner-Taggart*, M. T. Ledbetter*, Robert Barminski*, T. E. Chase, K. R. Hicks and Charles Baxter*. CALIFORNIA. Offshore and onshore liquefaction at Moss Landing spit, Central California; results of the October 17, 1989, Loma Prieta earthquake. Geology (Boulder). v. 19, no. 9, September 1991. p. 946-949.

OP-384. H. G. Greene and D. P. Johnson*. Geology of the central basin region of the New Hebrides arc inferred from single-channel seismic-refraction data. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 117-199.

OP-385. H. G. Greene, Alexander Macfarlane*, D. P. Johnson* and A. J. Crawford*. Structure and tectonics of the central New Hebrides arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 377-412.

OP-386. H. G. Greene, Alexander Macfarlane* and F. L. Wong. Geology and offshore resources of Vanuatu; introduction and summary. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 1-25.

OP-387. H. G. Greene and F. L. Wong (editors). Geology and offshore resources of Pacific island arcs; Vanuatu region. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series. 8, 1988. 442 p.

OP-388. J. R. Grey, R. H. Webb and D. W. Hynman*. Low-flow sediment transport in the Colorado River. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 4.63-4.71.

OP-389. A. E. Grosz, C. R. Berquist, Jr.* and C. T. Fischler*. A procedure for assessing heavy-mineral resources potential of continental shelf sediments. Virginia Division of Mineral Resources Publication, *in* Heavy-mineral studies; Virginia inner continental shelf. (C. R. Berquist, Jr., editor). 103, 1990. p. 13-30.

OP-390. M. A. Grout, G. A. Abrams, R. L. Tang*, T. J. Hainsworth* and E. R. Verbeek. COLORADO. Late Laramide thrust related and evaporite-domed anticlines in the southern Piceance Basin, northeastern Colorado Plateau. AAPG Bulletin. v. 75, no. 2, February 1991. p. 205-218.

OP-391. George Gryc (compiler). Geographic map of the Circum-Pacific region; Arctic Sheet, *in the collection* Circum-Pacific map project. Tulsa, OK: Am. Assoc. Pet. Geol. 1990. 1 sheet.

OP-392. M. C. Guffanti, L. J. Muffler, R. H. Mariner, D. R. Sherrod, J. G. Smith, D. D. Blackwell* and C. S. Weaver. Geothermal segmentation of the Cascade Range in the USA. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1431-1435.

OP-393. S. C. Guptill. Evaluating geographic information systems technology. Photogrammetric Engineering and Remote Sensing. v. 55, no. 11, 1989. p. 1583-1587.

OP-394. R. C. Gutschick and C. A. Sandberg. MICHIGAN. Upper Devonian biostratigraphy of Michigan Basin. Special Paper - Geological Society of America, *in* Early sedimentary evolution of the Michigan Basin. (P. A. Catacosinos, editor and others). 256, 1991. p. 155-179.

OP-395. R. C. Gutschick and C. A. Sandberg. MICHIGAN. Late Devonian history of Michigan Basin. Special Paper - Geological Society of America, *in* Early sedimentary evolution of the Michigan Basin. (P. A. Catacosinos, editor and others). 256, 1991. p. 181-202.

OP-396. G. L. Guymon and Chung-Cheng Yen*. CALIFORNIA. An efficient deterministic-probabilistic approach to modeling regional groundwater flow; 2, Application to Owens Valley, California. Water Resources Research. v. 26, no. 7, July 1990. p. 1569-1581.

OP-397. F. P. Haeni and S. R. Gorin. CONNECTICUT. Postflood measurement of a refilled scour hole at the Bulkeley Bridge in Hartford, Connecticut, *in* Proceedings of the Bridge scour symposium. (Dah-Cheng Woo, chairperson and others). Report no. FHWA-RD-90-035, December 1989. p. 147-174. *Available from:* U.S. Dep. Transp., Fed. Highw. Adm., McLean, VA, United States.

OP-398. B. E. Hagee*, T. J. Bernatowicz*, F. A. Podosek*, M. L. Johnson*, D. S. Burnett* and Mitsunobu Tatsumoto. Actinide abundances in ordinary chondrites. Geochimica et Cosmochimica Acta. v. 54, no. 10, October 1990. p. 2847-2858.

OP-399. J. T. Hagstrum. CALIFORNIA. Remagnetization and northward coastwise transport of Franciscan Complex rocks, Northern California; a reinterpretation of the paleomagnetic data. Tectonics. v. 9, no. 5, October 1990. p. 1221-1233.

OP-400. J. T. Hagstrum and P. W. Lipman. ARIZONA. Late Cretaceous paleomagnetism of the Tucson Mountains; implications for vertical axis rotations in south central Arizona. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,069-16,081.

OP-401. J. T. Hagstrum and R. L. Sedlock*. Remagnetization and northward translation of Mesozoic red chert from Cedros Island and the San Benito Islands, Baja California, Mexico: Reply. Geological Society of America Bulletin. v. 103, no. 7, July 1991. p. 968-969.

OP-402. A. N. Halliday*, J. P. Davidson*, Wes Hildreth and P. Holden*. Modelling the petrogenesis of high Rb/Sr silicic magmas. Chemical Geology, *in* Geochemistry of granitoid rocks. (Angelo Peccerillo, editor). v. 92, no. 1-3, September 25, 1991. p. 107-114.

OP-403. J. V. Hamel* and R. B. Jacobson. PENNSYLVANIA. Archeo-geological investigation of a Monongahela River terrace, *in* The engineering geology of ancient works, monuments and historical sites; preservation and protection—La géologie de l'ingénieur appliquée aux travaux anciens, monuments et sites historiques; preservation et protection. (P. G. Marinos, editor and others). Rotterdam: A. A. Balkema, 1988. p. 1163-1171.

OP-404. W. E. Hames*, R. J. Tracy*, N. M. Ratcliffe and J. F. Sutter. Petrologic, structural, and geochronologic characteristics of the Acadian metamorphic overprint on the Taconide Zone in part of southwestern New England. American Journal of Science. v. 291, no. 9, November 1991. p. 887-913.

OP-405. J. M. Hammarstrom. Mineral chemistry of emeralds and some associated minerals from Pakistan and Afghanistan; an electron microprobe study, *in* Emeralds of Pakistan; geology, gemology and genesis. (A. H. Kazmi and others). New York, NY: Van Nostrand Reinhold Co. 1989. p. 125-150.

OP-406. J. G. Hammond* and J. L. Wooden. Isotopic constraints on the petrogenesis of Proterozoic diabase in southwestern USA. Zhongguo Dizhi Jingji = Geological Economy of China, *in* Mafic dykes and emplacement mechanisms; proceedings of the Second international dyke conference. (A. J. Parker, editor and others). 1990. p. 145-156.

OP-407. T. C. Hanks. Toward a standard ground-motion estimation model for eastern North America, *in* Proceedings; Earthquake ground-motion estimation in eastern North America. (R. K. McGuire, editor and others). Report no. EPRI NP-5875, 1988. p. 22:1-8. *Available from:* Risk Eng., Golden, CO, United States.

OP-408. W. R. Hansen. Memorial to Frank W. Osterwald, 1922-1989. Bulletin of the Association of Engineering Geologists. v. 27, no. 3, August 1990. p. 383-385.

OP-409. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Explanatory notes. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 17-38.

OP-410. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Site 760. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 115-160.

OP-411. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Site 761.

Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 161-211.

OP-412. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Site 764. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 353-384.

OP-413. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Site 762. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 213-288.

OP-414. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Summary and highlights of Leg 122. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 5-7.

OP-415. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Introduction. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 9-15.

OP-416. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Site 763. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 289-352.

OP-417. B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders*. Site 759. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 81-114.

OP-418. J. W. Harden. Soil development on stable landforms and implications for landscape studies. Geomorphology, *in* Soils and landscape evolution; proceedings of the 21st annual Binghamton symposium in geomorphology. (P. L. Kneupfer, editor and others). v. 3, no. 3-4, September 1990. p. 391-398.

OP-419. J. W. Harden, E. M. Taylor, Cindy Hill, R. K. Mark, L. D. McFadden, M. C. Reheis, J. M. Sowers and S. G. Wells. Rates of soil development from four soil chronosequences in the southern Great Basin. Quaternary Research (New York). v. 35, no. 3, Part 1, May 1991. p. 383-399.

OP-420. A. G. Harris and W. C. Sweet*. Mechanical and chemical techniques for separating microfossils from rock, sediment, and residue matrix. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 70-86.

OP-421. S. H. Hartzell and Carlos Mendoza. Application of an iterative least-squares waveform inversion of strong motion and teleseismic records to the 1978 Tabas, Iran, earthquake. Bulletin of the Seismological Society of America. v. 81, no. 2, April 1991. p. 305-331.

OP-422. R. W. Harvey and S. P. Garabedian. Use of colloid filtration theory in modeling movement of bacteria through a contaminated sandy aquifer. Environmental Science & Technology, ES & T. v. 25, no. 1, January 1991. p. 178-185.

OP-423. D. M. Harwood*, P. J. Barrett*, A. R. Edwards*, H. J. Rieck and P. N. Webb*. Biostratigraphy and chronology. DSIR Bulletin, *in* Antarctic Cenozoic history from the CIROS-1 drillhole, McMurdo Sound. (P. J. Barrett, editor). 245, 1989. p. 231-239.

OP-424. P. G. Hatcher, E. C. Spiker and W. H. Orem. Organic geochemical studies of the humification process in low-moor peat, *in* Peat and water; aspects of water retention and dewatering in peat.

(C. H. Fuchsman, editor). London: Elsevier Appl. Sci. Publ. 1986. p. 195-213.

OP-425. P. G. Hatcher and M. A. Wilson*. The effect of sample hydration on ^{13}C CPMAS NMR spectra of fulvic acids. Organic Geochemistry. v. 17, no. 3, 1991. p. 293-299.

OP-426. S. A. Hauck*, C. M. Ager, John Pastor*, L. Zando* and N. Aaseng*. MINNESOTA. Airborne imaging scanner survey of northeastern Minnesota. Report no. NRRI/GMIN/TR-09-13, April 1990. 55 p. *Available from:* Univ. Minn., Nat. Resour. Res. Inst., Duluth, MN, United States.

OP-427. R. A. Haugerud, Peter van der Heyden*, R. W. Tabor, J. S. Stacey and R. E. Zartman. WASHINGTON. Late Cretaceous and early Tertiary plutonism and deformation in the Skagit gneiss complex, North Cascade Range, Washington and British Columbia; with Suppl. Data 91-25. Geological Society of America Bulletin. v. 103, no. 10, October 1991. p. 1297-1307.

OP-428. R. A. Haugerud and E-an Zen. An essay on metamorphic path studies or Cassandra in P-T-τ space, *in* Progress in metamorphic and magmatic petrology; a memorial volume in honor of D. S. Korzhinskiy. (L. L. Perchuk, editor). Cambridge: Univ. Press, 1991. p. 323-348.

OP-429. Egill Hauksson* and L. M. Jones. CALIFORNIA. The 1988 and 1990 Upland earthquakes; left-lateral faulting adjacent to the central Transverse Ranges. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 5, May 10, 1991. p. 8143-8165.

OP-430. B. P. Hausback*, A. L. Deino*, B. D. Turrin, E. H. McKee, V. A. Frizzell, Jr., D. C. Noble* and S. I. Weiss*. NEVADA. New Ar-40/Ar-39 ages for the Spearhead and Civet Cat Canyon members of the Stonewall Flat Tuff, Nye County, Nevada; evidence for systematic errors in standard K-Ar age determinations on sanidine. Isochron/West. 56, December 1990. p. 3-7.

OP-431. B. P. Hausback* and D. A. Swanson. WASHINGTON. Record of prehistoric debris avalanches on the north flank of Mount St. Helens Volcano, Washington. Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 142-145.

OP-432. W. W. Hay*, C. N. Wold* and C. A. Shaw. Mass balanced paleogeographic maps; background and input requirements, *in* Quantitative dynamic stratigraphy. (T. A. Cross, editor). Englewood Cliffs, NJ: Prentice Hall, 1990. p. 261-275.

OP-433. M. H. Hayes*, Patrick MacCarthy*, R. L. Malcolm and R. S. Swift* (editors). Humic substances; II, In search of structure. Chichester: John Wiley & Sons, 1989. 764 p.

OP-434. M. H. Hayes*, Patrick MacCarthy*, R. L. Malcolm and R. S. Swift*. Structures of humic substances; the emergence of "forms", *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 689-733.

OP-435. M. H. Hayes*, Patrick MacCarthy*, R. L. Malcolm and R. S. Swift*. The search for structure; setting the scene, *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 3-31.

OP-436. W. W. Hays. Earthquake research in the U.S. Geological Survey. Proceedings of the U.S. National Conference on Earthquake Engineering, *in* Proceedings, Fourth U.S. national conference on Earthquake engineering. (Earthquake Engineering Research Institute). 4, Vol. 1, 1990. p. 17-19.

OP-437. J. W. Head*, D. B. Campbell*, Charles Elachi*, J. E. Guest*, D. P. McKenzie*, R. S. Saunders*, G. G. Schaber and Gerald Schubert*. Venus volcanism: initial analysis from Magellan data. Science. v. 252, no. 5003, April 12, 1991. p. 276-288.

OP-438. E. H. Hearn*, B. M. Kennedy* and A. H. Truesdell. WYOMING. Coupled variations in helium isotopes and fluid chemistry; Shoshone Geyser Basin, Yellowstone National Park. Geochimica et Cosmochimica Acta. v. 54, no. 11, November 1990. p. 3103-3113.

OP-439. T. H. Heaton. Evidence for and implications of self-healing pulses of slip in earthquake rupture. Physics of the Earth and Planetary Interiors. 64, November 1990. p. 1-20.

OP-440. G. H. Heiken*, Napoleon Ramos*, W. A. Duffield, John Musgrave*, K. H. Wohletz*, S. S. Priest, J. Aldrich*, Wilmer Flores*, Alexander Ritchie*, Fraser Goff*, Dean Eppler* and Carlos Escobar*. Geology of the Platanares geothermal area, Departamento de Copán, Honduras. Journal of Volcanology and Geothermal Research, *in* Honduras; a geothermal investigation. (Fraser Goff, editor). v. 45, no. 1-2, March 1991. p. 41-58.

OP-441. F. J. Heimes. The High Plains regional aquifer; estimating 1980 ground water pumpage for irrigation. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 207-218.

OP-442. J. R. Hein, M. S. Schulz* and Jung-Keuk Kang*. Insular and submarine ferromanganese mineralization of the Tonga-Lau region. Marine Mining. v. 9, no. 3, September 1990. p. 305-354.

OP-443. J. O. Helgesen and R. B. Leonard. Geohydrology of the Great Plains aquifer system, central United States. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 179-190.

OP-444. J. O. Helgesen and E. M. Thurman. KANSAS. Trace organic compounds in ground water in south-central Kansas as inferred from gas chromatography with flame-ionization detection. Preprints of Papers, *in* American Chemical Society, 75 years of progress; Division of Environmental Chemistry; preprints of papers presented at the 196th ACS national meeting. v. 28, no. 2, September 1988. p. 9-12.

OP-445. D. R. Helsel. Advantages of nonparametric procedures for analysis of water quality data. Hydrological Sciences Journal = Journal des Sciences Hydrologiques. v. 32, no. 2, 1987. p. 179-190.

OP-446. D. R. Helsel. Less than obvious; statistical treatment of data below the detection limit. Environmental Science & Technology, ES & T. v. 24, no. 12, December 1990. p. 1766-1774.

OP-447. J. D. Hem and C. J. Lind. Coprecipitation mechanisms and products in manganese oxidation in the presence of cadmium.

Geochimica et Cosmochimica Acta. v. 55, no. 9, September 1991. p. 2435-2451.

OP-448. B. S. Hemingway. Thermodynamic properties for bunsenite, NiO, magnetite, Fe_3O_4, and hematite, Fe_2O_3, with comments on selected oxygen buffer reactions. American Mineralogist. v. 75, no. 7-8, August 1990. p. 781-790.

OP-449. B. S. Hemingway. Thermodynamic properties of anthophyllite and talc; corrections and discussion of calorimetric data. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1589-1596.

OP-450. B. S. Hemingway, L. M. Anovitz*, R. A. Robie and J. J. McGee. The thermodynamic properties of dumortierite $Si_3B[Al_{6.75}\square_{0.25}O_{17.25}(OH)_{0.75}]$. American Mineralogist. v. 75, no. 11-12, December 1990. p. 1370-1375.

OP-451. B. S. Hemingway, R. A. Robie and J. A. Apps*. Revised values for the thermodynamic properties of boehmite, AlO(OH), and related species and phases in the system Al-H-O. American Mineralogist. v. 76, no. 3-4, April 1991. p. 445-457.

OP-452. B. S. Hemingway, R. A. Robie, H. T. Evans, Jr. and D. M. Kerrick*. Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1597-1613.

OP-453. J. D. Hendricks and J. B. Plescia*. ARIZONA. A review of the regional geophysics of the Arizona transition zone. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,351-12,373.

OP-454. C. G. Hennet*, J. H. Luetgert and R. A. Phinney*. MAINE. The crustal structure in central Maine from coherency processed refraction data. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 7, July 10, 1991. p. 12,023-12,037.

OP-455. A. E. Hess and F. L. Paillet. Applications of the thermal-pulse flowmeter in the hydraulic characterization of fractured rocks. ASTM Special Technical Publication = American Society for Testing and Materials Special Technical Publication, *in* Geophysical applications for geotechnical investigations. (F. L. Paillet, editor and others). 1101, October 1990. p. 99-112.

OP-456. A. V. Heyl. The tectonic controls and vertical and horizontal dimensions of mississippi valley-type deposits in the United States, *in* North American conference on Tectonic control of ore deposits and the vertical and horizontal extent of ore systems, Proceedings volume. (Geza Kisvarsanyi, editor and others). Rolla, MO: Univ. Mo. 1988. p. 415-423.

OP-457. C. J. Hickson* and D. W. Peterson (prefacers). WASHINGTON. Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. Geoscience Canada. v. 17, no. 3, September 1990. p. 125-187.

OP-458. C. G. Higgins*, W. R. Osterkamp and C. G. Higgins*. Seepage-induced cliff recession and regional denudation. Special Paper - Geological Society of America, *in* Groundwater geomorphology; the role of subsurface water in earth-surface processes and landforms. (C. G. Higgins, editor and others). 252, 1990. p. 291-317.

OP-459. M. W. Higgins and L. B. Conant. MARYLAND. The geology of Cecil County, Maryland. Bulletin - Maryland Geological Survey. Report no. 37, 1990. 183 p.

OP-460. Wes Hildreth and J. E. Fierstein. WASHINGTON. Geologic map and geothermal assessment of the Mount Adams volcanic field, Cacade Range of southern Washington. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1455-1456.

OP-461. Wes Hildreth, A. N. Halliday* and R. L. Christiansen. WYOMING. Isotopic and chemical evidence concerning the genesis and contamination of basaltic and rhyolitic magma beneath the Yellowstone Plateau volcanic field. Journal of Petrology. v. 32, no. 1, February 1991. p. 63-137.

OP-462. B. R. Hill and K. M. Nolan. CALIFORNIA, NEVADA. Suspended-sediment factors, Lake Tahoe basin, California-Nevada, *in* Proceedings: International mountain watershed symposium: subalpine processes and water quality. (I. G. Poppoff, editor and others). South Lake Tahoe, CA: Tahoe Resour. Conserv. Dist. 1988. p. 179-189.

OP-463. M. C. Hill. Solving groundwater flow problems by conjugate-gradient methods and the strongly implicit procedure. Water Resources Research. v. 26, no. 9, September 1990. p. 1961-1969.

OP-464. M. C. Hill. Relative efficiency of four parameter-estimation methods in steady-state and transient ground-water flow models, *in* Computational methods in subsurface hydrology. (Giuseppe Gambolati, editor and others). Southampton: Comput. Mech. Publ. 1990. p. 103-108.

OP-465. J. W. Hillhouse and R. E. Wells. ARIZONA, CALIFORNIA, NEVADA. Magnetic fabric, flow directions, and source area of the lower Miocene Peach Springs Tuff in Arizona, California, and Nevada. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,443-12,460.

OP-466. G. R. Himmelberg, D. A. Brew and A. B. Ford. ALASKA. Development of inverted metamorphic isograds in the western metamorphic belt, Juneau, Alaska. Journal of Metamorphic Geology. v. 9, no. 2, March 1991. p. 165-180.

OP-467. M. E. Hinkle. UTAH. Seasonal and geothermal production variations in concentrations of He and CO_2 in soil gases, Roosevelt Hot Springs Known Geothermal Resource Area, Utah, U.S.A. Applied Geochemistry. v. 6, no. 1, 1991. p. 35-47.

OP-468. M. E. Hinkle. Factors affecting concentrations of helium and carbon dioxide in soil gases, *in* Geochemistry of gaseous elements and compounds. (E. M. Durrance and others). Athens: Theophrastus Publ. 1990. p. 421-448.

OP-469. T. K. Hinkley. Distribution of metals between particulate and gaseous forms in a volcanic plume. Bulletin of Volcanology. v. 53, no. 5, June 1991. p. 395-400.

OP-470. S. N. Hiortdahl. MARYLAND. Changes in groundwater quality caused by river-water intrusion in the Potomac Group aquifer system of northwestern Charles County, Maryland. Ground Water Management, *in* Proceedings of the FOCUS conference on Eastern regional ground water issues. 3, 1990. p. 391-404.

OP-471. R. J. Hite and D. E. Anders. Petroleum and evaporites. Developments in Sedimentology, *in* Evaporites, petroleum and mineral resources. (J. L. Melvin, editor). 50, 1991. p. 349-411.

OP-472. M. F. Hochella, Jr.* and A. F. White (editors). Mineral-water interface geochemistry. Reviews in Mineralogy. 23, 1990. 603 p.

OP-473. M. F. Hochella, Jr.* and A. F. White. Mineral-water interface geochemistry; an overview. Reviews in Mineralogy, *in* Mineral-water interface geochemistry. (M. F. Hochella, Jr., editor and others). 23, 1990. p. 1-16.

OP-474. A. G. Hochstaedter*, J. B. Gill*, Minoru Kusakabe*, Sally Newman*, M. S. Pringle, Brian Taylor* and Patricia Fryer*. Volcanism in the Sumisu Rift; I, Major element, volatile, and stable isotope geochemistry. Earth and Planetary Science Letters, *in* The Mariana Trough; special section. v. 100, no. 1-3, October 1990. p. 179-194.

OP-475. S. M. Hodge, R. W. Jacobel* and D. L. Wright. Low-frequency ice radar studies on ice streams B and C, West Antarctica. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 79-81.

OP-476. R. J. Hoffman. A horizontal intragravel pipe for sampling water quality in salmonid spawning gravel. North American Journal of Fisheries Management. 6, 1986. p. 445-448.

OP-477. J. P. Hoffmann*, G. E. Ulrich and M. O. Garcia*. HAWAII. Horizontal ground deformation patterns and magma storage during the Puu Oo eruption of Kilauea Volcano, Hawaii, episodes 22-42. Bulletin of Volcanology. v. 52, no. 7, September 1990. p. 522-531.

OP-478. A. H. Hofstra, J. S. Leventhal, H. R. Northrop, G. P. Landis, R. O. Rye, D. J. Birak* and A. R. Dahl*. NEVADA. Genesis of sediment-hosted disseminated-gold deposits by fluid mixing and sulfidization; chemical-reaction-path modeling of ore-depositional processes documented in the Jerritt Canyon District, Nevada. Geology (Boulder). v. 19, no. 1, January 1991. p. 36-40.

OP-479. W. S. Holbrook*, R. D. Catchings and C. M. Jarchow*. NEVADA. Origin of deep crustal reflections; implications of coincident seismic refraction and reflection data in Nevada. Geology (Boulder). v. 19, no. 2, February 1991. p. 175-179.

OP-480. W. S. Holbrook*, R. D. Catchings and C. M. Jarchow*. NEVADA. Origin of deep crustal reflections; implications of coincident seismic refraction and reflection data in Nevada: Reply. Geology (Boulder). v. 19, no. 12, December 1991. p. 1243-1244.

OP-481. T. L. Holcombe*, J. W. Ladd*, G. K. Westbrook*, N. T. Edgar and C. L. Bowland*. Caribbean marine geology; ridges and basins of the plate interior, *in* The Caribbean region. (Gabriel Dengo, editor and others), *in the collection* The geology of North America. Boulder, CO: Geol. Soc. Am. H, 1990. p. 231-260.

OP-482. S. R. Holdahl* and Daniel Dzurisin. Time-dependent models of vertical deformation for the Yellowstone-Hebgen Lake region, 1923-1987. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 2, February 10, 1991. p. 2465-2483.

OP-483. C. W. Holmes, R. M. Flores and D. T. Pocknall*. Carbon isotopes in Tertiary coals of the Powder River basin. The Journal of Coal Quality. v. 10, no. 2, June 1991. p. 49-52.

OP-484. M. L. Holmes. Seismic refraction measurements in the summit basins of the New Hebrides arc. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 163-176.

OP-485. W. F. Holmes and S. A. Thiros. UTAH. Groundwater hydrology of Pahvant Valley and adjacent areas, Utah. Technical Publication - State of Utah, Department of Natural Resources. Report no. 98, 1990. 64 p.

OP-486. S. R. Holnbeck* and Charles Parrett. MONTANA. Estimating firm yield and reliability of small reservoirs on ungaged streams in north-central Montana, *in* Engineering hydrology; proceedings of the symposium. (A. D. Feldman, editor). New York, NY: Am. Soc. Civ. Eng. 1987. p. 32-37.

OP-487. T. L. Holzer. Nontectonic subsidence, *in* The heritage of engineering geology; the first hundred years. (G. A. Kiersch), *in the collection* Centennial special volume. Boulder, CO: Geol. Soc. Am. 3, 1991. p. 219-232.

OP-488. Masahiko Honda*, Ian McDougall*, D. B. Patterson*, Anthony Doulgeris* and D. A. Clague. HAWAII. Possible solar noble-gas component in Hawaiian basalts. Nature (London). v. 349, no. 6305, January 10, 1991. p. 149-151.

OP-489. P. J. Horick* and P. J. Soenksen. IOWA. Water resources of Northeast Iowa. Iowa Geological Survey Water Atlas. Report no. 8, October 1989. 133 p.

OP-490. G. M. Hornberger. Environmental tracers. Eos, Transactions, American Geophysical Union. v. 72, no. 8, February 19, 1991. p. 90.

OP-491. A. J. Horowitz. A primer on sediment-trace element chemistry. Chelsea, MI: Lewis Publ. 1991. 136 p.

OP-492. A. J. Horowitz, F. A. Rinella, P. J. Lamothe, T. L. Miller, T. K. Edwards, R. L. Roche and D. A. Rickert. Variations in suspended sediment and associated trace element concentrations in selected riverine cross sections. Environmental Science & Technology, ES & T. v. 24, no. 9, September 1990. p. 1313-1320.

OP-493. J. W. Hosterman and F. T. Dulong. A computer program for semiquantitative mineral analysis by X-ray powder diffraction. CMS Workshop Lectures, *in* Quantitative mineral analysis of clays. (D. R. Pevear, editor and others). 1, 1989. p. 38-50.

OP-494. S. W. Hostetler, P. J. Bartlein* and N. B. Hamancioglu*. OREGON. Simulation of lake evaporation with application to modeling lake level variations of Harney-Malheur Lake, Oregon. Water Resources Research. v. 26, no. 10, October 1990. p. 2603-2612.

OP-495. S. W. Hostetler and L. V. Benson. Paleoclimatic implications of the high stand of Lake Lahontan derived from models of evaporation and lake level. Climate Dynamics. v. 4, no. 3, September 1990. p. 207-212.

OP-496. K. A. Howard. Intrusion of horizontal dikes; tectonic significance of middle Proterozoic diabase sheets widespread in

the upper crust of the Southwestern United States. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,461-12,478.

OP-497. L. W. Howells. UTAH. Base of moderately saline ground water in San Juan County, Utah. Technical Publication - State of Utah, Department of Natural Resources. Report no. 94, 1990. 35 p.

OP-498. T. V. Hromadka, II* and Chintu Lai. The complex variable boundary element method in engineering analysis. New York, NY: Springer-Verlag, 1987. 389 p.

OP-499. M. R. Hudson and J. W. Geissman*. NEVADA. Paleomagnetic evidence for the age and extent of middle Tertiary counterclockwise rotation, Dixie Valley region, west central Nevada. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 3979-4006.

OP-500. Stephen Hughes and J. H. Luetgert. Crustal structure of the western New England Appalachians and the Adirondack Mountains. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,471-16,494.

OP-501. W. B. Hughes. MARYLAND. Application of marine seismic profiling to a ground water contamination study, Aberdeen Proving Ground, Maryland. Ground Water Monitoring Review. v. 11, no. 1, 1991. p. 97-102.

OP-502. C. R. Hupp and D. E. Bazemore. Dendrogeomorphic analysis of wetland sedimentation. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 4.40-4.47.

OP-503. D. W. Hynman*, R. A. Roberts* and R. H. Webb. Modeling sediment transport in an ephemeral river. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 8.101-8.108.

OP-504. Masahiro Iida. Optimum strong-motion array geometry for source inversion. Proceedings of the U.S. National Conference on Earthquake Engineering, *in* Proceedings, Fourth U.S. national conference on Earthquake engineering. (Earthquake Engineering Research Institute). 4, Vol. 1, 1990. p. 337-346.

OP-505. J. L. Imes. Geohydrology and hydrochemistry of the Ozark Plateaus aquifer systems. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 165-178.

OP-506. J. L. Inge. Halftone processes for planetary maps. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 277-285.

OP-507. S. E. Ingebritsen. Vapor-dominated zones within hydrothermal convection systems, *in* Proceedings of the 12th workshop on geothermal reservoir engineering. Stanford, CA: Stanford Univ. 1987. p. 6.

OP-508. S. E. Ingebritsen and K. M. Paulson. OREGON. Numerical simulation of hydrothermal circulation in the Cascade Range, north-central Oregon. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 691-698.

OP-509. J. C. Ingle, Jr.*, Kiyoshi Suyehiro*, M. T. von Breymann*, J. S. Bristow*, L. H. Burkle*, Jacques Charvet*, B. A. Cragg*, Peter de Menocal*, R. B. Dunbar*, K. B. Follmi*, J. R. Griffin*, K. A. Grimm*, Yozo Hamano*, Naoshi Hirata*, Peter Holler*, C. M. Isaacs, Michio Kato*, Richard Kettler*, Tara Kheradyar*, K. A. Krumsiek*, Hsin-yi Ling*, Ryo Matsumoto*, J. P. Muza*, R. J. Parkes*, André Pouclet*, S. D. Scott*, Ruediger Stein* and A. A. Sturz*. Proceedings of the Ocean Drilling Program, Japan Sea, covering Leg 128 of the cruises of the drilling vessel JOIDES Resolution, Pusan Harbor, Korea, to Pusan Harbor, Korea, Sites 794, 798-799, 20 August 1989-15 October 1989. Proceedings of the Ocean Drilling Program, Part A: Initial Reports. 128, 1989. 652 p.

OP-510. J. C. Ingle, Jr.*, Kiyoshi Suyehiro*, M. T. von Breymann*, J. S. Bristow*, L. H. Burkle*, Jacques Charvet*, B. A. Cragg*, Peter de Menocal*, R. B. Dunbar*, K. B. Follmi*, J. R. Griffin*, K. A. Grimm*, Yozo Hamano*, Naoshi Hirata*, Peter Holler*, C. M. Isaacs, Michio Kato*, Richard Kettler*, Tara Kheradyar*, K. A. Krumsiek*, Hsin-yi Ling*, Ryo Matsumoto*, J. P. Muza*, R. J. Parkes*, André Pouclet*, S. D. Scott*, Ruediger Stein* and A. A. Sturz*. Site 798. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, Japan Sea, covering Leg 128 of the cruises of the drilling vessel JOIDES Resolution, Pusan Harbor, Korea, to Pusan Harbor, Korea, Sites 794, 798-799, 20 August 1989-15 October 1989. (J. C. Ingle, Jr. and others). 128, 1989. p. 121-236.

OP-511. J. C. Ingle, Jr.*, Kiyoshi Suyehiro*, M. T. von Breymann*, J. S. Bristow*, L. H. Burkle*, Jacques Charvet*, B. A. Cragg*, Peter de Menocal*, R. B. Dunbar*, K. B. Follmi*, J. R. Griffin*, K. A. Grimm*, Yozo Hamano*, Naoshi Hirata*, Peter Holler*, C. M. Isaacs, Michio Kato*, Richard Kettler*, Tara Kheradyar*, K. A. Krumsiek*, Hsin-yi Ling*, Ryo Matsumoto*, J. P. Muza*, R. J. Parkes*, André Pouclet*, S. D. Scott*, Ruediger Stein* and A. A. Sturz*. Site 799. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, Japan Sea, covering Leg 128 of the cruises of the drilling vessel JOIDES Resolution, Pusan Harbor, Korea, to Pusan Harbor, Korea, Sites 794, 798-799, 20 August 1989-15 October 1989. (J. C. Ingle, Jr. and others). 128, 1989. p. 237-402.

OP-512. J. C. Ingle, Jr.*, Kiyoshi Suyehiro*, M. T. von Breymann*, J. S. Bristow*, L. H. Burkle*, Jacques Charvet*, B. A. Cragg*, Peter de Menocal*, R. B. Dunbar*, K. B. Follmi*, J. R. Griffin*, K. A. Grimm*, Yozo Hamano*, Naoshi Hirata*, Peter Holler*, C. M. Isaacs, Michio Kato*, Richard Kettler*, Tara Kheradyar*, K. A. Krumsiek*, Hsin-yi Ling*, Ryo Matsumoto*, J. P. Muza*, R. J. Parkes*, André Pouclet*, S. D. Scott*, Ruediger Stein* and A. A. Sturz*. Site 794. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, Japan Sea, covering Leg 128 of the cruises of the drilling vessel JOIDES Resolution, Pusan Harbor, Korea, to Pusan Harbor, Korea, Sites 794, 798-799, 20 August 1989-15 October 1989. (J. C. Ingle, Jr. and others). 128, 1989. p. 67-120.

OP-513. J. C. Ingle, Jr.*, Kiyoshi Suyehiro*, M. T. von Breymann*, J. S. Bristow*, L. H. Burkle*, Jacques Charvet*,

B. A. Cragg*, Peter de Menocal*, R. B. Dunbar*, K. B. Follmi*, J. R. Griffin*, K. A. Grimm*, Yozo Hamano*, Naoshi Hirata*, Peter Holler*, C. M. Isaacs, Michio Kato*, Richard Kettler*, Tara Kheradyar*, K. A. Krumsiek*, Hsin-yi Ling*, Ryo Matsumoto*, J. P. Muza*, R. J. Parkes*, André Pouclet*, S. D. Scott*, Ruediger Stein* and A. A. Sturz*. Explanatory notes. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, Japan Sea, covering Leg 128 of the cruises of the drilling vessel JOIDES Resolution, Pusan Harbor, Korea, to Pusan Harbor, Korea, Sites 794, 798-799, 20 August 1989-15 October 1989. (J. C. Ingle, Jr. and others). 128, 1989. p. 39-64.

OP-514. J. C. Ingle, Jr.*, Kiyoshi Suyehiro*, M. T. von Breymann*, J. S. Bristow*, L. H. Burkle*, Jacques Charvet*, B. A. Cragg*, Peter de Menocal*, R. B. Dunbar*, K. B. Follmi*, J. R. Griffin*, K. A. Grimm*, Yozo Hamano*, Naoshi Hirata*, Peter Holler*, C. M. Isaacs, Michio Kato*, Richard Kettler*, Tara Kheradyar*, K. A. Krumsiek*, Hsin-yi Ling*, Ryo Matsumoto*, J. P. Muza*, R. J. Parkes*, André Pouclet*, S. D. Scott*, Ruediger Stein* and A. A. Sturz*. Introduction, background, and principal results of Leg 128 of the Ocean Drilling Program, Japan Sea. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, Japan Sea, covering Leg 128 of the cruises of the drilling vessel JOIDES Resolution, Pusan Harbor, Korea, to Pusan Harbor, Korea, Sites 794, 798-799, 20 August 1989-15 October 1989. (J. C. Ingle, Jr. and others). 128, 1989. p. 5-38.

OP-515. R. M. Iverson. WASHINGTON. Lava domes modeled as brittle shells that enclose pressurized magma, with application to Mount St. Helens, *in* Lava flows and domes; emplacement mechanisms and hazard implications. (J. H. Fink, editor). Berlin: Springer Verlag, 1990. p. 47-69.

OP-516. H. M. Iyer, J. R. Evans, P. B. Dawson, D. A. Stauber and Ulrich Achauer. Differences in magma storage in different volcanic environments as revealed by seismic tomography; silicic volcanic centers and subduction-related volcanoes, *in* Magma transport and storage. (M. P. Ryan, editor). Chichester: John Wiley & Sons, 1990. p. 293-316.

OP-517. G. A. Izett. COLORADO, NEW MEXICO. The Cretaceous/Tertiary boundary interval, Raton Basin, Colorado and New Mexico, and its content of shock-metamorphosed minerals; evidence relevant to the K/T boundary impact-extinction theory. Special Paper - Geological Society of America. 249, 1990. 100 p.

OP-518. G. A. Izett, G. B. Dalrymple and L. W. Snee. $^{40}Ar/^{39}Ar$ age of Cretaceous-Tertiary boundary tektites from Haiti. Science. v. 252, no. 5012, June 14, 1991. p. 1539-1542.

OP-519. S. M. Jackson* and John Boatwright. IDAHO. Strong ground motion data from the 1983 Borah Peak, Idaho earthquake recorded at the Idaho National Engineering Laboratory, *in* Proceedings; DOE Natural phenomena hazards mitigation conference. (R. C. Murray). U.S. Gov. Print. Off. 1985. p. 187-194.

OP-520. B. E. Jaffe, A. H. Sallenger, Jr. and J. H. List. LOUISIANA. Massive sediment bypassing of a wide tidal inlet; Cat Island Pass, Louisiana. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 403-412.

OP-521. E. B. James* and W. R. Hotchkiss (editors). Transferring models to users. American Water Resources Association Technical Publication Series TPS. CTPS-90-3, 1990. 399 p.

OP-522. O. B. James*, M. M. Lindstrom and J. J. McGee*. Lunar ferroan anorthosite 60025: petrology and chemistry of mafic lithologies. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 63-87.

OP-523. N. O. Jannik*, F. M. Phillips*, G. I. Smith and David Elmore*. CALIFORNIA. A ^{36}Cl chronology of lacustrine sedimentation in the Pleistocene Owens River system. Geological Society of America Bulletin. v. 103, no. 9, September 1991. p. 1146-1159.

OP-524. I. Jany*, K. M. Scanlon and Alain Mauffret*. VIRGIN ISLANDS. Geological interpretation of combined Seabeam, GLORIA and seismic data from Anegada Passage (Virgin Islands, North Caribbean). Marine Geophysical Researches. v. 12, no. 3, August 1990. p. 173-196.

OP-525. C. M. Jarchow*, R. D. Catchings and W. J. Lutter. WASHINGTON. How Washington crew got good, thrifty seismic in bad data area. Oil and Gas Journal. v. 89, no. 24, June 17, 1991. p. 54-55.

OP-526. R. D. Jarrett. COLORADO. Hydrology and paleohydrology used to improve the understanding of flood hydrometeorology in Colorado. Proceedings of the International Symposium on Design of Hydraulic Structures, *in* Design of hydraulic structures 89; proceedings of the second international symposium. (M. L. Albertson, editor and others). 2, 1989. p. 9-16.

OP-527. R. D. Jarrett. Hydrometeorology of Rocky Mountain floods. Eos, Transactions, American Geophysical Union. v. 72, no. 1, January 1, 1991. p. 2.

OP-528. A. S. Jayko. NEVADA. Shallow crustal deformation in the Pahranagat area, southern Nevada. Memoir - Geological Society of America, *in* Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada. (B. P. Wernicke, editor). 176, 1990. p. 213-236.

OP-529. M. E. Jennings, J. B. Atkins and E. J. Inman. Estimating urban flood-frequency characteristics. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 516-521.

OP-530. M. E. Jennings and E. N. Cookmeyer, II*. Plans for national flood frequency by microcomputer. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 386-391.

OP-531. S. K. Jenson. Applications of hydrologic information automatically extracted from digital elevation models. Hydrological Processes. v. 5, no. 1, March 1991. p. 31-44.

OP-532. P. W. Jewell* and R. F. Stallard. NEVADA. Geochemistry and paleoceanographic setting of central Nevada bedded

barites. Journal of Geology. v. 99, no. 2, March 1991. p. 151-170.

OP-533. C. M. Johnson* and R. A. Thompson. COLORADO. Isotopic composition of Oligocene mafic volcanic rocks in the northern Rio Grande Rift; evidence for contributions of ancient intraplate and subduction magmatism to evolution of the lithosphere. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,593-13,608.

OP-534. D. P. Johnson* and H. G. Greene. Modern depositional regimes, offshore Vanuatu. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 287-299.

OP-535. E. A. Johnson and F. W. Pierce. WYOMING. Variations in fluvial deposition on an alluvial plain; an example from the Tongue River Member of the Fort Union Formation (Paleocene), southeastern Powder River basin, Wyoming, U.S.A. Sedimentary Geology. v. 69, no. 1-2, November 1990. p. 21-36.

OP-536. L. E. Johnson*, Patricia Fryer*, Brian Taylor*, Michelle Silk*, D. L. Jones*, W. V. Sliter, Tetsumaru Itaya* and Teruaki Ishii*. MARIANA ISLANDS. New evidence for crustal accretion in the outer Mariana fore arc; Cretaceous radiolarian cherts and mid-ocean ridge basalt-like lavas. Geology (Boulder). v. 19, no. 8, August 1991. p. 811-814.

OP-537. P. R. Johnson. U.S. west coast revisited; an aeromagnetic perspective: Reply. Geology (Boulder). v. 19, no. 9, September 1991. p. 950-951.

OP-538. R. G. Johnson. X-ray fluorescence analysis of geological materials using Rousseau's fundamental algorithm. Advances in X-Ray Analysis, *in* Proceedings of the Thirty-fifth annual conference on Applications of X-ray analysis. (C. S. Barrett, editor and others). 30, 1987. p. 105-112.

OP-539. S. Y. Johnson and A. M. Alam*. Sedimentation and tectonics of the Sylhet Trough, Bangladesh. Geological Society of America Bulletin. v. 103, no. 11, November 1991. p. 1513-1527.

OP-540. M. J. Johnsson, R. F. Stallard and Neil Lundberg*. Controls on the composition of fluvial sands from a tropical weathering environment; sands of the Orinoco River drainage basin, Venezuela and Colombia; with Suppl. Data 91-33. Geological Society of America Bulletin. v. 103, no. 12, December 1991. p. 1622-1647.

OP-541. M. J. Johnston, A. T. Linde* and M. T. Gladwin*. CALIFORNIA. Near-field high resolution strain measurements prior to the October 18, 1989, Loma Prieta M_s 7.1 earthquake. Geophysical Research Letters, *in* The Loma Prieta California earthquake of October 17, 1989; III. v. 17, no. 10, September 1990. p. 1777-1780.

OP-542. D. S. Jones*, B. J. MacFadden*, S. D. Webb*, P. A. Mueller*, D. A. Hodell* and T. M. Cronin. FLORIDA. Integrated geochronology of a classic Pliocene fossil site in Florida; linking marine and terrestrial biochronologies. Journal of Geology. v. 99, no. 5, September 1991. p. 637-648.

OP-543. J. E. Jones, B. F. Molnia and J. W. Schoonmaker, Jr. ALASKA. The Malaspina Glacier radar study; a SLAR investigation of glacial and periglacial features, *in* Proceedings of the Second Glacier Bay science symposium. (A. M. Milner, editor and others). Washington, DC: U.S. Gov. Print. Off. 1990. p. 34-40.

OP-544. P. R. Jordan. KANSAS. Rainfall-runoff relations and expected streamflow in western Kansas. Bulletin - Kansas Water Office. Report no. 25, 1982. 42 p.

OP-545. D. G. Jorgensen. Estimating water quality from geophysical logs. ASTM Special Technical Publication = American Society for Testing and Materials Special Technical Publication, *in* Geophysical applications for geotechnical investigations. (F. L. Paillet, editor and others). 1101, October 1990. p. 47-64.

OP-546. W. B. Joyner. Incorporation of site effects in stochastic source models for prediction of earthquake ground motion, *in* Proceedings: Earthquake ground-motion estimation in eastern North America. (R. K. McGuire, editor and others). Report no. EPRI NP-5875, 1988. p. 7:1-10. *Available from:* Risk Eng., Golden, CO, United States.

OP-547. A. P. Julson*, B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens*, P. E. Williamson* and A. A. Wonders* (editors). Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. Proceedings of the Ocean Drilling Program, Part A: Initial Reports. 122, January 1990. 828 p.

OP-548. Hiroo Kanamori*, J. J. Mori, D. L. Anderson* and T. H. Heaton. CALIFORNIA. Seismic excitation by the space shuttle Columbia. Nature (London). v. 349, no. 6312, February 28, 1991. p. 781-782.

OP-549. J. P. Kauahikaua. HAWAII. The location and mapping of hydrologic regimes and thermal waters in Hawaii; the use of electrical geophysical techniques. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 1489-1492.

OP-550. A. H. Kazmi* and L. W. Snee. Geology of the world emerald deposits; a brief review, *in* Emeralds of Pakistan; geology, gemology and genesis. (A. H. Kazmi and others). New York, NY: Van Nostrand Reinhold Co. 1989. p. 165-228.

OP-551. T. E. Keith. ALASKA. Fossil and active fumaroles in the 1912 eruptive deposits, Valley of Ten Thousand Smokes, Alaska. Journal of Volcanology and Geothermal Research. v. 45, no. 3-4, April 1991. p. 227-254.

OP-552. M. A. Keller. CALIFORNIA. Introduction to stratigraphy and hydrocarbon occurrence in Oligocene and Miocene rocks of the Santa Barbara-Ventura and Santa Maria basins of California. SEPM Core Workshop, *in* Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins,

California; a core workshop. (M. A. Keller, compiler and others). 14, 1990. p. 1-11.

OP-553. M. A. Keller and M. K. McGowen (compilers). CALIFORNIA. Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California; a core workshop. SEPM Core Workshop. 14, 1990. 400 p.

OP-554. Michael Keller*, M. E. Mitre* and R. F. Stallard. Consumption of atmospheric methane in soils of central Panama; effects of agricultural development. Global Biogeochemical Cycles. v. 4, no. 1, March 1990. p. 21-27.

OP-555. K. S. Kellogg and G. E. Beckmann. Paleomagnetic investigations of upper Proterozoic rocks in the eastern Arabian Shield, Kingdom of Saudi Arabia. F.E.S. Bulletin, *in* Pan-African crustal evolution in the Arabian-Nubian Shield; I.G.C.P. No. 164; proceedings of a symposium. (A. R. Bakor, chairperson and others). 6, 1984. p. 483-500.

OP-556. Vance Kennedy. Mineralogy and exchange capacity of modern fluvial sediments, *in* Transport of radionuclides in fresh water systems; a working conference. (B. H. Kornegay and others). Report no. TID-7664, July 1963. p. 71-90.

OP-557. W. J. Kennedy* and W. A. Cobban. Upper Cretaceous (upper Santonian) Boehmoceras fauna from the Gulf Coast region of the United States. Geological Magazine. v. 128, no. 2, March 1991. p. 167-189.

OP-558. B. L. Kennett* and E. R. Engdahl. Traveltimes for global earthquake location and phase identification. Geophysical Journal International. v. 105, no. 2, May 1991. p. 429-465.

OP-559. J. M. Kernodle. The role of a geographic information system in modeling of groundwater flow in the San Juan Basin regional aquifer system, New Mexico, Colorado, Arizona, and Utah. Institute for Environmental Studies Report, *in* Proceedings of the 1986 seminar on Multipurpose land information systems; application of information technology for natural resource planning, management, and monitoring. (B. J. Niemann, Jr., editor and others). 132, April 1988. p. 71-78.

OP-560. Y. K. Kharaka and H. L. Barnes* (editors). Water-rock interactions. Applied Geochemistry. v. 5, no. 5-6, December 1990. p. 537-735.

OP-561. Y. K. Kharaka and H. L. Barnes*. Introduction; memorial volume to honor Ivan Barnes (1931-1989). Applied Geochemistry, *in* Water-rock interactions. (Y. K. Kharaka, editor and others). v. 5, no. 5-6, December 1990. p. 537-539.

OP-562. Y. K. Kharaka, R. H. Mariner, Gil Ambats, W. C. Evans, L. D. White, T. D. Bullen and B. M. Kennedy*. WYOMING. Origins of water and solutes in and north of the Norris-Mammoth corridor, Yellowstone National Park. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 705-714.

OP-563. J. L. Kiesler, Jr. KENTUCKY. Relation between surface-water quality and the composition of coal in Pike County, Kentucky, *in* Proceedings; 1987 national symposium on Mining, hydrology, sedimentology and reclamation. (R. W. De Vore, editor and others). Lexington, KY: Univ. Ky., Coll. Eng., Off. Eng. Serv. December 1987. p. 423-430.

OP-564. D. E. Kile and C. T. Chiou. Water solubility enhancements of DDT and trichlorobenzene by some surfactants below and above the critical micelle concentration. Environmental Science & Technology, ES & T. v. 23, no. 7, July 1989. p. 832-838.

OP-565. D. E. Kile, C. T. Chiou and R. S. Helburn*. Effect of some petroleum sulfonate surfactants on the apparent water solubility of organic compounds. Environmental Science & Technology, ES & T. v. 24, no. 2, 1990. p. 205-208.

OP-566. J. L. Kindinger, Shea Penland*, S. J. Williams and J. R. Suter*. LOUISIANA, MISSISSIPPI, ALABAMA. Inner shelf deposits of the Louisiana-Mississippi-Alabama region, Gulf of Mexico. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 413-420.

OP-567. Chi-Yu King. Multicycle slip distribution along a laboratory fault. Open-File Report. Reston, VA: U.S. Geol. Surv. v. 96, no. 9, August 10, 1991. p. 14,377-14,381.

OP-568. E. R. King. WISCONSIN. Precambrian terrane of north-central Wisconsin; an aeromagnetic perspective. Canadian Journal of Earth Sciences = Journal Canadien des Sciences de la Terre. v. 27, no. 11, November 1990. p. 1472-1477.

OP-569. G. C. King and Michael Ellis*. The origin of large local uplift in extensional regions. Nature (London). v. 348, no. 6303, December 27, 1990. p. 689-693.

OP-570. S. H. Kirby (chairperson). Mineral Physics Committee chairman's report. Eos, Transactions, American Geophysical Union. v. 71, no. 48, November 27, 1990. p. 1822-1823.

OP-571. S. H. Kirby, W. B. Durham* and L. A. Stern. Mantle phase changes and deep-earthquake faulting in subducting lithosphere. Science. v. 252, no. 5003, April 12, 1991. p. 216-225.

OP-572. W. H. Kirby. Statistical frequency analysis of flood records. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 366-371.

OP-573. W. H. Kirby, D. R. Helsel, E. J. Gilroy and Geoff Kite*. Some statistical observations; discussion and reply. Water Resources Bulletin (Urbana). v. 26, no. 4, August 1990. p. 693-698.

OP-574. Carl Kisslinger* and L. M. Jones. CALIFORNIA. Properties of aftershock sequences in Southern California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 7, July 10, 1991. p. 11,947-11,958.

OP-575. J. S. Klasner* and E. R. King. NORTH DAKOTA, SOUTH DAKOTA. A model for tectonic evolution of the Trans-Hudson Orogen in North and South Dakota. Special Paper - Geological Association of Canada, *in* The early Proterozoic Trans-Hudson Orogen of North America. (J. F. Lewry, editor and others). 37, 1990. p. 271-285.

OP-576. D. P. Klein. ARIZONA. Crustal resistivity structure from magnetotelluric soundings in the Colorado Plateau–Basin and Range provinces, central and western Arizona. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special

section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,313-12,331.

OP-577. H. J. Knebel, R. R. Rendigs and M. H. Bothner. MASSACHUSETTS. Modern sedimentary environments in Boston Harbor, Massachusetts. Journal of Sedimentary Petrology. v. 61, no. 5, September 1991. p. 791-804.

OP-578. R. A. Koski, J. R. Hein, R. M. Bouse*, R. C. Evarts and L. G. Pickthorn. NEVADA. K/Ar and fission-track ages of tuff beds at the Three Kids Mine, Clark County, Nevada; implications for manganese mineralization. Isochron/West. 56, December 1990. p. 30-32.

OP-579. A. N. Kover and J. E. Jones. The U.S. Geological Survey's side-looking airborne radar acquisition program; basic data for exploration. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Sixth thematic conference on Remote sensing for exploration geology; applications, technology, economics. (R. H. Rogers, chairperson). 6, Vol. 1, 1988. p. 403-404.

OP-580. D. P. Krabbenhoft, M. P. Anderson* and C. J. Bowser*. Estimating groundwater exchange with lakes; 2, Calibration of a three-dimensional, solute transport model to a stable isotope plume. Water Resources Research. v. 26, no. 10, October 1990. p. 2455-2462.

OP-581. D. P. Krabbenhoft, C. J. Bowser*, M. P. Anderson* and J. W. Valley*. Estimating groundwater exchange with lakes; 1, The stable isotope mass balance method. Water Resources Research. v. 26, no. 10, October 1990. p. 2445-2453.

OP-582. T. F. Kraemer and P. B. Curwick*. LOUISIANA. Radium isotopes in the lower Mississippi River. Journal of Geophysical Research, C, Oceans. v. 96, no. 2, February 2, 1991. p. 2797-2806.

OP-583. L. F. Krystinik* and C. J. Schenk. The geologist's role in secondary and enhanced oil recovery projects in Rocky Mountain reservoirs, *in* Energy frontiers in the Rockies. (J. C. Lorenz, editor and others). Albuquerque, NM: Albuquerque Geol. Soc. 1989. p. 121-129.

OP-584. G. E. Kues. NEW MEXICO. Well drilling, water-quality sampling and aquifer testing on Acoma Pueblo lands, November 1, 1988 to March 8, 1989. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 29-30.

OP-585. E. L. Kuniansky. LOUISIANA. Geohydrology and simulation of ground-water flow in the "400-foot," "600-foot," and adjacent aquifers, Baton Rouge area, Louisiana. Water Resources Technical Report (Baton Rouge, La.). Report no. 49, 1989. 90 p.

OP-586. M. J. Kunk and J. F. Sutter. $^{40}Ar/^{39}Ar$ age spectrum dating of biotite from Middle Ordovician bentonites, eastern North America. Paleontological Contributions from the University of Oslo, *in* Aspects of the Ordovician System; IV, Proceedings of an international symposium. (D. L. Bruton, editor). 295, 1984. p. 11-22.

OP-587. A. Y. Kwarteng* and P. S. Chavez, Jr. ARIZONA. Digital image processing of airborne geophysical data for uranium-mineralized breccia pipes exploration in northwestern Arizona. Geophysics. v. 55, no. 8, August 1990. p. 965-976.

OP-588. A. Y. Kwarteng*, P. S. Chavez, Jr., K. J. Wenrich and P. C. Goodell*. ARIZONA. Application of Landsat thematic mapper digital data to the exploration for uranium mineralized breccia pipes in northwestern Arizona. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Sixth thematic conference on Remote sensing for exploration geology; applications, technology, economics. (R. H. Rogers, chairperson). 6, Vol. 1, 1988. p. 239-248.

OP-589. E. M. Kwicklis. NEVADA. Potential mechanisms for fracture flow in the unsaturated zone at Yucca Mountain; effects of air entrapment within matrix blocks, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 398-399.

OP-590. T. Z. La Tourrette*, D. S. Burnett* and C. R. Bacon. OREGON. Uranium and minor-element partitioning in Fe-Ti oxides and zircon from partially melted granodiorite, Crater Lake, Oregon. Geochimica et Cosmochimica Acta. v. 55, no. 2, February 1991. p. 457-469.

OP-591. J. L. Labowski*, D. J. McKenzie and A. L. Higer*. FLORIDA. Very low frequency electromagnetics mapping of a freshwater lens at Key West, Florida. American Water Resources Association Technical Publication Series TPS, *in* Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress. (J. H. Krishna, editor and others). 90-2, 1990. p. 311-316.

OP-592. P. J. Lacombe. NEW JERSEY. Types of surface- and borehole-geophysical equipment and methods used in hydrologic and geologic investigations in New Jersey. Annual Field Conference - Geological Association of New Jersey, *in* Aspects of groundwater in New Jersey; Seventh annual meeting of the Geological Association of New Jersey. (R. L. Kroll, compiler and others). 7, 1990. p. L1-L4.

OP-593. J. W. Ladd*, T. L. Holcombe*, G. K. Westbrook* and N. T. Edgar. Caribbean marine geology; active margins of the plate boundary, *in* The Caribbean region. (Gabriel Dengo, editor and others), *in the collection* The geology of North America. Boulder, CO: Geol. Soc. Am. H, 1990. p. 261-290.

OP-594. Chintu Lai. Numerical modeling of unsteady sediment-laden flow. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 8.30-8.37.

OP-595. Chintu Lai. Computational open-channel hydraulics for movable-bed problems. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Hydraulic engineering; proceedings of the 1990 conference. (H. H. Chang, editor and others). 1990, Vol. 1, 1990. p. 493-499.

OP-596. Y. P. Lancelot*, R. L. Larson*, Andrew Fisher*, Lewis Abrams*, Richard Behl*, W. H. Busch*, Gordon Cameron*, P. R. Castillo*, J. M. Covington*, Gabriele Durr*, Elisabetta Erba*, P. A. Floyd*, Christian France-Lanord*, E. H. Hauser*, S. M. Karl, Anne-Marie Karpoff*, Atsushi Matsuoka*, Alain Molinie*, J. G. Ogg*, A. R. Salimullah*, Maureen Steiner*, B. P. Wallick* and Winton Wightman*. Site 800. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra

Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990. (Y. P. Lancelot and others). 129, 1990. p. 33-89.

OP-597. Y. P. Lancelot*, R. L. Larson*, Andrew Fisher*, Lewis Abrams*, Richard Behl*, W. H. Busch*, Gordon Cameron*, P. R. Castillo*, J. M. Covington*, Gabriele Durr*, Elisabetta Erba*, P. A. Floyd*, Christian France-Lanord*, E. H. Hauser*, S. M. Karl, Anne-Marie Karpoff*, Atsushi Matsuoka*, Alain Molinie*, J. G. Ogg*, A. R. Salimullah*, Maureen Steiner*, B. P. Wallick* and Winton Wightman*. Site 801. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990. (Y. P. Lancelot and others). 129, 1990. p. 91-170.

OP-598. Y. P. Lancelot*, R. L. Larson*, Andrew Fisher*, Lewis Abrams*, Richard Behl*, W. H. Busch*, Gordon Cameron*, P. R. Castillo*, J. M. Covington*, Gabriele Durr*, Elisabetta Erba*, P. A. Floyd*, Christian France-Lanord*, E. H. Hauser*, S. M. Karl, Anne-Marie Karpoff*, Atsushi Matsuoka*, Alain Molinie*, J. G. Ogg*, A. R. Salimullah*, Maureen Steiner*, B. P. Wallick* and Winton Wightman*. Site 802. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990. (Y. P. Lancelot and others). 129, 1990. p. 171-243.

OP-599. Y. P. Lancelot*, R. L. Larson*, Andrew Fisher*, Lewis Abrams*, Richard Behl*, W. H. Busch*, Gordon Cameron*, P. R. Castillo*, J. M. Covington*, Gabriele Durr*, Elisabetta Erba*, P. A. Floyd*, Christian France-Lanord*, E. H. Hauser*, S. M. Karl, Anne-Marie Karpoff*, Atsushi Matsuoka*, Alain Molinie*, J. G. Ogg*, A. R. Salimullah*, Maureen Steiner*, B. P. Wallick* and Winton Wightman*. Explanatory notes. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990. (Y. P. Lancelot and others). 129, 1990. p. 5-29.

OP-600. Y. P. Lancelot*, R. L. Larson*, Andrew Fisher*, Lewis Abrams*, Richard Behl*, W. H. Busch*, Gordon Cameron*, P. R. Castillo*, J. M. Covington*, Gabriele Durr*, Elisabetta Erba*, P. A. Floyd*, Christian France-Lanord*, E. H. Hauser*, S. M. Karl, Anne-Marie Karpoff*, Atsushi Matsuoka*, Alain Molinie*, J. G. Ogg*, A. R. Salimullah*, Maureen Steiner*, B. P. Wallick*, Winton Wightman* and L. H. Dearmont*. Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990. Proceedings of the Ocean Drilling Program, Part A: Initial Reports. 129, 1990. 488 p.

OP-601. M. N. Landers. A bridge scour measurement data base system. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 2.121-2.126.

OP-602. G. P. Landis. COLORADO. A reply to the discussion of sherman-type deposits by Brian J. Skinner. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 397-401.

OP-603. G. P. Landis and R. J. Tschauder*. COLORADO. Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part II, Fluid inclusion, stable isotope, and rock geochemistry data and a model of ore deposition. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 339-366.

OP-604. J. O. Langbein. Earthquake explanations: discussion. Nature (London). v. 349, no. 6307, January 24, 1991. p. 287.

OP-605. C. J. Langer and G. A. Bollinger*. ILLINOIS. The southeastern Illinois earthquake of 10 June 1987; the later aftershocks. Bulletin of the Seismological Society of America. v. 81, no. 2, April 1991. p. 423-445.

OP-606. M. C. Larsen and A. J. Torres-Sánchez. PUERTO RICO. Rainfall-soil moisture relations in landslide-prone areas of tropical rain forest, Puerto Rico. American Water Resources Association Technical Publication Series TPS, *in* Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress. (J. H. Krishna, editor and others). 90-2, 1990. p. 121-129.

OP-607. D. K. Larue*, Barnes. I. and R. L. Sedlock*. CALIFORNIA. Subduction and accretion of the Permanente Terrane near San Francisco, California. Tectonics. v. 8, no. 2, April 1989. p. 221-235.

OP-608. J. S. Latimer*, E. J. Hoffman*, G. L. Hoffman, J. L. Fasching* and J. G. Quinn*. Sources of petroleum hydrocarbons in urban runoff. Water, Air and Soil Pollution. v. 52, no. 1-2, July 1990. p. 1-21.

OP-609. Julie Laudon and K. R. Belitz. CALIFORNIA. Texture and depositional history of late Pleistocene-Holocene alluvium in the central part of the western San Joaquin Valley, California. Bulletin of the Association of Engineering Geologists. v. 28, no. 1, February 1991. p. 73-88.

OP-610. E. P. Lawrence*, E. P. Poeter* and R. B. Wanty. COLORADO. Geohydrologic, geochemical, and geologic controls on the occurrence of radon in ground water near Conifer, Colorado, USA. Journal of Hydrology. v. 127, no. 1-4, October 1991. p. 367-386.

OP-611. R. D. Lawrence*, A. H. Kazmi* and L. W. Snee. Geological setting of the emerald deposits, *in* Emeralds of Pakistan; geology, gemology and genesis. (A. H. Kazmi and others). New York, NY: Van Nostrand Reinhold Co. 1989. p. 13-38.

OP-612. D. L. Leach, G. S. Plumlee, A. H. Hofstra, G. P. Landis, E. L. Rowan and J. G. Viets. Origin of late dolomite cement by CO_2-saturated deep basin brines; evidence from the Ozark region, central United States; with Suppl. Data 91-10. Geology (Boulder). v. 19, no. 4, April 1991. p. 348-351.

OP-613. D. L. Leach and E. L. Rowan. Focused fluid flow and Ozark mississippi valley-type deposits: Comment. Geology (Boulder). v. 19, no. 2, February 1991. p. 190.

OP-614. S. A. Leake. Interbed storage changes and compaction in models of regional groundwater flow. Water Resources Research. v. 26, no. 9, September 1990. p. 1939-1950.

OP-615. S. A. Leake. Simulation of vertical compaction in models of regional ground-water flow. IAHS-AISH Publication, *in* Land subsidence. (A. I. Johnson, editor). 200, 1991. p. 565-574.

OP-616. F. T. Lee, J. S. Scott*, Mariano Ruiz-Vazquez*, G. P. Salas* and J. I. Maycotte*. Research efforts, governments of North America, *in* The heritage of engineering geology; the first hundred years. (G. A. Kiersch), *in the collection* Centennial special volume. Boulder, CO: Geol. Soc. Am. 3, 1991. p. 87-107.

OP-617. H. J. Lee, K. R. Demars* and R. C. Chaney*. Geotechnical engineering for ocean waste disposal; an introduction. ASTM Special Technical Publication = American Society for Testing and Materials Special Technical Publication, *in* Geotechnical engineering of ocean waste disposal. (K. R. Demars, editor and others). 1087, July 1990. p. 3-17.

OP-618. J. K. Lee. Physical modeling of contracted flow, *in* Hydraulic engineering; proceedings of the 1987 national conference on Hydraulic engineering. (R. M. Ragan, editor). New York, NY: Am. Soc. Civ. Eng. 1987. p. 25-30.

OP-619. J. K. Lee, R. W. Schaffranek and R. A. Baltzer. SOUTH CAROLINA. Convergence experiments with a hydrodynamic model of Port Royal Sound, South Carolina. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 434-441.

OP-620. Jeffrey Lee* and J. F. Sutter. NEVADA. Incremental $^{40}Ar/^{39}Ar$ thermochronology of mylonitic rocks from the northern Snake Range, Nevada. Tectonics. v. 10, no. 1, February 1991. p. 77-100.

OP-621. M. W. Lee. Traveltime inversion using transmitted waves of offset VSP data. Geophysics. v. 55, no. 8, August 1990. p. 1089-1097.

OP-622. W. H. Lee. Replace the HYPO71 format; Reply. Bulletin of the Seismological Society of America. v. 80, no. 04, August 1990. p. 1046-1047.

OP-623. J. A. Leenheer. Organic substance structures that facilitate contaminant transport and transformations in aquatic sediments, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 3-22.

OP-624. J. A. Leenheer and T. I. Noyes. Derivatization of humic substances for structural studies, *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 257-280.

OP-625. J. A. Leenheer, R. L. Wershaw, P. A. Brown and T. I. Noyes. Detection of poly(ethylene glycol) residues from nonionic surfactants in surface water by ^{1}H and ^{13}C nuclear magnetic resonance spectrometry. Environmental Science & Technology, ES & T. v. 25, no. 1, January 1991. p. 161-168.

OP-626. J. S. Leventhal. Comparative geochemistry of metals and rare earth elements from the Cambrian alum shale and kolm of Sweden. Special Publication of the International Association of Sedimentologists, *in* Sediment-hosted mineral deposits; Proceedings of a symposium. (John Parnell, editor and others). 11, 1990. p. 203-215.

OP-627. R. S. Lewis* and T. H. Kiilsgaard. IDAHO. Eocene plutonic rocks in south central Idaho. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,295-13,311.

OP-628. E. V. Leyendecker, P. C. Thenhaus, K. W. Campbell, M. G. Hopper, S. L. Hanson, S. T. Algermissen and D. M. Perkins. CALIFORNIA. Seismicity and strong motion data. National Bureau of Standards Special Publication, *in* Performance of structures during the Loma Prieta earthquake of October 17, 1989. (H. S. Lew, editor). Report no. 778, January 1990. p. 2.1-2.18.

OP-629. R. W. Lichty and M. R. Karlinger. Climate factor for small-basin flood frequency. Water Resources Bulletin (Urbana). v. 26, no. 4, August 1990. p. 577-586.

OP-630. B. H. Lidz, A. C. Hine*, E. A. Shinn and J. L. Kindinger. FLORIDA. Multiple outer-reef tracts along the South Florida bank margin; outlier reefs, a new windward-margin model. Geology (Boulder). v. 19, no. 2, February 1991. p. 115-118.

OP-631. B. H. Lidz and E. A. Shinn. FLORIDA. Paleoshorelines, reefs, and a rising sea; South Florida, U.S.A. Journal of Coastal Research. v. 7, no. 1, 1991. p. 203-229.

OP-632. J. J. Lienkaemper, Glenn Borchardt* and Michael Lisowski. CALIFORNIA. Historic creep rate and potential for seismic slip along the Hayward Fault, California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 11, October 10, 1991. p. 18,261-18,283.

OP-633. A. G. Lindh. Earthquake prediction; the seismic cycle pursued. Nature (London). v. 348, no. 6302, December 13, 1990. p. 580-581.

OP-634. Chi-Hai Ling, Cheng-Jung Chen and Chyan-Deng Jan*. Rheological properties of simulated debris flows in the laboratory environment, *in* Proceedings of the International symposium on Hydraulics/hydrology of arid lands (H^2AL). (R. H. French, editor). New York, NY: Am. Soc. Civ. Eng. 1990. p. 218-224.

OP-635. B. R. Lipin and G. A. McKay* (editors). Geochemistry and mineralogy of rare earth elements. Reviews in Mineralogy. 21, 1989. 348 p.

OP-636. P. W. Lipman and A. F. Glazner*. Introduction to Middle Tertiary Cordilleran volcanism; magma sources and relations to regional tectonics. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism; plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,193-13,199.

OP-637. P. W. Lipman, J. M. Rhodes* and G. B. Dalrymple. HAWAII. The Ninole Basalt; implications for the structural evolution of Mauna Loa Volcano, Hawaii. Bulletin of Volcanology. v. 53, no. 1, December 1990. p. 1-19.

OP-638. P. W. Lipman, Stephen Self* and G. H. Heiken*. Introduction to calderas special issue, *in* Discoveries of valuable minerals and precious metals deposits related to intrusions and faults. (V. F. Hollister, editor), *in the collection* Case histories of

mineral discoveries; Volume 2. Littleton, CO: Soc. Min., Metall., and Explor. 1990. p. 9-11.

OP-639. M. J. Lippmann* and A. H. Truesdell. Beneficial effects of groundwater entry into liquid-dominated geothermal systems. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 721-727.

OP-640. M. J. Lippmann*, A. H. Truesdell, S. E. Halfman-Dooley* and A. Mañón M.*. A review of the hydrogeologic-geochemical model for Cerro Prieto. Geothermics. v. 20, no. 1-2, 1991. p. 39-52.

OP-641. Michael Lisowski, J. C. Savage and W. H. Prescott. CALIFORNIA. The velocity field along the San Andreas Fault in Central and Southern California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 5, May 10, 1991. p. 8369-8389.

OP-642. R. J. Litwin and S. R. Ash*. ARIZONA. First early Mesozoic amber in the Western Hemisphere. Geology (Boulder). v. 19, no. 3, March 1991. p. 273-276.

OP-643. R. J. Litwin and Alfred Traverse*. Basic guidelines for palynomorph extraction and preparation from sedimentary rocks. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 87-98.

OP-644. Hsi-Ping Liu. Calculation of zero-offset vertical seismic profiles generated by a horizontal point force acting on the surface of an anelastic half-space. Bulletin of the Seismological Society of America. v. 80, no. 04, August 1990. p. 832-856.

OP-645. D. A. Lockner, J. D. Byerlee, V. S. Kuksenko*, A. V. Ponomarev* and A. Sidorin*. Quasi-static fault growth and shear fracture energy in granite. Nature (London). v. 350, no. 6313, March 7, 1991. p. 39-42.

OP-646. D. A. Lockner, S. H. Hickman, V. S. Kuksenko*, A. V. Ponomarev*, A. Sidorin*, J. D. Byerlee and B. Khakaev*. Laboratory-determined permeability of cores from the Kola superdeep well, USSR. Geophysical Research Letters. v. 18, no. 5, May 1991. p. 881-884.

OP-647. J. P. Lockwood and R. L. Schuster. Lake Nyos dam threat. Nature (London). v. 351, no. 6323, May 16, 1991. p. 195-196.

OP-648. R. L. Logan* and R. L. Schuster. WASHINGTON. Lakes divided; the origin of Lake Crescent and Lake Sutherland, Clallam County, Washington. Washington Geology. v. 19, no. 1, March 1991. p. 38-42.

OP-649. D. J. Lonergan and D. R. Lovley. Microbial oxidation of natural and anthropogenic aromatic compounds coupled to Fe(III) reduction, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 327-338.

OP-650. J. B. Louis* and E. F. Vowinkel. NEW JERSEY. Effect of agricultural chemicals on groundwater quality in the New Jersey coastal plain, *in* Pesticides in terrestrial and aquatic environments. (D. L. Weigmann, editor). Blacksburg, VA: Va. Polytech. Inst. and State Univ. 1989. p. 80-89.

OP-651. M. A. Lovell* and R. H. Morin. Physical-properties characterization of sediments in the area around DSDP/ODP Hole 504B. Proceedings of the Ocean Drilling Program, Scientific Results, *in* Costa Rica Rift; covering Leg 111 of the cruises of the drilling vessel JOIDES Resolution, Bridgetown, Barbados, to Callao, Peru, sites 504, 677, and 678, 16 August 1986-20 October 1986. (Keir Becker and others). 111, December 1989. p. 233-244.

OP-652. D. R. Lovley and E. J. Phillips. Rapid assay for microbially reducible ferric iron in aquatic sediments. Applied and Environmental Microbiology. v. 53, no. 7, July 1987. p. 1536-1540.

OP-653. D. R. Lovley, E. J. Phillips, Y. A. Gorby and E. R. Landa. Microbial reduction of uranium. Nature (London). v. 350, no. 6317, April 4, 1991. p. 413-416.

OP-654. B. K. Lucchitta, H. M. Ferguson, F. J. Schafer, J. G. Ferrigno and R. S. Williams, Jr. Antarctic glacier velocities from Landsat images. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 106-107.

OP-655. K. R. Ludwig, B. J. Szabo, J. G. Moore and K. R. Simmons. HAWAII. Crustal subsidence rate off Hawaii determined from $^{234}U/^{238}U$ ages of drowned coral reefs. Geology (Boulder). v. 19, no. 2, February 1991. p. 171-174.

OP-656. W. R. Lund*, D. P. Schwartz, W. E. Mulvey*, K. E. Budding* and B. D. Black. UTAH. Paleoseismology of Utah; Volume I, Fault behavior and earthquake recurrence on the Provo segment of the Wasatch fault zone at Mapleton, Utah County, Utah. Special Studies - Utah Geological and Mineral Survey. Report no. 75, 1991. 41 p.

OP-657. V. D. Lyne*, Bradford Butman and W. D. Grant*. Sediment movement along the U.S. east coast continental shelf; I. Estimates of bottom stress using the Grant-Madsen model and near-bottom wave and current measurements. Continental Shelf Research. v. 10, no. 5, May 1990. p. 397-428.

OP-658. V. D. Lyne*, Bradford Butman and W. D. Grant*. Sediment movement along the U.S. east coast continental shelf; II, Modelling suspended sediment concentration and transport rate during storms. Continental Shelf Research. v. 10, no. 5, May 1990. p. 429-460.

OP-659. P. C. Lyons. PENNSYLVANIA. Hydrothermal alteration in anthracite from eastern Pennsylvania; implications for mechanisms of anthracite formation: Comment. Geology (Boulder). v. 19, no. 2, February 1991. p. 188.

OP-660. P. C. Lyons, T. G. Callcott* and Boris Alpern* (editors). Peat and coal: origin, facies, and coalification. International Journal of Coal Geology. v. 16, no. 1-3, December 10, 1990. 237 p.

OP-661. T. R. MacDonald, J. G. Ferrigno, R. S. Williams, Jr. and B. K. Lucchitta. Velocities of Antarctic outlet glaciers determined from sequential Landsat images. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 105-106.

OP-662. Alexander Macfarlane*, J. N. Carney*, A. J. Crawford and H. G. Greene*. Vanuatu: a review of the onshore geology. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island

arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 45-91.

OP-663. M. N. Machette, S. F. Personius, A. R. Nelson, D. P. Schwartz and W. R. Lund*. UTAH. The Wasatch fault zone, Utah; segmentation and history of Holocene earthquakes. Journal of Structural Geology, *in* Characteristics of active faults. (P. L. Hancock, editor and others). v. 13, no. 2, 1991. p. 137-149.

OP-664. D. L. Macke. Unusually large subsidence and sea-level events during middle Paleozoic time; new evidence supporting mantle convection models for supercontinent assembly: Comment. Geology (Boulder). v. 19, no. 11, November 1991. p. 1149.

OP-665. G. J. MacPherson*, S. P. Phipps* and J. N. Grossman. CALIFORNIA. Diverse sources for igneous blocks in Franciscan melanges, California Coast Ranges. Journal of Geology. v. 98, no. 6, November 1990. p. 845-862.

OP-666. D. J. Madden and S. P. Marsh. NEVADA. Lower Paleozoic host rocks in the Getchell gold belt; several distinct allochthons or a sequence of continuous sedimentation?. Geology (Boulder). v. 19, no. 5, May 1991. p. 489-492.

OP-667. J. J. Major and T. C. Pierson. Rheological analysis of fine-grained natural debris-flow material, *in* Proceedings of the International symposium on Hydraulics/hydrology of arid lands (H^2AL). (R. H. French, editor). New York, NY: Am. Soc. Civ. Eng. 1990. p. 225-232.

OP-668. R. L. Malcolm. The relative importance of pH, charge, and water solubility on the movement of organic solutes in soils and ground water. Ecological Studies, *in* Toxic organic chemicals in porous media. (Z. Gerstl, editor and others). 73, 1988. p. 288-301.

OP-669. R. L. Malcolm. Application of solid-state ^{13}C NMR spectroscopy to geochemical studies of humic substances, *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 339-372.

OP-670. R. P. Maley, R. L. Porcella and E. Etheredge. The strong-motion network operated by the U.S. Geological Survey. Proceedings of the U.S. National Conference on Earthquake Engineering, *in* Proceedings, Fourth U.S. national conference on Earthquake engineering. (Earthquake Engineering Research Institute). 4, Vol. 1, 1990. p. 347-355.

OP-671. R. J. Mandle* and D. B. Westjohn. MICHIGAN. Geohydrologic framework and ground-water flow in the Michigan Basin. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 83-109.

OP-672. E. A. Mankinen, C. S. Grommé and K. M. Williams. CALIFORNIA. Concordant paleolatitudes from ophiolite sequences in the Northern California Coast Ranges, U.S.A. Tectonophysics. v. 198, no. 1, 1991. p. 1-21.

OP-673. P. A. Mantz* and W. W. Emmett. CALIFORNIA. Analyses of United States Geological Survey sediment transport data for some California streams, *in* Transport of suspended solids in open channels; proceedings of Euromech 192. (W. Bechteler, editor). Rotterdam: A. A. Balkema, 1986. p. 177-182.

OP-674. M. Manzano*, Emilio Custodio* and B. F. Jones. Progress in the understanding of groundwater flow through the aquitard of the Llobregat Delta; Barcelona, Spain, *in* Livro de homenagem a Carlos Romariz (In honor of Carlos Romariz). (C. A. Alves, prefacer and others). Lisbon: Univ. Lisboa, Secc. Geol. Econ. Apl. 1990. p. 115-126.

OP-675. Louie Marincovich, Jr. and C. L. Powell, II. ALASKA. High-latitude application of $^{87}Sr/^{86}Sr$; correlation of Nuwok beds on North Slope, Alaska, to standard Oligocene chronostratigraphy: Comment. Geology (Boulder). v. 19, no. 5, May 1991. p. 537-538.

OP-676. Louie Marincovich, Jr. and W. J. Zinsmeister*. The first Tertiary (Paleocene) marine mollusks from the Eureka Sound Group, Ellesmere Island, Canada. Journal of Paleontology. v. 65, no. 2, March 1991. p. 242-248.

OP-677. H. W. Markewich, M. J. Pavich and G. R. Buell. Contrasting soils and landscapes of the Piedmont and coastal plain, Eastern United States. Geomorphology, *in* Soils and landscape evolution; proceedings of the 21st annual Binghamton symposium in geomorphology. (P. L. Kneupfer, editor and others). v. 3, no. 3-4, September 1990. p. 417-447.

OP-678. M. S. Marlow, A. K. Cooper, S. V. Dadisman, E. L. Geist and P. R. Carlson. Bowers Swell; evidence for a zone of compressive deformation concentric with Bowers Ridge, Bering Sea. Marine and Petroleum Geology. v. 7, no. 4, November 1990. p. 398-409.

OP-679. J. D. Marr, Jr.* and R. E. Weems. VIRGINIA. Geology of portions of the Richmond 1° × 2° quadrangle. Annual Virginia Geology Field Conference. 17, 1985. 52 p.

OP-680. D. C. Marron. SOUTH DAKOTA. Physical and chemical characteristics of a metal-contaminated overbank deposit, west-central South Dakota. Earth Surface Processes and Landforms. v. 14, no. 5, August 1989. p. 419-432.

OP-681. B. D. Marsh*, J. H. Fournelle*, J. D. Myers* and I-Ming Chou. On plagioclase thermometry in island arc rocks; experiments and theory. Special Publication - Geochemical Society, *in* Fluid-mineral interactions; a tribute to H. P. Eugster. (R. J. Spenser, editor and others). 2, 1990. p. 65-83.

OP-682. D. G. Masson* and K. M. Scanlon. PUERTO RICO. The neotectonic setting of Puerto Rico. Geological Society of America Bulletin. v. 103, no. 1, January 1991. p. 144-154.

OP-683. C. D. Masters, D. H. Root and E. D. Attanasi. World oil and gas resources; future production realities. Annual Review of Energy. 15, 1990. p. 23-51.

OP-684. C. D. Masters, D. H. Root and E. D. Attanasi. Resource constraints in petroleum production potential. Science. v. 253, no. 5016, July 12, 1991. p. 146-152.

OP-685. N. C. Matalas. Reflections on hydrology. Chester C. Kisiel Memorial Lecture Series. 1, 1983. 16 p.

OP-686. M. V. Mathes and S. M. Ward. WEST VIRGINIA. Water resources of the Elk River basin, West Virginia. River Basin Bulletin. Report no. RBB-6, 1990. 37 p.

OP-687. E. K. Maughan. COLORADO. Hydrocarbon exploration plays in the Colorado Park Basin province, *in* Energy frontiers

in the Rockies. (J. C. Lorenz, editor and others). Albuquerque, NM: Albuquerque Geol. Soc. 1989. p. 79-83.

OP-688. C. H. Maxwell. NEW MEXICO. Bandera Crater. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 65.

OP-689. C. H. Maxwell, O. J. Anderson*, S. G. Lucas*, R. M. Chamberlin* and D. W. Love*. NEW MEXICO. First-day road log, Albuquerque to Mesita, Laguna, Acoma, McCartys and Grants. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 1-24.

OP-690. L. R. Mayo and R. S. March. ALASKA. Air temperature and precipitation at Wolverine Glacier, Alaska; glacier growth in a warmer, wetter climate. Annals of Glaciology, *in* Proceedings of the symposium on Ice and climate. (D. R. MacAyeal, editor). 14, 1990. p. 191-194.

OP-691. R. A. McBride*, Shea Penland*, B. E. Jaffe, S. J. Williams, A. H. Sallenger, Jr. and K. A. Westphal*. LOUISIANA. Erosion and deterioration of the Isles Dernieres barrier island arc, Louisiana, U.S.A.; 1853 to 1988. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 431-444.

OP-692. G. J. McCabe, Jr., L. E. Hay, L. S. Kalkstein, M. A. Ayers and D. M. Wolock. Simulation of precipitation by weather-type analysis. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 679-684.

OP-693. G. J. McCabe, Jr. and D. M. Wolock. Detectability of the effects of a hypothetical temperature increase on the Thornthwaite moisture index. Journal of Hydrology. v. 125, no. 1-2, June 1991. p. 25-35.

OP-694. G. J. McCabe, Jr., D. M. Wolock, L. E. Hay and M. A. Ayers. Effects of climatic change on the Thornthwaite moisture index. Water Resources Bulletin (Urbana). v. 26, no. 4, August 1990. p. 633-643.

OP-695. J. H. McCarthy. Gases as geochemical indicators of concealed mineral deposits. Explore. 65, April 1989. p. 6, 8, 10.

OP-696. Jill McCarthy, S. P. Larkin, G. S. Fuis, R. W. Simpson and K. A. Howard. CALIFORNIA, ARIZONA. Anatomy of a metamorphic core complex; seismic refraction/wide-angle reflection profiling in southeastern California and western Arizona. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,259-12,291.

OP-697. Jill McCarthy and G. A. Thompson*. Seismic imaging of extended crust with emphasis on the Western United States: Reply. Geological Society of America Bulletin. v. 103, no. 11, November 1991. p. 1539-1542.

OP-698. C. R. McClure*, G. L. Sorrough*, R. E. Gray*, R. W. Galster*, D. J. Varnes and G. A. Kiersch*. Professional practice and societal organizations, *in* The heritage of engineering geology; the first hundred years. (G. A. Kiersch), *in the collection* Centennial special volume. Boulder, CO: Geol. Soc. Am. 3, 1991. p. 129-148.

OP-699. P. A. McCrory. CALIFORNIA. Neogene paleoceanographic events recorded in an active-margin setting; Humboldt Basin, California. Palaeogeography, Palaeoclimatology, Palaeoecology. v. 80, no. 3-4, November 1990. p. 267-282.

OP-700. A. S. McEwen. Global color and albedo variations on Triton. Geophysical Research Letters, *in* The Neptune System; a post-Voyager perspective. (E. C. Stone, prefacer). v. 17, no. 10, September 1990. p. 1765-1768.

OP-701. A. F. McGarr. Observations constraining near-source ground motion estimated from locally recorded seismograms. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 10, September 10, 1991. p. 16,495-16,508.

OP-702. A. F. McGarr and J. D. Bicknell. Synthetic seismogram analysis of locally-recorded mine tremors, *in* Proceedings: Rock at great depth; Rock mechanics and rock physics at great depth—Comptes rendus; Mécanique des roches et physique des roches en condition de grande profondeur—Berichte; Felsmechanik und Felsphysik in grosser Tiefe; Volume 3. (V. Maury, editor and others). Rotterdam: A. A. Balkema, 1989. p. 1407-1413.

OP-703. A. F. McGarr, J. D. Bicknell, J. Churcher* and S. Spottiswoode*. Comparison of ground motion from tremors and explosions in deep gold mines. Journal of Geophysical Research, B, Solid Earth and Planets. v. 95, no. 13, December 10, 1990. p. 21,777-21,792.

OP-704. J. J. McGee, J. F. Slack and C. R. Herrington*. Boron analysis by electron microprobe using MoB_4C layered synthetic crystals. American Mineralogist. v. 76, no. 3-4, April 1991. p. 681-684.

OP-705. W. C. McIntosh*, J. F. Sutter, C. E. Chapin* and L. L. Kedzie*. NEW MEXICO. High-precision $^{40}Ar/^{39}Ar$ sanidine geochronology of ignimbrites in the Mogollon-Datil volcanic field, southwestern New Mexico. Bulletin of Volcanology. v. 52, no. 8, November 1990. p. 584-601.

OP-706. E. D. McKee. ARIZONA. Paleozoic rocks of Grand Canyon, *in* Geology of the Grand Canyon. Flagstaff, AZ: Mus. North. Ariz. 1974. p. 42-64.

OP-707. F. A. McKeown, R. M. Hamilton*, S. F. Diehl and E. E. Glick. Diapiric origin of the Blytheville and Pascola arches in the Reelfoot Rift, east-central United States; relation to New Madrid seismicity: Reply. Geology (Boulder). v. 19, no. 6, June 1991. p. 668-669.

OP-708. D. M. McKnight and K. E. Bencala. The chemistry of iron, aluminum, and dissolved organic material in three acidic, metal-enriched, mountain streams, as controlled by watershed and in-stream processes. Water Resources Research, *in* Chapman conference on Hydrogeochemical responses of forested catchments. (Soroosh Sorooshian, editor). v. 26, no. 12, December 1990. p. 3087-3100.

OP-709. Hugh McLean. Reconnaissance geology of a Pliocene marine embayment near Loreto, Baja California Sur, Mexico. Field Trip Guidebook - Pacific Section, Society of Economic Paleontologists and Mineralogists, *in* Geologic studies in Baja California. (P. L. Abbot, editor). 63, 1989. p. 17-25.

OP-710. P. B. McMahon and F. H. Chapelle. Microbial production of organic acids in aquitard sediments and its role in aquifer geochemistry. Nature (London). v. 349, no. 6306, January 17, 1991. p. 233-235.

OP-711. P. B. McMahon and F. H. Chapelle. SOUTH CAROLINA. Geochemistry of dissolved inorganic carbon in a coastal plain aquifer; 2, Modeling carbon sources, sinks, and $\delta^{13}C$ evolution. Journal of Hydrology. v. 127, no. 1-4, October 1991. p. 109-135.

OP-712. P. B. McMahon, D. F. Williams* and J. T. Morris*. SOUTH CAROLINA. Production and carbon isotopic composition of bacterial CO_2 in deep coastal plain sediments of South Carolina. Ground Water. v. 28, no. 5, October 1990. p. 693-702.

OP-713. S. R. McNutt*, T. P. Miller and J. J. Taber*. ALASKA. Geological and seismological evidence of increased explosivity during the 1986 eruptions of Pavlof Volcano, Alaska. Bulletin of Volcanology. v. 53, no. 2, February 1991. p. 86-98.

OP-714. B. F. McPherson, R. T. Montgomery* and E. E. Emmons*. FLORIDA. Phytoplankton productivity and biomass in the Charlotte Harbor estuarine system, Florida. Water Resources Bulletin (Urbana). v. 26, no. 5, October 1990. p. 787-800.

OP-715. R. H. Meade, F. H. Weibezahn*, W. M. Lewis, Jr.* and David Pérez Hernández*. Suspended-sediment budget for the Orinoco River, *in* El Rio Orinoco como ecosistema—The Orinoco River as an ecosystem. (F. H. Weibezahn and others). Impresos Rubel, 1990. p. 55-79.

OP-716. C. E. Meyer, A. M. Sarna-Wojcicki, J. W. Hillhouse, M. J. Woodward, J. L. Slate and D. H. Sorg. CALIFORNIA. Fission-track age (400,000 yr) of the Rockland Tephra, based on inclusion of zircon grains lacking fossil fission tracks. Quaternary Research (New York). v. 35, no. 3, Part 1, May 1991. p. 367-382.

OP-717. R. F. Meyer, L. G. Wallace and F. J. Wagner, Jr.*. AAPG-CSD geologic provinces code map. AAPG Bulletin. v. 75, no. 10, October 1991. p. 1644-1651.

OP-718. Klaus Mezger*, C. M. Rawnsley*, S. R. Bohlen and G. N. Hanson*. NEW YORK. U-Pb garnet, sphene, monazite, and rutile ages; implications for the duration of high-grade metamorphism and cooling histories, Adirondack Mts., New York. Journal of Geology. v. 99, no. 3, May 1991. p. 415-428.

OP-719. A. J. Michael. CALIFORNIA. Spatial variations in stress within the 1987 Whittier Narrows, California, aftershock sequence; new techniques and results. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6303-6319.

OP-720. A. J. Michael and D. M. Eberhart-Phillips. Relations among fault behavior, subsurface geology, and three-dimensional velocity models. Science. v. 253, no. 5020, August 9, 1991. p. 651-654.

OP-721. G. Michel-Noël*, R. E. Anderson and Jacques Angelier*. NEVADA. Fault kinematics and estimates of strain partitioning of a Neogene extensional fault system in southeastern Nevada. Memoir - Geological Society of America, *in* Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada. (B. P. Wernicke, editor). 176, 1990. p. 155-180.

OP-722. A. J. Miller. Channel instability in a strip-mined basin. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 10.1-10.8.

OP-723. D. M. Miller and R. W. Allmendinger*. UTAH. Jurassic normal and strike-slip faults at Crater Island, northwestern Utah. Geological Society of America Bulletin. v. 103, no. 9, September 1991. p. 1239-1251.

OP-724. G. H. Miller*, Fred Wendorf*, Richard Ernst*, Romuald Schild*, A. E. Close*, Irving Friedman and H. P. Schwarcz*. Dating lacustrine episodes in the eastern Sahara by the epimerization of isoleucine in ostrich eggshells. Palaeogeography, Palaeoclimatology, Palaeoecology, *in* Paleoenvironments of salt lakes. (A. R. Chivas, editor and others). v. 84, no. 1-4, May 15, 1991. p. 175-189.

OP-725. J. J. Miller, M. W. Lee and Roland von Huene*. An analysis of a seismic reflection from the base of a gas hydrate zone, offshore Peru. AAPG Bulletin. v. 75, no. 5, May 1991. p. 910-924.

OP-726. M. L. Miller, J. Y. Bradshaw, D. L. Kimbrough*, T. W. Stern and T. K. Bundtzen*. ALASKA. Isotopic evidence for early Proterozoic age of the Idono Complex, west-central Alaska. Journal of Geology. v. 99, no. 2, March 1991. p. 209-223.

OP-727. R. L. Miller, T. F. Kraemer and B. F. McPherson. FLORIDA. Radium and radon in Charlotte Harbor Estuary, Florida. Estuarine, Coastal and Shelf Science. v. 31, no. 4, October 1990. p. 439-457.

OP-728. M. L. Millgate. NEW MEXICO. Some relationships among folds, faults and mid-Tertiary igneous rocks near Gallup, northwestern New Mexico. Guidebook - New Mexico Geological Society, *in* Southeastern Colorado Plateau. (O. J. Anderson, editor and others). 40, 1989. p. 123-125.

OP-729. D. P. Moecher* and I-Ming Chou. Experimental investigation of andradite and hedenbergite equilibria employing the hydrogen sensor technique, with revised estimates of $\Delta_f G^0_{m,298}$ for andradite and hedenbergite. American Mineralogist. v. 75, no. 11-12, December 1990. p. 1327-1341.

OP-730. B. F. Molnia and J. E. Jones. ALASKA. Malaspina Glacier research holds clues to possible global change scenarios. Park Science. v. 10, no. 4, 1990. p. 1, 3-4.

OP-731. F. J. Molz*, Oktay Guven*, J. G. Melville*, A. E. Hess and F. L. Paillet. Measurement of hydraulic conductivity distribution; a manual of practice. Report no. EPA/600/8-90/046, March 1990. 60 p. *Available from:* U.S. Environ. Prot. Agency, Ada, OK, United States.

OP-732. F. J. Molz*, Oktay Guven*, J. G. Melville*, Iraj Javandel*, A. E. Hess and F. L. Paillet. A new approach and methodologies for characterizing the hydrogeologic properties of aquifers. Report no. EPA/600/2-90/002, January 1990. 205 p. *Available from:* U.S. Environ. Prot. Agency, Ada, OK, United States.

OP-733. D. W. Moody. Groundwater contamination in the United States. Journal of Soil and Water Conservation. v. 45, no. 2, April 1990. p. 170-179.

OP-734. D. W. Moody and K. J. Lanfear. Use of a geographic information system for the analysis of water resources conditions and issues. Institute for Environmental Studies Report, *in* Proceedings of the 1986 seminar on Multipurpose land information systems; application of information technology for natural resource planning, management, and monitoring. (B. J. Niemann, Jr., editor and others). 132, April 1988. p. 59-70.

OP-735. W. D. Mooney (prefacer). CALIFORNIA. Special section on EDGE and related seismic projects, onshore-offshore California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6421-6506.

OP-736. W. D. Mooney and A. Ginzburg*. Seismic measurements of the internal properties of fault zones. Pure and Applied Geophysics, *in* International structure of fault zones. (Wang Chi-yuen, editor). v. 124, no. 1-2, 1986. p. 141-157.

OP-737. C. J. Moore*, J. B. Diebold*, M. A. Fisher, J. C. Sample*, T. M. Brocher, Manik Talwani*, J. I. Ewing*, Roland von Huene*, C. Rowe*, D. Stone*, Chris Stevens and D. S. Sawyer*. ALASKA. EDGE deep seismic reflection transect of the eastern Aleutian arc-trench layered lower crust reveals underplating and continental growth. Geology (Boulder). v. 19, no. 5, May 1991. p. 420-424.

OP-738. D. E. Moore and J. D. Byerlee. Textural development of clayey and quartzofeldspathic fault gouges relative to their sliding behavior. Physics and Chemistry of the Earth, *in* The international symposium on tectonophysics. (Ma Jin and others). v. 17, no. 1, 1989. p. 1-9.

OP-739. D. E. Moore and J. D. Byerlee. CALIFORNIA. Comparative geometry of the San Andreas Fault, California, and laboratory fault zones. Geological Society of America Bulletin. v. 103, no. 6, June 1991. p. 762-774.

OP-740. D. E. Moore, R. Summers and J. D. Byerlee. The effects of sliding velocity on the frictional and physical properties of heated fault gouge. Pure and Applied Geophysics, *in* International structure of fault zones. (Wang Chi-yuen, editor). v. 124, no. 1-2, 1986. p. 31-52.

OP-741. H. J. Moore and T. W. Thompson*. A radar-echo model for Mars. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 457-472.

OP-742. J. G. Moore and L. C. Calk. Degassing and differentiation in subglacial volcanoes, Iceland. Journal of Volcanology and Geothermal Research. v. 46, no. 1-2, May 1991. p. 157-180.

OP-743. J. N. Moore* and S. N. Luoma. Hazardous wastes from large-scale metal extraction. Environmental Science & Technology, ES & T. v. 24, no. 9, September 1990. p. 1278-1284.

OP-744. R. B. Moore. Volcanic geology and eruption frequency, Sao Miguel, Azores. Bulletin of Volcanology. v. 52, no. 8, November 1990. p. 602-614.

OP-745. Daniel Moos* and R. H. Morin. PUERTO RICO. Observations of wellbore failure in the Toa Baja well; implications for the state of stress in the North Coast Tertiary Basin, Puerto Rico. Geophysical Research Letters. v. 18, no. 3, March 1991. p. 505-508.

OP-746. B. A. Morgan. The U.S. Geological Survey's contributions to the U.S. Mining Industry; an update. American Mining Congress - MINExpo International, *in* MINexpo international '88; session papers; Volume I, Technical. (C. E. Nickels, Jr., chairperson and others). v. 1988, no. 1, 1988. p. 129-134.

OP-747. J. J. Mori. CALIFORNIA. Estimates of velocity structure and source depth using multiple P waves from aftershocks of the 1987 Elmore Ranch and Superstition Hills, California, earthquakes. Bulletin of the Seismological Society of America. v. 81, no. 2, April 1991. p. 508-523.

OP-748. R. H. Morin, R. N. Anderson* and C. A. Barton*. Analysis and interpretation of the borehole televiewer log; information on the state of stress and the lithostratigraphy at Hole 504B. Proceedings of the Ocean Drilling Program, Scientific Results, *in* Costa Rica Rift; covering Leg 111 of the cruises of the drilling vessel JOIDES Resolution, Bridgetown, Barbados, to Callao, Peru, sites 504, 677, and 678, 16 August 1986-20 October 1986. (Keir Becker and others). 111, December 1989. p. 109-118.

OP-749. J. L. Morrison. The revolution in cartography in the 1980s, *in* Cartography past, present and future; a festschrift for F. J. Ormeling. (D. W. Rhind and others). London: Elsevier Appl. Sci. Publ. 1989. p. 169-185.

OP-750. V. G. Mossotti and L. M. Castanier*. The measurement of water transport in Salem Limestone by X-ray computer aided tomography, *in* The engineering geology of ancient works, monuments and historical sites; preservation and protection—La géologie de l'ingénieur appliquée aux travaux anciens, monuments et sites historiques; preservation et protection. (P. G. Marinos, editor and others). Rotterdam: A. A. Balkema, 1988. p. 2079-2082.

OP-751. T. E. Mower*, I. C. Yang and J. D. Higgins*. NEVADA. Triaxial- and uniaxial-compression testing methods developed for extraction of pore water from unsaturated tuff, Yucca Mountain, Nevada, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 426-433.

OP-752. R. J. Mueller, M. J. Johnston and J. O. Langbein. CALIFORNIA. Possible tectonomagnetic effect observed from mid-1989, to mid-1990, in Long Valley Caldera, California. Geophysical Research Letters. v. 18, no. 4, April 1991. p. 601-604.

OP-753. L. J. Muffler, C. R. Bacon and W. A. Duffield. Geothermal systems of the Cascade Range. Proceedings of Pacific Geothermal Conference, *in* Proceedings of the Pacific geothermal conference 1982; incorporating the 4th New Zealand geothermal workshop; Parts 1 and 2. (New Zealand, University of Auckland Geothermal Institute). 4, 1982. p. 337-343.

OP-754. L. J. Muffler, N. L. Nehring, A. H. Truesdell, C. J. Janik, M. A. Clynne and J. M. Thompson. CALIFORNIA. The Lassen geothermal system. Proceedings of Pacific Geothermal Conference, *in* Proceedings of the Pacific geothermal conference 1982; incorporating the 4th New Zealand geothermal workshop; Parts 1 and 2. (New Zealand, University of Auckland Geothermal Institute). 4, 1982. p. 349-356.

OP-755. P. S. Murdoch and C. R. Barnes. NEW YORK. Assessment of stream acidification in the Catskill Mountains of New York. IAHS-AISH Publication, *in* Regional characterization of water quality. (S. E. Ragone, editor). 182, 1989. p. 313-319.

OP-756. W. A. Myers*, P. K. Kuroda*, B. E. Hagee*, T. J. Bernatowicz*, F. A. Podosek*, M. L. Johnson*, D. S. Burnett* and Mitsunobu Tatsumoto. Actinide abundances in ordinary chondrites; discussion and reply. Geochimica et Cosmochimica Acta. v. 55, no. 8, August 1991. p. 2355-2363.

OP-757. C. W. Naeser, C. G. Cunningham and D. W. Beaty*. COLORADO. Origin of the ore deposits at Gilman, Colorado; Part III, Fission-track and fluid inclusion studies. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 219-228.

OP-758. R. L. Naff. Radial flow in heterogeneous porous media; an analysis of specific discharge. Water Resources Research. v. 27, no. 3, March 1991. p. 307-316.

OP-759. B. S. Nagy*, F. Gauthier-Lafaye*, Philippe Holliger*, D. W. Davis*, D. J. Mossman*, J. S. Leventhal, M. J. Rigali* and John Parnell*. Organic matter and containment of uranium and fissiogenic isotopes at the Oklo natural reactors. Nature (London). v. 354, no. 6353, December 12, 1991. p. 472-475.

OP-760. J. K. Nakata, M. A. Pernokas, K. A. Howard, J. E. Nielson and J. R. Shannon. ARIZONA. K/Ar and fission-track ages (dates) of volcanic, intrusive, altered, and metamorphic rocks in the Mohave Mountains area, west-central Arizona. Isochron/West. 56, December 1990. p. 8-20.

OP-761. G. M. Nalley and M. W. Thomas (compilers). TEXAS. Compilation of hydrologic data for the Edwards Aquifer, San Antonio area, Texas, 1989, with 1934-89 summary. Bulletin - Edwards Underground Water District. Report no. 49, December 1990. 155 p.

OP-762. M. L. Nebel*, R. W. Hutchinson* and R. E. Zartman. Metamorphism and polygenesis of the Madem Lakkos polymetallic sulfide deposit, Chalkidiki, Greece. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 86, no. 1, February 1991. p. 81-105.

OP-763. J. M. Nelson. The initial instability and finite-amplitude stability of alternate bars in straight channels. Earth-Science Reviews, *in* Self-organization in geological systems; proceedings of a workshop. (P. J. Ortoleva, editor). v. 29, no. 1-4, October 1990. p. 97-115.

OP-764. J. M. Nelson, W. W. Emmett and J. D. Smith. Flow and sediment transport in rough channels. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 4.54-4.62.

OP-765. W. H. Nelson. WYOMING. Kinematic model of a continuous Heart Mountain Allochthon: Comment. Geological Society of America Bulletin. v. 103, no. 5, May 1991. p. 718-719.

OP-766. D. J. Nichols. Geologic and biostratigraphic framework of the non-marine Cretaceous-Tertiary boundary interval in western North America. Review of Palaeobotany and Palynology, *in* The proceedings of the 7th international palynological congress; Part II. (E. M. Truswell, editor and others). v. 65, no. 1-4, October 30, 1990. p. 75-84.

OP-767. D. R. Nichols and C. C. Campbell (editors). Environmental planning and geology. Report no. DCPD-32, December 1971. 204 p. *Available from:* U.S. Gov. Print. Off., Supt. Doc., Washington, DC, United States.

OP-768. K. M. Nichols and N. J. Silberling. UTAH. Delle Phosphatic Member; an anomalous phosphatic interval in the Mississippian (Osagean-Meramecian) shelf sequence of central Utah: Reply. Geology (Boulder). v. 19, no. 4, April 1991. p. 411-412.

OP-769. T. C. Nichols, Jr. and D. S. Collins. Rebound, relaxation, and uplift, *in* The heritage of engineering geology; the first hundred years. (G. A. Kiersch), *in the collection* Centennial special volume. Boulder, CO: Geol. Soc. Am. 3, 1991. p. 265-276.

OP-770. W. D. Nichols. NEVADA. The significance of climate in southern Nevada for the shallow burial of low-level radioactive waste, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 93-98.

OP-771. R. S. Nicholson. NEW JERSEY. Stop 3; Progress in the evaluation of a carbonate rock aquifer near Long Valley in the New Jersey Highlands. Annual Field Conference - Geological Association of New Jersey, *in* Aspects of groundwater in New Jersey; Seventh annual meeting of the Geological Association of New Jersey. (R. L. Kroll, compiler and others). 7, 1990. p. N25-N32.

OP-772. T. H. Nilsen* and S. H. Clarke, Jr. CALIFORNIA. Late Cenozoic basins of Northern California. Tectonics. v. 8, no. 6, December 1989. p. 1137-1158.

OP-773. J. R. Nimmo. Experimental testing of transient unsaturated flow theory at low water content in a centrifugal field. Water Resources Research. v. 26, no. 9, September 1990. p. 1951-1960.

OP-774. J. R. Nimmo. Comment on the treatment of residual water content in "A consistent set of parametric models for the two-phase flow of immiscible fluids in subsurface" by L. Luckner et al. Water Resources Research. v. 27, no. 4, April 1991. p. 661-662.

OP-775. K. Nishiizumi*, C. P. Kohl*, E. M. Shoemaker, J. R. Arnold*, J. Klein*, D. Fink* and Roy Middleton*. ARIZONA. In situ ^{10}Be-^{26}Al exposure ages at Meteor Crater, Arizona. Geochimica et Cosmochimica Acta. v. 55, no. 9, September 1991. p. 2699-2703.

OP-776. T. B. Nolan. NEVADA. Eureka mining district, Nevada, *in* Discoveries of valuable minerals and precious metals deposits related to intrusions and faults. (V. F. Hollister, editor), *in the collection* Case histories of mineral discoveries; Volume 2. Littleton, CO: Soc. Min., Metall., and Explor. 1990. p. 200-206.

OP-777. R. M. Norris* and William Back. Erosion of seacliffs by groundwater. Special Paper - Geological Society of America, *in* Groundwater geomorphology; the role of subsurface water in earth-surface processes and landforms. (C. G. Higgins, editor and others). 252, 1990. p. 283-290.

OP-778. V. F. Nuccio. WYOMING. Determination of source-rock thermal maturity by direct measurements and predictive modeling; application to Upper Cretaceous Cody Shale, Powder River basin, Wyoming, *in* Applications of thermal maturity studies to energy exploration. (V. F. Nuccio, editor and others). Denver, CO: Eastwood Print. and Publ. September 1990. p. 167-175.

OP-779. V. F. Nuccio and C. E. Barker. Applications of thermal maturation studies to energy exploration, *in* Energy frontiers in the Rockies. (J. C. Lorenz, editor and others). Albuquerque, NM: Albuquerque Geol. Soc. 1989. p. 111-120.

OP-780. D. J. Nyman. LOUISIANA. Quality of water in freshwater aquifers in southwestern Louisiana. Water Resources Technical Report (Baton Rouge, La.). Report no. 42, 1989. 22 p.

OP-781. D. J. Nyman, K. J. Halford and Angel Martin, Jr. LOUISIANA. Geohydrology and simulation of flow in the Chicot Aquifer system of southwestern Louisiana. Water Resources Technical Report (Baton Rouge, La.). Report no. 50, 1990. 58 p.

OP-782. D. R. O'Connell*, R. R. von Frese* and J. F. Paskievitch. Ship-to-shore seismic refraction investigation of the lithospheric structure of the Transantarctic Mountain front. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 33-35.

OP-783. W. J. Oatfield and J. B. Czarnecki. NEVADA. Hydrogeologic inferences from drillers' logs and from gravity and resistivity surveys in the Amargosa Desert, southern Nevada. Journal of Hydrology. v. 124, no. 1-2, April 1991. p. 131-158.

OP-784. S. F. Obermeier, N. R. Bleuer*, C. A. Munson*, P. J. Munson*, W. S. Martin*, K. M. McWilliams*, D. A. Tabaczynski, J. K. Odum, Meyer Rubin and D. L. Eggert*. Evidence of strong earthquake shaking in the lower Wabash Valley from prehistoric liquefaction features. Science. v. 251, no. 4997, March 1, 1991. p. 1061-1063.

OP-785. G. C. Ohlmacher* and C. A. Baskerville. VERMONT. Landslides on fluidlike zones in the deposits of glacial Lake Hitchcock, Windsor County, Vermont. Bulletin of the Association of Engineering Geologists. v. 28, no. 1, February 1991. p. 31-43.

OP-786. G. R. Olhoeft. Selected bibliography on ground penetrating radar, *in* Proceedings of the symposium on the Application of geophysics to engineering and environmental problems. (D. V. Fitterman, convener and others). Soc. Eng. and Miner. Explor. Geophys. 1988. p. 462-520.

OP-787. H. W. Oliver, E. L. Hardin* and P. H. Nelson (editors). NEVADA, CALIFORNIA. Status of data, major results, and plans for geophysical activities, Yucca Mountain Project. Report no. YMP/90-38, July 1990. 231 p. *Available from:* NTIS, Springfield, VA, United States.

OP-788. N. H. Oliver*, T. C. Hoering*, T. W. Johnson, W. C. Shanks, III and Douglas Rumble, III*. MAINE. Sulfur isotope geochemistry of graphitic, sulfidic schists from the Waterville-Augusta area, Maine, using SO_2 and SF_6 techniques. Annual Report of the Director, Geophysical Laboratory, Carnegie Institution. Report no. 2200, 1989. p. 30-33.

OP-789. O. Orheim* and B. K. Lucchitta. Investigating climate change by digital analysis of blue ice extent on satellite images of Antarctica. Annals of Glaciology, *in* Proceedings of the symposium on Ice and climate. (D. R. MacAyeal, editor). 14, 1990. p. 211-215.

OP-790. L. A. Orlowski*, W. D. Grundy and P. W. Mielke, Jr.*. An empirical coverage test for the g-sample problem. Mathematical Geology. v. 23, no. 4, May 1991. p. 583-591.

OP-791. D. J. Orth* and J. C. Campbell. Potomac and Blue Ridge toponymic tour. 1990. 32 p. *Available from:* U.S. Board Geogr. Names, Reston, VA, United States.

OP-792. W. R. Osterkamp and R. S. Parker. Sediment monitoring in the United States. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 1.15-1.23.

OP-793. J. K. Otton, J. P. Bradbury, R. M. Forester and J. H. Hanley. ARIZONA. Paleontological analysis of a lacustrine carbonaceous uranium deposit at the Anderson Mine, Date Creek basin, west-central Arizona (U.S.A.). Ore Geology Reviews, *in* Palynology of ore deposits. (E. I. Robbins, editor). v. 5, no. 5-6, October 1990. p. 541-552.

OP-794. W. F. Outerbridge, D. M. Triplehorn and P. C. Lyons. KENTUCKY, WEST VIRGINIA. The Princess No. 6 Middle Pennsylvanian volcanic ash fall (tonstein), Kentucky and West Virginia, central Appalachian Basin. Southeastern Geology. v. 31, no. 2, September 1990. p. 63-78.

OP-795. J. P. Owens and N. F. Sohl. NORTH CAROLINA, SOUTH CAROLINA. Campanian and Maastrichtian depositional systems of the Black Creek Group of the Carolinas. Raleigh, NC: N.C. Geol. Surv. 1989. 23 p.

OP-796. F. L. Paillet (prefacer). Acoustic-waveform logging. The Log Analyst. v. 32, no. 3, June 1991. p. 185-278.

OP-797. F. L. Paillet. Qualitative and quantitative interpretation of fracture permeability by means of acoustic full-waveform logs. The Log Analyst, *in* Acoustic-waveform logging. (F. L. Paillet, prefacer). v. 32, no. 3, June 1991. p. 256-270.

OP-798. F. L. Paillet and David Goldberg*. PUERTO RICO. Acoustic televiewer log images of natural fractures and bedding planes in the Toa Baja borehole, Puerto Rico. Geophysical Research Letters. v. 18, no. 3, March 1991. p. 501-504.

OP-799. F. L. Paillet and W. R. Saunders* (editors). Geophysical applications for geotechnical investigations. ASTM Special Technical Publication = American Society for Testing and Materials Special Technical Publication. 1101, October 1990. 112 p.

OP-800. F. L. Paillet, J. Waltz* and R. E. Boyle*. Geophysical log investigation of formation changes produced by hydraulic fracture simulation in a crystalline-bedrock aquifer. International Symposium on Borehole Geophysics for Minerals, Geotechnical, and Groundwater Applications, *in* Proceedings of the Third international symposium on Borehole geophysics for minerals, geotechnical, and groundwater applications. (M. A. Mathews, chairperson and others). 3, 1989. p. 571-594.

OP-801. J. G. Palacas, J. W. Schmoker*, T. A. Daws*, M. J. Pawlewicz* and R. R. Anderson*. IOWA. Petroleum source-rock assessment of middle Proterozoic (Keweenawan) sedimentary rocks, Eischeid #1 well, Carroll County, Iowa. Special Report Series - Iowa Geological Survey, *in* The Amoco M.G. Eischeid

#1 deep petroleum test; Carroll County, Iowa; preliminary investigations. (R. R. Anderson). Report no. 2, April 1990. p. 119-134.

OP-802. C. A. Palmer. Determination of twenty-nine elements in eight Argonne Premium Coal samples by instrumental neutron activation analysis. Energy & Fuels, *in* American Chemical Society annual meeting; Symposium on research with Argonne Premium Coal samples. (J. W. Larsen, editor). v. 4, no. 5, 1989. p. 436-439.

OP-803. J. J. Papike*, T. E. Keith, M. N. Spilde*, K. C. Galbreath*, C. K. Shearer* and J. C. Laul*. ALASKA. Geochemistry and mineralogy of fumarolic deposits, Valley of Ten Thousand Smokes, Alaska; bulk chemical and mineralogical evolution of dacite-rich protolith. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1662-1673.

OP-804. G. G. Parker, Sr.*, C. G. Higgins* and W. W. Wood. Piping and pseudokarst in drylands. Special Paper - Geological Society of America, *in* Groundwater geomorphology; the role of subsurface water in earth-surface processes and landforms. (C. G. Higgins, editor and others). 252, 1990. p. 77-110.

OP-805. G. W. Parker and N. C. Suurballe. MASSACHUSETTS. Differences in oxygen productivity rates and reaeration coefficients for wetland reaches of Natty Pond Brook, Massachusetts. ASWM Technical Report, *in* Proceedings of the National wetland symposium; Wetland hydrology. (J. A. Kusler, chairperson and others). Report no. 6, December 1988. p. 205-212.

OP-806. C. K. Paull*, R. F. Commeau, J. R. Curray* and A. C. Neumann*. Seabed measurements of modern corrosion rates on the Florida Escarpment. Geo-Marine Letters. v. 11, no. 1, 1991. p. 16-22.

OP-807. C. K. Paull*, D. C. Twichell, F. N. Spiess* and J. R. Curray*. Morphological development of the Florida Escarpment; observations on the generation of time transgressive unconformities in carbonate terrains. Marine Geology. v. 101, no. 1-4, 1991. p. 181-201.

OP-808. C. K. Paull*, William Ussler, III* and W. P. Dillon. Is the extent of glaciation limited by marine gas-hydrates?. Geophysical Research Letters. v. 18, no. 3, March 1991. p. 432-434.

OP-809. D. L. Peck. GIS development and support for earth sciences, *in* International geographic information systems (IGIS) symposium, the research agenda; proceedings. (R. T. Aangeenbrug, editor and others). NASA, June 1988. p. I.8-I.9.

OP-810. D. L. Peck. Natural hazards and public perception; earth scientists can make the difference. Geotimes. v. 36, no. 5, May 1991. p. 5.

OP-811. D. L. Peck. Role of the federal government in geoscience education. Journal of Geological Education. v. 39, no. 2, March 1991. p. 95-98.

OP-812. A. E. Pedder* and W. A. Oliver, Jr. Rugose coral distribution as a test of Devonian palaeogeographic models. Memoir - Geological Society of London, *in* Palaeozoic palaeogeography and biogeography. (W. S. McKerrow, editor and others). 12, 1990. p. 267-275.

OP-813. V. A. Pedone*, K. R. Cercone* and R. C. Burruss. Activators of photoluminescence in calcite; evidence from high-resolution, laser-excited luminescence spectroscopy. Chemical Geology. v. 88, no. 1-2, October 15, 1990. p. 183-190.

OP-814. Shea Penland*, H. H. Roberts*, S. J. Williams, A. H. Sallenger, Jr., D. R. Cahoon*, D. W. Davis* and C. G. Groat*. LOUISIANA. Coastal land loss in Louisiana. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section SEPM, 40th annual meeting. (G. L. Kinsland, editor and others). 40, 1990. p. 685-699.

OP-815. Shea Penland*, J. R. Suter*, R. A. McBride*, S. J. Williams, J. L. Kindinger and Ron Boyd*. Holocene sand shoals offshore of the Mississippi River delta plain. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 471-480.

OP-816. Shea Penland*, J. R. Suter*, K. E. Ramsey*, R. A. McBride*, S. J. Williams and C. G. Groat*. LOUISIANA. Offshore sand resources for coastal erosion control in Louisiana. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section SEPM, 40th annual meeting. (G. L. Kinsland, editor and others). 40, 1990. p. 721-731.

OP-817. Shea Penland*, J. R. Suter*, A. H. Sallenger, Jr., S. J. Williams, R. A. McBride*, K. A. Westphal*, P. D. Reimer*, B. E. Jaffe and William Ritchie*. Morphodynamic signature on the 1985 hurricane impacts on the northern Gulf of Mexico. Proceedings of the Symposium on Coastal and Ocean Management, *in* Coastal zone '89; proceedings of the Sixth symposium on Coastal and ocean management. (O. T. Magoon, editor and others). 6, 1989. p. 4220-4234.

OP-818. W. E. Pereira and C. E. Rostad. Occurrence, distribution, and transport of herbicides and their degradation products in the lower Mississippi River and its tributaries. Environmental Science & Technology, ES & T. v. 24, no. 9, September 1990. p. 1400-1406.

OP-819. W. E. Pereira, C. E. Rostad and T. J. Leiker. Determination of trace levels of herbicides and their degradation products in surface and ground waters by gas chromatography/ion-trap mass spectrometry. Analytica Chimica Acta. 228, 1990. p. 69-75.

OP-820. Mireille Perrin, Michel Prévot* and E. A. Mankinen. Low intensity of the geomagnetic field in Early Jurassic time. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 9, August 10, 1991. p. 14,197-14,210.

OP-821. Z. E. Peterman, R. W. Spengler, Kiyoto Futa, B. D. Marshall and S. A. Mahan. NEVADA. Assessing the natural performance of felsic tuffs using the Rb-Sr and Sm-Nd systems; a study of the altered zone in the Topopah Spring Member, Paintbrush Tuff, Yucca Mountain, Nevada. Materials Research Society Symposia Proceedings, *in* Materials Research Society symposium proceedings; Scientific basis for nuclear waste management XIV. (T. A. Abrajano, Jr., editor and others). 212, 1991. p. 687-694.

OP-822. D. W. Peterson. WASHINGTON. Overview of the effects and influence of the activity of Mount St. Helens in the 1980s. Geoscience Canada, *in* Special symposium commemorat-

ing the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 163-166.

OP-823. J. A. Peterson. Future petroleum resource potential, Northern Rocky Mountain-Great Plains area, *in* Energy frontiers in the Rockies. (J. C. Lorenz, editor and others). Albuquerque, NM: Albuquerque Geol. Soc. 1989. p. 47-55.

OP-824. G. H. Pettengill*, P. G. Ford*, W. T. Johnson*, R. K. Raney* and L. A. Soderblom. Magellan; radar performance and data products. Science. v. 252, no. 5003, April 12, 1991. p. 260-265.

OP-825. F. M. Phillips*, M. G. Zreda*, S. S. Smith*, David Elmore*, P. W. Kubik*, R. I. Dorn* and D. J. Roddy. ARIZONA. Age and geomorphic history of Meteor Crater, Arizona, from cosmogenic ^{36}Cl and ^{14}C in rock varnish. Geochimica et Cosmochimica Acta. v. 55, no. 9, September 1991. p. 2695-2698.

OP-826. R. J. Phillips*, R. E. Arvidson*, J. M. Boyce*, D. B. Campbell*, J. E. Guest*, G. G. Schaber and L. A. Soderblom. Impact craters on Venus; initial analysis from Magellan. Science. v. 252, no. 5003, April 12, 1991. p. 288-297.

OP-827. J. A. Philpotts, Mitsunobu Tatsumoto, Li Xianhua* and Wang Kaiyi*. Some Nd and Sr isotopic systematics for the REE-enriched deposits at Bayan Obo, China. Chemical Geology. v. 90, no. 3-4, June 25, 1991. p. 177-188.

OP-828. W. G. Pierce, W. H. Nelson, A. K. Tokarski* and Ewa Piekarska*. WYOMING. Heart Mountain, Wyoming, detachment lineations; are they in microbreccia or in volcanic tuff?. Geological Society of America Bulletin. v. 103, no. 9, September 1991. p. 1133-1145.

OP-829. T. C. Pierson. Hazardous hydrological consequences of volcanic eruptions and goals for mitigative action; an overview, *in* Hydrology of disasters; proceedings of the technical conference. (O. Starosolszky, editor and others). London: James and James, 1989. p. 220-236.

OP-830. G. F. Pinder* and S. M. Gorelick. Macelwane Medal to Gorelick. Eos, Transactions, American Geophysical Union. v. 72, no. 4, January 22, 1991. p. 36, 40.

OP-831. D. Z. Piper, B. Loebner* and Paul Aharon. Physical and chemical properties of the phosphate deposit on Nauru, western Equatorial Pacific Ocean, *in* Phosphate deposits of the world; Neogene to modern phosphorites. (W. C. Burnett, editor and others). New York, NY: Cambridge Univ. Press, 1990. p. 176-194.

OP-832. George Plafker. ALASKA. Regional vertical tectonic displacement of shorelines in south-central Alaska during and between great earthquakes. Northwest Science, *in* Environmental disasters; the nature of recovery. (M. V. Wilson, editor and others). v. 64, no. 5, November 1990. p. 250-258.

OP-833. G. S. Plumlee and D. O. Hayba. COLORADO. Preliminary chemical modeling of epithermal processes at Creede, Colorado; the role of fluid mixing as an ore deposition mechanism, *in* Proceedings of the Workshop on Geochemical modeling. (K. J. Jackson, editor and others). Report no. CONF-8609134, 1986. p. 51-57. *Available from:* Lawrence Livermore Natl. Lab., Berkeley, CA, United States.

OP-834. L. N. Plummer, J. F. Busby, R. W. Lee and B. B. Hanshaw. MONTANA, WYOMING, SOUTH DAKOTA. Geochemical modeling of the Madison Aquifer in parts of Montana, Wyoming, and South Dakota. Water Resources Research. v. 26, no. 9, September 1990. p. 1981-2014.

OP-835. H. A. Pohn and J. L. Coleman, Jr.*. PENNSYLVANIA. Fold patterns, lateral ramps and seismicity in central Pennsylvania. Tectonophysics, *in* Intraplate deformation, neotectonics, seismicity, and the state of stress in eastern North America. (Jean-Claude Mareschal, editor). v. 186, no. 1-2, February 1, 1991. p. 133-149.

OP-836. John Pojeta, Jr. Visions for paleontology. Journal of Paleontology. v. 65, no. 3, May 1991. p. 347-354.

OP-837. John Pojeta, Jr. and Marija Balanc. Heating and quenching of fossils. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 218-222.

OP-838. John Pojeta, Jr. and Marija Balanc. Uses of ultrasonic cleaners in paleontological laboratories. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 213-217.

OP-839. John Pojeta, Jr. and Marija Balanc. Freezing and thawing of fossils. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 223-226.

OP-840. Marta Polgari*, P. M. Okita and J. R. Hein. Stable isotope evidence for the origin of the Urkut manganese ore deposit, Hungary. Journal of Sedimentary Petrology. v. 61, no. 3, May 1991. p. 384-393.

OP-841. R. M. Pollastro. The illite/smectite geothermometer-concepts, methodology, and application to basin history and hydrocarbon generation, *in* Applications of thermal maturity studies to energy exploration. (V. F. Nuccio, editor and others). Denver, CO: Eastwood Print. and Publ. September 1990. p. 1-18.

OP-842. R. M. Pollastro and T. M. Finn. IOWA. Clay mineralogy and bulk rock composition of selected core and cutting samples from the Amoco Eischeid #1 well, Carroll County, Iowa; a reconnaissance study from X-ray powder diffraction analysis. Special Report Series - Iowa Geological Survey, *in* The Amoco M.G. Eischeid #1 deep petroleum test; Carroll County, Iowa; preliminary investigations. (R. R. Anderson). Report no. 2, April 1990. p. 143-152.

OP-843. L. J. Poppe and L. J. Dodd. Computer-generated templates to convert degrees 2Θ to interplanar spacings. CMS Workshop Lectures, *in* Quantitative mineral analysis of clays. (D. R. Pevear, editor and others). 1, 1989. p. 168-171.

OP-844. C. J. Potter. Seismic imaging of extended crust with emphasis on the Western United States: Discussion. Geological Society of America Bulletin. v. 103, no. 11, November 1991. p. 1537-1539.

OP-845. L. M. Pratt*, E. R. Force and Bernard Pomerol*. Coupled manganese and carbon-isotopic events in marine carbonates at the Cenomanian-Turonian boundary. Journal of Sedimentary Petrology. v. 61, no. 3, May 1991. p. 370-383.

OP-846. W. R. Premo and Mitsunobu Tatsumoto. U-Th-Pb isotopic systematics of lunar norite 78235. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 89-100.

OP-847. T. S. Presser and W. C. Swain. CALIFORNIA. Geochemical evidence for Se mobilization by the weathering of pyritic shale, San Joaquin Valley, California, U.S.A. Applied Geochemistry, *in* Water-rock interactions. (Y. K. Kharaka, editor and others). v. 5, no. 5-6, December 1990. p. 703-717.

OP-848. C. V. Price, D. M. Wolock and M. A. Ayers. Extraction of terrain-features from digital elevation models. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 845-850.

OP-849. M. S. Pringle, Hubert Staudigel* and Jeff Gee*. Jasper Seamount; seven million years of volcanism. Geology (Boulder). v. 19, no. 4, April 1991. p. 364-368.

OP-850. Claus Prodehl*, J. Mechie*, W. Kaminski*, K. Fuchs*, C. Grosse*, H. Hoffmann*, R. Stangl*, R. Stellrecht*, M. A. Khan*, P. K. Maguire*, W. Kirk*, G. R. Keller*, A. Githui*, M. Baker*, W. D. Mooney, E. E. Criley, J. H. Luetgert, B. Jacob*, Hans Thybo*, M. Demartin*, S. Scarascia*, A. Hirn*, J. R. Bowman*, I. O. Nyambok*, S. J. Gaciri*, J. P. Patel*, E. Dindi*, D. H. Griffiths*, R. F. King*, A. E. Mussett*, L. W. Braile*, G. A. Thompson*, K. H. Olsen*, S. Harder*, R. Vees*, D. J. Gajewski*, A. Schulte*, J. Obel*, F. Mwango*, J. Mukinya* and D. Riaroh*. Large-scale variation in lithospheric structure along and across the Kenya Rift. Nature (London). v. 354, no. 6350, November 21, 1991. p. 223-227.

OP-851. R. W. Puls*, J. H. Eychaner and R. M. Powell*. Colloidal-facilitated transport of inorganic contaminants in ground water; Part I, Sampling considerations. Report no. EPA/600/M-90/023, December 1990. 12 p. *Available from:* U.S. Environ. Prot. Agency, Cent. Environ. Res. Inf., Cincinnati, OH, United States.

OP-852. J. E. Quick. Late Proterozoic transpression on the Nabitah fault system; implications for the assembly of the Arabian Shield. Precambrian Research, *in* Special issue; Crustal evolution in the late Proterozoic. (R. J. Stern, editor and others). v. 53, no. 1-2, October 1991. p. 119-147.

OP-853. E. G. Quilty and E. A. Roeloffs. Removal of barometric pressure response from water level data. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 6, June 10, 1991. p. 10,209-10,218.

OP-854. Vicente Quiñones-Aponte. Comparison of aquifer storage coefficients computed using anisotropic and isotropic analytical models. Hydrological Science and Technology Short Papers. v. 4, no. 1-4, December 1988. p. 349-357.

OP-855. J. F. Ranville, R. A. Harnish and D. M. McKnight. COLORADO. Particulate and colloidal organic material in Pueblo Reservoir, Colorado; influence of autochthonous source on chemical composition, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 47-73.

OP-856. N. M. Ratcliffe, J. N. Aleinikoff, W. C. Burton and P. A. Karabinos*. VERMONT. Trondhjemitic, 1.35-1.31 Ga gneisses of the Mount Holly Complex of Vermont; evidence for an Elzevirian event in the Grenville basement of the United States Appalachians. Canadian Journal of Earth Sciences = Journal Canadien des Sciences de la Terre. v. 28, no. 1, January 1991. p. 77-93.

OP-857. R. E. Rathbun. Influence of temperature on oxygen transfer; discussion. Journal of Environmental Engineering. v. 115, no. 4, August 1989. p. 868-869.

OP-858. R. E. Rathbun, D. W. Stephens and D. Y. Tai. MISSISSIPPI. Fate of acetone in an outdoor model stream with a nitrate supplement, southern Mississippi, U.S.A. Journal of Hydrology. v. 123, no. 3-4, March 1991. p. 225-242.

OP-859. R. E. Rathbun and D. Y. Tai. Volatization rates of organic chemicals of public health concern; discussion. Journal of Environmental Engineering. v. 113, no. 5, October 1987. p. 1171-1173.

OP-860. D. A. Reckhow*, P. C. Singer* and R. L. Malcolm. Chlorination of humic materials; byproduct formation and chemical interpretations. Environmental Science & Technology, ES & T. v. 24, no. 11, November 1990. p. 1655-1664.

OP-861. J. A. Redden, Z. E. Peterman, R. E. Zartman and Ed DeWitt. SOUTH DAKOTA. U-Th-Pb geochronology and preliminary interpretation of Precambrian tectonic events in the Black Hills, South Dakota. Special Paper - Geological Association of Canada, *in* The early Proterozoic Trans-Hudson Orogen of North America. (J. F. Lewry, editor and others). 37, 1990. p. 229-251.

OP-862. T. F. Rees, J. A. Leenheer and J. F. Ranville. Use of a single-bowl continuous flow centrifuge for dewatering suspended sediments; effect on sediment physical and chemical characteristics. Hydrological Processes. v. 5, no. 2, June 1991. p. 201-214.

OP-863. T. F. Rees and J. F. Ranville. Collection and analysis of colloidal particles transported in the Mississippi River, U.S.A. Journal of Contaminant Hydrology. v. 6, no. 3, January 1990. p. 241-250.

OP-864. G. M. Reimer. NEW MEXICO. Helium soil-gas survey of the Crownpoint area, New Mexico; evaluation of the regional distribution, *in* Geochemistry of gaseous elements and compounds. (E. M. Durrance and others). Athens: Theophrastus Publ. 1990. p. 449-454.

OP-865. C. A. Repenning. Of mice and ice in the late Pliocene of North America. Arctic, *in* Circum-Arctic late Tertiary/early Pleistocene stratigraphy and environments. (J. V. Matthews, Jr. and others). v. 43, no. 4, December 1990. p. 314-323.

OP-866. Kinga Revesz and T. B. Coplen. Caution on the use of Viton or FETFE O-rings in carbon dioxide sample containers for $\delta^{18}O$ analysis. Chemical Geology; Isotope Geoscience Section. v. 86, no. 3, February 20, 1991. p. 259-261.

OP-867. R. L. Reynolds, N. S. Fishman and M. R. Hudson. Sources of aeromagnetic anomalies over Cement oil field (Oklahoma), Simpson oil field (Alaska), and the Wyoming-Idaho-Utah thrust belt. Geophysics. v. 56, no. 5, May 1991. p. 606-617.

OP-868. D. B. Richards. Ground-water information manual; coal mine permit applications, *in* Proceedings; 1987 national symposium on Mining, hydrology, sedimentology and reclamation. (R. W. De Vore, editor and others). Lexington, KY: Univ. Ky., Coll. Eng., Off. Eng. Serv. December 1987. p. 131-136.

OP-869. D. H. Richter, J. G. Smith, M. A. Lanphere, G. B. Dalrymple, B. L. Reed and Nora Shew. ALASKA. Age and progression of volcanism, Wrangell volcanic field, Alaska. Bulletin of Volcanology. v. 53, no. 1, December 1990. p. 29-44.

OP-870. H. J. Rieck. Paleomagnetic stratigraphy. DSIR Bulletin, *in* Antarctic Cenozoic history from the CIROS-1 drillhole, McMurdo Sound. (P. J. Barrett, editor). 245, 1989. p. 153-157.

OP-871. H. C. Riggs. Estimating flow characteristics at ungauged sites. IAHS-AISH Publication. 191, 1990. p. 159-169.

OP-872. D. M. Roark, W. F. Holmes and H. K. Shlosar. UTAH. Hydrology of Heber and Round valleys, Wasatch County, Utah, with emphasis on simulation of ground-water flow in Heber Valley. Technical Publication - State of Utah, Department of Natural Resources. Report no. 101, 1991. 93 p.

OP-873. J. M. Robb. Groundwater processes in the submarine environment. Special Paper - Geological Society of America, *in* Groundwater geomorphology; the role of subsurface water in earth-surface processes and landforms. (C. G. Higgins, editor and others). 252, 1990. p. 267-281.

OP-874. E. I. Robbins (editor). Palynology of ore deposits. Ore Geology Reviews. v. 5, no. 5-6, October 1990. p. 387-575.

OP-875. E. I. Robbins, J. P. D'Agostino, J. L. Haas, Jr., R. R. Larson and F. T. Dulong. NEVADA. Palynological assessment of organic tissues and metallic minerals in the Jerritt Canyon gold deposit, Nevada (U.S.A.). Ore Geology Reviews, *in* Palynology of ore deposits. (E. I. Robbins, editor). v. 5, no. 5-6, October 1990. p. 399-422.

OP-876. E. I. Robbins, Zhou Zili* and Zhou Zhicheng*. Organic tissues in Tertiary lacustrine and palustrine rocks from the Jiyang and Pingyi rift depressions, Shandong Province, Eastern China. Special Publication of the International Association of Sedimentologists, *in* Lacustrine facies analysis. (P. Anadon, editor and others). 13, 1991. p. 291-311.

OP-877. Jeanne Robbins* and W. L. Lyke. Transferring model-operating responsibility from a federal to a state agency. American Water Resources Association Technical Publication Series TPS, *in* Transferring models to users. (E. B. James, editor and others). CTPS-90-3, 1990. p. 141-147.

OP-878. A. C. Roberts*, Maurizio Bonardi*, R. C. Erd, A. J. Criddle* and Yvon Le Page*. CALIFORNIA. Wattersite $Hg^{+1}{}_4Hg^{+2}Cr^{+6}O_6$, a new mineral from Clear Creek claim, San Benito County, California. The Mineralogical Record. v. 22, no. 4, August 1991. p. 269-272.

OP-879. S. G. Robson and E. R. Banta. Determination of specific storage by measurement of aquifer compression near a pumping well. Ground Water. v. 28, no. 6, December 1990. p. 868-874.

OP-880. T. K. Rockwell*, D. R. Muhs, G. L. Kennedy*, M. E. Hatch*, S. H. Wilson* and R. E. Klinger*. Uranium-series ages, faunal correlations and tectonic deformation of marine terraces within the Agua Blanca fault zone at Punta Banda, northern Baja California, Mexico. Field Trip Guidebook - Pacific Section, Society of Economic Paleontologists and Mineralogists, *in* Geologic studies in Baja California. (P. L. Abbot, editor). 63, 1989. p. 1-16.

OP-881. R. J. Rosenbauer. UDATE1; a computer program for the calculation of uranium-series isotopic ages. Computers & Geosciences. v. 17, no. 1, 1991. p. 45-75.

OP-882. J. G. Rosenbaum and M. R. Hudson. NEVADA. Paleomagnetic investigation of Tertiary structural rotations at Yucca Mountain, southern Nevada, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 344-347.

OP-883. J. G. Rosenbaum, M. R. Hudson and R. B. Scott. NEVADA. Paleomagnetic constraints on the geometry and timing of deformation at Yucca Mountain, Nevada. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 2, February 10, 1991. p. 1963-1979.

OP-884. D. O. Rosenberry. Effect of sensor error on interpretation of long-term water-level data. Ground Water. v. 28, no. 6, December 1990. p. 927-936.

OP-885. J. S. Rosenshein and R. L. Laney. The changing emphasis of the U.S. Geological Survey activities in ground-water hydrology in the 1980's, *in* Recent advances in ground-water hydrology. (J. E. Moore, editor and others). Minneapolis, MN: Am. Inst. Hydrol. 1989. p. 533-545.

OP-886. Malcolm Ross. Acceptance of the distinguished public service medal for 1990. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1744-1745.

OP-887. R. J. Ross, Jr.* and C. W. Naeser. The Ordovician time scale; new refinements. Paleontological Contributions from the University of Oslo, *in* Aspects of the Ordovician System; IV, Proceedings of an international symposium. (D. L. Bruton, editor). 295, 1984. p. 5-10.

OP-888. R. G. Rothwell*, N. H. Kenyon* and B. A. McGregor. TEXAS. Sedimentary features of the South Texas continental slope as revealed by side scan sonar and high resolution seismic data. AAPG Bulletin. v. 75, no. 2, February 1991. p. 298-312.

OP-889. L. C. Rowan, J. W. Salisbury*, M. J. Kingston, Norma Vergo and N. H. Bostick. COLORADO. Evaluation of visible and near-infrared and thermal-infrared reflectance spectra for studying thermal alteration of Pierre Shale, Wolcott, Colorado. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 11, October 10, 1991. p. 18,047-18,057.

OP-890. Ruan Huichu*, Hua Renmin* and D. P. Cox. Copper deposition by fluid mixing in deformed strata adjacent to a salt diapir, Dongchuan area, Yunnan Province, China. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 86, no. 7, November 1991. p. 1539-1545.

OP-891. Jacob Rubin. Solute transport with multisegment, equilibrium-controlled reactions; a feed forward simulation method. Water Resources Research. v. 26, no. 9, September 1990. p. 2029-2055.

OP-892. L. F. Ruppert, R. W. Stanton, C. B. Cecil, C. F. Eble and F. T. Dulong. Effects of detrital influx in the Pennsylvanian Upper Freeport peat swamp. International Journal of Coal Geology. v. 17, no. 2, April 1991. p. 95-116.

OP-893. G. M. Russell. FLORIDA. Application of geophysical techniques for assessing ground-water contamination near a landfill at Stuart, Florida. Ground Water Management, *in* Proceedings of the FOCUS conference on Eastern regional ground water issues. 3, 1990. p. 211-225.

OP-894. A. T. Rutledge and E. R. German. FLORIDA. Statistical comparisons of ground-water quality underlying different land uses in central Florida. Preprints of Papers, *in* American Chemical Society, 75 years of progress; Division of Environmental Chemistry; preprints of papers presented at the 196th ACS national meeting. v. 28, no. 2, September 1988. p. 27-29.

OP-895. H. F. Ryan and D. W. Scholl. ALASKA. The evolution of forearc structures along an oblique convergent margin, central Aleutian Arc. Tectonics. v. 8, no. 3, June 1989. p. 497-516.

OP-896. M. P. Ryan. The physical nature of the Icelandic magma transport system, *in* Magma transport and storage. (M. P. Ryan, editor). Chichester: John Wiley & Sons, 1990. p. 175-224.

OP-897. M. P. Ryan (editor). Magma transport and storage. Chichester: John Wiley & Sons, 1990. 420 p.

OP-898. M. P. Ryan, N. G. Banks, R. P. Hoblitt and J. Y. Blevins*. WASHINGTON. The in-situ thermal transport properties and the thermal structure of Mount St. Helens eruptive units, *in* Magma transport and storage. (M. P. Ryan, editor). Chichester: John Wiley & Sons, 1990. p. 137-155.

OP-899. R. T. Ryder, M. W. Lee, W. F. Agena and R. C. Anderson*. WYOMING. Patrick Draw Field, Wyo.; 2 (Conclusion), Seismic detection of subtle stratigraphic trap. Oil and Gas Journal. v. 88, no. 52, December 24, 1990. p. 54-57.

OP-900. M. J. Rymer. CALIFORNIA. Near-fault measurement of postseismic slip associated with the 1989 Loma Prieta, California earthquake. Geophysical Research Letters, *in* The Loma Prieta California earthquake of October 17, 1989; III. v. 17, no. 10, September 1990. p. 1789-1792.

OP-901. W. W. Sager* and M. S. Pringle. HAWAII. Paleomagnetic evidence for Cretaceous age of two volcanoes on the south flank of the island of Hawaii. Geophysical Research Letters. v. 17, no. 13, December 1990. p. 2445-2448.

OP-902. R. W. Saltus and A. H. Lachenbruch. CALIFORNIA. Thermal evolution of the Sierra Nevada; tectonic implications of new heat flow data. Tectonics. v. 10, no. 2, April 1991. p. 325-344.

OP-903. C. A. Sandberg, R. C. Gutschick, M. S. Petersen*, F. G. Poole and Willi Ziegler*. UTAH. Delle Phosphatic Member; an anomalous phosphatic interval in the Mississippian (Osagean-Meramecian) shelf sequence of central Utah: Comment. Geology (Boulder). v. 19, no. 4, April 1991. p. 410-411.

OP-904. C. A. Sandberg, Willi Ziegler* and P. Bultynck*. Middle-Upper Devonian series boundary as an example of intent and reality in biostratigraphic zonation. Newsletters on Stratigraphy. v. 18, no. 2, 1988. p. 117-121.

OP-905. C. A. Sandberg, Willi Ziegler*, Roland Dreesen* and J. L. Butler. Late Frasnian mass extinction; conodont event stratigraphy, global changes, and possible causes. CFS. Courier Forschungsinstitut Senckenberg, *in* 1st international Senckenberg conference and 5th European conodont symposium (ECOS 5); Contributions 1. (Willi Ziegler, editor). 102, 1988. p. 263-307.

OP-906. M. W. Sandstrom. Organic matter in modern marine phosphatic sediments from the Peruvian continental margin, *in* Phosphate deposits of the world; Neogene to modern phosphorites. (W. C. Burnett, editor and others). New York, NY: Cambridge Univ. Press, 1990. p. 33-45.

OP-907. J. R. SanFilipo, R. A. Khan* and S. A. Khan*. Coal resources and geologic controls of the Lakhra and Sonda coal fields, Sindh Province, Pakistan, *in* Significance of the coal resources of Pakistan. (A. H. Kazmi, editor and others). Karachi: Geol. Surv. Pakistan, 1990. p. 93-103.

OP-908. R. F. Sanford. Paleohydrogeology of the Colorado Plateau; background and conceptual models. Special Publication - Geochemical Society, *in* Fluid-mineral interactions; a tribute to H. P. Eugster. (R. J. Spenser, editor and others). 2, 1990. p. 285-311.

OP-909. W. E. Sanford and W. W. Wood. Brine evolution and mineral deposition in hydrologically open evaporite basins. American Journal of Science. v. 291, no. 7, September 1991. p. 687-710.

OP-910. F. J. Sansone*, G. W. Tribble, C. C. Andrews* and J. P. Chanton*. Anaerobic diagenesis within Recent, Pleistocene, and Eocene marine carbonate frameworks. Sedimentology. v. 37, no. 6, December 1990. p. 997-1009.

OP-911. Philippe Sarda*, Thomas Staudacher*, Masatake Honda*, Ian McDougall*, D. B. Patterson*, Anthony Doulgeris* and D. A. Clague. Terrestrial primordial neon; discussion and reply. Nature (London). v. 352, no. 6334, August 1, 1991. p. 388.

OP-912. D. R. Sarewitz* and S. D. Lewis. The Marinduque intra-arc basin, Philippines; basin genesis and in situ ophiolite development in a strike-slip setting. Geological Society of America Bulletin. v. 103, no. 5, May 1991. p. 597-614.

OP-913. J. H. Sass. Borehole studies; climate plumbs the depths. Nature (London). v. 349, no. 6309, February 7, 1991. p. 458.

OP-914. Motoaki Sato. Thermochemistry of the formation of fossil fluids. Special Publication - Geochemical Society, *in* Fluid-mineral interactions; a tribute to H. P. Eugster. (R. J. Spenser, editor and others). 2, 1990. p. 271-283.

OP-915. V. B. Sauer. Urban flood frequency and hydrograph analysis. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 379-385.

OP-916. R. S. Saunders*, R. E. Arvidson*, J. W. Head*, G. G. Schaber, E. R. Stofan* and S. C. Solomon*. An overview of Venus geology. Science. v. 252, no. 5003, April 12, 1991. p. 249-252.

OP-917. J. C. Savage and Michael Lisowski. WASHINGTON. Strain measurements and the potential for a great subduction

earthquake off the coast of Washington. Science. v. 252, no. 5002, April 5, 1991. p. 101-103.

OP-918. J. C. Savage and Michael Lisowski. ALASKA. Strain accumulation along the Denali Fault at the Nenana River and Delta River crossings, Alaska. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 9, August 10, 1991. p. 14,481-14,492.

OP-919. J. C. Savage, Michael Lisowski and W. H. Prescott. CALIFORNIA. An apparent shear zone trending north-northwest across the Mojave Desert into Owens Valley, eastern California. Geophysical Research Letters. v. 17, no. 12, November 1990. p. 2113-2116.

OP-920. J. C. Savage, Michael Lisowski and W. H. Prescott. WASHINGTON. Strain accumulation in western Washington. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 9, August 10, 1991. p. 14,493-14,507.

OP-921. J. C. Savage and George Plafker. ALASKA. Tide gage measurements of uplift along the south coast of Alaska. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 3, March 10, 1991. p. 4325-4335.

OP-922. W. W. Sayre and D. W. Hubbell*. Transport of radionuclides in fresh water; dispersal of bed sediments, *in* Transport of radionuclides in fresh water systems; a working conference. (B. H. Komegay and others). Report no. TID-7664, July 1963. p. 327-352.

OP-923. G. G. Schaber. Volcanism on Venus as inferred from the morphometry of large shields. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 3-11.

OP-924. R. W. Schaffranek and R. A. Baltzer. Implementation of a hydrodynamic model for the upper Potomac Estuary. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 484-492.

OP-925. Ulrich Schimschal. CALIFORNIA. Integrated exploration for low-temperature geothermal resources in the Honey Lake basin, California. Geophysical Prospecting. v. 39, no. 2, February 1991. p. 279-291.

OP-926. J. S. Schlee and J. M. Robb. Submarine processes of the middle Atlantic continental rise based on GLORIA imagery. Geological Society of America Bulletin. v. 103, no. 8, August 1991. p. 1090-1103.

OP-927. C. M. Schlinger*, D. R. Veblen* and J. G. Rosenbaum. NEVADA. Magnetism and magnetic mineralogy of ash flow tuffs from Yucca Mountain, Nevada. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 4, April 10, 1991. p. 6035-6052.

OP-928. A. R. Schmidt, L. S. Weiss and K. A. Oberg. Geographic estimation of runoff-model parameters, *in* Engineering hydrology; proceedings of the symposium. (A. D. Feldman, editor). New York, NY: Am. Soc. Civ. Eng. 1987. p. 551-554.

OP-929. C. J. Schmidt*, H. W. Smedes* and J. M. O'Neill. MONTANA. Syncompressional emplacement of the Boulder and Tobacco Root batholiths (Montana, USA) by pull-apart along old fault zones. Geological Journal, *in* Granite; proceedings of the symposium celebrating the 70th birthday of W. S. Pitcher. (M. P. Atherton, editor and others). v. 25, no. 3-4, 1990. p. 305-318.

OP-930. D. L. Schmidt and G. F. Brown. Major-element chemical evolution of the late Proterozoic shield of Saudi Arabia. F.E.S. Bulletin, *in* Pan-African crustal evolution in the Arabian-Nubian Shield; I.G.C.P. No. 164; proceedings of a symposium. (A. R. Bakor, chairperson and others). 6, 1984. p. 1-21.

OP-931. J. W. Schmoker and T. C. Hester. Regional trends of sandstone porosity versus vitrinite reflectance; a preliminary framework, *in* Applications of thermal maturity studies to energy exploration. (V. F. Nuccio, editor and others). Denver, CO: Eastwood Print. and Publ. September 1990. p. 53-60.

OP-932. J. W. Schmoker and J. G. Palacas. IOWA. Porosity of Precambrian sandstones in lower portion of the Eischeid #1 well, Carroll County, Iowa. Special Report Series - Iowa Geological Survey, *in* The Amoco M.G. Eischeid #1 deep petroleum test; Carroll County, Iowa; preliminary investigations. (R. R. Anderson). Report no. 2, April 1990. p. 135-142.

OP-933. J. H. Schuenemeyer* and L. J. Drew. A forecast of undiscovered oil and gas in the Frio strand plain trend; the unfolding of a very large exploration play. AAPG Bulletin. v. 75, no. 6, June 1991. p. 1107-1115.

OP-934. R. R. Schumann. WYOMING. Morphology of Red Creek, Wyoming, an arid-region anastomosing channel system. Earth Surface Processes and Landforms. v. 14, no. 4, June 1989. p. 277-288.

OP-935. R. L. Schuster and D. R. Mullineaux. Volcanic activity, *in* The heritage of engineering geology; the first hundred years. (G. A. Kiersch), *in the collection* Centennial special volume. Boulder, CO: Geol. Soc. Am. 3, 1991. p. 233-250.

OP-936. W. C. Schwab, W. W. Danforth, K. M. Scanlon and D. G. Masson*. PUERTO RICO. A giant submarine slope failure on the northern insular slope of Puerto Rico. Marine Geology. v. 96, no. 3-4, February 1991. p. 237-246.

OP-937. R. A. Schweickert* and W. P. Irwin. CALIFORNIA. Extensional faulting in southern Klamath Mountains, California. Tectonics. v. 8, no. 1, February 1989. p. 135-149.

OP-938. D. H. Scott and M. G. Chapman. Mars Elysium Basin; geologic/volumetric analysis of a young lake and exobiologic implications. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 669-677.

OP-939. D. H. Scott and J. R. Underwood*. Mottled terrain; a continuing Martian enigma. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 627-634.

OP-940. R. B. Scott. NEVADA. Structural geology of Yucca Mountain, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 325.

OP-941. R. B. Scott. NEVADA. Tectonic setting of Yucca Mountain, Southwest Nevada. Memoir - Geological Society of America, *in* Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada. (B. P. Wernicke, editor). 176, 1990. p. 251-282.

OP-942. W. E. Scott. OREGON. Temporal relations between eruptions of the Mount Bachelor volcanic chain and fluctuations of late Quaternary glaciers. Oregon Geology. v. 52, no. 5, September 1990. p. 114-117.

OP-943. W. E. Scott. Patterns of volcanism in the Cascade Arc during the past 15,000 years. Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 179-183.

OP-944. W. E. Scott and C. A. Gardner. OREGON. Field trip guide to the central Oregon High Cascades; Part 1, Mount Bachelor-South Sister area. Oregon Geology. v. 52, no. 5, September 1990. p. 99-114.

OP-945. Paul Segall. CALIFORNIA. Loma Prieta earthquake. Eos, Transactions, American Geophysical Union. v. 72, no. 14, April 2, 1991. p. 162.

OP-946. Paul Segall* and Michael Lisowski. CALIFORNIA. Surface displacements in the 1906 San Francisco and 1989 Loma Prieta earthquakes. Science. v. 250, no. 4985, November 30, 1990. p. 1241-1244.

OP-947. Nicasio Sepúlveda. Solution of the one-dimensional consolidation theory equation with a pseudospectral method. IAHS-AISH Publication, *in* Land subsidence. (A. I. Johnson, editor). 200, 1991. p. 555-564.

OP-948. Nicasio Sepúlveda and A. L. Zack. Laboratory simulation of the effects of overburden stress on the specific storage of shallow artesian aquifers. American Water Resources Association Technical Publication Series TPS, *in* Proceedings of the International symposium on Tropical hydrology and Fourth Caribbean Islands water resources congress. (J. H. Krishna, editor and others). 90-2, 1990. p. 349-356.

OP-949. Nicasio Sepúlveda and A. L. Zack. The effects of overburden stress on the specific storage and hydraulic conductivity of artesian aquifers. Journal of Hydrology. v. 128, no. 1-4, November 1991. p. 305-321.

OP-950. B. A. Sether and G. J. Wiche. NORTH DAKOTA. Meteorologic and hydrologic data collected for computing evaporation from Devils Lake, North Dakota, 1986-88. Water-Resources Investigation (Bismarck, ND). Report no. 10, 1989. 172 p.

OP-951. K. W. Shanley* and P. J. McCabe. UTAH. Predicting facies architecture through sequence stratigraphy; an example from the Kaiparowits Plateau, Utah. Geology (Boulder). v. 19, no. 7, July 1991. p. 742-745.

OP-952. C. A. Shaw and W. W. Hay*. Mass-balanced paleogeographic maps; modeling program and results, *in* Quantitative dynamic stratigraphy. (T. A. Cross, editor). Englewood Cliffs, NJ: Prentice Hall, 1990. p. 277-291.

OP-953. H. R. Shaw and B. A. Chouet. HAWAII. Fractal hierarchies of magma transport in Hawaii and critical self-organization of tremor. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 6, June 10, 1991. p. 10,191-10,207.

OP-954. R. E. Sheridan*, R. K. Olsson* and J. J. Miller. NEW JERSEY. Seismic reflection and gravity study of proposed Taconic suture under the New Jersey coastal plain; implications for continental growth. Geological Society of America Bulletin. v. 103, no. 3, March 1991. p. 402-414.

OP-955. D. M. Sherman. The high-pressure electronic structure of magnesiowustite (Mg,Fe)O; applications to the physics and chemistry of the lower mantle. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 9, August 10, 1991. p. 14,299-14,312.

OP-956. D. M. Sherman. Chemical bonding in the outer core; high-pressure electronic structures of oxygen and sulfur in metallic iron. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 11, October 10, 1991. p. 18,029-18,036.

OP-957. D. M. Sherman. Hartree-Fock band structure, equation of state, and pressure-induced hydrogen bonding in brucite, $Mg(OH)_2$. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1769-1772.

OP-958. D. R. Sherrod and R. M. Tosdal. ARIZONA, CALIFORNIA. Geologic setting and Tertiary structural evolution of southwestern Arizona and southeastern California. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,407-12,423.

OP-959. Y. Shimizu*, R. L. Dinehart and J. Dungan Smith*. WASHINGTON. Flow modeling in the Toutle River, Washington, *in* Proceedings of the international symposium on Sediment transport modeling. (S. S. Wang). New York, NY: Am. Soc. Civ. Eng. 1989. p. 506-511.

OP-960. Y. Shimizu*, J. D. Smith* and J. M. Nelson. Comparison of models for single-thread streams, *in* Proceedings of the international symposium on Sediment transport modeling. (S. S. Wang). New York, NY: Am. Soc. Civ. Eng. 1989. p. 524-529.

OP-961. E. M. Shoemaker and C. S. Shoemaker. The collision of solid bodies, *in* The new solar system. (J. K. Beatty, editor and others). Cambridge: Cambridge Univ. Press, 1990. p. 259-274.

OP-962. A. C. Sigleo and J. C. Means*. Organic and inorganic components in estuarine colloids; implications for sorption and transport of pollutants. Reviews of Environmental Contamination and Toxicology. 112, 1990. p. 123-146.

OP-963. D. C. Signor and J. L. Imes. Geohydrology of regional aquifer systems in Cretaceous and older rocks underlying the central United States. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 149-163.

OP-964. N. J. Silberling and K. M. Nichols*. Comments on "A defense of the Rhaetian Stage". Albertiana. 7, 1988. p. 7-8.

OP-965. R. H. Sillitoe*, E. H. McKee and Tomás Vila*. Reconnaissance K-Ar geochronology of the Maricunga gold-silver belt, northern Chile. Economic Geology and the Bulletin of the Society of Economic Geologists, *in* A special issue devoted to gold depos-

its in the Chilean Andes. (R. H. Sillitoe, prefacer and others). v. 86, no. 6, October 1991. p. 1261-1270.

OP-966. Andrew Simon and Senén Guzmán-Ríos. PUERTO RICO. Sediment discharge from a montane basin, Puerto Rico; implications of erosion processes and rates in the humid tropics. IAHS-AISH Publication, *in* Research needs and applications to reduce erosion and sedimetation in tropical steeplands; proceedings of an international symposium. (R. R. Ziemer, editor and others). 192, 1990. p. 35-47.

OP-967. Andrew Simon, M. C. Larsen and C. R. Hupp. PUERTO RICO. The role of soil processes in determining mechanisms of slope failure and hillslope development in a humid-tropical forest, eastern Puerto Rico. Geomorphology, *in* Soils and landscape evolution; proceedings of the 21st annual Binghamton symposium in geomorphology. (P. L. Kneupfer, editor and others). v. 3, no. 3-4, September 1990. p. 263-286.

OP-968. Andrew Simon, G. S. Outlaw and Randy Thomas. TENNESSEE. Evaluation, modeling, and mapping of potential bridge-scour, West Tennessee, *in* Proceedings of the Bridge scour symposium. (Dah-Cheng Woo, chairperson and others). Report no. FHWA-RD-90-035, December 1989. p. 112-129. *Available from:* U.S. Dep. Transp., Fed. Highw. Adm., McLean, VA, United States.

OP-969. Andrew Simon, W. J. Wolfe and Albert Molina*. Mass-wasting algorithms in an alluvial channel model. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 8.22-8.29.

OP-970. Carol Simpson*, Janet Schweitzer* and K. A. Howard. CALIFORNIA. A reinterpretation of the timing, position, and significance of part of the Sacramento Mountains detachment fault, southeastern California. Geological Society of America Bulletin. v. 103, no. 6, June 1991. p. 751-761.

OP-971. R. W. Simpson, K. A. Howard and G. B. Haxel. CALIFORNIA, ARIZONA. Introduction to Special section on the California-Arizona Crustal Transect; CACTIS, Part 3. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,257-12,258.

OP-972. P. K. Sims, E. B. Kisvarsanyi* and G. B. Morey*. The Precambrian basement of the northern Midcontinent, U.S.A.; a major frontier for mineral exploration, *in* North American conference on Tectonic control of ore deposits and the vertical and horizontal extent of ore systems, Proceedings volume. (Geza Kisvarsanyi, editor and others). Rolla, MO: Univ. Mo. 1988. p. 236-244.

OP-973. D. A. Singer, N. J Page, W. C. Bagby, D. P. Cox and Stephen Ludington. Evaluación de los recursos minerales de Costa Rica [Evaluation of the mineral resources of Costa Rica]. Revista Geológica de América Central. 11, October 1990. p. 1-25.

OP-974. S. A. Sipkin and R. E. Needham. Moment-tensor solutions estimated using optimal filter theory; global seismicity, 1988-1989. Physics of the Earth and Planetary Interiors. v. 67, no. 3-4, July 1991. p. 221-230.

OP-975. C. J. Skeen, B. J. Libby and W. B. Crandell. Automated semiquantitive direct-current-arc spectrographic analysis of eight Argonne Premium Coal Ash samples. Energy & Fuels, *in* American Chemical Society annual meeting; Symposium on research with Argonne Premium Coal samples. (J. W. Larsen, editor). v. 4, no. 5, 1989. p. 432-436.

OP-976. J. V. Skinner. History of the Federal Interagency Sedimentation Project, *in* Proceedings of the international symposium on Sediment transport modeling. (S. S. Wang). New York, NY: Am. Soc. Civ. Eng. 1989. p. 266-271.

OP-977. J. V. Skinner and J. J. Szalona. Gages for measuring fluvial-sediment concentration. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 2.1-2.8.

OP-978. B. A. Skipp, P. L. Brenckle*, V. I. Poletaev*, T. I. Nemirovskaya*, H. R. Lane* and W. L. Manger*. The continuing international search for a Mid-Carboniferous boundary stratotype; Donets Basin, USSR, 1988. Episodes. v. 12, no. 3, September 1989. p. 179-183.

OP-979. W. V. Sliter and Isabella Premoli Silva*. CALIFORNIA. Age and origin of Cretaceous planktonic foraminifers from limestone of the Franciscan Complex near Laytonville, California. Paleoceanography. v. 5, no. 5, October 1990. p. 639-667.

OP-980. B. D. Smith, J. L. Plesha and R. J. Bisdorf. MISSISSIPPI. Geographic information system analysis applied to mapping subsurface brine, Brookhaven oil field, Mississippi. Symposium on the Application of Geophysics to Engineering and Environmental Problems, *in* Proceedings of the symposium on the application of geophysics to engineering and environmental problems. (S. E. Hulse, chairperson and others). 1990, 1990. p. 257-259.

OP-981. G. I. Smith. CALIFORNIA. Anomalous folds associated with the east-central part of the Garlock Fault, Southeast California. Geological Society of America Bulletin. v. 103, no. 5, May 1991. p. 615-624.

OP-982. G. L. Smith, D. A. Falvey* and Raymond Shaw*. Multichannel data acquisition and processing. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 39-42.

OP-983. J. A. Smith, P. T. Harte and M. A. Hardy. NEW JERSEY. Trace-metal and organochlorine residues in sediments of the upper Rockaway River, New Jersey. Bulletin of Environmental Contamination and Toxicology. 39, 1987. p. 465-473.

OP-984. J. A. Smith, D. M. Tuck*, P. R. Jaffé* and R. T. Mueller*. Effects of surfactants on the mobility of nonpolar organic contaminants in porous media, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 201-238.

OP-985. J. D. Smith* and J. M. Nelson. Mechanics of mud flows in curved channels with uneven beds, *in* Proceedings of the international symposium on Sediment transport modeling. (S. S. Wang). New York, NY: Am. Soc. Civ. Eng. 1989. p. 518-523.

OP-986. P. E. Smith and B. E. Larock. High-resolution two-dimensional advective transport. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 1005-1010.

OP-987. R. L. Smith, R. W. Harvey and D. R. LeBlanc. Importance of closely spaced vertical sampling in delineating chemical and micro-biological gradients in groundwater studies. Journal of Contaminant Hydrology. v. 7, no. 3, February 1991. p. 285-300.

OP-988. R. L. Smith, B. L. Howes* and J. H. Duff. Denitrification in nitrate-contaminated groundwater; occurrence in steep vertical geochemical gradients. Geochimica et Cosmochimica Acta. v. 55, no. 7, July 1991. p. 1815-1825.

OP-989. J. P. Smoot. Sedimentary facies and depositional environments of early Mesozoic Newark Supergroup basins, eastern North America. Palaeogeography, Palaeoclimatology, Palaeoecology, *in* Paleoenvironments of salt lakes. (A. R. Chivas, editor and others). v. 84, no. 1-4, May 15, 1991. p. 369-423.

OP-990. J. P. Smoot and T. K. Lowenstein*. Depositional environments of non-marine evaporites. Developments in Sedimentology, *in* Evaporites, petroleum and mineral resources. (J. L. Melvin, editor). 50, 1991. p. 189-347.

OP-991. L. W. Snee, E. E. Foord, B. E. Hill* and S. J. Carter*. Regional chemical differences among emeralds and host rocks of Pakistan and Afghanistan; implications for the origin of emerald, *in* Emeralds of Pakistan; geology, gemology and genesis. (A. H. Kazmi and others). New York, NY: Van Nostrand Reinhold Co. 1989. p. 93-123.

OP-992. G. L. Snyder, R. P. Hall*, D. J. Hughes* and K. R. Ludwig. Early Precambrian basic rocks of the USA, *in* Early Precambrian basic magmatism. (R. P. Hall, editor and others). New York, NY: Chapman and Hall, 1990. p. 191-220.

OP-993. L. A. Soderblom and Leslee Alexander*. Presentation of the G. K. Gilbert Award to Harold Masursky. Geological Society of America Bulletin. v. 103, no. 4, April 1991. p. 588-590.

OP-994. D. J. Soeder and Prasan Chowdiah*. TEXAS. Pore geometry in high- and low-permeability sandstones, Travis Peak Formation, East Texas. SPE Formation Evaluation. v. 5, no. 4, December 1990. p. 421-430.

OP-995. N. F. Sohl. Mechanical extraction of fossils; extraction by hammers, chisels, and picks. Special Publication (Paleontological Society), *in* Paleotechniques. (R. M. Feldmann, editor and others). 4, 1989. p. 204-207.

OP-996. I. G. Sohn. Video recording in the study of living Ostracoda; techniques and preliminary results. International Symposium on Ostracoda, *in* Ostracoda and global events. (R. C. Whatley, editor and others). 10, 1990. p. 591-602.

OP-997. D. R. Soller. Applying GIS to resource management. Geotimes. v. 36, no. 7, July 1991. p. 16-18.

OP-998. J. E. Sorauf* and G. H. Billingsley. ARIZONA, UTAH. Members of the Toroweap and Kaibab formations, Lower Permian, northern Arizona and southwestern Utah. The Mountain Geologist. v. 28, no. 1, January 1991. p. 9-24.

OP-999. M. L. Sorey, E. M. Colvard* and N. C. Sturchio*. WYOMING. Geothermal systems within the Mammoth corridor in Yellowstone National Park and the adjacent Corwin Springs KGRA. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 729-733.

OP-1000. R. E. Southard. NEW JERSEY. An alternative basin characteristic for estimating impervious area and urban flood frequency and its potential application in Mississippi. Proceedings - Mississippi Water Resources Conference, *in* Proceedings: Mississippi water resources conference. (E. J. Hawkins, editor). 17, 1987. p. 69-72.

OP-1001. R. E. Southard. A mobile scour monitoring system for use at bridges, *in* Proceedings of the Bridge scour symposium. (Dah-Cheng Woo, chairperson and others). Report no. FHWA-RD-90-035, December 1989. p. 175-182. *Available from:* U.S. Dep. Transp., Fed. Highw. Adm., McLean, VA, United States.

OP-1002. Carl Spencer*, A. G. Green*, Patrick Morel-à-l'Huissier*, Bernd Milkereit*, J. H. Luetgert, D. B. Stewart, J. D. Unger and J. D. Phillips. The extension of Grenville basement beneath the Northern Appalachians; results from Quebec-Maine seismic reflection and refraction surveys. Tectonics. v. 8, no. 4, August 1989. p. 677-696.

OP-1003. R. J. Spenser* and I-Ming Chou (editors). Fluid-mineral interactions; a tribute to H. P. Eugster. Special Publication - Geochemical Society. 2, 1990. 452 p.

OP-1004. C. S. Spirakis. UTAH. Genesis of the tabular-type vanadium-uranium deposits of the Henry Basin, Utah; discussion. Economic Geology and the Bulletin of the Society of Economic Geologists, *in* A special issue devoted to gold deposits in the Chilean Andes. (R. H. Sillitoe, prefacer and others). v. 86, no. 6, October 1991. p. 1350-1353.

OP-1005. F. J. Spitz and T. H. Barringer. NEW JERSEY. Simulation of ground-water in coastal southern New Jersey. Proceedings of the Symposium on Coastal and Ocean Management, *in* Coastal zone '89; proceedings of the Sixth symposium on Coastal and ocean management. (O. T. Magoon, editor and others). 6, 1989. p. 3651-3665.

OP-1006. Paul Spudich and D. P. Miller. CALIFORNIA. Seismic site effects and the spatial interpolation of earthquake seismograms; results using aftershocks of the 1986 North Palm Springs, California, earthquake. Bulletin of the Seismological Society of America. v. 80, no. 6, December 1990. p. 1504-1532.

OP-1007. P. D. Spudis. The Moon, *in* The new solar system. (J. K. Beatty, editor and others). Cambridge: Cambridge Univ. Press, 1990. p. 41-52.

OP-1008. P. D. Spudis, Graham Ryder*, G. J. Taylor*, K. A. McCormick*, Klaus Keil* and R. A. Grieve*. Sources of mineral fragments in impact melts 15445 and 15455; toward the origin of low-K Fra Mauro basalt. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 151-165.

OP-1009. R. F. Stallard, Lois Koehnken* and M. J. Johnsson*. Weathering processes and the composition of inorganic material transported through the Orinoco River system, Venezuela and

Colombia, *in* El Rio Orinoco como ecosistema—The Orinoco River as an ecosystem. (F. H. Weibezahn and others). Impresos Rubel, 1990. p. 81-119.

OP-1010. D. I. Stannard. Tensiometers: theory, construction, and use. ASTM Special Technical Publication = American Society for Testing and Materials Special Technical Publication, *in* Ground water and vadose zone monitoring. (D. M. Nielsen, editor and others). 1990. p. 34-51.

OP-1011. D. I. Stannard and D. O. Rosenberry. A comparison of short-term measurements of lake evaporation using eddy correlation and energy budget methods. Journal of Hydrology. v. 122, no. 1-4, January 1991. p. 15-22.

OP-1012. J. A. Stansberry*, J. I. Lunine*, C. C. Porco* and A. S. McEwen. Zonally averaged thermal balance and stability models for nitrogen polar caps on Triton. Geophysical Research Letters, *in* The Neptune System; a post-Voyager perspective. (E. C. Stone, prefacer). v. 17, no. 10, September 1990. p. 1773-1776.

OP-1013. J. R. Stark and R. G. Brown. MINNESOTA. Hydrology and water quality of a wetland used to receive wastewater effluent, St. Joseph, Minnesota. ASWM Technical Report, *in* Proceedings of the National wetland symposium; Wetland hydrology. (J. A. Kusler, chairperson and others). Report no. 6, December 1988. p. 197-204.

OP-1014. L. E. Starr and F. S. Brownworth. The Antarctic mapping program. Antarctic Journal of the United States, *in* 1989 review. v. 24, no. 5, 1989. p. 278-279.

OP-1015. L. E. Starr and S. C. Guptill. The U.S. Geological Survey and the National Digital Cartographic Data Base, *in* The decision maker and land information systems; FIG international symposium, held in Edmonton, Alberta, October 1984. (Angus Hamilton, editor and others). Ottawa, ON: Can. Inst. Surv. May 1985. p. 166-175.

OP-1016. Hubert Staudigel*, K. H. Park*, M. S. Pringle, J. L. Rubenstone*, W. H. Smith* and Alan Zindler*. The longevity of the South Pacific isotopic and thermal anomaly. Earth and Planetary Science Letters. v. 102, no. 1, January 1991. p. 24-44.

OP-1017. W. C. Steele and K. L. Kinoshita. Navigation data collection, processing, and display. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 37-38.

OP-1018. Cornelius Steelink*, R. L. Wershaw, K. A. Thorn and M. A. Wilson*. Application of liquid-state NMR spectroscopy to humic substances, *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 281-308.

OP-1019. H. J. Stein and S. A. Kish*. MISSOURI. The significance of Rb-Sr glauconite ages, Bonneterre Formation, Missouri; Late Devonian-Early Mississippian brine migration in the Midcontinent. Journal of Geology. v. 99, no. 3, May 1991. p. 468-481.

OP-1020. A. R. Stevens. U.S. Geological Survey Eastern Mapping Center; Experience in constructing a digital cartographic data base. Report - Water Resources Research Institute of the University of North Carolina, *in* Proceedings of the workshop on Remote sensing and geographic information systems for use in managing the Albemarle-Pamlico Estuary. (J. M. Stewart, convener). Report no. 87-04, 1987. p. 77-79.

OP-1021. C. H. Stevens*, Paul Stone and Paul Belasky*. NEVADA, CALIFORNIA. Paleogeographic and structural significance of an Upper Mississippian facies boundary in southern Nevada and east-central California; with Suppl. Data 91-14. Geological Society of America Bulletin. v. 103, no. 7, July 1991. p. 876-885.

OP-1022. J. H. Stewart and D. S. Diamond*. NEVADA. Changing patterns of extensional tectonics; overprinting of the basin of the middle and upper Miocene Esmeralda Formation in western Nevada by younger structural basins. Memoir - Geological Society of America, *in* Basin and Range extensional tectonics near the latitude of Las Vegas, Nevada. (B. P. Wernicke, editor). 176, 1990. p. 447-475.

OP-1023. J. H. Stewart and Jaime Roldán-Quintana*. Upper Triassic Barranca Group; nonmarine and shallow-marine rift-basin deposits of northwestern Mexico. Special Paper - Geological Society of America, *in* Studies of Sonoran geology. (Efrén Pérez-Segura, editor and others). 254, 1991. p. 19-36.

OP-1024. D. B. Stoeser, R. J. Fleck and J. S. Stacey. Geochronology and origin of an early tonalite gneiss of the Wadi Tarib Batholith and the formation of syntectonic gneiss complexes in the southeastern Arabian Shield, Kingdom of Saudi Arabia. F.E.S. Bulletin, *in* Pan-African crustal evolution in the Arabian-Nubian Shield; I.G.C.P. No. 164; proceedings of a symposium. (A. R. Bakor, chairperson and others). 6, 1984. p. 351-364.

OP-1025. M. E. Strobell and Harold Masursky. Planetary nomenclature. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 96-140.

OP-1026. W. D. Stuart. CALIFORNIA. Seismic quiescence at Parkfield due to detachment faulting. Nature (London). v. 349, no. 6304, January 3, 1991. p. 58-61.

OP-1027. J. S. Stuckless, I. T. Nkomo*, D. B. Wenner* and George VanTrump, Jr.*. Geochemistry and uranium favourability of the postorogenic granites of the northwestern Arabian Shield, Kingdom of Saudi Arabia. F.E.S. Bulletin, *in* Pan-African crustal evolution in the Arabian-Nubian Shield; I.G.C.P. No. 164; proceedings of a symposium. (A. R. Bakor, chairperson and others). 6, 1984. p. 195-209.

OP-1028. J. S. Stuckless, Z. E. Peterman and D. R. Muhs. NEVADA. U and Sr isotopes in ground water and calcite, Yucca Mountain, Nevada; evidence against upwelling water. Science. v. 254, no. 5031, October 25, 1991. p. 551-554.

OP-1029. N. C. Sturchio*, Mohamed Sultan*, P. Sylvester*, Rodey Batiza*, C. E. Hedge, E. M. El Shazly* and A. Abdel-Maguid*. Geology, age, and origin of the Meatiq Dome; implications for the Precambrian stratigraphy and tectonic evolution of the Eastern Desert of Egypt. F.E.S. Bulletin, *in* Pan-African crustal evolution in the Arabian-Nubian Shield; I.G.C.P. No. 164; proceedings of a symposium. (A. R. Bakor, chairperson and others). 6, 1984. p. 127-143.

OP-1030. R. J. Sun. Regional Aquifer-System Analysis program. Hydrological Science and Technology Short Papers. v. 4, no. 1-4, December 1988. p. 78-88.

OP-1031. E. T. Sundquist. Influence of deep-sea benthic processes on atmospheric CO_2. Philosophical Transactions of the Royal Society of London, Series A: Mathematical and Physical Sciences. v. 331, no. 1616, June 19, 1990. p. 155-165.

OP-1032. N. C. Suurballe. MASSACHUSETTS. Hydrologic regime of a floodplain wetland in Massachusetts. ASWM Technical Report, *in* Proceedings of the National wetland symposium; Wetland hydrology. (J. A. Kusler, chairperson and others). Report no. 6, December 1988. p. 73-81.

OP-1033. L. A. Swain and A. I. Johnson* (editors). Regional aquifer systems of the United States; aquifers of the Midwestern area. AWRA Monograph Series. 13, 1989. 238 p.

OP-1034. D. A. Swanson. WASHINGTON. A decade of dome growth at Mount St. Helens, 1980-90. Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 154-157.

OP-1035. D. A. Swanson and R. T. Holcomb. WASHINGTON. Regularities in growth of the Mount St. Helens dacite dome 1980-1986, *in* Lava flows and domes; emplacement mechanisms and hazard implications. (J. H. Fink, editor). Berlin: Springer Verlag, 1990. p. 3-24.

OP-1036. T. D. Swindle*, P. D. Spudis, G. J. Taylor*, R. L. Korotev*, R. H. Nichols, Jr.* and C. T. Olinger*. Searching for Crisium Basin ejecta; chemistry and ages of Luna 20 impact melts. Proceedings of the Lunar and Planetary Science Conference, *in* Proceedings of Lunar and planetary science. (Graham Ryder, editor and others). 21, 1991. p. 167-181.

OP-1037. Z. G. Szabo. MISSISSIPPI. Uranium, radium, and radon in ground water from the rock aquifers of the Piedmont Province and the Kirkwood-Cohansey aquifer system of the Coastal Plain Province, New Jersey. Annual Field Conference - Geological Association of New Jersey, *in* Aspects of groundwater in New Jersey; Seventh annual meeting of the Geological Association of New Jersey. (R. L. Kroll, compiler and others). 7, 1990. p. H1-H11.

OP-1038. K. Tabutt*, C. W. Naeser, T. E. Jordan* and P. F. Cerveny*. New fission-track ages of Mio-Pliocene tuffs in the Sierras Pampeanas and Precordillera of Argentina. Revista de la Asociación Geológica Argentina. v. 44, no. 1-4, December 1989. p. 408-419.

OP-1039. J. E. Taggart, Jr. The role of X-ray fluorescence in a modern geochemical laboratory. Advances in X-Ray Analysis. 28, 1985. p. 17-24.

OP-1040. D. Y. Tai, K. S. Turner and L. A. Garcia. The use of a standpipe to evaluate ground water samplers. Ground Water Monitoring Review. v. 11, no. 1, 1991. p. 125-132.

OP-1041. W. V. Tangborn, A. G. Fountain and W. G. Sikonia. WASHINGTON. Effect of area distribution with altitude on glacier mass balance; a comparison of North and South Klawatti glaciers, Washington State, U.S.A. Annals of Glaciology, *in* Proceedings of the symposium on Ice and climate. (D. R. MacAyeal, editor). 14, 1990. p. 278-282.

OP-1042. A. B. Tanner. Error in measuring radon in soil gas by means of passive detectors. Nuclear Geophysics. v. 5, no. 1-2, 1991. p. 28-30.

OP-1043. J. A. Tarduno*, W. V. Sliter, L. W. Kroenke*, R. M. Leckie*, H. Mayer*, J. J. Mahoney*, R. J. Musgrave*, Michael Storey* and E. L. Winterer*. Rapid formation of Ontong Java Plateau by Aptian mantle plume volcanism. Science. v. 254, no. 5030, October 18, 1991. p. 399-403.

OP-1044. J. F. Taylor*, D. J. Kennedy*, J. F. Miller* and J. E. Repetski. VERMONT. Uppermost Cambrian slope deposits at Highgate Gorge, Vermont; a minor miscorrelation with major consequences for conodont- and trilobite-based chronocorrelation. Journal of Paleontology. v. 65, no. 5, September 1991. p. 855-863.

OP-1045. Christophe Téqui*, R. A. Robie, B. S. Hemingway, D. R. Neuville* and Pascal Richet*. Melting and thermodynamic properties of pyrope ($Mg_3Al_2Si_3O_{12}$). Geochimica et Cosmochimica Acta. v. 55, no. 4, April 1991. p. 1005-1010.

OP-1046. C. L. Terhune and J. W. Harden. NEVADA. Seasonal variations of carbon dioxide concentrations in stony, coarse-textured desert soils of southern Nevada, USA. Soil Science. v. 151, no. 6, June 1991. p. 417-429.

OP-1047. D. J. Teskey*, M. D. Thomas*, R. A. Gibb*, S. D. Dods*, R. P. Kucks, V. W. Chandler*, Kian Fadaie* and J. D. Phillips. High resolution aeromagnetic survey of Lake Superior. Eos, Transactions, American Geophysical Union. v. 72, no. 8, February 19, 1991. p. 81, 85-86.

OP-1048. Wayne Thatcher and D. P. Hill. Fault orientations in extensional and conjugate strike-slip environments and their implications. Geology (Boulder). v. 19, no. 11, November 1991. p. 1116-1120.

OP-1049. Wayne Thatcher and Paul Segall. Segall receives Macelwane Medal. Eos, Transactions, American Geophysical Union. v. 72, no. 3, January 15, 1991. p. 22.

OP-1050. G. P. Thelin. The High Plains regional aquifer; mapping irrigated agriculture using Landsat data. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 219-223.

OP-1051. G. P. Thelin and R. J. Pike. Your best view of the U.S. Earth in Space. v. 3, no. 2, October 1990. p. 8-9.

OP-1052. T. G. Theodore and J. M. Hammarstrom. NEVADA. Petrochemistry and fluid-inclusion study of skarns from the northern Battle Mountain mining district, Nevada, *in* Skarns; their genesis and metallogeny. (A. Barto-Kyriakidis, editor). Athens: Theophrastus Publ. 1991. p. 497-554.

OP-1053. R. E. Thomas and S. A. Khan*. Indus East coal exploration, Sindh Province, Pakistan, *in* Significance of the coal resources of Pakistan. (A. H. Kazmi, editor and others). Karachi: Geol. Surv. Pakistan, 1990. p. 105-107.

OP-1054. R. P. Thomas. Application of the DR3M watershed model on a small urban basin. Water Resources Bulletin (Urbana). v. 26, no. 5, October 1990. p. 757-766.

OP-1055. W. O. Thomas and M. N. Landers. Regionalization of flood characteristics. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 372-378.

OP-1056. R. A. Thompson, C. M. Johnson* and H. H. Mehnert. COLORADO. Oligocene basaltic volcanism of the northern Rio Grande Rift; San Luis Hills, Colorado. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Mid-Tertiary Cordilleran magmatism: plate convergence versus intraplate processes. v. 96, no. 8, July 30, 1991. p. 13,577-13,592.

OP-1057. J. M. Thormodsgard and J. W. Feuquay. Larger scale image mapping with SPOT. Techniques Spatiales, *in* SPOT 1; Utilisation des images, bilan, resultats—SPOT 1; Image utilization, assessment, results. (France, Centre National d'Etudes Spatiales). 1, 1988. p. 1273-1279.

OP-1058. D. C. Thorstenson, Herbert Haas*, E. P. Weeks and J. C. Woodward. NEVADA. Physical and chemical characteristics of topographically affected airflow in an open borehole at Yucca Mountain, Nevada, *in* Proceedings of the topical meeting on Nuclear waste isolation in the unsaturated zone; Focus '89. (P. A. Witherspoon, chairperson and others). La Grange Park, IL: Am. Nucl. Soc. 1990. p. 256-270.

OP-1059. E. M. Thurman, M. D. Meyer, M. L. Pomes, C. A. Perry and A. P. Schwab. Enzyme-linked immunosorbent assay compared with gas chromatography/mass spectrometry for the determination of triazine herbicides in water. Analytical Chemistry (Washington, DC). v. 62, no. 18, September 15, 1990. p. 2043-2048.

OP-1060. E. M. Thurman, P. J. Squillace, K. M. Strzepek* and L. Garcia*. IOWA. Intelligent data analyzer; herbicide transport in the Cedar River, Iowa. Preprints of Papers, *in* American Chemical Society, 75 years of progress; Division of Environmental Chemistry; preprints of papers presented at the 196th ACS national meeting. v. 28, no. 2, September 1988. p. 13-15.

OP-1061. L. J. Tilley, K. V. Slack and S. S. Kennelly. Transport of invertebrates and detritus in streams. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 13.9-13.17.

OP-1062. R. I. Tilling (editor). How volcanoes work; selections from the Journal of Geophysical Research. Washington, DC: Am. Geophys. Union, December 1988. unpaginated.

OP-1063. Priestley Toulmin, III, P. B. Barton and L. B. Wiggins. Commentary on the sphalerite geobarometer. American Mineralogist. v. 76, no. 5-6, June 1991. p. 1038-1051.

OP-1064. A. M. Tréhu*, Patrick Morel-à-l'Huissier*, R. P. Meyer*, Zoltan Hajnal*, J. H. Karl*, R. F. Mereu*, J. L. Sexton*, J. T. Shay, W. K. Chan*, D. Epili*, T. J. Jefferson*, X. R. Shih*, S. A. Wendling*, Bernd Milkereit*, A. G. Green* and D. R. Hutchinson*. Imaging the Midcontinent Rift beneath Lake Superior using large aperture seismic data. Geophysical Research Letters. v. 18, no. 4, April 1991. p. 625-628.

OP-1065. G. W. Tribble. HAWAII. Underwater observations of active lava flows from Kilauea Volcano, Hawaii. Geology (Boulder). v. 19, no. 6, June 1991. p. 633-636.

OP-1066. Fabio Trincardi* and M. E. Field. Geometry, lateral variation, and preservation of downlapping regressive shelf deposits; eastern Tyrrhenian Sea margin, Italy. Journal of Sedimentary Petrology. v. 61, no. 5, September 1991. p. 775-790.

OP-1067. D. M. Triplehorn*, R. W. Stanton, L. F. Ruppert and S. S. Crowley. WYOMING. Volcanic ash dispersed in the Wyodak-Anderson coal bed, Powder River basin, Wyoming. Organic Geochemistry, *in* Collected papers from the Sixth annual meeting of the Society for Organic Petrology. (R. D. Harvard and others). v. 17, no. 4, 1991. p. 567-575.

OP-1068. J. W. Troester and J. E. Moore*. Karst hydrogeology in the United States of America. Episodes. v. 12, no. 3, September 1989. p. 172-178.

OP-1069. A. H. Truesdell and M. J. Lippmann*. Interaction of cold-water aquifers with exploited reservoirs of the Cerro Prieto geothermal system. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 735-741.

OP-1070. R. J. Tschauder*, G. P. Landis and R. R. Noyes*. COLORADO. Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part I, Geologic framework, mineralogy, and cave morphology. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 308-338.

OP-1071. Patrick Tucci. ARIZONA. Geophysical methods for water resource investigations in south and central Arizona. Symposium on the Application of Geophysics to Engineering and Environmental Problems, *in* Proceedings of the Symposium on the Application of Geophysics to Engineering and Environmental Problems. (D. V. Fitterman, chairman). 2, 1989. p. 368-383.

OP-1072. C. E. Turner and N. S. Fishman. Jurassic Lake T'oo'dichi'; a large alkaline, saline lake, Morrison Formation, eastern Colorado Plateau. Geological Society of America Bulletin. v. 103, no. 4, April 1991. p. 538-558.

OP-1073. C. E. Turner-Peterson. Recent geologic studies in the San Juan Basin; highlights and new direction, *in* Energy frontiers in the Rockies. (J. C. Lorenz, editor and others). Albuquerque, NM: Albuquerque Geol. Soc. 1989. p. 177-188.

OP-1074. G. L. Turney and D. F. Goerlitz. WASHINGTON. Organic contamination of ground water at Gas Works Park, Seattle, Washington. Ground Water Monitoring Review. v. 10, no. 3, 1990.

OP-1075. B. D. Turrin, D. E. Champion and R. J. Fleck. NEVADA. $^{40}Ar/^{39}Ar$ age of the Lathrop Wells volcanic center, Yucca Mountain, Nevada. Science. v. 253, no. 5020, August 9, 1991. p. 654-657.

OP-1076. M. P. Tuttle*, Patience Cowie*, J. C. Tinsley, III, M. J. Bennett and J. B. Berrill*. CALIFORNIA. Liquefaction and foundation failure of Chevron oil and gasoline tanks at Moss Landing, California. Geophysical Research Letters, *in* The Loma Prieta California earthquake of October 17, 1989; III. v. 17, no. 10, September 1990. p. 1797-1800.

OP-1077. D. C. Twichell, C. K. Paull* and L. M. Parson*. Terraces on the Florida Escarpment; implications for erosional processes. Geology (Boulder). v. 19, no. 9, September 1991. p. 897-900.

OP-1078. T. C. Urban and W. H. Diment. Capillary corrections for acid-etch inclinometry in boreholes for glass tubes ranging in

diameter from 6-25 mm and over a temperature range of 4-80°C. International Symposium on Borehole Geophysics for Minerals, Geotechnical, and Groundwater Applications, *in* Proceedings of the Third international symposium on Borehole geophysics for minerals, geotechnical, and groundwater applications. (M. A. Mathews, chairperson and others). 3, 1989. p. 233-260.

OP-1079. E. L. Usery, P. Altheide*, R. R. Deister* and D. J. Barr*. Knowledge-based GIS techniques applied to geological engineering, *in* Fundamentals of geographic information systems; a compendium. (W. J. Ripple, editor). Bethesda, MD: Am. Congr. Surv. and Mapping, 1989. p. 207-212.

OP-1080. T. L. Vallier, G. A. Jenner*, F. A. Frey*, J. B. Gill*, A. S. Davis, A. M. Volpe*, J. W. Hawkins*, J. D. Morris*, P. A. Cawood*, J. L. Morton, D. W. Scholl, M. Rautenschlein*, W. M. White*, R. W. Williams*, A. J. Stevenson and L. D. White. Subalkaline andesite from Valu Fa Ridge, a back-arc spreading center in southern Lau Basin; petrogenesis, comparative chemistry, and tectonic implications. Chemical Geology. v. 91, no. 3, September 5, 1991. p. 227-256.

OP-1081. R. D. van der Hilst*, Robert Engdahl, Wim Spakman* and Guust Nolet*. Tomographic imaging of subducted lithosphere below Northwest Pacific island arcs. Nature (London). v. 353, no. 6339, September 5, 1991. p. 37-43.

OP-1082. T. R. Van Devender*, T. L. Burgess, R. S. Felger* and R. M. Turner. Holocene vegetation of the Hornaday Mountains of northwestern Sonora, Mexico. Proceedings of the San Diego Society of Natural History. 2, September 15, 1990. 19 p.

OP-1083. R. J. Varga*, R. A. Bailey and G. A. Suemnicht*. CALIFORNIA. Evidence for 600 year-old basalt and magma mixing at Inyo Craters volcanic chain, Long Valley Caldera, California. Journal of Geophysical Research, B, Solid Earth and Planets. v. 95, no. 13, December 10, 1990. p. 21,441-21,450.

OP-1084. J. G. Vedder, Hugh McLean, R. G. Stanley and T. J. Wiley. CALIFORNIA. Paleogeographic implications of an erosional remnant of Paleogene rocks southwest of the Sur-Nacimiento fault zone, southern Coast Ranges, California. Geological Society of America Bulletin. v. 103, no. 7, July 1991. p. 941-952.

OP-1085. Bruce Velde*, Jacques Dubois*, D. E. Moore and Gerard Touchard*. Fractal patterns of fractures in granites. Earth and Planetary Science Letters. v. 104, no. 1, May 1991. p. 25-35.

OP-1086. D. L. Verbyla*, G. J. McCabe, Jr. and M. A. Ayers. Hydrologic effects of climate change in the Delaware River basin; discussion and reply. Water Resources Bulletin (Urbana). v. 26, no. 5, October 1990. p. 831-834.

OP-1087. F. L. Vernon*, J. B. Fletcher, Linda Carroll, A. D. Chave* and E. D. Sembera. Coherence of seismic body waves from local events as measured by a small-aperture array. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 7, July 10, 1991. p. 11,981-11,996.

OP-1088. C. E. Vidal C.*, Jorge Injoque-Espinoza*, G. B. Sidder and S. B. Mukasa*. Amphibolitic Cu-Fe skarn deposits in the central coast of Peru. Economic Geology and the Bulletin of the Society of Economic Geologists, *in* A special issue devoted to the mineral deposits of Peru. (B. J. Skinner). v. 85, no. 7, November 1990. p. 1447-1461.

OP-1089. J. E. Vidale, Ornella Bonamassa* and Heidi Houston*. CALIFORNIA. Directional site resonances observed from the 1 October 1987 Whittier Narrows, California, earthquake and the 4 October aftershock. Earthquake Spectra. v. 7, no. 1, February 1991. p. 107-125.

OP-1090. R. A. Volkert*, F. J. Markewicz* and A. A. Drake, Jr. NEW JERSEY. Bedrock geologic map of the Chester Quadrangle, Morris County, New Jersey. Geologic Map Series (Trenton). Report no. 90-1, 1990. 1 sheet.

OP-1091. K. L. Von Damm*, J. L. Bischoff and R. J. Rosenbauer. Quartz solubility in hydrothermal seawater; an experimental study and equation describing quartz solubility for up to 0.5 M NaCl solutions. American Journal of Science. v. 291, no. 10, December 1991. p. 977-1007.

OP-1092. Paul von Guerard. Variation in streambed material, bedload and benthic invertebrates. Proceedings - Federal Inter-Agency Sedimentation Conference, *in* Proceedings of the Fifth Federal interagency Sedimentation conference. (Shou-Shan Fan, editor and others). 5, 1991. p. 13.1-13.8.

OP-1093. Ulrich von Rad*, Volkher Riech*, Gerd Wissmann*, A. J. Stevenson, J. L. Morton and M. C. Sinha*. Seafloor reflectivity, sediment distribution, and magnetic anomalies of the Lau Basin (SW Pacific, SO35/48 cruises). Marine Mining, *in* Hydrothermal mineralization of the Lau Basin; results of the Sonne Cruise SO48. (J. R. Moore, editor and others). v. 9, no. 2, June 1990. p. 157-181.

OP-1094. C. I. Voss and W. R. Souza. Modeling a regional aquifer containing a narrow transition between fresh water and salt water using solute-transport simulation; Part 1, Theory and methods. International Contributions to Hydrogeology, *in* Hydrogeology of salt water intrusion; a selection of SWIM papers. (G. A. Bruggeman, prefacer). 11, 1991. p. 189-206.

OP-1095. D. A. Vroblesky and M. M. Lorah. Prospecting for zones of contaminated ground-water discharge to streams using bottom-sediment gas bubbles. Ground Water. v. 29, no. 3, June 1991. p. 333-340.

OP-1096. D. A. Vroblesky, M. M. Lorah and S. P. Trimble*. MARYLAND. Mapping zones of contaminated ground-water discharge using creek-bottom-sediment vapor samplers, Aberdeen Proving Grounds, Maryland. Ground Water. v. 29, no. 1, 1991. p. 7-12.

OP-1097. D. A. Vroblesky and T. M. Yanosky. Use of tree-ring chemistry to document historical ground-water contamination events. Ground Water. v. 28, no. 5, October 1990. p. 677-684.

OP-1098. L. A. Wald and T. H. Heaton. CALIFORNIA. Lg and Rg waves on the California regional networks from the December 23, 1985, Nahanni earthquake. Journal of Geophysical Research, B, Solid Earth and Planets. v. 96, no. 7, July 10, 1991. p. 12,099-12,125.

OP-1099. R. J. Walker*, J. W. Morgan, A. J. Naldrett*, C. Li* and J. D. Fassett*. Re-Os isotope systematics of Ni-Cu sulfide ores, Sudbury igneous complex, Ontario; evidence for a major crustal component. Earth and Planetary Science Letters. v. 105, no. 4, August 1991. p. 416-429.

OP-1100. A. R. Wallace. COLORADO. Regional geologic and tectonic setting of the central Colorado mineral belt. Economic Geology Monograph, *in* Carbonate-hosted sulfide deposits of the central Colorado mineral belt. (D. W. Beaty, editor and others). 7, 1990. p. 19-28.

OP-1101. R. E. Wallace and H. T. Morris. Characteristics of faults and shear zones in deep mines. Pure and Applied Geophysics, *in* International structure of fault zones. (Wang Chi-yuen, editor). v. 124, no. 1-2, 1986. p. 107-125.

OP-1102. R. A. Walters. Effects of runoff changes and sea level rise on salinity in the Delaware River estuary. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 685-686.

OP-1103. R. A. Walters. A model for tides and currents in the English Channel and southern North Sea. Advances in Water Resources. 10, September 1987. p. 138-148.

OP-1104. Katherine Walton-Day, L. H. Filipek and C. S. Papp. MINNESOTA. Mechanisms controlling Cu, Fe, Mn, and Co profiles in peat of the Filson Creek Fen, northeastern Minnesota. Geochimica et Cosmochimica Acta. v. 54, no. 11, November 1990. p. 2933-2946.

OP-1105. R. B. Wanty, J. R. Chatam and Donald Langmuir. The solubilities of some major and minor element minerals in ground waters associated with a sandstone-hosted uranium deposit. Bulletin de Minéralogie, *in* Les mécanismes de concentration de l'uranium dans les environnements géologiques; colloque international (Mechanisms of uranium concentration in the geologic environment; international colloquium). v. 110, no. 2-3, 1987. p. 209-226.

OP-1106. R. B. Wanty, C. A. Rice, Donald Langmuir*, Paul Briggs* and E. P. Lawrence*. Prediction of uranium adsorption by crystalline rocks; the key role of reactive surface area. Materials Research Society Symposia Proceedings, *in* Materials Research Society symposium proceedings; Scientific basis for nuclear waste management XIV. (T. A. Abrajano, Jr., editor and others). 212, 1991. p. 695-702.

OP-1107. P. L. Ward. Global data collection and the surveillance of active volcanoes. Global and Planetary Change, *in* Geosphere fluctuations; short term instabilities in the Earth's system. (Sierd Cloetingh, editor). v. 3, no. 3, December 1990. p. 263-267.

OP-1108. P. L. Ward. On plate tectonics and the geologic evolution of southwestern North America. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,479-12,496.

OP-1109. W. C. Ward*, A. E. Weidie*, William Back and A. P. Andrews*. Geology and hydrogeology of the Yucatan and Quaternary geology of northeastern Yucatan Peninsula. New Orleans, LA: New Orleans Geol. Soc. 1985. 160 p.

OP-1110. K. L. Warner. Review of geographic-information-system technology in the U.S. Geological Survey, *in* Proceedings of National cooperative soil survey conference. 1989. p. 223-246. *Available from:* U.S. Dep. Agric., Soil Conserv. Serv., Washington, DC, United States.

OP-1111. P. D. Warwick and Farhat Husain*. Coal fields of Punjab, North-West Frontier Provinces and Azad Kashir, *in* Significance of the coal resources of Pakistan. (A. H. Kazmi, editor and others). Karachi: Geol. Surv. Pakistan, 1990. p. 15-26.

OP-1112. P. D. Warwick and Shahid Javed*. Quality and character of Pakistan coal, *in* Significance of the coal resources of Pakistan. (A. H. Kazmi, editor and others). Karachi: Geol. Surv. Pakistan, 1990. p. 127-135.

OP-1113. Kenneth Watson, Susanne Hummer-Miller and F. A. Kruse*. NEVADA. Co-registered TIMS, geology and topography data sets for evaluating lithologic discrimination, Carlin District, Nevada. Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Sixth thematic conference on Remote sensing for exploration geology; applications, technology, economics. (R. H. Rogers, chairperson). 6, Vol. 1, 1988. p. 227.

OP-1114. C. S. Weaver, R. D. Norris and Chris Jonientz-Trisler*. Results of seismological monitoring in the Cascade Range, 1962-1989; earthquakes, eruptions, avalanches, and other curiosities. Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 158-162.

OP-1115. J. D. Webster* and W. A. Duffield. NEW MEXICO. Volatiles and lithophile elements in Taylor Creek Rhyolite; constraints from glass inclusion analysis. American Mineralogist. v. 76, no. 9-10, October 1991. p. 1628-1645.

OP-1116. J. B. Weeks and E. D. Gutentag. The High Plains regional aquifer; geohydrology. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 191-206.

OP-1117. J. B. Weeks and R. R. Luckey. Simulated effects of future pumpage on the High Plains Aquifer, west-central United States. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 225-235.

OP-1118. R. E. Weems. VIRGINIA. Road guide to representative lithologies in the metamorphic complex of western Hanover County, Virginia. Annual Virginia Geology Field Conference. 17, 1985. p. 23-52.

OP-1119. G. W. Weir and L. S. Beard. UTAH. Geologic map of the Tenmile Flat Quadrangle, Garfield County, Utah. Map - Utah Geological and Mineral Survey. Report no. 118, 1990. 1 sheet.

OP-1120. G. W. Weir and L. S. Beard. UTAH. Geologic map of the Red Breaks Quadrangle, Garfield County, Utah. Map - Utah Geological and Mineral Survey. Report no. 117, 1990. 1 sheet.

OP-1121. G. W. Weir and L. S. Beard. UTAH. Geologic map of the Calf Creek Quadrangle, Garfield County, Utah. Map - Utah Geological and Mineral Survey. Report no. 120, 1990. 1 sheet.

OP-1122. G. W. Weir and L. S. Beard. UTAH. Geologic map of the King Bench Quadrangle, Garfield County, Utah. Map - Utah Geological and Mineral Survey. Report no. 119, 1990. 1 sheet.

OP-1123. G. W. Weir, V. S. Williams and L. S. Beard. UTAH. Geologic map of the Roger Peak Quadrangle, Garfield County, Utah. Map - Utah Geological and Mineral Survey. Report no. 115, 1990. 7 p., 1 sheet.

OP-1124. L. S. Weiss. ILLINOIS. Estimation of navigation-dam discharge in Illinois, *in* Hydraulic engineering; proceedings of the 1987 national conference on Hydraulic engineering. (R. M. Ragan, editor). New York, NY: Am. Soc. Civ. Eng. 1987. p. 641-647.

OP-1125. L. G. Wennerberg. Stochastic summation of empirical Green's functions. Bulletin of the Seismological Society of America. v. 80, no. 6, December 1990. p. 1418-1432.

OP-1126. K. J. Wenrich and H. B. Sutphin. ARIZONA. Lithotectonic setting necessary for formation of a uranium rich, solution collapse breccia pipe province, Grand Canyon region, Arizona. Panel Proceedings Series - International Atomic Energy Agency, *in* Metallogenesis of uranium deposits; proceedings of a Technical Committee Meeting. (J. Dardel, chairperson). 1989, 1989. p. 307-344.

OP-1127. C. M. Wentworth and M. D. Zoback*. CALIFORNIA. The style of late Cenozoic deformation at the eastern front of the California Coastal Ranges. Tectonics. v. 8, no. 2, April 1989. p. 237-246.

OP-1128. W. H. Werkheiser. MARYLAND. Hydrogeology and ground-water resources of Somerset County, Maryland. Bulletin - Maryland Geological Survey. Report no. 35, 1990. 156 p.

OP-1129. R. L. Wershaw. Sizes and shapes of humic substances by scattering techniques, *in* Humic substances; II, In search of structure. (M. H. Hayes, editor and others). Chichester: John Wiley & Sons, 1989. p. 545-559.

OP-1130. R. L. Wershaw. The importance of humic substance-mineral particle complexes in the modeling of contaminant transport in sediment-water systems, *in* Organic substances and sediments in water; Volume 1, Humics and soils. (R. A. Baker, editor). Chelsea, MI: Lewis Publ. 1991. p. 23-34.

OP-1131. D. B. Westjohn. MICHIGAN. Application of geophysics in the delineation of the freshwater/saline-water interface in the Michigan Basin. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 111-143.

OP-1132. A. F. White. Heterogeneous electrochemical reactions associated with oxidation of ferrous oxide and silicate surfaces. Reviews in Mineralogy, *in* Mineral-water interface geochemistry. (M. F. Hochella, Jr., editor and others). 23, 1990. p. 467-509.

OP-1133. A. F. White, M. L. Peterson, H. A. Wollenberg* and Steve Flexser*. CALIFORNIA. Sources and fractionation processes influencing the isotopic distribution of H, O and C in the Long Valley hydrothermal system, California, U.S.A. Applied Geochemistry, *in* Water-rock interactions. (Y. K. Kharaka, editor and others). v. 5, no. 5-6, December 1990. p. 571-585.

OP-1134. D. E. White. Memorial of Charles A. Anderson, 1902-1990. American Mineralogist. v. 76, no. 1-2, February 1991. p. 306-307.

OP-1135. J. W. Whitney and R. R. Shroba. NEVADA. Geomorphic assessment of late Quaternary volcanism in the Yucca Mountain area, southern Nevada; implications for the proposed high-level radioactive waste repository: Comment. Geology (Boulder). v. 19, no. 6, June 1991. p. 661.

OP-1136. D. E. Wilhelms. Geologic mapping. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 208-260.

OP-1137. G. P. Williams and B. M. Troutman. Comparison of structural and least-squares lines for estimating geologic relations. Mathematical Geology. v. 22, no. 8, November 1990. p. 1027-1049.

OP-1138. J. H. Williams and R. W. Conger. Preliminary delineation of contaminated water-bearing fractures intersected by open-hole bedrock wells. Ground Water Monitoring Review. v. 10, no. 4, 1990. p. 118-126.

OP-1139. S. J. Williams, Shea Penland* and R. C. Circé LOUISIANA. Distribution and textural character of surficial sediments, Isles Dernieres to Ship Shoal region, Louisiana. Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 571-576.

OP-1140. V. S. Williams. Scope and importance of environmental geology. Bulletin of the Directorate of Environmental Geology = Bulletin Direktorat Geologi Tata Lingkungan. 4, November 1987. p. 33-40.

OP-1141. P. E. Williamson*, B. U. Haq*, Ulrich von Rad*, Suzanne O'Connell*, Alistair Bent*, C. D. Blome, P. E. Borella*, Ron Boyd*, T. J. Bralower*, W. W. Brenner*, E. H. de Carlo*, Thierry Dumont*, N. F. Exon*, Bruno Galbrun*, Xenia Golovchenko*, Naci Gorur*, Makoto Ito*, J. M. Lorenzo*, P. A. Meyers*, I. W. Moxon*, D. K. O'Brien*, Motoyoshi Oda*, Massimo Sarti*, W. G. Siesser*, L. R. Snowdon*, Cheng Tang*, R. H. Wilkens* and A. A. Wonders*. Underway geophysics. Proceedings of the Ocean Drilling Program, Part A: Initial Reports, *in* Exmouth Plateau; covering Leg 122 of the cruises of the drilling vessel JOIDES Resolution, Singapore, Republic of Sing., sites 759-764, 28 June 1988-28 August 1988. (A. P. Julson, editor and others). 122, January 1990. p. 39-77.

OP-1142. H. G. Wilshire, A. V. McGuire*, J. S. Noller* and B. D. Turrin. CALIFORNIA. Petrology of lower crustal and upper mantle xenoliths from the Cima volcanic field, California. Journal of Petrology. v. 32, no. 1, February 1991. p. 169-200.

OP-1143. J. M. Wilson* and W. B. Fleck. MARYLAND. Geology and hydrologic assessment of coastal plain aquifers in the Waldorf area, Charles County, Maryland; Part 1, Geology, hydrogeologic framework, and water quality. Report of Investigations - Maryland Geological Survey. Report no. 53, 1990. p. 1-38.

OP-1144. J. M. Wilson, Jill McCarthy, R. A. Johnson* and K. A. Howard. CALIFORNIA. An axial view of a metamorphic core complex; crustal structure of the Whipple and Chemehuevi mountains, southeastern California. Journal of Geophysical Research, B, Solid Earth and Planets, *in* Special section on CACTIS III. v. 96, no. 7, July 10, 1991. p. 12,293-12,311.

OP-1145. S. L. Wing*, T. M. Brown and J. D. Obradovich. Early Eocene biotic and climatic change in interior western North

America. Geology (Boulder). v. 19, no. 12, December 1991. p. 1189-1192.

OP-1146. I. J. Winograd. NEVADA. The Yucca Mountain Project; another perspective; discussion. Environmental Science & Technology, ES & T. v. 24, no. 9, September 1990. p. 1291-1293.

OP-1147. D. U. Wise*, E. S. Belt* and P. C. Lyons. Clastic diversion by fold salients and blind thrust ridges in coal-swamp development. Geology (Boulder). v. 19, no. 5, May 1991. p. 514-517.

OP-1148. S. H. Wolf*, M. A. Celia* and K. M. Hess. Evaluation of hydraulic conductivities calculated from multiport-permeameter measurements. Ground Water. v. 29, no. 4, August 1991. p. 516-525.

OP-1149. E. W. Wolfe and Jean Morris. HAWAII. New geologic map of the Island of Hawaii. Transactions - Geothermal Resources Council, *in* Transactions, 1990 International symposium on geothermal energy. (Jim Combs, chairperson). v. 14, no. 1-2, 1990. p. 817-818.

OP-1150. J. A. Wolfe. WYOMING. Palaeobotanical evidence for a June "impact winter" at the Cretaceous/Tertiary boundary. Nature (London). v. 352, no. 6334, August 1, 1991. p. 420-423.

OP-1151. D. M. Wolock, M. A. Ayers, L. E. Hay and G. J. McCabe, Jr. Effects of climate change on watershed runoff. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 673-678.

OP-1152. F. L. Wong and H. G. Greene. Geologic hazards in the central basin region, Vanuatu. Circum-Pacific Council for Energy and Mineral Resources, Earth Science Series, *in* Geology and offshore resources of Pacific island arcs; Vanuatu region. (H. G. Greene, editor and others). 8, 1988. p. 225-251.

OP-1153. H. F. Wong* and R. T. Cheng. CALIFORNIA. A branched hydrodynamic model of the Sacramento-San Joaquin Delta, California. Hydraulic Engineering: Proceedings of the National Conference on Hydraulic Engineering, *in* Proceedings of the 1989 national conference on Hydraulic engineering. (M. A. Ports, editor). 1989, 1989. p. 493-498.

OP-1154. W. W. Wood and W. E. Sanford. Ground-water control of evaporite deposition. Economic Geology and the Bulletin of the Society of Economic Geologists. v. 85, no. 6, October 1990. p. 1226-1235.

OP-1155. D. G. Woodward and C. M. Menges. Application of uphole data from petroleum seismic surveys to groundwater investigations, Abu Dhabi (United Arab Emirates). Geoexploration, *in* Application of geophysics to water prospecting in arid and semiarid areas; proceedings of the 1990 international symposium. (Dominique Chapellier, editor and others). v. 27, no. 1-2, February 1991. p. 193-212.

OP-1156. J. E. Wright* and J. L. Wooden. New Sr, Nd, and Pb isotopic data from plutons in the northern Great Basin; implications for crustal structure and granite petrogenesis in the hinterland of the Sevier thrust belt. Geology (Boulder). v. 19, no. 5, May 1991. p. 457-460.

OP-1157. L. D. Wright*, J. D. Boon*, S. C. Kim* and J. H. List. Modes of cross-shore sediment transport on the shoreface of the Middle Atlantic Bight. Marine Geology. v. 96, no. 1-2, January 1991. p. 19-51.

OP-1158. W. G. Wright. VIRGINIA. Hydrogeologic factors affecting flow in the ground-water systems of the coalfields of southwestern Virginia, *in* Proceedings; 1987 national symposium on Mining, hydrology, sedimentology and reclamation. (R. W. De Vore, editor and others). Lexington, KY: Univ. Ky., Coll. Eng., Off. Eng. Serv. December 1987. p. 419-422.

OP-1159. S. S. Wu and F. J. Doyle. Topographic mapping. Cambridge Planetary Science Series, *in* Planetary mapping. (Ronald Greeley, editor and others). 6, 1990. p. 169-207.

OP-1160. J. C. Wynn, A. E. Grosz and V. L. Carlson-Foscz*. Induced-polarization response of some titanium-bearing placer deposits in the Southeastern United States. Investigations in Geophysics, *in* Induced polarization; applications and case histories. (J. B. Fink, editor and others). 4, 1990. p. 280-303.

OP-1161. D. K. Yamaguchi*, R. P. Hoblitt and D. B. Lawrence*. WASHINGTON. A new tree ring date for the "floating island" lava flow, Mount St. Helens, Washington. Bulletin of Volcanology. v. 52, no. 7, September 1990. p. 545-550.

OP-1162. I. C. Yang, G. S. Davis* and T. M. Sayre*. Comparison of pore-water extraction by triaxial compression and high-speed centrifugation methods, *in* Minimizing risk to the hydrologic environment. (Alexander Zaporozec, editor). Dubuque, IA: Kendall Hunt Publ. Co. 1990. p. 250-259.

OP-1163. R. S. Yeats* and D. P. Schwartz. Paleoseismicity: extending the record of earthquakes into prehistoric time. Episodes. v. 13, no. 1, March 1990. p. 9-12.

OP-1164. Chung-Cheng Yen* and G. L. Guymon. An efficient deterministic-probabilistic approach to modeling regional groundwater flow; 1, Theory. Water Resources Research. v. 26, no. 7, July 1990. p. 1559-1567.

OP-1165. H. L. Young, A. J. MacKenzie* and R. J. Mandle*. ILLINOIS, WISCONSIN. Simulation of ground-water flow in the Cambrian-Ordovician aquifer system in the Chicago-Milwaukee area of the northern Midwest. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 39-72.

OP-1166. H. L. Young, R. J. Mandle, A. L. Kontis and D. I. Siegel*. The Cambrian-Ordovician regional aquifer system in the northern Midwest; a summary. AWRA Monograph Series, *in* Regional aquifer systems of the United States; aquifers of the Midwestern area. (L. A. Swain, editor and others). 13, 1989. p. 5-37.

OP-1167. O. S. Zapecza. NEW JERSEY. An overview of New Jersey groundwater hydrology. Annual Field Conference - Geological Association of New Jersey, *in* Aspects of groundwater in New Jersey; Seventh annual meeting of the Geological Association of New Jersey. (R. L. Kroll, compiler and others). 7, 1990. p. B1-B22.

OP-1168. S. C. Zell*, M. Budhraja*, J. L. Riggs* and S. K. Sorenson. Monoclonal antibody detection of Giardia lamblia

cysts in human stool by direct immunofluorescence. Jr. of Wilderness Med. 1, 1990. p. 203-207.

OP-1169. E-an Zen. Phanerozoic denudation history of the southern New England Appalachians deduced from pressure data. American Journal of Science. v. 291, no. 4, April 1991. p. 401-424.

OP-1170. Andrea Zerilli* and R. J. Bisdorf. A BASIC program to transform continuous polar dipole-dipole resistivity soundings to half-Schlumberger soundings. Computers & Geosciences. v. 16, no. 7, 1990. p. 911-923.

OP-1171. Zhai Qingshan*, J. E. Springer and M. D. Zoback*. Analysis of fractures from borehole televiewer logs in a 500 m deep hole at Xiaguan, Yunnan Province, Southwest China. Physics and Chemistry of the Earth, *in* The international symposium on tectonophysics. (Ma Jin and others). v. 17, no. 1, 1989. p. 199-206.

OP-1172. Lei Zhou*, F. T. Kyte* and B. F. Bohor. Cretaceous/Tertiary boundary of DSDP Site 596, South Pacific. Geology (Boulder). v. 19, no. 7, July 1991. p. 694-697.

OP-1173. M. L. Zientek, T. L. Fries and R. W. Vian*. MONTANA. As, Bi, Hg, S, Sb, Sn and Te geochemistry of the J-M Reef, Stillwater Complex, Montana; constraints on the origin of PGE-enriched sulfides in layered intrusions. Journal of Geochemical Exploration, *in* Geochemistry of platinum-group elements. (C. E. Dunn, editor and others). v. 37, no. 1, March 1990. p. 51-73.

OP-1174. R. W. Zimmerman* and G. S. Bodvarsson. Absorption of water into porous blocks of various shapes and sizes. Water Resources Research. v. 26, no. 11, 1990. p. 2797-2806.

OP-1175. A. A. Zohdy and R. J. Bisdorf. CALIFORNIA. Schlumberger sounding near Medicine Lake, California. Geophysics. v. 55, no. 8, August 1990. p. 956-964.

OP-1176. Y. A. Zorin* and L. E. Cordell. Crustal extension in the Baikal rift zone. Tectonophysics. v. 198, no. 1, 1991. p. 117-121.

ABSTRACTS

Abstracts are condensed but informative summaries of presentations made at meetings of scientific and professional organizations. Typically they summarize the principal conclusions of an author's current work but contain little supporting data. Non-Geological Survey personnel who share authorship in abstracts with U.S. Geological Survey personnel are indicated by an asterisk (*) immediately following the name. These publications are not available from the U.S. Geological Survey.

OP-1177. William Acevedo and R. J. Pike. CALIFORNIA. Digital representation of morphology in the San Jose 1:100,000 sheet, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 2.

OP-1178. J. C. Adamski. MARYLAND. Factors affecting well productivity in the fractured rocks of the Piedmont physiographic province, Maryland [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 2.

OP-1179. C. L. Aiken*, M. E. Ander*, M. F. de la Fuente* and D. B. Hoover. Geophysical study of Platanares geothermal site, Honduras, Central America [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies; 1989 technical program. 59, Vol. 1, November 2, 1989. p. 122-125.

OP-1180. W. T. Aker*, C. F. Miller* and J. L. Wooden. CALIFORNIA. Nature and origin of enclaves in the Old Woman Granodiorite, SE California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 2.

OP-1181. J. N. Aleinikoff, R. E. Zartman, D. W. Rankin, P. T. Lyttle, W. C. Burton and R. C. McDowell. New U-Pb zircon ages for rhyolite of the Catoctin and Mount Rogers formations: more evidence for two pulses of Iapetan rifting in the Central and Southern Appalachians [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 2.

OP-1182. R. B. Alexander and R. A. Smith. The transport of lead in major U.S. rivers; a budget for major sources and sinks of lead [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 ENVR 183.

OP-1183. R. H. Alexander. The decade for natural disaster reduction; seven questions for URISA [abstr.], *in* Papers from the annual conference of the Urban & Regional Information Systems Association. (Libby Clapp, editor and others). Washington, DC: URISA, 1990. p. 79.

OP-1184. L. R. Alldredge. On predicting changes in the geomagnetic field [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 434.

OP-1185. C. N. Alpers*, R. O. Rye and D. K. Nordstrom. Low-temperature oxygen isotope exchange between aqueous sulfate and water; evidence from Lake Tyrrell, Australia [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 62.

OP-1186. J. L. Anderson*, E. D. Young*, A. P. Barth*, J. L. Wooden, R. M. Tosdal and Jean Morrison*. CALIFORNIA. Mesozoic batholiths of the Mojave [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 3.

OP-1187. O. J. Anderson* and G. D. Stricker. NEW MEXICO. Coal-bearing Ramah Member of the Crevasse Canyon Formation; a new stratigraphic unit in the Zuni Basin, west-central New Mexico [abstr.] New Mexico Geology, *in* New Mexico Geological Society; 1990 annual spring meeting; abstracts. v. 12, no. 4, November 1990. p. 92.

OP-1188. R. E. Anderson and T. P. Barnhard. NEVADA. Neogene strain incongruity at the Hamblin Bay Fault, Lake Mead,

Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 3.

OP-1189. B. J. Andraski. Rubber-balloon and drive-core sampling for deteriming bulk density of an alluvial Desert soil [abstr.] Agronomy Abstracts, *in* American Society of Agronomy, Crop Science Society of America, Soil Science Society of America; proceedings of the 1990 annual meetings. 1990, 1990. p. 208.

OP-1190. D. J. Andrews. Stress in the crust near a weak strike-slip fault [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 3.

OP-1191. A. K. Armstrong and J. S. Kelley. ALASKA. Petrology and reservoir quality of the Katakturuk Dolomite, Arctic National Wildlife Refuge, Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 600.

OP-1192. A. K. Armstrong and C. T. Wrucke. ARIZONA. Depositional environment of the carbonate members of the middle Proterozoic Mescal Limestone, Apache Group, central and southern Arizona [abstr.] New Mexico Geology, *in* Abstracts; New Mexico Geological Society. v. 12, no. 3, August 1990. p. 65.

OP-1193. B. F. Atwater and Minze Stuiver*. WASHINGTON. Precise ^{14}C ages for sudden Holocene submergence in Washington [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 4.

OP-1194. W. M. Aubrey. NEW MEXICO. Tectonic and eustatic controls of facies architecture of Upper Cretaceous Dakota Sandstone, San Juan Basin, New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1146-1147.

OP-1195. R. A. Ayuso and J. G. Arth. VERMONT. Geochemistry and metallogeny of Devonian intrusives in the Northeast Kingdom Batholith, Vermont [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 4.

OP-1196. William Back. Role of chemical studies in hydrogeology [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 5.

OP-1197. P. A. Baedecker. Materials effects research of the U.S. National Acid Precipitation Assessment Program [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 ENVR 67.

OP-1198. W. C. Bagby and J. S. Cline*. NEVADA. Constraints on the pressure of formation of the Getchell gold deposit, Humboldt County, Nevada, as interpreted from secondary-fluid-inclusion data [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 70.

OP-1199. G. B. Bailey and J. L. Dwyer. Examination of selected satellite and airborne remote sensing systems for geologic mapping and mineral exploration in semiarid terrains [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 106-107.

OP-1200. G. B. Bailey and J. L. Dwyer. Examination of selected satellite and airborne remote sensing systems for geologic mapping and mineral exploration in semi-arid terrains [abstr.] Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 1255-1257.

OP-1201. M. M. Ball. FLORIDA. Continental dynamics in the eastern Gulf of Mexico (Florida and the western Florida shelf) [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A82.

OP-1202. M. M. Ball. Reworked eolianites; Bahaman highstand anomalies [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 604.

OP-1203. M. M. Ball. FLORIDA. Seismic stratigraphy of the western Florida shelf [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 6.

OP-1204. Viki Bankey and E. A. Merewether. WYOMING. Gravity studies in southwestern Wyoming; evidence for a buried east-west-trending uplift north of Rock Springs [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1314-1315.

OP-1205. Jesus Baraza*, C. H. Nelson and Andrés Maldonado*. Factors controlling Pliocene-Quaternary sedimentation on the Gulf of Cadiz continental slope, Spain [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 604-605.

OP-1206. C. E. Barker and B. L. Crysdale. COLORADO. Stabilization of kerogen thermal maturation; evidence from geothermometry and burial history reconstruction, Niobrara Limestone, Berthoud oil field, western Denver Basin, Colorado [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 605.

OP-1207. C. E. Barker, J. R. Hatch, R. H. Goldstein* and A. W. Walton*. KANSAS. Thermal maturity, organic geochemistry, and burial history of Pennsylvanian rocks, Cherokee Basin, southeastern Kansas [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1315.

OP-1208. C. E. Barker, R. C. Johnson, M. J. Pawlewicz, B. L. Crysdale and A. C. Clark. WYOMING. Coal-bed methane show within the Wind River Indian Reservation enhances gas prospects in deeper portions of the Wind River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1122-1123.

OP-1209. C. E. Barker, J. A. Peterson and F. G. Poole. NEVADA. Thermal maturity trends from Rock-Eval and vitrinite reflectance analysis on potential source rocks in eastern Nevada [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1123.

OP-1210. P. M. Barlow. Benefits and limitations of particle tracking for the delineation of supply-well contributing areas in shallow water-table aquifers [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 787-788.

OP-1211. D. F. Barnes, W. J. Nokleberg and T. M. Brocher. ALASKA. Gravitational and seismic evidence for Tertiary structural basins in the Alaska Range and Tanana Lowland [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 5.

OP-1212. D. W. Barnes and Erk Reimnitz. ALASKA. Coastal erosion and accretion in the Arctic National Wildlife Refuge, Alaska; the influence of sea ice, permafrost, and climate [abstr.] Proceedings (Arctic Science Conference), *in* Science education; 1988 Arctic science conference, Fairbanks, Alaska, proceedings, summaries of selected sessions and abstracts of papers. (American Association for the Advancement of Science). 39, 1988. p. 113.

OP-1213. P. W. Barnes, E. W. Kempema and Erk Reimnitz. Source, characteristics, and significance of sediment pellets formed on the sea ice of the Arctic Basin [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1263.

OP-1214. P. W. Barnes and Erk Reimnitz. Ice interaction with the Arctic shelf and coast; constraints on and implication for petroleum development [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 605.

OP-1215. J. A. Barron. Miocene-early Pliocene diatomaceous sedimentation patterns in the Pacific; a response to paleoceanographic and paleoclimatic change [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 605.

OP-1216. J. A. Bartow. CALIFORNIA. Coarse-grained deltaic sedimentation in the Miocene Cuyama strike-slip basin, California Coast Ranges [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 606.

OP-1217. B. C. Beaudoin*, G. S. Fuis, W. D. Mooney, W. J. Nokleberg, W. J. Lutter and N. I. Christensen*. ALASKA. Thin, low-velocity crust beneath the Yukon-Tanana Terrane, east-central Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 5.

OP-1218. J. C. Behrendt, A. G. Green*, W. F. Cannon, M. W. Lee, D. R. Hutchinson and Bernd Milkereit*. Crustal attenuation and associated basalt flow extrusion in the Keweenawan Rift, Lake Superior, from deep seismic reflection profiles [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 64.

OP-1219. E. S. Belt* and P. C. Lyons. MARYLAND, WEST VIRGINIA. Thrust-ridge paleodepositional model for the upper Freeport coal bed and associated clastic facies, Upper Potomac coal field, Appalachian Basin, U.S.A. [abstr.] International Journal of Coal Geology. v. 16, no. 1-3, December 10, 1990. p. 167-170.

OP-1220. L. M. Benninger, R. A. Koski and R. A. Zierenberg. Southern Juan de Fuca Ridge and Escanaba Trough, Gorda Ridge; comparison of hydrothermal deposits in sediment-free and sediment-covered ridge settings [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 960.

OP-1221. C. Benson*, Irving Friedman and Jim Gleason. ALASKA. Anthropogenic water in the ice fog of Fairbanks, Alaska [abstr.] Proceedings (Arctic Science Conference), *in* Science education; 1988 Arctic science conference, Fairbanks, Alaska, proceedings, summaries of selected sessions and abstracts of papers. (American Association for the Advancement of Science). 39, 1988. p. 115.

OP-1222. H. M. Benz and George Zandt*. CALIFORNIA. Lithospheric structure and seismicity of Northern California; evolution of the crustal margin with passage of the Mendocino triple junction [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 6.

OP-1223. L. M. Bertolini and A. S. McEwen. Digital mosaic and elevation models of central Valles Marineris, Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 77-78.

OP-1224. L. A. Beyer. ALASKA. Borehole gravity surveys in the Cretaceous-Tertiary Sagavanirktok Formation, Kuparuk River oil field, Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 610.

OP-1225. K. J. Bird, P. H. McClellan and T. R. Bruns. CALIFORNIA. Case studies, Santa Maria Province, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with divisions DPA/EMD/SEPM. v. 74, no. 5, May 1990. p. 610-611.

OP-1226. M. C. Blake, Jr., D. L. Jones*, R. J. McLaughlin and C. M. Wentworth. CALIFORNIA. Tectonic significance of fragments of Sierran basement in the northern Coast Ranges, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 7.

OP-1227. M. C. Blake, Jr. and P. K. Showalter. CALIFORNIA. Preliminary tectonic synthesis of the northern Diablo Range, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 6.

OP-1228. R. J. Blakely and R. C. Jachens. NEVADA. Concealed mineral deposits in Nevada; insights from three-dimensional analysis of gravity and magnetic anomalies [abstr.], *in* Geology and ore deposits of the Great Basin; program with ab-

stracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 52-53.

OP-1229. R. B. Blodgett and D. M. Rohr*. ALASKA. Silurian and Devonian gastropods of Alaska [abstr.] Annual Report - Western Society of Malacologists, *in* Abstracts and proceedings of the annual meeting of the Western Society of Malacologists on Current directions in Alaskan malacology. (P. H. Scott, organizer and others). 23, 1991. p. 15-16.

OP-1230. R. J. Bodnar*, C. L. Knight* and R. C. Burruss. CALIFORNIA. The nature and distribution of fluid inclusions in the Monterey Formation in the vicinity of the Santa Maria Basin, California; implications for petroleum migration [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 614.

OP-1231. S. R. Bohlen. The value and limitations of thermobarometry: a partisan view [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 71-72.

OP-1232. B. F. Bohor. Ejecta components and thickness of K-T boundary clays and claystones; indicators of crater location [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1291.

OP-1233. J. S. Booth and D. W. O'Leary. The North American Atlantic outer continental margin landslides data base; summary and observations [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 961.

OP-1234. Catherine Bouroz*, Jacques Angelier*, Françoise Bergerat* and C. C. Barton. UTAH, ARIZONA. Geometry and evolution of joint and minor fault patterns in Bryce, Zion, and Grand Canyon (Utah, Arizona) [abstr.] International Geological Congress, Abstracts—Congres Geologique Internationale, Resumes, *in* 28th international geological congress; abstracts. v. 28, no. 1, 1989. p. 185-186.

OP-1235. T. M. Bown. WYOMING. Possible late Cenozoic emplacement of Paleozoic allochthons on Heart Mountain and McCulloch Peaks, Park County, Wyoming [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A61.

OP-1236. S. E. Box and W. P. Elder. ALASKA. Depositional and biostratigraphic framework of the Upper Cretaceous Kuskokwim Group, SW Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 7.

OP-1237. E. E. Brabb. Landslides: extent and economic significance in United States [abstr.] International Geological Congress, Abstracts—Congres Geologique Internationale, Resumes, *in* 28th international geological congress; abstracts. v. 28, no. 1, 1989. p. 189.

OP-1238. E. E. Brabb and W. H. Hensolt*. CALIFORNIA. Depth to bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 7.

OP-1239. R. E. Bracken and V. F. Labson. Airborne application of the ring core fluxgate magnetometer [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies. 59, Vol. 1, November 2, 1989. p. 336-339.

OP-1240. M. W. Bradley and J. X. Corgan*. TENNESSEE. Trilobites from the Warsaw Limestone (Mississippian, Meramecian) of Dickson County, Tennessee [abstr.] Journal of the Tennessee Academy of Science, *in* Tennessee Academy of Science 100th annual meeting; proceedings. (B. P. Stone, president). v. 66, no. 2, April 1991. p. 61.

OP-1241. T. J. Bralower*, M. R. Leckie*, W. V. Sliter, D. J. Allard*, M. A. Arthur* and S. O. Schlanger*. Oceanwide anoxia in the early Aptian [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 618-619.

OP-1242. D. A. Brew, J. M. Hammarstrom, G. R. Himmelberg*, J. L. Wooden, R. A. Loney and S. M. Karl. ALASKA. Crawfish Inlet Pluton, Baranof Island, southeastern Alaska; a north-tilted Eocene body or an untilted enigma? [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 8.

OP-1243. T. M. Brocher and U.S. Brink*. Multichannel seismic evidence for a subcrustal intrusive complex under Oahu and a model for Hawaiian volcanism [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 420.

OP-1244. T. M. Brocher, M. A. Fisher, R. D. Luzitano, G. S. Fuis, W. J. Nokleberg, V. F. Labson, W. D. Stanley and N. I. Christensen*. ALASKA. Crustal structure and evolution of the Alaska Range, Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 8.

OP-1245. T. M. Brocher, M. A. Fisher, C. D. Stephens, M. J. Moses and E. L. Geist. ALASKA. Structure and tectonics of the northern Gulf of Alaska, Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 8.

OP-1246. T. M. Brocher and W. D. Mooney. A comparison of the lower oceanic and continental crust and upper mantle based on coincident seismic reflection/refraction profiles [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 62.

OP-1247. S. D. Brower*, H. W. Rauch* and A. P. Schultz. WEST VIRGINIA. Distribution of radon gas in ground water, soil

gas and indoor air for the Great Valley of West Virginia [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 11.

OP-1248. C. L. Brown*, C. L. Ostergren and M. T. Ledbetter*. Sedimentological study in the northwestern Gulf of Mexico using tephrochronology and oxygen isotope stratigraphy [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 619-620.

OP-1249. J. L. Brown and P. L. Hansley. WYOMING, MONTANA. Petrology of Tullock Member, Fort Union Formation, Wyoming and Montana; evidence for early Paleocene uplift of Bighorn Mountains [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1149.

OP-1250. P. W. Brown*, S. J. Owen-Joyce, C. S. Daughtry* and W. P. Kustas*. Effect of underlying surface on ground-based environmental data collected in an arid region [abstr.] Agronomy Abstracts, *in* American Society of Agronomy, Crop Science Society of America, Soil Science Society of America; proceedings of the 1990 annual meetings. 1990, 1990. p. 15.

OP-1251. R. D. Brown. CALIFORNIA. Seismicity and geologic structure, San Francisco Bay region, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 9.

OP-1252. R. G. Brown and J. R. Stark. MINNESOTA. Hydrologic and water quality characteristics of a wetland receiving wastewater effluent in Minnesota, USA [abstr.] International Geological Congress, Abstracts—Congres Geologique Internationale, Resumes, *in* 28th international geological congress; abstracts. v. 28, no. 1, 1989. p. 207-208.

OP-1253. T. R. Bruns, P. R. Carlson, A. J. Stevenson and M. R. Dobson*. ALASKA. Geology along the Fairweather-Queen Charlotte fault system off Southeast Alaska and British Columbia from GLORIA images and seismic-reflection data [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 962.

OP-1254. T. R. Bruns, P. R. Carlson, A. J. Stevenson, M. A. Fisher, H. F. Ryan, D. M. Mann, M. R. Dobson*, Q. J. Huggett*, L. M. Parson* and N. G. Fannin*. GLORIA mosaic of the Gulf of Alaska and the British Columbia margin; deep-sea channels, margin deformation, and the Queen Charlotte Fault [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 620.

OP-1255. T. R. Bruns and J. G. Vedder. Petroleum prospects for offshore sedimentary basins in the eastern Papua New Guinea and Solomon Islands regions [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 961-962.

OP-1256. K. E. Budding, D. P. Schwartz and C. L. Ostergren. CALIFORNIA. The Rodgers Creek fault zone, CA; slip rate and earthquake recurrence estimates [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 9.

OP-1257. W. C. Burton, M. J. Kunk and N. M. Ratcliffe. VERMONT. Microcline and biotite $^{40}Ar/^{39}Ar$ ages and their bearing on the Taconian and Acadian thermal history of the central Green Mountains massif, Vermont [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 13.

OP-1258. M. A. Buzas* and T. G. Gibson. MARYLAND. Spatial distribution of Miocene foraminifera at Calvert Cliffs, Maryland [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A47.

OP-1259. G. J. Calderone and R. F. Butler*. The effects of randomly directed noise on paleomagnetic directions [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 4, November 1, 1988. p. 1158.

OP-1260. W. M. Calvin and T. V. King. Analysis of Mariner 6 and 7 spectra for weak absorption features from 2 to 6 μm [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 95-96.

OP-1261. C. C. Cameron, C. A. Palmer and J. S. Esterle*. The geology of selected peat-forming environments in temperate and tropical latitudes [abstr.] International Journal of Coal Geology. v. 16, no. 1-3, December 10, 1990. p. 127-130.

OP-1262. S. C. Cande*, S. D. Lewis, S. F. Tebbens* and Nathan Bangs*. Subduction erosion along the southern Chile Trench [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 460.

OP-1263. W. F. Cannon and T. A. McGervey. Mineral deposits of the Midcontinent Rift, Lake Superior region, U.S. and Canada [abstr.], *in* Michigan; its geology and geologic resources; a second symposium, 1991; program and abstracts. Lansing, MI: Mich. Dep. Nat. Resour. 1991. p. 22.

OP-1264. P. D. Capel. MINNESOTA. Atmospheric deposition of herbicides in Minnesota [abstr.], *in* Minnesota water 1990; facing the environmental challenges of the 1990s, collection of conference abstracts. (Minnesota Environmental Quality Board). St. Paul, MN: Minn. Environ. Quality Board, 1990. p. 27.

OP-1265. M. A. Carey. NEW MEXICO. Foraminifers suggest environmental differences between Whitewater Arroyo Shale Tongue and basal main-body Mancos Shale, San Juan Basin, New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1150.

OP-1266. P. R. Carlson, T. R. Bruns, Q. J. Huggett*, D. M. Mann and A. J. Stevenson. ALASKA. GLORIA imagery links sedimentation in Aleutian Trench to Yakutat margin via Surveyor Channel [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 962-963.

OP-1267. P. R. Carlson, T. R. Bruns, A. J. Stevenson, D. M. Mann, Q. J. Huggett*, U. K. Wormly* and M. R. Dobson*. Sedimentary depositional environments in the Gulf of Alaska from GLORIA imagery [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 624.

OP-1268. P. R. Carlson, H. A. Karl, B. D. Edwards, J. V. Gardner and R. K. Hall. ALASKA. Submarine slumps, slides, and flows dominate sculpting of Beringian margin, Alaska [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 963.

OP-1269. M. H. Carr. The inventory of water on the Martian surface; implications for the evolution of the atmosphere [abstr.] International Union of Geodesy and Geophysics, General Assembly. 19, Vol. 1, 1987. p. 96.

OP-1270. M. H. Carr. The effects of floods, volcanism and polar processes on the D/H ratio in the Martian atmosphere [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 97-98.

OP-1271. L. D. Carter. ALASKA. Aeolian sediments in Arctic Alaska as sources of paleo-environmental data [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 176.

OP-1272. D. A. Castillo* and W. L. Ellsworth. CALIFORNIA. The seismotectonics of the San Andreas fault system north of Point Arena along the Coast Ranges of Northern California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 12.

OP-1273. S. J. Cauller and D. A. Eckhardt. NEW YORK. Relation between land use and quality of shallow ground water in central and eastern Long Island, New York [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 792-793.

OP-1274. G. T. Cebula, M. J. Kunk, H. H. Mehnert, C. W. Naeser, J. D. Obradovich and J. F. Sutter. The Fish Canyon Tuff, a potential standard for the ^{40}Ar-^{39}Ar and fission-track dating methods [abstr.] Terra Cognita, *in* Sixth international conference on Geochronology, cosmochronology and isotope geology; abstracts. v. 6, no. 2, 1986. p. 139-140.

OP-1275. C. B. Cecil. A climate change model for the origin of Carboniferous coal-bearing strata in the Eastern United States [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A25.

OP-1276. C. B. Cecil and N. T. Edgar. Climatic influence on basin sedimentation; Peru-Chile Trench as an analogue for the Ouachita Basin [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 15.

OP-1277. C. B. Cecil, N. T. Edgar and T. S. Ahlbrandt. Climate controls on cyclic sedimentation; climatostratigraphy [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 15.

OP-1278. D. E. Champion and R. W. Kistler. CALIFORNIA. Paleogeographic reconstruction of the northern Salinian Block using Sr isotopic properties [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 12.

OP-1279. D. E. Champion, M. A. Lanphere and E. M. Shoemaker. Multiple polarity subchrons within late Matuyama and Brunhes polarity chrons [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1168.

OP-1280. F. H. Chapelle. Integrating microbiology and hydrogeology in studies of ground-water chemistry [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 16.

OP-1281. F. H. Chapelle and P. B. McMahon. Bacterially mediated diagenesis of deeply buried sediments in the Atlantic Coastal Plain; Part 1, Distribution of bacterial processes [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 37.

OP-1282. M. G. Chapman and K. L. Tanaka. Geologic mapping of lower Mangala Valles, Mars; evidence of flooding, sapping, debris flow, and volcanism [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 103.

OP-1283. T. E. Chase and J. D. Young. Detailed side and overhead views of geologic features from joint panoramic and blimp operations [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 964.

OP-1284. P. S. Chavez, Jr., S. C. Sides and J. A. Anderson. Comparison of three different methods to merge multiresolution and multispectral data; Landsat TM and SPOT panchromatic [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 964.

OP-1285. R. T. Cheng. CALIFORNIA. Tides, tidal and residual circulation in San Francisco Bay, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 13.

OP-1286. T. C. Chidsey*, M. L. Allison* and J. G. Palacas. UTAH. Potential for Precambrian source rock in Utah [abstr.]

AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1319.

OP-1287. J. L. Chin and L. A. White*. CALIFORNIA. Sedimentary furrows in San Francisco Bay, CA; characteristics and initial observations [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1258.

OP-1288. B. A. Chouet, R. A. Page, J. N. Davies* and J. A. Power*. ALASKA. Forecasting eruptions at Redoubt Volcano, Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 13.

OP-1289. M. J. Chrzastowski*, D. W. Folger, C. F. Polloni, F. A. Pranschke* and C. W. Shabica*. Geologic setting of the Olson tree site, southern Lake Michigan [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 85.

OP-1290. S. E. Church, J. D. Gaccetta and M. H. Delevaux. ALASKA. Pb-isotope results from syngenetic and epigenetic vein occurrences and implications for their genesis, Yukon-Tanana Terrane, Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 24.

OP-1291. D. H. Clark*, M. M. Clark and A. R. Gillespie*. CALIFORNIA. A late Pleistocene ice field in the Mokelumne drainage, north-central Sierra Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 13.

OP-1292. J. C. Clark*, R. J. McLaughlin, R. W. Kistler, D. E. Champion and C. R. Franck*. CALIFORNIA. Basement structure southwest of the San Andreas Fault, Loma Prieta, Laurel and Los Gatos quadrangles, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 13.

OP-1293. J. W. Clarke and J. A. Peterson. Diverse super-giant petroleum deposits in the West Siberian oil-gas basin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 629.

OP-1294. S. H. Clarke, Jr. and G. A. Carver*. CALIFORNIA. Tectonics and late Holocene paleoseismicity of the southern Cascadia subduction zone, northwestern California continental margin [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 13.

OP-1295. J. L. Clayton and T. A. Daws. Thermal maturation and oil generation history of Pennsylvanian (Desmoinesian) black shales of Powder River and northern Denver basins [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1151.

OP-1296. J. L. Clayton and R. R. Gries*. COLORADO. Petroleum geochemistry of San Juan Sag, Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1151-1152.

OP-1297. J. L. Clayton and R. R. Gries*. COLORADO. Source rock evaluation, oil-source rock correlation, and kinetic modeling; San Juan Sag, CO [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 629.

OP-1298. J. R. Clayton, Jr.*, Erk Reimnitz, J. R. Payne* and E. W. Kempema. Movement of fine-grained sediment particles in freshwater- and seawater-slush ice slurries during freeze front advances [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1284.

OP-1299. H. E. Clifton. CALIFORNIA. Deformational structures of possible earthquake origin in Pleistocene shelf siltstone, San Francisco, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 629.

OP-1300. H. E. Clifton, R. J. Anima and J. L. Chin. CALIFORNIA. Modern sediments of San Francisco Bay [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 14.

OP-1301. J. G. Clough*, M. S. Robinson*, G. H. Pessel*, T. A. Imm*, R. B. Blodgett*, A. G. Harris, S. C. Bergman* and K. A. Foland*. ALASKA. Geology and age of Franklinian and older rocks in the Sadlerochit and Shubik mountains, Arctic National Wildlife Refuge, Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 25.

OP-1302. G. D. Clow and R. M. Haberle*. Characteristics of the Martian atmospheric surface layer [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 111-113.

OP-1303. G. D. Clow, A. H. Lachenbruch and C. P. McKay*. ALASKA. Inversion of borehole temperature data for Recent climatic changes; examples from the Alaskan Arctic and Antarctica [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 158.

OP-1304. T. S. Collett. ALASKA. Gas hydrate resource estimate, North Slope, Alaska [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 32.

OP-1305. T. S. Collett. Potential geologic hazards of Arctic gas hydrates [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 631-632.

OP-1306. T. S. Collett. ALASKA. Permafrost-associated gas hydrates of northern Alaska; a possible source of atmospheric methane [abstr.], *in* Abstracts; International conference on the role

of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 223.

OP-1307. Jen-Yves Collot* and M. A. Fisher. Mechanisms for tectonic erosion of an accretionary complex in the d'Entrecasteaux Zone-New Hebrides island arc collision zone [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 965.

OP-1308. S. M. Colman. The effect of sea level rise on coastal plain estuaries, with examples from Chesapeake Bay [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 632.

OP-1309. J. E. Conrad, E. H. McKee and B. D. Turrin. Laser-microprobe single-grain $^{40}Ar/^{39}Ar$ age-spectrum analysis of riebeckite from Bayan Obo, China; implications for dating disturbed minerals [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 15.

OP-1310. H. E. Cook and M. E. Taylor. Paleozoic carbonate passive-margin evolution and resulting petroleum reservoirs; Great Basin, Western United States [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 45.

OP-1311. A. K. Cooper, P. J. Barrett*, Karl Hinz*, H. M. Stagg* and V. V. Traube*. Cenozoic prograding sequences of the Antarctic continental margin; what balance between structural and eustatic control? [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 633.

OP-1312. A. K. Cooper, S. L. Eittreim, J. B. Anderson* and H. M. Stagg*. Sedimentary sequences of the Pacific-Indian Ocean sector of the Antarctic continental margin [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 965-966.

OP-1313. R. W. Couch. OREGON. The structure of western Oregon [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 118.

OP-1314. R. M. Coveney, Jr.*, J. B. Murowchick*, R. I. Grauch and M. D. Glascock*. Molybdenum, nickel and precious metals in black shales [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 12.

OP-1315. B. F. Cox and V. M. Seiders. CALIFORNIA. Paleogeographic significance of conglomerate clast assemblages in the Great Valley Sequence, Central California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 16.

OP-1316. D. P. Cox, Stephen Ludington, M. G. Sherlock*, D. A. Singer*, B. R. Berger* and J. V. Tingley*. NEVADA. Mineralization patterns in time and space in the Great Basin of Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 53-54.

OP-1317. S. D. Craigg. Analysis of spatial geologic data using surface modeling and geographic information system software; applications to regional geologic mapping, San Juan structural basin, New Mexico, Colorado, Arizona, and Utah [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1152.

OP-1318. Stuart Crampin*, D. C. Booth*, Russ Evans*, Sheila Peacock* and J. B. Fletcher. Response to comments by Aster et al. about shear-wave splitting observed by Crampin et al. and Peacock et al [abstr.] Eos, Transactions, American Geophysical Union, *in* Additional and revised abstracts from the 1990 AGU fall meeting. v. 71, no. 48, November 27, 1990. p. 1825.

OP-1319. J. K. Crowley. Spectral reflectance analysis of playa evaporite minerals; potential for use in playa geochemical studies and mineral resource exploration [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 108.

OP-1320. J. K. Crowley and M. H. Podwysocki. Relative absorption band-depth images; use in imaging spectrometer data analysis and calibration [abstr.] Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 443-444.

OP-1321. B. L. Crysdale. WYOMING, MONTANA. Stratigraphic framework of the Powder River basin, Wyoming and Montana, utilizing computer-generated isopach and structure contour maps and cross sections [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1320.

OP-1322. B. L. Crysdale and C. E. Barker. COLORADO. Use of comparative geothermometry to reconstruct burial history and timing of oil generation and migration in Niobrara Formation, Berthoud State 4 well, Denver Basin, Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1152.

OP-1323. W. W. Danforth, W. C. Schwab, T. F. O'Brien and H. A. Karl. Side-scan sonar mapping; pseudo-real-time processing and mosaicking techniques [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 638.

OP-1324. J. Daniel*, J. Boultin*, Jean-Yves Collot*, J. P. Eissen*, M. A. Fisher, H. G. Greene, S. E. Lallemand*, Michel Monzier* and Bernard Pelletier*. Ridges subduction/collision along the New Hebrides island arc [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 967.

OP-1325. Joanne Danielson*, M. L. Silberman and Muhammad Shafiqullah*. CALIFORNIA. Age of mineralization of gold-quartz veins at the Reid Mine, eastern Klamath Terrane, Shasta County, Northern California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America,

Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 17.

OP-1326. W. R. Danskin. Advice and arbitration; the role of numerical models in the public sector [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 17.

OP-1327. G. F. Davidson. IDAHO. Southwest-vergent thrusting and metamorphism along the northern margin of the Wallowa Terrane near Orofino, Idaho [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A89.

OP-1328. A. S. Davis, W. B. Friesen, L. G. Pickthorn, M. S. Pringle and D. A. Clague. Xenoliths from Late Cretaceous seamounts in the Central Pacific; cumulates of fractionating alkalic basalt magma chambers [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 967-968.

OP-1329. M. W. de Wit. CALIFORNIA. An investigation of hornblende weathering as a relative age indicator of glacial tills, eastern Sierra Nevada, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 83rd annual meeting with the Paleontological Society of America, Pacific Coast Section. v. 19, no. 6, March 1987. p. 372.

OP-1330. W. E. Dean, M. A. Arthur* and B. J. Hay*. Geochemical records of late Holocene sedimentation and environmental history of the Black Sea [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1990 ocean sciences meeting. v. 71, no. 2, January 9, 1990. p. 172.

OP-1331. W. E. Dean, M. A. Arthur* and L. M. Pratt*. Geochemical evidence for global changes in climate, P_{CO2}, and organic carbon burial at Cenomanian/Turonian boundary [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 639.

OP-1332. R. G. Deike. Geovideos for teacher training and field trip planning [abstr.] Virginia Journal of Science, *in* Virginia Academy of Science; Sixty-eighth annual meeting; abstracts of papers. (J. H. Martin, editor). v. 41, no. 2, 1989. p. 90.

OP-1333. G. N. Delin. MINNESOTA. Hydrologic considerations for delineating groundwater recharge areas for wells, Rochester, Minnesota [abstr.], *in* Minnesota water 1990; facing the environmental challenges of the 1990s, collection of conference abstracts. (Minnesota Environmental Quality Board). St. Paul, MN: Minn. Environ. Quality Board, 1990. p. 42-43.

OP-1334. R. P. Denlinger. An analysis of dome building eruptions as creep-rupture phenomena [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 413.

OP-1335. D. J. DesMarais* and A. H. Truesdell. Molecular and isotopic evidence for the origin of hydrocarbon gases in geothermal systems of western North America [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 67.

OP-1336. M. D. Dettinger, D. H. Schaefer and J. M. Thomas. NEVADA, UTAH. Tertiary-age extensional patterns as a geologic framework for interpreting regional ground-water flow in the eastern Great Basin, Nevada and Utah [abstr.], *in* Oil fields and geology of the Pine Valley, Eureka County area, Nevada; Nevada Petroleum Society 1990 fieldtrip guidebook. (D. M. Flanigan, editor and others). Reno, NV: Nev. Pet. Soc. June 1990. p. 55.

OP-1337. Ed DeWitt and S. J. Reynolds*. ARIZONA. Late Cretaceous plutonism and cooling in the Maria fold and thrust belt, west-central Arizona [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 18.

OP-1338. Ed DeWitt, J. F. Sutter and S. J. Reynolds*. Mylonites aren't so hot; the cold facts [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 18.

OP-1339. K. A. Dickinson. NEBRASKA. Statistical study of geochemistry and mineralogy of uraniferous lake beds in Oligocene Brule Formation in northwestern Nebraska [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1153.

OP-1340. Mary Digiacomo-Cohen*, J. R. Stone and R. S. Lewis*. Detailed seismic-reflection analysis of an ice-marginal lacustrine fan in eastern Long Island Sound [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 22.

OP-1341. J. K. Dillinger. NEW MEXICO. Lithofacies in Twowells Tongue of Dakota Sandstone, southern San Juan Basin, New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1153.

OP-1342. W. P. Dillon, P. A. Battuello*, C. W. Poag, K. O. Klitgord and A. M. Tréhu*. Evolution of the Blake Plateau Basin from rift basin to carbonate platform to present eroded continental borderland [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 642.

OP-1343. W. P. Dillon, K. L. Fehlhaber, M. W. Lee, J. S. Booth and C. K. Paull*. Methane hydrate in sea floor sediments off the Southeastern U.S.; amounts and implications for climate change [abstr.] Abstracts with Programs - Geological Society of America, *in* Abstracts of papers to be presented at the meeting of the Northeastern and Southeastern sections of the Geological Society of America and associated societies. v. 23, no. 1, February 1991. p. 22.

OP-1344. J. R. Dingler and T. E. Reiss. LOUISIANA. Controls on location of sand-mud contact beneath barrier island; central Isles Dernieres, Louisiana [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section of

SEPM meeting; abstracts. v. 73, no. 9, September 1989. p. 1182-1183.

OP-1345. J. R. Dingler and T. E. Reiss. LOUISIANA. Timing and extent of barrier-island retreat; Isles Demieres, Louisiana [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1238.

OP-1346. J. C. Dohrenwend, R. C. Jachens, R. J. Blakely and B. C. Moring. NEVADA. Subsurface geometry and stratigraphy of basins in the western Great Basin; implications for the analysis of concealed mineral resources in Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 50.

OP-1347. J. C. Dohrenwend, G. Yanez* and G. Lowry*. Cenozoic landscape evolution of La Gran Sabana Sur, Southeast Venezuela [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 19.

OP-1348. J. F. Dolan. Eustatic, volcanic, and tectonic controls on redeposition of shallow-water carbonate; a reanalysis of Pacific DSDP examples [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 643.

OP-1349. M. M. Donato. OREGON. A newly-recognized ductile shear zone in the northeastern Klamath Mountains [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 19.

OP-1350. J. H. Dover. ALASKA. Parautochthonous geologic framework of east-central Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 34.

OP-1351. H. Dragert*, J. Kouba* and Michael Lisowski. GPS measurement of crustal deformation in the northern Cascadia subduction zone [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 859.

OP-1352. R. F. Dubiel. Paleoclimatic cycles and tectonic controls on fluvial lacustrine, and eolian strata in Upper Triassic Chinle Formation, San Juan Basin [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1153-1154.

OP-1353. N. M. Dubrovsky and J. M. Neil. CALIFORNIA. San Joaquin Valley RASA Phase II; regional to site-specific approaches to evaluating regional geochemical processes and trace-element distribution [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 788.

OP-1354. F. T. Dulong, C. B. Cecil, T. M. Cronin and J. C. Cobb*. A reconnaissance study of the sedimentology associated with Indonesian peat deposits [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A26.

OP-1355. J. A. Dumoulin and A. G. Harris. ALASKA. Devonian-Mississippian carbonate sequence in the Maiyumerak Mountains, western Brooks Range, Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 645-646.

OP-1356. Cynthia Dusel-Bacon and S. L. Douglass. ALASKA. New thermobarometric evidence for high pressure, medium temperature metamorphism of two subterranes of the Yukon-Tanana composite terrane (YTT) in easternmost Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 35.

OP-1357. Cynthia Dusel-Bacon and V. L. Hansen*. ALASKA. High-pressure, medium-temperature early Mesozoic metamorphism and deformation within the Yukon-Tanana composite terrane, eastern Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 20.

OP-1358. J. T. Dutro, Jr. Paleotectonic significance of an early Namurian (Carboniferous) brachiopod fauna from northwestern North America [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 59.

OP-1359. T. S. Dyman, S. B. Anderson*, E. B. Campen*, W. A. Cobban, J. E. Fox*, R. H. Hammond*, K. W. Porter*, D. D. Rice, D. R. Setterholm* and G. W. Shurr*. MONTANA, MINNESOTA. West-east stratigraphic transect of Cretaceous rocks; southwestern Montana to western Minnesota [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1125.

OP-1360. T. S. Dyman, P. G. DeCelles*, J. C. Haley*, D. J. Nichols, R. C. Pearson, W. J. Perry, Jr., R. G. Tysdal and R. K. Schwartz*. MONTANA. Cretaceous rocks of southwestern Montana [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990.

OP-1361. T. S. Dyman, S. V. Foster*, D. D. Rice and W. A. Cobban. MONTANA. Cretaceous strata of northwestern Montana [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1322.

OP-1362. T. S. Dyman and R. G. Tysdal. MONTANA. Correlation of Lower and Upper Cretaceous Blackleaf Formation, Lima Peaks area to eastern Pioneer Mountains, southwestern Montana foreland basin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 646-647.

OP-1363. C. F. Eble and W. C. Grady*. Comparative palynologic and petrographic characteristics of Middle Pennsylvanian coal beds and a probable modern analog [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A26.

OP-1364. J. R. Eggleston and L. F. Ferdinand*. The occurrence of freshwater limestones in the Upper Pennsylvanian and Lower Permian of the northern Appalachian Basin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 647.

OP-1365. S. L. Eittreim and R. E. Embley*. Active geologic processes in Monterey Seavalley [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 21.

OP-1366. A. E. El-Shazly*, R. G. Coleman* and M. A. Lanphere. Two high pressure metamorphic events in NE Oman [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 31.

OP-1367. W. P. Elder. CALIFORNIA. Paleolatitudinal implications of late Campanian molluscan assemblages near Loma Prieta and Pigeon Point, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 21.

OP-1368. W. P. Elder. CALIFORNIA. Paleoecology and biogeography of Late Cretaceous molluskan assemblages near Loma Prieta, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 648-649.

OP-1369. E. R. Engdahl, B. W. Presgrave, M. Bergman* and T. H. Jordan*. Planning for an International Seismological Observing Period [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 389.

OP-1370. K. J. Englund, C. B. Cecil and W. H. Gillespie. Evolution of major Carboniferous depositional and erosional events in the central Appalachian Basin, USA [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 166-167.

OP-1371. R. C. Evarts. WASHINGTON. Before Mount St. Helens; the Eocene to Miocene Cascade volcanic arc in southern Washington [abstr.] Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 126.

OP-1372. B. E. Faggart, Jr.*, A. R. Basu*, Mitsunobu Tatsumoto and Harmon Craig*. HAWAII. Implications of Sr, Nb, Pb, and He isotopes for recycled continental crust in the evolution of the Hawaiian hot spot [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 850.

OP-1373. J. E. Fassett. NEW MEXICO, COLORADO. Coal-bed methane resources and Fruitland Formation coal-bed geology, San Juan Basin, New Mexico and Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1155.

OP-1374. J. E. Fassett, C. M. Molenaar, W. M. Aubrey, J. L. Ridgley, R. S. Zech, M. R. Leckie* and R. W. Dunbar*. NEW MEXICO, COLORADO. Cretaceous stratigraphy of the San Juan Basin, New Mexico and Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1323.

OP-1375. J. E. Fassett and V. F. Nuccio. NEW MEXICO, COLORADO. Thermal maturity of Upper Cretaceous coals, San Juan Basin, New Mexico and Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1322-1323.

OP-1376. J. G. Ferrigno and B. F. Molnia. Evaluation of Landsat, SPOT, and Sojuzkarta data of Antarctica for ice and climate research [abstr.] Annals of Glaciology, *in* Proceedings of the symposium on Ice and climate. (D. R. MacAyeal, editor). 14, 1990. p. 333-334.

OP-1377. J. G. Ferrigno, R. S. Williams, Jr., B. K. Lucchitta and B. F. Molnia. Recent changes in the coastal regions of Antarctica documented by Landsat images [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 24.

OP-1378. M. E. Field. CALIFORNIA. Submarine landslides associated with shallow seafloor gas and gas hydrates off Northern California [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 971-972.

OP-1379. M. E. Field and Fabio Trincardi*. Geometry, lateral variability, and preservation of downlapped regressive shelf deposits, eastern Tyrrhenian margin, Italy [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 653.

OP-1380. J. H. Filloux*, L. K. Law*, J. Segawa*, T. Yukutake*, Yozo Hamano*, H. Utada*, A. F. White*, A. D. Chave*, P. Tatris* and A. W. Green, Jr. Offshore EMSLAB; largest magnetotelluric experiment conducted to date on the open ocean floor [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 119.

OP-1381. C. A. Finn. Geophysical models across Pacific convergent margins; implications for subduction erosion [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 900.

OP-1382. J. L. Fio and S. J. Deverel. CALIFORNIA. Interaction of shallow ground water and subsurface drains; implications for selenium transport and distribution in the western San Joaquin Valley, California [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 788-789.

OP-1383. M. A. Fisher, T. M. Brocher, T. R. Bruns and E. L. Geist. ALASKA. Deep-crustal structure of the continental margin adjacent to the eastern Aleutian Trench [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 972.

OP-1384. D. V. Fitterman. Self-potential flow anomalies for engineering and environmental monitoring [abstr.], *in* Detection of subsurface flow phenomena by self-potential/geoelectrical and thermical methods. (Germany, Karlsruhe University, Institute of Soil and Rock Mechanics). Report no. AD-A204 488, March 1988. p. 4. *Available from:* DTIC, United States.

OP-1385. D. V. Fitterman, A. T. Mazzella* and W. L. Anderson*. What pipes can do to your transient EM interpretation [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies; 1989 technical program. 59, Vol. 1, November 2, 1989. p. 219-221.

OP-1386. D. V. Fitterman, S. K. Park* and T. C. Lee*. CALIFORNIA. Sensitivity of the Parkfield telluric monitoring array [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1169.

OP-1387. K. K. Fitzgerald, W. E. Webb, L. J. Schroder and T. L. Miller. Variation in reported values for selected water-quality constituents and properties caused by sample collection and processing [abstr.], *in* Environmental threats to Wisconsin's water resources; concerns for the 90s. Am. Water Resour. Assn., Wis. Sect. 1991. p. 6.

OP-1388. J. J. Fitzpatrick. Evaporites from the Lewis Cliff ice tongue, Antarctica [abstr.] LPI Technical Report, *in* Workshop on Antarctic meteorite stranding surfaces. (W. A. Cassidy, editor and others). 90-03, 1990. p. 84.

OP-1389. R. M. Flores, D. Bossiroy*, J. N. Weaver and J. Thorez*. WYOMING. Genesis of clay mineral assemblages and micropaleoclimatic implications in the Tertiary Powder River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 655.

OP-1390. R. M. Flores, T. S. Dyman, J. N. Weaver and R. G. Tysdal. MONTANA. Cretaceous fluvio-lacustrine facies of upper Kootenai Formation and Flood Member of Blackleaf Formation, southwestern Montana [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1155.

OP-1391. R. M. Flores, C. W. Keighin and W. R. Keefer. WYOMING. Reservoir-sandstone paradigms, Paleocene Fort Union Formation, Wind River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1323.

OP-1392. R. M. Flores, C. W. Keighin and W. R. Keefer. WYOMING. Basin-wide architecture of sandstone reservoirs in the Fort Union Formation, Wind River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1126.

OP-1393. R. M. Flores and Richard Sykes*. Retrogradational fluvio-paralic coal-forming environments, South Island, New Zealand [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 972.

OP-1394. E. E. Foord and Paul Hlava*. NEW MEXICO. Rare-earth arsenates and other rare-earth minerals from the Black Range tin district, Sierra and Catron counties, New Mexico [abstr.] New Mexico Geology, *in* Proceedings of the 11th annual New Mexico mineral symposium. v. 13, no. 2, May 1991. p. 40.

OP-1395. G. D. Foster* and P. M. Gates. Enhanced preconcentration techniques used to study the geochemical fate of pesticides in surface waters [abstr.] Virginia Journal of Science, *in* Virginia Academy of Science; Sixty-eighth annual meeting; abstracts of papers. (J. H. Martin, editor). v. 41, no. 2, 1989. p. 75.

OP-1396. T. D. Fouch, C. M. Molenaar and K. J. Franczyk. UTAH. Cretaceous-sedimentary rocks, Uinta Basin, Utah [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1323.

OP-1397. K. J. Franczyk, D. A. Carr*, W. P. Elder, J. I. Kirkland* and M. R. Leckie*. ARIZONA. Cretaceous strata of the Black Mesa area, northeastern Arizona [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1324.

OP-1398. K. J. Franczyk, T. D. Fouch, R. C. Johnson and C. M. Molenaar. UTAH, COLORADO. Late Cretaceous and Tertiary paleogeographic reconstructions; Uinta and Piceance basins, northeastern Utah and northwestern Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1324.

OP-1399. Arthur Frankel, A. F. McGarr, J. D. Bicknell, J. J. Mori, Leonardo Seeber* and Edward Cranswick. NEW YORK, CALIFORNIA. Attenuation and scattering of high-frequency shear waves at local and regional distances in South Africa, New York State and Southern California [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 401.

OP-1400. E. A. Frick. NEVADA. Refined concepts of the ground-water flow system in Steptoe Valley, east-central Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 23.

OP-1401. G. S. Fuis, E. L. Ambos, W. D. Mooney, R. A. Page, George Plafker, W. J. Nokleberg, D. L. Campbell, M. A. Fisher and T. M. Brocher. ALASKA. Tectonic evolution of southern Alaska [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 108.

OP-1402. P. B. Gans, J. E. Repetski, A. G. Harris and D. H. Clark. Conodont geothermometry of Paleozoic supracrustal rocks in the eastern Great Basin [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 103.

OP-1403. J. L. Gardiner* and J. W. Salisbury. The spectral reflectance of mineral mixtures in the mid-infrared (7-25 μm) [abstr.] Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 31.

OP-1404. W. D. Gardner*, M. J. Richardson* and D. A. Cacchione. FLORIDA. Sedimentological effects of strong southward flow in the Straits of Florida [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1258.

OP-1405. Paul Garrison* and William Rose. WISCONSIN. The artificial alkalization of an acidic lake by ground-water addition [abstr.], *in* Environmental threats to Wisconsin's water resources; concerns for the 90s. Am. Water Resour. Assn., Wis. Sect. 1991. p. 8.

OP-1406. J. S. Gassaway. Utility of San Juan Basin silcretes [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1156-1157.

OP-1407. P. E. Geissler*, R. B. Singer* and B. K. Lucchitta. Dark materials in Valles Marineris; indications of the style of volcanism and magmatism on Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 166-167.

OP-1408. G. R. Gelfenbaum. Application of recent turbidity current models to Monterey canyon and fan [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1258.

OP-1409. T. M. Gerlach. Noneruptive magmatic degassing of carbon dioxide at mid-oceanic spreading centers [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1990 spring meeting. v. 71, no. 17, April 24, 1990. p. 645.

OP-1410. Per Gloersen* and W. J. Campbell. Annually averaged polar sea-ice extents during 1978-87; northern extent decrease and southern extent oscillation [abstr.] Annals of Glaciology, *in* Proceedings of the symposium on Ice and climate. (D. R. MacAyeal, editor). 14, 1990. p. 336.

OP-1411. Per Gloersen* and W. J. Campbell. Variations of open water area within the Polar sea ice covers; 1978-1987 [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 10.

OP-1412. R. J. Goldfarb, C. A. Gent, J. E. Gray, M. L. Miller and W. J. Pickthorn. ALASKA. Oxygen, hydrogen, and sulfur isotope studies of Hg-Sb epithermal systems, southwestern Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 48.

OP-1413. R. J. Goldfarb, L. W. Snee, L. D. Miller* and R. J. Newberry*. ALASKA. New evidence for widespread fluid flow and gold deposition in Southeast Alaska at 55 Ma [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 29.

OP-1414. M. B. Goldhaber, E. L. Mosier, S. E. Church, H. A. Whitney, G. Gacetta, J. J. Eidel* and K. Hackley*. ILLINOIS. The Illinois Basin as a flow path for ore fluids [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 663.

OP-1415. S. J. Good* and J. L. Ridgley. NEW MEXICO. Paleontology and sedimentology of upper clastic member of Wanakah Formation, Chama Basin, New Mexico; lacustrine paleoenvironmental implications [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1157.

OP-1416. D. W. Gordon. Historic earthquakes, isoseismal patterns, and Precambrian terranes in the Northern Great Plains [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 150-151.

OP-1417. L. C. Gordon. Innovative education programs of the U.S. Geological Survey's Western region [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 29-30.

OP-1418. W. C. Grady*, C. F. Eble and S. G. Neuzil. Distribution of petrographic components in a modern domed tropical Indonesian peat; a possible analog for maceral distributions in Middle Pennsylvanian coal beds of the Appalachian Basin [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A25.

OP-1419. Arthur Grantz and T. E. Moore. ALASKA. Crustal model of northern Alaska from the Brooks Range to the Arctic Ocean basin [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 30.

OP-1420. V. J. Grauch. Statistical examination of linear trends in a compilation of aeromagnetic data from the Southwestern U.S. [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies. 59, Vol. 1, November 2, 1989. p. 351-352.

OP-1421. V. J. Grauch. COLORADO. The importance of total magnetization in aeromagnetic interpretation of volcanic areas: an illustration from the San Juan Mountains, Colorado [abstr.] SEG Abstracts, *in* Expanded abstracts of the 57th annual international Society of Exploration Geophysicists meeting and exposition. 57, 1987. p. 109-110.

OP-1422. V. J. Grauch and Viki Bankey. NEVADA. Preliminary results of aeromagnetic studies near the Getchell disseminated gold deposit trend, Osgood Mountains, north-central Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 121.

OP-1423. V. J. Grauch and D. L. Sawatzky. NEVADA. Regional patterns of basin and range structure determined from gravity data of Nevada [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; ex-

panded abstracts with biographies. 59, Vol. 1, November 2, 1989. p. 353-354.

OP-1424. A. G. Green*, Bernd Milkereit*, C. Spencer*, Patrick Morel-à-l'Huissier*, A. Davidson*, D. J. Teskey*, J. C. Behrendt, W. F. Cannon, D. R. Hutchinson and M. W. Lee. Seismic reflection profiling across the Grenville Front; lower crustal reflections extend to the surface [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 64.

OP-1425. D. C. Greene* and J. T. Dutro, Jr. CALIFORNIA. Stratigraphic affinity and structural implications of late Paleozoic fossils in the Ritter Range Pendant, eastern Sierra Nevada, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 30.

OP-1426. H. G. Greene. Recent Sea Beam mapping of Ascension-Monterey submarine canyon system [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 975.

OP-1427. H. G. Greene and K. R. Hicks. CALIFORNIA. Submarine canyon processes; potential hazards, Monterey Canyon, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 30.

OP-1428. R. R. Gries* and J. L. Clayton. COLORADO. Source rock maturation, San Juan Sag [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1158.

OP-1429. Andrew Griscom and R. C. Jachens. CALIFORNIA. Tectonic transect of the California Coast Ranges based on a new magnetic map [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 31.

OP-1430. Andrew Griscom and P. E. Sauer. ALASKA. Tectonics of the Aleutian subduction fault in the northern Gulf of Alaska from magnetic data [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 31.

OP-1431. M. A. Grout and E. R. Verbeek. Prediction of fracture networks at depth in low-permeability reservoir rocks, Piceance and Washakie basins, Western United States [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1158.

OP-1432. J. A. Grow, R. G. Bohannon, J. J. Miller and R. E. Anderson. NEVADA. A seismic reflection study of Miocene listric faulting north of Lake Mead, Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 27.

OP-1433. George Gryc, T. R. Iki and F. R. Mills. New geologic and mineral resource maps, Circum-Pacific region [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 975.

OP-1434. Cheryl Gullet*, P. B. McMahon and Robert Ehrlich*. Bacterially-mediated diagenesis of deeply buried sediments in the Atlantic Coastal Plain; Part 3, Petrographic evidence for porosity enhancement [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 37.

OP-1435. W. J. Gwilliam*, W. D. Stanley, G. V. Latham* and J. K. Westhusing*. Deep seismic surveys of a dormant subduction zone in the Pacific Northwest, United States [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 667-668.

OP-1436. F. P. Haeni. Surface-geophysical methods; knowledge gaps and needed research [abstr.], *in* Proceedings of the Bridge scour symposium. (Dah-Cheng Woo, chairperson and others). Report no. FHWA-RD-90-035, December 1989. p. 368. *Available from:* U.S. Dep. Transp., Fed. Highw. Adm., McLean, VA, United States.

OP-1437. J. T. Hagstrum and P. B. Gans*. NEVADA. Paleomagnetism of the Kalamazoo Tuff; implications for middle Tertiary extension in east-central Nevada [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1164.

OP-1438. J. T. Hagstrum and P. W. Lipman. ARIZONA. Late Cretaceous paleomagnetism of the Tucson Mountains; implications for regional deformation in south central Arizona [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 27-28.

OP-1439. J. T. Hagstrum and B. L. Murchey. CALIFORNIA. Paleomagnetism of Lower Jurassic chert within the Franciscan Complex, Northern California, indicates deposition at the paleoequator and accretion near 7° north paleolatitude [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 33.

OP-1440. D. W. Hall. PENNSYLVANIA. Methods of analyzing groundwater quality and agricultural activities data in the Conestoga River headwaters, Lancaster County, Pennsylvania [abstr.] Annual Meeting - Association of Engineering Geologists, *in* Engineering geology for the 90's. October 1990. p. 54-55.

OP-1441. P. A. Hamilton and J. M. Denver. DELAWARE, MARYLAND, VIRGINIA. Effects of land use and ground-water flow on shallow ground-water quality, Delmarva Peninsula, Delaware, Maryland, and Virginia [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 789.

OP-1442. S. N. Hamlin and E. B. Yates. CALIFORNIA. Relation of nitrate concentration and ground-water movement through a water-table lake in San Francisco, California [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 794.

OP-1443. J. G. Hammond* and J. L. Wooden. CALIFORNIA, ARIZONA. Pb isotope constraints on the origin of Proterozoic diabases of California and Arizona [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 28.

OP-1444. J. M. Hanchar*, C. F. Miller* and J. G. Staude. CALIFORNIA. Lower crustal xenoliths in Tertiary dikes, Old Woman Mountains area, southeastern California; I, Petrology [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 28.

OP-1445. Mohamed Haneef*, S. F. Rudine* and B. R. Wardlaw. TEXAS. Shelf to basin transition in the Capitanian (Permian) deposition in the Glass Mountains, West Texas [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 46.

OP-1446. D. M. Hanes* and B. E. Jaffe. Cross-shore sediment transport on a Gulf Coast barrier island shoreface [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1238.

OP-1447. T. C. Hanks and A. C. Johnston*. Some common features in the excitation and propagation of strong ground motion for North American earthquakes [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 151.

OP-1448. J. L. Hannah*, H. J. Stein and Alec Macbeth*. UTAH. Field relations between Tertiary magmatism and Tintic ore deposits, East Tintic Mountains, Utah [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 63.

OP-1449. William Harbert*, J. W. Hillhouse and T. L. Vallier. Leonardian paleolatitude of Wrangellia [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1169.

OP-1450. J. W. Harden, C. L. Hill, R. K. Mark, L. D. McFadden*, S. G. Wells*, M. C. Reheis, E. M. Taylor and J. M. Sowers*. Rates of soil development in the southern Great Basin [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 33.

OP-1451. R. F. Hardyman. NEVADA. Tertiary tectonic framework, styles of faulting, and mineralization in the central Walker Lane, western Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 57.

OP-1452. E. L. Harp and T. E. Spittler*. CALIFORNIA. Relations between landslides and structural coseismic fractures in the Summit Road area triggered by the October 17, 1989, Loma Prieta, California, earthquake [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 33.

OP-1453. A. G. Harris, C. B. Rexroad*, R. T. Lierman*, J. Gordon* and R. A. Askin*. INDIANA. Evaluation of a CAI anomaly, Putnam County, central Indiana, U.S.A. [abstr.] CFS. Courier Forschungsinstitut Senckenberg, *in* 1st international Senckenberg conference and 5th European conodont symposium (ECOS 5); Contributions 1. (Willi Ziegler, editor). 102, 1988. p. 240-241.

OP-1454. Carol Harrisville-Wolff*, H. H. Covert* and T. M. Bown. WYOMING. Two species of the early Eocene and adapid primate Cantius from the Lysite subage of the Willwood Formation in the Bighorn Basin, Wyoming [abstr.] Journal of Vertebrate Paleontology, *in* Society of Vertebrate Paleontology, Fiftieth annual meeting; abstracts of papers. (Hans-Peter Schultze, chairperson). v. 10, no. 3, Suppl. September 2, 1990. p. 26A.

OP-1455. W. P. Hasbrouck. Results of shear-wave measurements [abstr.] Symposium on the Application of Geophysics to Engineering and Environmental Problems, *in* Proceedings of the symposium on the application of geophysics to engineering and environmental problems. (S. E. Hulse, chairperson and others). 1990, 1990. p. 201.

OP-1456. J. R. Hatch, J. S. Leventhal and G. A. Desborough. Geochemical and mineralogical clues to depositional environments for Pennsylvanian, metal-rich, black shales, Midcontinent region, USA [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 11-12.

OP-1457. J. R. Hatch, J. S. Leventhal and G. A. Desborough. Early diagenetic, aerobic degradation of organic matter and sulfides in some Middle and Upper Pennsylvanian marine shales, Mid-continent region, United States [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 671-672.

OP-1458. P. G. Hatcher, H. E. Lerch, III and T. V. Verheyen*. Organic geochemical studies of the transformation of gymnospermous xylem during peatification and coalification to subbituminous coal [abstr.] International Journal of Coal Geology. v. 16, no. 1-3, December 10, 1990. p. 193-196.

OP-1459. P. G. Hatcher, M. A. Wilson*, M. Vassallo* and H. E. Lerch, III. Studies of angiospermous woods in Australian brown coal by nuclear magnetic resonance and analytical pyrolysis; new insight into early coalification [abstr.] International Journal of Coal Geology. v. 16, no. 1-3, December 10, 1990. p. 205-207.

OP-1460. R. A. Haugerud, R. B. Miller*, R. W. Tabor and W. M. Phillips*. WASHINGTON. Ross Lake Fault near Gabriel Peak, North Cascades Range, Washington [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 34.

OP-1461. B. P. Hausback* and D. A. Swanson. WASHINGTON. Prehistoric avalanche record of the north flank of Mount St. Helens, Washington [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada;

Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 55.

OP-1462. G. B. Haxel, A. M. Simmons* and Jill McCarthy. ARIZONA, CALIFORNIA. Synextensional dioritic magmatism within and beneath metamorphic core complexes, southern Arizona and southeastern California; integration of structural, petrologic, and seismic refraction data [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 28-29.

OP-1463. B. J. Hay*, M. A. Arthur*, E. D. Neff*, W. E. Dean, T. Konuk* and Susumu Honjo*. Late Holocene sediment accumulation in the abyssal Black Sea [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1242.

OP-1464. J. W. Head*, D. B. Campbell*, J. E. Guest*, Harold Masursky, R. S. Saunders* and G. G. Schaber. Initial analysis of Venus volcanism from Magellan data [abstr.] Eos, Transactions, American Geophysical Union, *in* Additional and revised abstracts from the 1990 AGU fall meeting. v. 71, no. 48, November 27, 1990. p. 1825, 1829.

OP-1465. J. R. Hein, Herbert Kirschenbaum, R. L. Olson and M. S. Schulz. Platinum-group elements and gold in Pacific ferromanganese deposits [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 978.

OP-1466. J. R. Hein, M. S. Morrison and L. M. Gein. Origin of marine manganese deposits in active volcanic arcs [abstr.], *in* IAS international symposium on Sedimentology related to mineral deposits; Abstracts. Beijing: Acad. Sin., Inst. Geol. 1988. p. 84-85.

OP-1467. J. O. Helgesen. KANSAS. Effects of agricultural and petroleum-production land use on water quality in the High Plains Aquifer, south-central Kansas [abstr.] Ground Water, *in* Groundwater flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 795.

OP-1468. E. J. Helley. CALIFORNIA. Quaternary alluvial fan and fan-delta facies in the Santa Clara Valley, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 34.

OP-1469. W. J. Herb. MINNESOTA. The U.S. Geological Survey's surface-water monitoring network in Minnesota [abstr.], *in* Minnesota water 1990; facing the environmental challenges of the 1990s, collection of conference abstracts. (Minnesota Environmental Quality Board). St. Paul, MN: Minn. Environ. Quality Board, 1990. p. 29-30.

OP-1470. J. F. Hermance*, S. R. Lusi*, W. Slocum*, G. A. Neumann*, A. W. Green, Jr., W. D. Stanley, A. G. Jones*, J. H. Filloux*, L. K. Law*, D. Auld* and J. R. Booker*. OREGON. A comparison of 2-D generalized inversion techniques using magnetotelluric and magnetic variation data for an east-west transect across the Oregon Coast Range and High Cascades [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 126.

OP-1471. P. A. Herrera*, M. L. Silberman and L. G. Closs*. CALIFORNIA. Alteration mineral assemblage and trace-element zoning in the Bodie mining district, Mono County, California; a comparison to the "hot spring" model [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 127-128.

OP-1472. J. R. Herring, W. E. Dean, M. A. Arthur* and G. R. Heath*. North Pacific productivity as recorded by P/Al ratios over the past 55 Ma [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1254.

OP-1473. T. C. Hester and J. W. Schmoker. OKLAHOMA. Regional geologic characteristics relevant to horizontal drilling, Woodford Shale, Anadarko Basin, Oklahoma [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1128.

OP-1474. R. D. Hettinger, P. J. McCabe and K. W. Shanley*. UTAH. Clastic facies architecture associated with a major marine transgression; the Mid-Cretaceous of the Kaiparowits Plateau, Utah [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1327.

OP-1475. D. K. Higley. COLORADO. Comparison of sandstone diagenesis and reservoir development within two Lower Cretaceous J Sandstone fields, Denver Basin, Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1160.

OP-1476. D. K. Higley. WYOMING. Diagenesis of the Upper Cretaceous Sussex Sandstone in the House Creek and Porcupine fields, Powder River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 674.

OP-1477. D. K. Higley and K. I. Takahashi. Interactive computer display of exploration through time for petroleum producing regions in the conterminous United States [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 674.

OP-1478. D. K. Higley, K. I. Takahashi and T. S. Dyman. Interactive computer display of petroleum exploration history for basins in the Northern Rocky Mountain region of the United States [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1128.

OP-1479. D. P. Hill. CALIFORNIA. Alert level criteria for unrest in the Long Valley-Mono Craters region, eastern California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 35.

OP-1480. R. P. Hoblitt. WASHINGTON. Current perspectives on the 18 May 1980 lateral blast deposit at Mount St. Helens, Washington [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 58.

OP-1481. R. P. Hoblitt. WASHINGTON. Current perspectives on the May 18, 1980 lateral-blast deposit at Mount St. Helens, Washington [abstr.] Geoscience Canada, *in* Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980. (C. J. Hickson, prefacer and others). v. 17, no. 3, September 1990. p. 126.

OP-1482. E. F. Hollyday, J. V. Brahana and D. J. Pavlicek. NEW JERSEY, ALABAMA. Conceptualization of ground-water flow in carbonate and siliciclastic rocks in the Valley and Ridge Province, New Jersey to Alabama [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A41.

OP-1483. C. W. Holmes, J. S. Esterle* and T. A. Moore*. $\delta^{13}C$ trends in coal and peat from Borneo; clue to coal forming environments [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A50.

OP-1484. T. L. Holzer. TEXAS. Land subsidence caused by withdrawal of oil and gas in the Gulf Coastal Plain; the Houston, Texas case history [abstr.] Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section SEPM, 40th annual meeting. (G. L. Kinsland, editor and others). 40, 1990. p. 301.

OP-1485. T. L. Holzer. Detection of unsaturation beneath a water table by seismic refraction [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A41.

OP-1486. D. B. Hoover, V. J. Grauch, J. A. Pitkin, M. D. Krohn and H. A. Pierce. NEVADA. An integrated airborne geophysical study along the Getchell trend of gold deposits, north-central Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 70.

OP-1487. R. J. Horton, R. J. Bisdorf, B. D. Smith and M. A. Jirsa*. MINNESOTA. Airborne geophysical mapping of the Effie-Coon Lake area, Itasca County, Minnesota [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies; 1989 technical program. 59, Vol. 1, November 2, 1989. p. 141-144.

OP-1488. F. D. Hostettler, K. A. Kvenvolden and J. B. Rapp. CALIFORNIA. Tracking spilled oil in San Francisco Bay sediment [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 36.

OP-1489. K. A. Howard and B. E. John*. ARIZONA. Disharmonic drape folds associated with upper-crustal extension in the southern Basin and Range [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 87th annual meeting. v. 23, no. 2, March 1991. p. 36.

OP-1490. K. A. Howard, J. E. Nielson, J. K. Nakata and H. G. Wilshire. ARIZONA. Upended crustal slabs and low-angle extensional faults in the Colorado River extensional corridor; geologic map of the Mohave Mountains area, western Arizona [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 30.

OP-1491. D. G. Howell. Terrane analysis of the Circum-Pacific and its implications for petroleum exploration [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 678.

OP-1492. D. G. Howell, M. J. Johnsson and K. J. Bird. ALASKA. Geodynamics and petroleum potential, Brooks Range, Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 61.

OP-1493. E. F. Hubbard. Bridge scour program of the U.S. Geological Survey [abstr.], *in* Proceedings of the Bridge scour symposium. (Dah-Cheng Woo, chairperson and others). Report no. FHWA-RD-90-035, December 1989. p. 369-370. *Available from:* U.S. Dep. Transp., Fed. Highw. Adm., McLean, VA, United States.

OP-1494. M. R. Hudson. NEVADA. Paleomagnetic investigation of Tertiary rotations, Southwest Nevada; evaluation of the Yucca-Frenchman flexure [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1164.

OP-1495. G. F. Huff and J. P. Bonck. LOUISIANA, ARKANSAS. Extent and sources of saline water in a part of the Mississippi River alluvial aquifer in northeastern Louisiana and southeastern Arkansas [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 65.

OP-1496. A. C. Huffman, Jr. and S. M. Condon. New interpretations of Pennsylvanian and Permian stratigraphy, San Juan Basin and Southeast Paradox Basin [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1161.

OP-1497. A. C. Huffman, Jr. and D. J. Taylor. San Juan Basin faulting; more than meets eye [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1161.

OP-1498. Q. J. Huggett* and A. K. Cooper. Using side-scan sonar to look at buried surfaces [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 679.

OP-1499. C. M. Isaacs, R. G. Arends* and M. L. Thornton*. CALIFORNIA. Stratigraphic sequence of the Monterey and Sisquoc formations in the Hondo oil field, Santa Barbara Channel, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 682.

OP-1500. C. M. Isaacs and R. G. Stanley. CALIFORNIA. Santa Maria Province Project, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 682.

OP-1501. G. J. Iturrino*, N. I. Christensen* and S. H. Kirby. Shear-wave splitting and compressional-wave anisotropy at high pressures in deformed gabbros recovered from the Atlantis II fracture zone, Indian Ocean [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 460.

OP-1502. R. C. Jachens, Andrew Griscom, M. C. Blake, Jr. and R. J. McLaughlin. CALIFORNIA. Cross-fault compression inferred from southwest dips of strike-slip faults in the South San Francisco Bay region, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 31.

OP-1503. M. L. Jackson*, S. J. Tewalt and W. R. Kaiser*. TEXAS. Comparison of computer and manual estimates of lignite resources in the Paleocene-Eocene Wilcox Group, East Texas [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 58.

OP-1504. B. E. Jaffe and A. H. Sallenger, Jr. LOUISIANA. Seafloor response during the historic erosion of the Isles Dernieres barrier island arc, Louisiana [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1237-1238.

OP-1505. B. E. Jaffe, A. H. Sallenger, Jr. and J. H. List. LOUISIANA. Tidal inlet development and migration in Isles Dernieres barrier island arc, Louisiana [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section of SEPM meeting; abstracts. v. 73, no. 9, September 1989. p. 1185.

OP-1506. B. A. James. Study of patterns of subsurface current contributions in transient electromagnetic methods [abstr.] SEG Abstracts, *in* Expanded abstracts of the 57th annual international Society of Exploration Geophysicists meeting and exposition. 57, 1987. p. 69-72.

OP-1507. O. B. James. Origin and evolution of the lunar crust; inferences from sample studies [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 93.

OP-1508. C. M. Jarchow* and R. D. Catchings. Regional geophysics of the Great Basin [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 48-49.

OP-1509. Kap-Sik Jeong*, Jung-Keuk Kang*, Bong-Chool Suk* and M. L. Holmes. Ferromanganese nodule occurrence in relation to local variations of seafloor topography at the western margin of the Clarion-Clipperton fracture zones, North Pacific [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 981.

OP-1510. D. A. John, J. T. Nash*, C. W. Clark* and W. H. Wulftange*. NEVADA. Geology, hydrothermal alteration, and mineralization at the Paradise Peak gold-silver-mercury deposit, Nye County, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 81-82.

OP-1511. R. C. Johnson. COLORADO. Cretaceous rocks of the Piceance Basin area, northwestern Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1329-1330.

OP-1512. R. C. Johnson. COLORADO. Development of Laramide-style subsidence trends during Late Cretaceous foreland basin deposition, Northwest Colorado [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 687.

OP-1513. R. C. Johnson. COLORADO, UTAH. Subsidence and infilling patterns during deposition of Upper Cretaceous Mancos Shale, Northwest Colorado and Northeast Utah [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 687.

OP-1514. S. Y. Johnson, M. L. Tuttle, Bruce Bryant, R. F. Dubiel, T. D. Fouch, K. J. Franczyk, V. J. Grauch, M. A. Grout, R. C. Johnson, C. M. Molenaar, D. J. Nichols, K. M. Nichols, V. F. Nuccio, Fred Peterson, J. K. Pitman, W. J. Perry, Jr., C. J. Potter, D. L. Sawatzky, R. W. Scott, Jr., E. R. Verbeek and R. B. Wanty. COLORADO, UTAH. Geologic evolution of Uinta-Piceance Basin Province, northwestern Colorado and northeastern Utah [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 687-688.

OP-1515. A. C. Johnston*, W. J. Arabasz*, G. A. Bollinger*, J. R. Filson, R. B. Herrmann*, L. M. Jones and W. Benson*. The future of seismic networks in the United States [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 153.

OP-1516. J. E. Jones and B. F. Molnia. ALASKA. Radar mapping of Malaspina Glacier, Alaska, with applications for global change investigations [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 155.

OP-1517. Meridee Jones-Cecil. OKLAHOMA. Ground-magnetic profiles across the Meers Fault, SW Oklahoma; Quaternary reactivation of a late Paleozoic fault zone [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 18.

OP-1518. P. A. Kammerer, Jr., D. A. Goolsby and M. R. Burkart. Overview of U.S. Geological Survey investigations of the distribution of triazine herbicides in water in the upper Midwestern United States [abstr.], *in* Environmental threats to Wisconsin's water resources; concerns for the 90s. Am. Water Resour. Assn., Wis. Sect. 1991. p. 2.

OP-1519. J. S. Kane and C. A. Palmer. The characterization of USGS coal standard CLB-1; a preliminary report [abstr.] The Journal of Coal Quality, *in* Proceedings of the international conference on Trace elements in coal. (George Vourvopoulos, chairperson). v. 8, no. 3-4, December 1989. p. 120.

OP-1520. Jung-Keuk Kang* and J. R. Hein. Textural characteristics of hydrogenetic and hydrothermal Fe-Mn crusts [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1271.

OP-1521. Jung-Keuk Kang*, J. R. Hein, Byong-Kwon Park* and Suk-Hoon Yoon*. MARSHALL ISLANDS. Preliminary results of KORDI-USGS cooperative cruise for ferromanganese crusts in the western Marshall Islands [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 982.

OP-1522. H. A. Karl, J. L. Chin, D. M. Rubin, W. C. Schwab and D. C. Twichell. CALIFORNIA. Distribution and control of bed-forms on the continental shelf, Gulf of the Farallones, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 691.

OP-1523. H. A. Karl. GLORIA mosaic of the Western United States Exclusive Economic Zone [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 982.

OP-1524. H. A. Karl. ALASKA. GLORIA imagery of the Alaskan Exclusive Economic Zone [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 982.

OP-1525. Miriam Kastner*, J. Martin*, Erwin Suess*, R. E. Garrison*, K. A. Kvenvolden and Roland von Huene. Evidence for density and tectonically driven fluid migration in convergent margin sediments off Peru [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1263.

OP-1526. Masao Kasuya and C. W. Naeser. The effect of χ-damage on the fission-track annealing in zircon [abstr.] Nuclear Tracks and Radiation Measurements, *in* Proceedings of the 6th international fission track dating workshop. (S. A. Durrani, editor and others). v. 17, no. 3, 1990. p. 419.

OP-1527. J. P. Kauahikaua. Can electrical geophysical methods detect the salinity transition zone beneath ground water lenses? [abstr.] Symposium on the application of geophysics to engineering and environmental problems, *in* Proceedings of the Symposium on the application of geophysics to engineering and environmental problems. (D. V. Fitterman, chairman). 2, 1989. p. 424.

OP-1528. R. E. Kayen and H. J. Lee. Seafloor landslides in regions of gas hydrate, a global change perspective [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 982-983.

OP-1529. W. R. Keefer. WYOMING. Cretaceous rocks in the Wind River basin, central Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1331.

OP-1530. C. W. Keighin. COLORADO. Petrology and reservoir properties of Point Lookout Sandstone, Southern Ute Indian Reservation, La Plata County, Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1163.

OP-1531. C. W. Keighin and R. M. Flores. WYOMING. Heterogeneity of sandstone reservoirs in the Fort Union Formation, Fuller Reservoir Field, Wind River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1331.

OP-1532. E. W. Kempema, Erk Reimnitz and P. W. Barnes. ALASKA. Salt-water anchor ice formation; observations from the Alaskan Beaufort Sea and flume experiments [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1284.

OP-1533. K. B. Ketner. Stratigraphy, structure, and regional correlatives of tectonically juxtaposed Paleozoic miogeoclinal and eugeoclinal assemblages, Cerro Cobachi, Sonora, Mexico [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 34.

OP-1534. K. B. Ketner. NEVADA. Golconda and Roberts Mountains allochthons emplaced over Triassic strata at Mt. Ichabod, Elko County, Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 34.

OP-1535. K. B. Ketner. NEVADA. Stratigraphy of lower Paleozoic western facies rocks of northeastern Nevada, including stratabound lead and zinc sulfide deposits and barite [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 123.

OP-1536. R. M. Kettler*, R. O. Rye, S. E. Kesler* and P. A. Meyers*. The importance of iron-carbon-sulfur diagenesis to gold mineralization; evidence from the Moore gold deposit, Pueblo Viejo, Dominican Republic [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 13.

OP-1537. S. M. Khan*, R. S. Coe* and J. A. Barron. CALIFORNIA. Magnetic polarity stratigraphy of the Monterey Formation, Shell Beach, Pismo Basin, California [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 4, November 1, 1988. p. 1160.

OP-1538. S. M. Khan*, R. S. Coe* and J. A. Barron. CALIFORNIA. Application of paleomagnetism for absolute age-dating and correlating in the Miocene Monterey Formation of California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 694.

OP-1539. J. L. Kindinger, Shea Penland*, S. J. Williams and J. R. Suter*. LOUISIANA, MISSISSIPPI, ALABAMA. Inner shelf deposits of Louisiana-Mississippi-Alabama region, Gulf of Mexico [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section of SEPM meeting; abstracts. v. 73, no. 9, September 1989. p. 1186.

OP-1540. J. D. King and P. G. Lillis. CALIFORNIA. Thermal modeling using biomarkers in the Santa Maria Basin, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 695.

OP-1541. John Kingston. Petroleum geology of western Antarctica [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 695.

OP-1542. M. J. Kingston and J. K. Crowley. CALIFORNIA. Lithologic mapping using AVIRIS data near Mountain Pass, California [abstr.] Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 15.

OP-1543. S. H. Kirby, C. K. Mawer*, G. J. Iturrino* and N. I. Christensen*. Ductile shear zones in layer 3 gabbroic rocks; their deformation structures, V_p anisotropy and candidacy for the curvilinear reflection structures of the lower crust [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 460.

OP-1544. M. A. Kirschbaum and E. R. Gustason*. UTAH. Coal accumulation and alluvial architecture in the Dakota Formation, southwestern Utah [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A51.

OP-1545. C. E. Kirschner and Arthur Grantz. ALASKA. Impact origin of the Avak structure, Arctic Alaska, and genesis of the Barrow gas fields [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 696.

OP-1546. Carl Kisslinger* and L. M. Jones. CALIFORNIA. Properties of aftershock sequences in Southern California [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 895.

OP-1547. R. W. Kistler. Chemical and isotopic characteristics of plutons in the Great Basin [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 102.

OP-1548. E. B. Kisvarsanyi*, P. K. Sims and Geza Kisvarsanyi*. Proterozoic ore-forming systems; examples of iron metallogenesis from the United States Midcontinent [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A34.

OP-1549. K. E. Kolm* and J. S. Downey. Determining areas of large permeabililty and large well yield in regional aquifers using hydrochemical, hydrological, and structural discontinuity analysis [abstr.] Annual Meeting - Association of Engineering Geologists, *in* Engineering geology for the 90's. October 1990. p. 53.

OP-1550. K. E. Kolm*, J. S. Downey, A. K. Turner* and E. D. Gutentag. NEVADA. Developing regional ground-water models for the high-level nuclear waste repository, Yucca Mountain [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990.

OP-1551. M. T. Koterba and R. J. Shedlock. DELAWARE, MARYLAND, VIRGINIA. Regional assessment of agricultural chemicals in groundwater in the Delmarva Peninsula of Delaware, Maryland, and Virginia [abstr.], *in* Pesticides in terrestrial and aquatic environments. (D. L. Weigmann, editor). Blacksburg, VA: Va. Polytech. Inst. and State Univ. 1989. p. 79.

OP-1552. R. K. Kotra and C. C. Walters. Organic geochemistry of Jurassic shales from the Newark Supergroup: maturation by hydrothermal fluids [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 75.

OP-1553. A. M. Koziol and S. R. Bohlen. Garnet (almandine-pyrope) geobarometry [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 71.

OP-1554. M. D. Krohn. NEVADA. Geometry of block faulting patterns observed in the Getchell Trend airborne geophysical data compared to the Snowstorm Mountains, Humboldt and Elko counties, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 121-122.

OP-1555. A. P. Krumhardt* and A. G. Harris. ALASKA. Conodont biostratigraphy and biofacies of the Wahoo Limestone (Carboniferous), Sadlerochit Mountains, Northeast Brooks Range, Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 698.

OP-1556. K. M. Kuivila and D. R. Lovley. In situ measurements of dissolved hydrogen concentration in undisturbed sediments along a salinity gradient [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1127.

OP-1557. D. M. Kulik. WYOMING. Gravity and aeromagnetic interpretation in northwestern Wyoming basins [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1332.

OP-1558. M. J. Kunk, S. M. Bergstrom and J. F. Sutter. A comparison of Middle Ordovician bentonites in Sweden and North America using $^{40}Ar/^{39}Ar$ age spectrum dating techniques [abstr.] Terra Cognita, *in* Sixth international conference on Geochronology, cosmochronology and isotope geology; abstracts. v. 6, no. 2, 1986. p. 141.

OP-1559. M. J. Kunk and R. A. Haugerud. IOWA. $^{40}Ar/^{39}Ar$ age spectra of shock heated microcline from the Manson impact structure and its temporal relation to the K-T boundary [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1291.

OP-1560. K. A. Kvenvolden. Gas hydrates of outer continental margins [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 698.

OP-1561. K. A. Kvenvolden. Arctic gas hydrates as a source of methane in global change [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 211.

OP-1562. K. A. Kvenvolden and Miriam Kastner*. Gas hydrates in sediment of the Peruvian continental margin [abstr.] Chemical

Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 1.

OP-1563. K. A. Kvenvolden, J. B. Rapp and F. D. Hostettler. CALIFORNIA. Hydrothermally-generated petroleum from Escanaba Trough, offshore California [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 47.

OP-1564. V. F. Labson and H. G. Medberry. Airborne resistivity mapping using powerline sources [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies; 1989 technical program. 59, Vol. 1, November 2, 1989. p. 138-140.

OP-1565. E. R. Landis, R. A. Khan*, P. D. Warwick, C. L. Oman, S. A. Khan* and L. J. Bragg. Quality of coal from the Paleocene Bara Formation, South Sind, Pakistan [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 985.

OP-1566. C. J. Langer, D. W. Simpson*, R. D. Borcherdt and J. R. Filson. The Armenian earthquake of December 7, 1988; its general characteristics and details of some locally recorded aftershocks [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 154-155.

OP-1567. M. A. Lanphere and B. L. Reed. ALASKA. Origin of the McKinley sequence of granitic rocks; constraints from Nd, Sr, and O isotopic data [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 36.

OP-1568. B. E. Law. The relationship between coal rank and clear density; a preliminary report [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1131.

OP-1569. B. E. Law, D. E. Anders and G. E. Michael. NEW MEXICO, COLORADO. Use of Rock-Eval pyrolysis and vitrinite reflectance data in characterizing type and maturity of organic matter in coal, Upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico and Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1333.

OP-1570. B. E. Law, J. Dolson*, W. R. Hanson* and V. L. Leighton*. Stratigraphy of Cretaceous rocks in the Red Desert and Washakie basins, southwestern Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1333.

OP-1571. S. J. Lawrence. NEVADA. Quality of shallow ground water in the vicinity of a small urban area in west-central Nevada [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 790.

OP-1572. T. F. Lawton*, K. J. Franczyk and J. K. Pitman. UTAH. Latest Cretaceous-Paleogene basin development and resultant sedimentation patterns in the thrust belt and broken foreland of central Utah [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 701.

OP-1573. D. L. Leach, G. S. Plumlee, A. H. Hofstra, G. P. Landis, E. L. Rowan and J. G. Viets. Precipitation of saddle dolomite cement by CO_2: effervescence from upward-migrating basinal brines [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 701.

OP-1574. Andrew Lee, P. W. Barnes, R. E. Hunter, Erk Reimnitz and W. S. Weber. Sediment transport by ice gouging; application of model experiments to the Arctic continental shelf [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1275.

OP-1575. H. J. Lee, W. C. Schwab, B. D. Edwards and R. E. Kayen. Quantitative controls on submarine slope failure morphology in the Pacific Ocean [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 986.

OP-1576. W. Leith. Geotechnical aspects of the Joint Verification Experiment [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 393.

OP-1577. L. L. Lesney and T. P. Wilson*. OHIO. Spatial variation in ground water chemistry as an indicator of heterogeneity in ground water flow in the Cuyahoga River basin, northeastern Ohio [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 61.

OP-1578. J. S. Leventhal. Comparative geochemistry of metals and trace elements from the Cambrian alum shale of Sweden [abstr.], *in* IAS international symposium on Sedimentology related to mineral deposits; Abstracts. Beijing: Acad. Sin., Inst. Geol. 1988. p. 122-123.

OP-1579. G. E. Lewis. New information on high-altitude mammoths, and on a prongbuck with supernumerary horns [abstr.] Journal of Vertebrate Paleontology, *in* Society of Vertebrate Paleontology, Fiftieth annual meeting; abstracts of papers. (Hans-Peter Schultze, chairperson). v. 10, no. 3, Suppl. September 2, 1990. p. 32A.

OP-1580. D. L. Light. Mapping system technology for tomorrow's geoscience library [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A29.

OP-1581. P. G. Lillis. CALIFORNIA. Biomarker variations in relation to paleogeography in the Saltos Shale Member of the Monterey Formation, Cuyama Basin, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 704.

OP-1582. P. K. Link, J. B. Mahoney and B. R. Burton*. IDAHO. Sediment-hosted mineral deposits of the eastern Hailey 2 degree Quadrangle, south-central Idaho [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical As-

sociation of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 77.

OP-1583. P. W. Lipman. ARIZONA. The Cretaceous Tucson Mountains caldera; an asymmetrical trap-door subsidence structure [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 37.

OP-1584. M. G. Lockley* and C. J. Schenk. COLORADO. Middle Pennsylvanian paleoecology and paleoenvironments of the Eagle Basin, Colorado [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 145-146.

OP-1585. D. T. Long and T. P. Wilson*. MICHIGAN. Sources for water and solutes in subsurface fluids; Michigan Basin [abstr.], *in* Michigan; its geology and geologic resources; a second symposium, 1991; program and abstracts. Lansing, MI: Mich. Dep. Nat. Resour. 1991. p. 11-12.

OP-1586. K. R. Long and M. W. Bultman. NEVADA. Assessing potential for future discoveries of sediment-hosted gold deposits in Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 104.

OP-1587. J. D. Love. WYOMING. Cretaceous rocks of Jackson Hole, northwestern Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1335.

OP-1588. B. K. Lucchitta. What if deposits in the Valles Marineris are volcanic? [abstr.] LPI Technical Report, *in* MEVTV workshop on the Evolution of magma bodies on Mars. (P. J. Mouginis-Mark, editor and others). v. 90, no. 04, 1990. p. 42-43.

OP-1589. B. K. Lucchitta, R. A. Balser and L. M. Bertolini. Valles Marineris, Mars; are pit chains formed by erosion and troughs by tectonism? [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 203-204.

OP-1590. B. K. Lucchitta, J. G. Ferrigno, T. R. MacDonald and R. S. Williams, Jr. The velocity field of Antarctic outlet glaciers [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 153.

OP-1591. K. R. Ludwig, D. R. Muhs, K. R. Simmons, B. J. Szabo and J. G. Moore. Sr-isotopic variation in the Quaternary; the record from glacial and interglacial marine terraces [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 709.

OP-1592. Gretchen Luepke. CALIFORNIA. Variations in clay minerals and pebble lithologies in the Merced Formation, Northern California; comparisons with heavy-mineral variations [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 38.

OP-1593. J. H. Luetgert. Spatial variation of Poisson's ratio in the crust of the Northeastern U.S. [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1990 spring meeting. v. 71, no. 17, April 24, 1990. p. 567.

OP-1594. J. H. Luetgert, Stephen Hughes*, D. Forsyth* and J. J. Cipar. NEW YORK. The 1988 Ontario-New York-New England seismic refraction experiment, description and early results [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 400.

OP-1595. J. F. Luhr*, R. O. Rye and J. C. Varekamp*. The 1982 eruptions of El Chichón Volcano, Mexico; primary anhydrite and the origin of explosive high-sulfur magmas [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 425.

OP-1596. Karen Lund, L. S. Beard and W. J. Perry, Jr. NEVADA. Extensional geometries in the northern Grant Range, east-central Nevada; implications for oil occurrences in Railroad Valley [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1131-1132.

OP-1597. P. C. Lyons and W. C. Darrah. Paleoecological significance of Walchian conifers in Westphalian (Late Carboniferous) horizons of North America and Europe [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 146-147.

OP-1598. P. C. Lyons, J. W. Hosterman, D. M. Hercules* and J. J. Morelli*. Laser microprobe (LAMMA 1000) chemical analysis of clay minerals; potential application to in situ analysis of clay minerals in coal [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 258-259.

OP-1599. D. J. MacKinnon and K. L. Tanaka. A physical model of the impacted Martian crust; hydrologic and mechanical properties and geologic implications [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 205-206.

OP-1600. D. J. Madden and A. R. Palmer*. NEVADA. Age and stratigraphy of the Preble Formation, host rock for gold deposits, Humboldt County, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 120-121.

OP-1601. R. J. Madrid*, G. Forrest and J. F. Oliva-Becerril*. Origin of barite in the Barita de Sonora Mine area, central Sonora, Mexico [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section,

86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 38.

OP-1602. L. B. Magoon. ALASKA. Arctic National Wildlife Refuge; petroleum potential in one of the last Alaskan frontiers [abstr.] CSPG Reservoir. v. 17, no. 1, January 1990. p. 1-3.

OP-1603. L. B. Magoon and D. E. Anders. ALASKA. Oil-source rock correlation using carbon isotope data and biological marker compounds, Cook Inlet-Alaska Peninsula, Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 711.

OP-1604. B. J. Maher, Q. J. Browne and E. H. McKee. NEVADA. Chronology of Tertiary igneous and hydrothermal events, Roberts Mountains, Eureka County, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 48.

OP-1605. Florian Maldonado, E. G. Sable and J. J. Anderson. UTAH. Shallow detachment of mid-Tertiary rocks, Red Hills (Basin and Range), with implications for a regional detachment zone in the adjacent Markagunt Plateau (Colorado Plateau), Southwest Utah [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 63.

OP-1606. M. T. Mangan, B. D. Marsh*, A. J. Froelich and David Gottfried. Flow differentiation in Mesozoic diabase sheets of the Eastern United States; a case study [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1990 spring meeting. v. 71, no. 17, April 24, 1990. p. 646.

OP-1607. F. T. Manheim. Maps of chemical constituents in Pacific ferromanganese crusts [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 988.

OP-1608. Louie Marincovich, Jr. ALASKA. Origin of the modern Gulf of Alaska cold-water molluscan fauna [abstr.] Annual Report - Western Society of Malacologists, *in* Abstracts and proceedings of the annual meeting of the Western Society of Malacologists on Current directions in Alaskan malacology. (P. H. Scott, organizer and others). 23, 1991. p. 8-9.

OP-1609. Louie Marincovich, Jr. and C. L. Powell, II. ALASKA. Pliocene and Pleistocene molluscs in marine transgressions of western and northern Alaska [abstr.] Annual Report - Western Society of Malacologists, *in* Abstracts and proceedings of the annual meeting of the Western Society of Malacologists on Current directions in Alaskan malacology. (P. H. Scott, organizer and others). 23, 1991. p. 10-14.

OP-1610. M. S. Marlow, J. A. Pearce*, L. G. Pickthorn and M. A. Hobart*. MARIANA ISLANDS. Late Cenozoic forearc volcanism in the Marianas island arc revealed from drilling at ODP Site 781 [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 988-989.

OP-1611. C. S. Martens* and M. J. Baedecker. UTAH. Methane distribution and fluxes in the water column and sediments near Fremont Island, Great Salt Lake [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1137-1138.

OP-1612. J. R. Martin*, G. W. Clough* and S. F. Obermeier. SOUTH CAROLINA. Estimation of seismic loading levels for the 1886 Charleston earthquake from soil liquefaction phenomena and field testing [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 156-157.

OP-1613. Harold Masursky, M. G. Chapman, P. A. Davis, A. L. Dial, Jr. and M. E. Strobell. The search for Mars lander/rover/returned-sample sites [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 96.

OP-1614. D. L. Matson*, T. V. Johnson*, A. S. McEwen and L. A. Soderblom. Io's atmosphere; evidence for H_2S [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1296.

OP-1615. L. R. Mayo. ALASKA. History of Russel Fiord and Hubbard Glacier, Alaska [abstr.] Proceedings (Arctic Science Conference), *in* Science education; 1988 Arctic science conference, Fairbanks, Alaska, proceedings, summaries of selected sessions and abstracts of papers. (American Association for the Advancement of Science). 39, 1988. p. 50.

OP-1616. L. R. Mayo, R. S. March and D. C. Trabant. ALASKA. Wolverine Glacier, southern Alaska; surface altitude measurements snow continuing growth [abstr.] Proceedings (Arctic Science Conference), *in* Science education; 1988 Arctic science conference, Fairbanks, Alaska, proceedings, summaries of selected sessions and abstracts of papers. (American Association for the Advancement of Science). 39, 1988. p. 123.

OP-1617. R. A. McBride*, M. R. Byrnes*, Shea Penland* and J. L. Kindinger. MISSISSIPPI, ALABAMA. Geologic framework and hard mineral resources of Petit Bois Pass and adjacent inner shelf, Mississippi-Alabama [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section SEPM meeting; abstracts. v. 75, no. 9, September 1991. p. 1532.

OP-1618. R. A. McBride*, K. A. Westphal*, Shea Penland*, B. E. Jaffe, A. H. Sallenger, Jr. and S. J. Williams. LOUISIANA. Erosion and deterioration of Isles Dernieres barrier island arc, Louisiana; 1842-1988 [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section of SEPM meeting; abstracts. v. 73, no. 9, September 1989. p. 1188.

OP-1619. Jill McCarthy, D. A. Okaya* and E. B. Goodwin*. Geophysical character of the middle and lower crust in the Southwestern U.S.; results from seismic profiling [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 65-66.

OP-1620. R. H. McCorkell* and C. W. Naeser. Natural glass interlaboratory reference materials for fission track dating [abstr.] Nuclear Tracks and Radiation Measurements, *in* Proceedings of

the 6th international fission track dating workshop. (S. A. Durrani, editor and others). v. 17, no. 3, 1990. p. 422.

OP-1621. A. S. McEwen. Valles Marineris landslides; evidence for mechanics of large rock avalanches [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 213-214.

OP-1622. A. S. McEwen, L. A. Soderblom, J. D. Swann and T. L. Becker. Mars' global color and albedo [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 2, 1989. p. 660-661.

OP-1623. E. J. McFaul. Government data dissemination on CD-ROM [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A29.

OP-1624. J. J. McGee. Mineralogy of the ferroan anorthosite suite; clues to the parent magma puzzle [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 2, 1989. p. 664-665.

OP-1625. E. H. McKee and R. J. Blakely. NEVADA. Tectonic significance of linear, north-trending anomalies in north-central Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 49.

OP-1626. E. H. McKee, R. C. Jachens and R. J. Blakely. Major crustal differences between the northwestern part of the Great Basin and other parts of the province [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 100-101.

OP-1627. E. H. McKee, D. C. Noble* and S. I. Weiss*. Late Neogene volcanism and tectonism in the Goldfield Segment of the Walker Lane Belt [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 66.

OP-1628. D. M. McKnight, G. R. Aiken and K. E. Bencala. The influence of iron speciation on the sorption of dissolved organic material by iron and aluminum oxides in a mountain stream system [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1147.

OP-1629. R. J. McLaughlin, W. V. Sliter, W. P. Elder, Kristin McDougall, P. C. Russell, D. H. Sorg, J. D. Sims and M. C. Blake, Jr. CALIFORNIA. 190-km post-middle Miocene offset on the Tolay-Hayward-Calaveras fault system superposed on large-scale Late Cretaceous to early Eocene translation [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 67.

OP-1630. P. B. McMahon and F. H. Chapelle. Bacterially mediated diagenesis of deeply buried sediments in the Atlantic Coastal Plain; Part 2, Production and migration of carboxylic acids [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 37.

OP-1631. E. A. Merewether. WYOMING. Cretaceous formations in the southwestern part of the Powder River basin, northeastern Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1337.

OP-1632. E. A. Merewether. WYOMING. Cretaceous formations of the Hanna Basin, south-central Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1337.

OP-1633. R. P. Meyer*, J. H. Karl*, J. L. Sexton* and A. M. Tréhu. Observations of airgun shots at lake-bottom and land seismographs in the U.S. Great Lakes region, project GLIMPCE [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 63.

OP-1634. Klaus Mezger*, S. R. Bohlen, E. J. Essene*, B. A. van der Pluijm* and A. N. Halliday*. NEW YORK. Metamorphic history of the Grenville Terrane of southern Ontario and New York [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting; abstracts with programs. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 56.

OP-1635. E. Michael and J. L. Clayton. Application of porphyrin and other biological marker geochemistry to paleoenvironmental assessment; Pennsylvanian black shales, northern Denver Basin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 719.

OP-1636. G. E. Michael, D. E. Anders and W. Dickinson. COLORADO. Crude oil and source rock correlation, Northwest Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1337.

OP-1637. A. A. Miller*, C. F. Lewis*, L. M. Bybell, L. E. Osterman* and G. V. Sonnichsen*. Microfossil evidence of a Quaternary (?) sequence, Grand Banks of Newfoundland [abstr.], *in* Canadian Quaternary Association-American Quaternary Association; first joint meeting. (A. V. Morgan, chairperson). Waterloo, ON: Univ. Waterloo, Quat. Sci. Inst. 1990. p. 25.

OP-1638. B. M. Miller. An object-oriented expert system for sedimentary basin analysis with applications in petroleum geology [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 719.

OP-1639. B. M. Miller. NEW MEXICO. Applications of geographic information systems (GIS) to exploration studies in the San Juan Basin, New Mexico [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 719.

OP-1640. C. D. Miller. Volcanic hazards in the Pacific Northwest [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 89.

OP-1641. J. A. Miller. Ground water atlas of the United States [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 26.

OP-1642. J. J. Miller, J. A. Grow, R. G. Bohannon and R. E. Anderson. NEVADA. Seismic images of Miocene listric faulting N. of Lake Mead, NV [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 68.

OP-1643. T. P. Miller and M. E. Yount. ALASKA. Hazards, response, and effects of the 1986 eruption of Augustine Volcano, Alaska [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 429.

OP-1644. J. D. Milliman*, Deborah Freile*, R. P. Steinen*, R. J. Wilber* and R. B. Halley. Great Bahama Bank aragonitic muds; ubiquitously precipitated, mostly exported [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 720.

OP-1645. P. C. Milly and S. Manabe*. Sensitivity of a GCM climate to the parameterization of continental hydrology [abstr.] Annual Rocky Mountains Groundwater Conference, *in* Proceedings of Tenth annual American Geophysical Union hydrology days. (H. J. Morel-Seytoux, editor). 14, 1990. p. 63.

OP-1646. Edward Modica and H. T. Buxton. NEW YORK. Cross-sectional analysis of ground-water flow patterns on Long Island, New York [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 790.

OP-1647. P. J. Modreski. NEW MEXICO, COLORADO. Pink and violet micas; composition, nomenclature, and genesis of muscovite and lepidolite micas from pegmatites and metamorphic rocks in northern New Mexico and central Colorado [abstr.] New Mexico Geology, *in* Proceedings of the 11th annual New Mexico mineral symposium. v. 13, no. 2, May 1991. p. 41.

OP-1648. C. M. Molenaar. UTAH, COLORADO. Stratigraphy and correlation of Middle Cretaceous rocks around Uinta Basin, northeastern Utah and northwestern Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1167.

OP-1649. C. M. Molenaar and J. K. Baird. NEW MEXICO, COLORADO. Stratigraphic cross sections of Upper Cretaceous rocks across San Juan Basin, northwestern New Mexico and southwestern Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1167.

OP-1650. C. M. Molenaar, K. J. Bird and L. B. Magoon. ALASKA. Petroleum geology of the coastal plain of the Arctic National Wildlife Refuge, northeastern Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 723.

OP-1651. C. M. Molenaar, W. A. Cobban and D. G. Wolfe*. NEW MEXICO. Stratigraphy of Upper Cretaceous rocks in the Zuni Basin, west-central New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1337-1338.

OP-1652. C. M. Molenaar, G. H. Mack*, B. A. Black* and W. A. Cobban. NEW MEXICO. Stratigraphy and provenance of Upper Cretaceous rocks in south-central New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1338.

OP-1653. E. J. Moll-Stalcup, J. L. Wooden, J. Y. Bradshaw and S. E. Box. ALASKA. A Sr, Nd, and Pb isotopic study of 2.07 Ga metaigneous rocks from the Kilbuck Terrane, southwestern Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 89.

OP-1654. P. A. Molling and R. A. Ayuso. MAINE. Mineral paragenesis and hydrothermal alteration in the Catheart Mountain porphyry Cu-Mo deposit, Maine [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting; abstracts with programs. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 57.

OP-1655. B. F. Molnia. ALASKA. Sediment instability in the northeastern Gulf of Alaska; a retrospective [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 991.

OP-1656. B. F. Molnia. ALASKA. Advance induced retreat of the Mendenhall Glacier, Alaska [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A54.

OP-1657. B. F. Molnia. One glacier's retreat, a global warming does not make; an argument for systematic monitoring of North American glaciers [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 25.

OP-1658. B. F. Molnia and J. E. Jones. Side-looking airborne radar; an underutilized remote sensing tool for the Circum-Pacific region [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 991.

OP-1659. B. F. Molnia and J. E. Jones. ALASKA. Radar remote sensing of glacial features, Malaspina Glacier, Alaska [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 723.

OP-1660. D. E. Moore and J. D. Byerlee. CALIFORNIA. Variations in fault zone geometry along the San Andreas Fault, California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A66-A67.

OP-1661. H. J. Moore and J. A. Ackerman*. Martian and terrestrial lava flows [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 2, 1989. p. 711-712.

OP-1662. H. J. Moore and P. A. Davis. Analyses and morphology of a lava flow, Ascraeus Mons, Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 219-220.

OP-1663. H. J. Moore and J. M. Keller*. Surface-material maps of Viking landing sites on Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 221-222.

OP-1664. H. J. Moore and T. W. Thompson*. Martian quasi-specular echoes; preliminary 1986 results [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 2, 1989. p. 713-714.

OP-1665. J. G. Moore and W. R. Normark. Significance of major landslides on the Hawaiian Ridge [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 991-992.

OP-1666. T. A. Moore*, R. M. Flores*, D. T. Pocknall*, R. W. Stanton and P. D. Warwick. Tertiary raised and low-lying peat accumulation in the Powder River basin [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A51.

OP-1667. T. E. Moore, W. K. Wallace*, K. J. Bird, S. M. Karl and C. G. Mull. ALASKA. Paleozoic and Mesozoic history of northern Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 90.

OP-1668. D. M. Morton, P. M. Sadler and J. C. Matti. CALIFORNIA. Constant watershed growth and fault offset in the San Timoteo Badlands, Southern California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 70.

OP-1669. J. L. Morton, W. R. Normark, D. A. Clague and M. L. Holmes. CALIFORNIA. Fine-scale segmentation of the sedimented southern Gorda Ridge, offshore Northern California [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 88.

OP-1670. J. L. Morton, R. A. Zierenberg, A. S. Davis, R. P. Denlinger and C. G. Fox*. Volcanic and sedimentary controls on hydrothermal mineralization at Escanaba Trough, southern Gorda Ridge [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 992.

OP-1671. M. J. Moses and E. S. Robinson*. VIRGINIA. Structure of the Bane Dome, Giles County, Virginia; a gravity test [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1155.

OP-1672. M. J. Moses and E. S. Robinson*. VIRGINIA. Structure of the Bane Dome, Giles County, Virginia; a gravity test [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1155.

OP-1673. E. L. Mosier, G. N. Breit, J. D. Schlottmann and C. S. Papp. OKLAHOMA. Processes responsible for large concentrations of As, Cr, Se, U, and V in water produced from the Central Oklahoma Aquifer [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 61.

OP-1674. M. E. Moss. Bayesian relative information as a measure of model validity [abstr.] Eos, Transactions, American Geophysical Union, *in* 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 871.

OP-1675. J. C. Mullarkey*, J. L. Clayton, R. F. Wendlandt* and T. A. Daws. NEVADA. Petroleum source rock evaluation of the Cretaceous Newark Canyon Formation in north-central Nevada [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1134.

OP-1676. H. T. Mullins*, J. F. Dolan, N. A. Breen* and B. C. Andersen*. Carbonate platforms along the Bahama-Hispaniola collision zone [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 727.

OP-1677. B. L. Murchey. Radiolarian biostratigraphy of Paleozoic siliceous sedimentary rocks in central Sonora, Mexico [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 71.

OP-1678. P. S. Murdoch. NEW YORK. Episodic acidification and response of fish in headwater streams of the Catskill Mountains, New York [abstr.] Eos, Transactions, American Geophysical Union. v. 71, no. 6, February 6, 1990. p. 257.

OP-1679. G. P. Murphy, R. M. Tosdal, J. L. Wooden, Judith Kent, R. B. Vaughn* and E. M. Hayes*. CALIFORNIA. Chemical and isotopic character of Jurassic granitoids, Cargo Muchacho Mountains, SE California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 71.

OP-1680. C. W. Naeser, R. A. Zimmermann, R. G. Bohannon and D. L. Schmidt. The timing of uplift peripheral to the Red Sea, Saudi Arabia [abstr.] Nuclear Tracks and Radiation Measurements, *in* Proceedings of the 6th international fission track dating workshop. (S. A. Durrani, editor and others). v. 17, no. 3, 1990. p. 424.

OP-1681. N. D. Naeser, K. D. Crowley*, T. H. McCulloh* and C. M. Reaves*. CALIFORNIA. High temperature annealing of fission tracks in fluorapatite, Sante Fe Springs oil field, Los Angeles Basin, California [abstr.] Nuclear Tracks and Radiation Measurements, *in* Proceedings of the 6th international fission track

dating workshop. (S. A. Durrani, editor and others). v. 17, no. 3, 1990. p. 424.

OP-1682. N. D. Naeser, T. H. McCulloh*, K. D. Crowley* and C. M. Reaves*. CALIFORNIA. Fission-track analysis as thermal-history indicator; Los Angeles Basin, California [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1168.

OP-1683. N. D. Naeser, T. H. McCulloh*, K. D. Crowley* and C. M. Reaves*. CALIFORNIA. Thermal history of the Los Angeles Basin; evidence from fission-track analysis [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 728.

OP-1684. J. T. Nash, W. C. Utterback and J. A. Saunders. NEVADA. Geology and geochemistry of the Sleeper gold deposits, Humboldt County, Nevada; interim report [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 82-83.

OP-1685. L. D. Nealey, D. M. Unruh and R. J. Knight. ARIZONA. Geochemistry of deep crustal xenoliths from the southern Colorado Plateau, northern Arizona [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 72.

OP-1686. E. D. Neff*, M. A. Arthur*, B. J. Hay* and W. E. Dean. Late Holocene evolution of anoxia in the Black Sea [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1242.

OP-1687. C. H. Nelson, Andrés Maldonado*, J. H. Barber, Jr. and B. Alonso*. Modern sand-rich and mud-rich siliciclastic aprons; alternative base-of-slope turbidite systems to submarine fans [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 729-730.

OP-1688. C. M. Nelson. Ulrich and Schuchert on strandline displacements through geologic time [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 28.

OP-1689. S. G. Neuzil, Supardi*, J. S. Kane and C. B. Cecil. Geochemistry of domed peat deposits in Indonesia; a model for low-ash, low-sulfur coal [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A25.

OP-1690. R. J. Newberry, D. A. Brew and T. C. Crafford*. ALASKA. Genesis of the Greens Creek (GC) volcanogenic massive sulfide (VMS) deposit, S.E. Alaska; a geochemical study [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 96.

OP-1691. R. J. Newberry* and J. M. Schmidt. Gold vs. tin; predictive mineralogy for zinc-copper-(lead) volcanogenic massive sulfide deposits (VMSD) [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 96.

OP-1692. D. J. Nichols and J. L. Brown. WYOMING, MONTANA. Cretaceous-Tertiary boundary in the Powder River basin, Wyoming and Montana [abstr.] Palynology, *in* Abstracts of the proceedings of the Twenty-second annual meeting of the American Association of Stratigraphic Palynologists. (D. K. Goodman, editor). 14, 1990. p. 215-216.

OP-1693. D. J. Nichols and R. F. Fleming*. Recovery of terrestrial flora following K-T extinction; the palynological record from western North America [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A32.

OP-1694. K. M. Nichols and N. J. Silberling. UTAH. Carbonate and siliciclastic shelf environments of rocks associated with the Mississippian (Osagean) Delle phosphatic event, Northwest Utah [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 97-98.

OP-1695. S. W. Nicholson, K. J. Schultz, W. F. Cannon and L. G. Woodruff. MICHIGAN. Is the Porcupine Mountains area a Keweenawan central volcano? [abstr.], *in* Michigan; its geology and geologic resources; a second symposium, 1991; program and abstracts. Lansing, MI: Mich. Dep. Nat. Resour. 1991. p. 27-28.

OP-1696. K. Nishiizumi*, C. P. Kohl*, E. M. Shoemaker, J. R. Arnold*, D. Lal*, Jeffrey Klein*, D. Fink* and Roy Middleton*. ARIZONA. In situ ^{10}Be-^{26}Al exposure ages at Meteor Crater, Arizona [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 2, 1989. p. 792-793.

OP-1697. D. C. Noble*, S. I. Weiss and E. H. McKee. NEVADA. Magmatic and hydrothermal activity, caldera geology, and regional extension in the western part of the southwestern Nevada volcanic field [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 77.

OP-1698. M. A. Noble, Amatzia Genin* and P. F. Lonsdale*. Observations of diurnal tides over Fieberling Seamount, eastern North Pacific [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1990 ocean sciences meeting. v. 71, no. 2, January 9, 1990. p. 173.

OP-1699. W. J. Nokleberg, H. L. Foster, M. A. Dusel-Bacon, M. A. Lanphere, J. N. Aleinikoff and V. F. Labson. ALASKA. Structure and tectonics of the Yukon-Tanana, southern Wickersham, and Seventymile terranes along the Trans-Alaskan Crustal Transect (TACT), east-central Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 97.

OP-1700. D. K. Nordstrom, J. M. Burchard and C. N. Alpers*. CALIFORNIA. The production and variability of acid mine drainage at Iron Mountain, California; a Superfund site undergoing rehabilitation [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 98.

OP-1701. W. R. Normark. Deep-water large-scale slides & debris avalanches; common occurrences rarely resolved [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 995.

OP-1702. G. A. Nowlan and J. B. McHugh. NEVADA, ARIZONA. Comparison of stream-sediment, raw panned-concentrate, and nonmagnetic heavy-mineral-concentrate samples as reconnaissance sample media for gold exploration, based on studies in several southern Nevada and southern Arizona wilderness study areas [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 110-111.

OP-1703. V. F. Nuccio. Determining source rock maturity using direct measurement vs. predictive modeling; comparison and application of five methods to hydrocarbon generation [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 731.

OP-1704. V. F. Nuccio, J. W. Schmoker and T. D. Fouch. UTAH. Thermal maturity, porosity, and facies relationships applied to gas generation and production in Tertiary and Cretaceous low-permeability sandstones, Uinta Basin, Utah [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1134-1135.

OP-1705. L. M. Nuelle*, C. M. Seeger*, M. A. Marikos* and W. C. Day. MISSOURI. Mineral assemblages of the Pea Ridge Fe-REE deposit: implications of an olympic dam-type variant in Southeast Missouri [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A34.

OP-1706. C. J. Nutt, C. H. Thorman*, D. R. Zimbelman* and R. W. Gloyn*. UTAH. Geologic setting and reconnaissance trace-element geochemistry of the Detroit mining district and Drum gold mine, Drum Mountains, west-central Utah [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 63-64.

OP-1707. D. R. O'Connell* and J. F. Paskievitch. Preliminary results from a ship-to-shore seismic refraction profile across the Transantarctic Mountains in northern Victoria Land [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 395-396.

OP-1708. J. V. O'Connor* and R. G. Deike. VIRGINIA. Scenic landforms of northern Virginia [abstr.] Virginia Journal of Science, *in* Virginia Academy of Science; Sixty-eighth annual meeting; abstracts of papers. (J. H. Martin, editor). v. 41, no. 2, 1989. p. 94.

OP-1709. D. W. O'Leary. Structural style and morphology of slide complexes in homoclinal settings; some clues to origin and process [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 995-996.

OP-1710. J. D. Obradovich, J. F. Sutter and M. J. Kunk. Magnetic polarity chron tie points for the Cretaceous and early Tertiary [abstr.] Terra Cognita, *in* Sixth international conference on Geochronology, cosmochronology and isotope geology; abstracts. v. 6, no. 2, 1986. p. 140.

OP-1711. T. W. Offield. NORTH CAROLINA. Structural framework of the Carolina slate belt in North Carolina [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 54.

OP-1712. T. W. Offield, M. J. Kunk and R. P. Koeppen. NORTH CAROLINA. Style and age of deformation in the Carolina slate belt of central North Carolina [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 54.

OP-1713. T. W. Offield and J. F. Slack. VERMONT. Polyphase folding and thrust faulting in the Vermont copper belt [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting; abstracts with programs. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 61.

OP-1714. P. M. Okita*, S. J. Sutton*, R. A. Ayuso and B. R. Doe. Geochemical patterns associated with sedimentary Mn-carbonate mineralization suggest an oxide precursor [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 12.

OP-1715. R. N. Oldale. Quaternary seismic stratigraphy of the eastern New England glaciated continental shelf [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting; abstracts with programs. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 61.

OP-1716. W. A. Oliver, Jr. Devonian rugose coral extinctions and migrations in the Eastern Americas Realm [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 54-55.

OP-1717. W. H. Orem, E. C. Spiker and R. K. Kotra. Organic matter associated with metal sulfides of hydrothermal vent origin [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 52.

OP-1718. R. S. Oremland, J. T. Hollibaugh*, A. S. Maest, T. S. Presser and L. G. Miller. Dissimilatory reduction of selenate in anoxic sediments and by anaerobic bacterial cultures [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1137.

OP-1719. D. E. Owen. Economic, environmental and health implications of uraniferous montane and subalpine wetlands [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1340.

OP-1720. D. E. Owen, J. K. Otton, R. R. Schumann, R. A. Zielinski, J. P. McKee*, E. I. Robbins and F. A. Hills. COLORADO. The Boston Peak Fen; a multidisciplinary case study of a uraniferous mountain wetland [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1340-1341.

OP-1721. W. R. Page. NEVADA. Effects of Tertiary extension on the Mesozoic Delamar thrust plate, southern Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 74.

OP-1722. C. A. Palmer and C. C. Cameron. The occurrence of gold and arsenic in a Sumatra, Indonesia, peat deposit [abstr.] The Journal of Coal Quality, *in* Proceedings of the international conference on Trace elements in coal. (George Vourvopoulos, chairperson). v. 8, no. 3-4, December 1989. p. 122.

OP-1723. C. A. Palmer, R. B. Finkelman, M. R. Krasnow, G. A. Sellers and P. J. Aruscavage. Behavior of selected elements during sequential leaching of 10 lignite and bituminous coals [abstr.] The Journal of Coal Quality, *in* Proceedings of the international conference on Trace elements in coal. (George Vourvopoulos, chairperson). v. 8, no. 3-4, December 1989. p. 122-123.

OP-1724. C. A. Palmer and P. C. Lyons. Chemistry and origin of minor and trace elements in selected vitrinite concentrates from bituminous and anthracitic coals [abstr.] International Journal of Coal Geology. v. 16, no. 1-3, December 10, 1990. p. 189-192.

OP-1725. Christopher Paola and Leon Borgman*. Reconstruction of random fluvial topography from preserved stratification [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 736.

OP-1726. Dale Patterson*, J. J. Steuer and Joydeb Bhattacharyya*. WISCONSIN. Fox River polychlorinated biphenyl (PCB) bottom sediment data [abstr.], *in* Environmental threats to Wisconsin's water resources; concerns for the 90s. Am. Water Resour. Assn., Wis. Sect. 1991. p. 18.

OP-1727. M. J. Pawlewicz and V. F. Nuccio. NEW MEXICO. Vitrinite reflectance study of the Upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1136.

OP-1728. V. Pease. ARIZONA. Paleomagnetic data bearing on the geometry and timing of detachment faulting in the Mojave Mountains, Arizona [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1163.

OP-1729. D. L. Peck. Does the Federal government have a role in science education? Yes! [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 74.

OP-1730. Shea Penland*, A. H. Sallenger, Jr. and S. J. Williams. LOUISIANA. Barrier island erosion in Louisiana [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1237.

OP-1731. Shea Penland*, J. R. Suter*, Ron Boyd* and S. J. Williams. Effects of sea level rise on river delta coasts [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 738.

OP-1732. Shea Penland*, J. R. Suter*, R. A. McBride*, S. J. Williams, J. L. Kindinger and Ron Boyd*. LOUISIANA. Holocene sand shoals offshore of Mississippi River delta plain, Louisiana [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section of SEPM meeting; abstracts. v. 73, no. 9, September 1989. p. 1189.

OP-1733. W. J. Perry, Jr., C. E. Barker and Karen Lund. NEVADA. A new oil-generation model for Pine and Railroad valleys, Nevada [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1136.

OP-1734. D. W. Peterson. WASHINGTON. Overview of the effects and influence of the activity of Mount St. Helens in the 1980's [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 105.

OP-1735. Fred Peterson. Jurassic paleogeography of the Colorado Plateau and vicinity [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 75.

OP-1736. J. A. Peterson. Aneth oil field carbonate mound reservoir; organic-rich mudbank origin? [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1170.

OP-1737. J. A. Peterson. Future petroleum resource potential of Northern Rocky Mountain-Great Plains area [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1170-1171.

OP-1738. J. A. Peterson. Geology and petroleum resources, eastern Great Basin, United States [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 739.

OP-1739. J. A. Peterson and J. W. Clarke. Petroleum geology of the West Siberian Basin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 739.

OP-1740. M. L. Peterson and A. F. White. CALIFORNIA. Chemical and isotopic evolution of fluids in the active Long Valley hydrothermal system [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A85.

OP-1741. J. D. Phillips. Integration of potential field and digital geologic data for two North American geoscience transects [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A75.

OP-1742. J. A. Philpotts and Mitsunobu Tatsumoto. Geochemical aspects of the Bayan Obo, China, rare-earth deposit and implications for iron ore genesis [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A33.

OP-1743. H. A. Pierce and D. B. Hoover. NEVADA. Airborne electromagnetic applications; mapping structure and electrical boundaries beneath cover along the Getchell Trend, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 122.

OP-1744. T. C. Pierson and R. J. Janda. A previously unrecognized type of proximal pyroclastic deposit at snow- and ice-covered volcanoes [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 55.

OP-1745. J. A. Pitkin. NEVADA. Radioelement data of the Getchell Trend, Humboldt County, Nevada; geologic discussion and possible significance for gold exploration [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 122.

OP-1746. John Pitlick and J. E. Costa. Sediment loads and flow hydraulics during floods [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A40.

OP-1747. J. K. Pitman, R. C. Burruss, T. S. Dyman, R. M. Flores, J. R. Hatch, M. E. Henry, C. W. Keighin, W. J. Perry, Jr., R. M. Pollastro, J. E. Repetski, R. L. Reynolds, D. D. Rice, R. L. Robbins and J. W. Schmoker. OKLAHOMA, TEXAS, KANSAS. Geologic history of the Anadarko Basin, western Oklahoma, North Texas Panhandle, and southwestern Kansas [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 741.

OP-1748. C. W. Poag. The rise and demise of Jurassic carbonate platforms on the U.S. Atlantic margin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 741-742.

OP-1749. M. H. Podwysocki, R. P. Ashley and O. D. Jones. NEVADA. The mapping of mineral zones in hydrothermally altered volcanic rocks with an airborne imaging spectrometer, Cuprite, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 107-108.

OP-1750. R. M. Pollastro. Clay minerals as geothermometers and indicators of thermal maturity; application to basin history and hydrocarbon generation [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1171.

OP-1751. R. M. Pollastro. CALIFORNIA. Geothermometry from smectite and silica diagenesis in the diatomaceous Monterey and Sisquoc formations, Santa Maria Basin, California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 742.

OP-1752. R. M. Pollastro and C. J. Schenk. WYOMING. Origin and diagenesis of clay minerals in relation to sandstone paragenesis; an example in eolian dune reservoirs and associated rocks, Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1136-1137.

OP-1753. D. W. Pollock. NEW YORK. Particle tracking analysis of recharge areas on Long Island, New York [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 797.

OP-1754. M. L. Pomes and E. M. Thurman. KANSAS. Reconnaissance hydrogeology of a small prairie watershed in the Flint Hills, Northeast Kansas [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 63-64.

OP-1755. D. A. Ponce. NEVADA. Gravity and magnetic anomalies in the Ely Quadrangle, Nevada, and anomalies related to granitic plutons [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 101.

OP-1756. F. G. Poole, R. J. Madrid* and J. F. Oliva-Becerril*. Geologic setting and origin of stratiform barite in central Sonora, Mexico [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 74-75.

OP-1757. F. G. Poole and J. M. Morales-Ramirez. Sonoran Orogen in the Barita de Sonora Mine area, central Sonora, Mexico [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 76.

OP-1758. Peter Popenoe and F. T. Manheim. The Aluminaut "sinkhole" revisited; evidence against submarine discharge and for Gulf Stream scour of the Blake Plateau [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 56.

OP-1759. K. W. Porter*, E. B. Campen*, W. A. Cobban and W. B. Hansen*. MONTANA. Stratigraphic sequences and unconformities in Cretaceous rocks of east-central MT [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1341.

OP-1760. D. R. Posson and M. O. Jones. Arctic environmental data directory [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 29.

OP-1761. C. J. Potter, J. A. Grow, Karen Lund, W. J. Perry, Jr., J. J. Miller and M. W. Lee. NEVADA. Regional seismic reflection profile from Railroad Valley to Lake Valley, east-central Nevada, reveals a variety of structural styles beneath Neogene basins [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1137.

OP-1762. C. J. Potter, R. L. Tang*, T. J. Hainsworth* and S. Y. Johnson. UTAH. Late Paleozoic tectonic evolution of the southern Uinta Basin; evidence from reflection data [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1342.

OP-1763. D. S. Powars, R. B. Mixon, L. E. Edwards, C. W. Poag and S. Bruce*. VIRGINIA. Cross section of Cretaceous and Cenozoic strata, Norfolk Arch to Salisbury Basin, outer coastal plain of Virginia [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. 57 p.

OP-1764. L. F. Pratson*, W. Ryan* and D. C. Twichell. Illustrations of the importance of mass wasting in the evolution of continental margins [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 743.

OP-1765. W. R. Premo and Mitsunobu Tatsumoto. Pb isotopes in anorthositic breccia 67075, revisited; evidence of a mare basalt-age component [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 866-867.

OP-1766. S. E. Prensky. WYOMING. Stratigraphic and areal distribution of overpressuring, northern Green River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1342.

OP-1767. L. C. Price. On the origin of the Gulf Coast Neogene oils [abstr.] AAPG Bulletin, *in* Gulf Coast Association of Geological Societies and Gulf Coast Section SEPM meeting; abstracts. v. 75, no. 9, September 1991. p. 1535.

OP-1768. L. C. Price and J. A. Le Fever*. Horizontal drilling in the Bakken Formation; the hunt for an elephant that never left the source system [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1137.

OP-1769. L. C. Price and L. M. Wenger*. The influence of pressure on petroleum generation and maturation as suggested by hydrous pyrolysis [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 743.

OP-1770. M. S. Pringle and J. M. Sinton*. Petrology and geochronology of the Musicians Seamounts [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 422.

OP-1771. R. S. Punongbayen*, E. G. Ramos* and C. G. Newhall. The 1984 and future eruptions of Mayon Volcano [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 423.

OP-1772. Ferdinand Quiñones-Marquez and M. C. Yurewicz. TENNESSEE. Tennessee groundwater quality studies [abstr.] Journal of the Tennessee Academy of Science, *in* Tennessee Academy of Science 100th annual meeting; proceedings. (B. P. Stone, president). v. 66, no. 2, April 1991. p. 62-63.

OP-1773. M. J. Radell and B. G. Katz. FLORIDA. Aqueous geochemistry of the Biscayne Aquifer, Southeast Florida [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 797-798.

OP-1774. N. M. Ratcliffe. VERMONT. Basement cover relationships, Paleozoic structural chronology, and tectonic history of the Green Mountain massif and eastern domes of southern Vermont; comparison with other massifs in the orogen [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 63-64.

OP-1775. N. M. Ratcliffe and J. N. Aleinikoff. Speculations on structural chronology and tectonic setting of middle Proterozoic terranes(?) of the northern U.S. Appalachians based on U-Pb dating, field relations and geochemistry [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 64.

OP-1776. P. A. Reasenberg, Yoshimitsu Okada* and F. Yamamizu*. Earthquake hazard after a mainshock in the Kanto-Tokai districts, Japan [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 908.

OP-1777. T. E. Reilly. Flow system considerations in collection and interpretation of ground-water quality samples [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 787.

OP-1778. R. A. Renken. PUERTO RICO. A structural and depositional framework for fan deltas in southern Puerto Rico [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 748.

OP-1779. R. L. Reynolds, N. S. Fishman and D. M. Sherman. Magnetite and maghemite from hydrocarbon wells [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 4, November 1, 1988. p. 1156.

OP-1780. D. D. Rice. Geologic settings and controls of shallow gas, Rocky Mountain area [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1138.

OP-1781. D. D. Rice and J. L. Clayton. Geochemistry of coal-generated hydrocarbons and source rock potential of coal beds [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1171-1172.

OP-1782. D. D. Rice, W. A. Cobban, D. L. Gautier and G. W. Shurr*. MONTANA. Cretaceous rocks of north-central Montana [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1343.

OP-1783. D. D. Rice, W. A. Cobban and G. W. Shurr*. MONTANA, NORTH DAKOTA. Cretaceous rocks of Cedar Creek Anticline area, eastern Montana and southwestern North Dakota [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1342-1343.

OP-1784. D. D. Rice and R. M. Flores. WYOMING. Nature of natural gas in anomalously thick coal beds, Powder River basin, Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1172.

OP-1785. D. D. Rice and R. M. Flores. WYOMING, MONTANA. Coal-bed methane potential of Tertiary coal beds and adjacent sandstone deposits, Powder River basin, Wyoming and Montana [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1343.

OP-1786. B. M. Richmond. Aggregate resources in reef environments; three examples from the South Pacific [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 998.

OP-1787. J. L. Ridgley. COLORADO. Contrasting styles of fault control on position of pre-Dakota unconformity and on depositional environments of Dakota Sandstone, northern San Juan Basin, Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1172.

OP-1788. J. L. Ridgley and A. C. Huffman, Jr. COLORADO, NEW MEXICO. Evolution of the San Juan Basin, Colorado, and New Mexico basin analysis case study [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 748.

OP-1789. N. R. Riggs and G. B. Haxel. ARIZONA. Paleogeography and tectonic setting of the Jurassic nagnatic arc in southern Arizona; progress and problems [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 78.

OP-1790. S. B. Roberts, G. D. Stricker and R. H. Affolter. ALASKA. 200+ billion tons of low sulfur coal in the Sagavanirktok Formation, North Slope, Alaska [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1343.

OP-1791. J. F. Robertson. NEW MEXICO, ARIZONA. Fluvial sandstone beds in Petrified Forest Member of Upper Triassic Chinle Formation, Northwest New Mexico and Northeast Arizona [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1172-1173.

OP-1792. M. S. Robinson* and K. L. Tanaka. Hydrology of a flow event in Kasei Valles, Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 912-913.

OP-1793. R. W. Rodriguez and R. M. Webb. PUERTO RICO. Impact of Hurricane Hugo on coastal resources of Puerto Rico [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 751.

OP-1794. S. M. Roeske*, Cynthia Dusel-Bacon and S. L. Douglass. ALASKA. Cretaceous deformation and metamorphism in the Southwest Ruby Terrane, Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 113.

OP-1795. D. M. Rohr* and R. B. Blodgett. ALASKA. Ordovician gastropods from Alaska [abstr.] Annual Report - Western Society of Malacologists, *in* Abstracts and proceedings of the annual meeting of the Western Society of Malacologists on Current directions in Alaskan malacology. (P. H. Scott, organizer and others). 23, 1991. p. 14-15.

OP-1796. D. H. Root, E. D. Attanasi, C. D. Masters and J. Wood*. Evolution of oil and gas recovery in the United States [abstr.] AAPG Bulletin, *in* History of petroleum symposium; abstracts. v. 73, no. 9, September 1989. p. 1144.

OP-1797. K. D. Rose* and T. M. Brown. WYOMING. New evidence on the early diversification of omomyid primates from the Wasatchian Willwood Formation, Wyoming [abstr.] Journal of Vertebrate Paleontology, *in* Abstracts of papers; Fiftieth annual meeting, Society of Vertebrate Paleontology. (Hans-Peter Schultze, editor). v. 10, no. 3, Suppl. September 2, 1990. p. 39A.

OP-1798. J. G. Rosenbaum and M. R. Hudson. NEVADA. Paleomagnetic investigation of Tertiary rotations, Southwest Nevada; Yucca Mountain [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1164.

OP-1799. S. L. Rotto and K. L. Tanaka. Faulting history of the Alba Patera-Ceraunius Fossae region of Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 926-927.

OP-1800. L. C. Rowan, M. J. Pawlewicz and O. D. Jones. Potential of remote visible and near-infrared spectral reflectance measurements of mapping thermal maturity variations [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1173.

OP-1801. P. D. Rowley, R. E. Anderson, L. W. Snee and H. H. Mehnert. NEVADA. Geology and structural setting of the western Caliente Caldera Complex, Lincoln County, Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 79-80.

OP-1802. L. F. Ruppert, S. G. Neuzil, C. B. Cecil and J. S. Kane. Inorganic constituents in a low-ash domed Sumatra peat [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A51.

OP-1803. N. B. Rybicki and V. P. Carter. Climate, water clarity and submersed macrophyte population dynamics in the tidal Potomac River [abstr.] Virginia Journal of Science, *in* Virginia Academy of Science: Sixty-eighth annual meeting; abstracts of papers. (J. H. Martin, editor). v. 41, no. 2, 1989. p. 88.

OP-1804. J. J. Rytuba, D. B. Vander Meulen and V. E. Barlock. OREGON, IDAHO. Epithermal precious-metal systems in the Lake Owyhee volcanic field, Oregon-Idaho [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 83.

OP-1805. J. W. Salisbury and Dana D'Aria*. Measurement of Christiansen frequencies in spectra of particulate samples for determination of rock composition [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 940-944.

OP-1806. A. H. Sallenger, Jr. LOUISIANA. Barrier island erosion and sea level rise [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1238.

OP-1807. A. H. Sallenger, Jr. LOUISIANA. Effects of sea level rise on barrier islands, with examples from Louisiana [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 754.

OP-1808. A. H. Sallenger, Jr. and S. J. Williams. LOUISIANA. Processes of barrier island erosion [abstr.] Transactions - Gulf Coast Association of Geological Societies, *in* Gulf Coast Association of Geological Societies, 39th annual meeting; and Gulf Coast Section SEPM, 36th annual meeting. (W. S. Croft, editor and others). 39, 1989. p. 541.

OP-1809. R. W. Saltus, R. W. Simpson, R. J. Blakely, R. C. Jachens, T. G. Hildenbrand, D. F. Barnes and Andrew Griscom. Geologic and tectonic insights from analysis of new gravity and magnetic maps of North America [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies. 59, Vol. 1, November 2, 1989. p. 355-356.

OP-1810. C. A. Sandberg. Conodont event stratigraphy and paleobiogeography of Western United States [abstr.] CFS. Courier Forschungsinstitut Senckenberg, *in* 1st international Senckenberg conference and 5th European conodont symposium (ECOS 5); Contributions 1. (Willi Ziegler, editor). 102, 1988. p. 252-253.

OP-1811. C. A. Sandberg, Roland Dreesen* and Willi Ziegler*. Refined conodont dating and event stratigraphy of Frasnian perireefal strata in Belgium [abstr.] CFS. Courier Forschungsinstitut Senckenberg, *in* 1st international Senckenberg conference and 5th European conodont symposium (ECOS 5); Contributions 1. (Willi Ziegler, editor). 102, 1988. p. 253.

OP-1812. C. A. Sandberg, Willi Ziegler* and Roland Dreesen*. Late Frasnian mass extinction; associated sea-level changes reflected by conodont faunas and biofacies [abstr.] CFS. Courier Forschungsinstitut Senckenberg, *in* 1st international Senckenberg conference and 5th European conodont symposium (ECOS 5); Contributions 1. (Willi Ziegler, editor). 102, 1988. p. 253-254.

OP-1813. W. J. Sando. Influence of carbonate factories on Early Carboniferous event history, Northern Rocky Mountains, USA [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 431.

OP-1814. M. G. Sawlan. OREGON. Gold deposition sites in quartz and sulfide; SEM studies of high-grade samples from the Quartz Mountain District, southern Oregon [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 126.

OP-1815. D. A. Sawyer, G. Sweetkind, R. O. Rye, D. F. Siems, R. L. Reynolds, J. G. Rosenbaum, P. W. Lipman, J. A. Boylan, P. B. Barton, P. M. Bethke and G. C. Curtin. COLORADO. Potassium metasomatism in the Creede mining district, San Juan volcanic field, Colorado [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 234.

OP-1816. G. G. Schaber and R. C. Kozak. Morphologies of ten Venusian shields between lat 30° and 90°N [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 954-955.

OP-1817. C. J. Schenk and S. G. Fryberger*. NEW MEXICO. Early diagenesis in eolian dune and interdune sands at White Sands, New Mexico [abstr.], *in* Sediments down-under; 12th international sedimentological congress. Canberra: Bur. Miner. Resour., Geol. and Geophys. 1986. p. 268.

OP-1818. C. J. Schenk, D. L. Gautier and G. R. Olhoeft. Bedding scales of a complex eolian dune using ground-penetrating radar [abstr.] Bulletin of Canadian Petroleum Geology, *in* Opportunities for the nineties; Canadian Society of Petroleum Geology 1991 convention. v. 39, no. 2, June 1991. p. 224.

OP-1819. C. J. Schenk and L. F. Krystinik*. Heterogeneity of eolian sandstones and enhanced oil recovery [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1173.

OP-1820. C. J. Schenk and M. G. Lockley*. COLORADO. Sedimentology and paleoecology of the Eagle Valley Evaporite (Middle Pennsylvanian), Eagle Basin, Colorado [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 178-179.

OP-1821. C. J. Schenk and Fred Peterson. UTAH. Eolian sabkha sandstones in the Nugget Sandstone (Jurassic), Vernal area, Utah [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1139.

OP-1822. C. J. Schenk and J. M. Scheffler. WYOMING. Sedimentology and reservoir heterogeneity of sandstones in the Permian upper Minnelusa Formation, Powder River basin, Wyoming [abstr.], *in* Sediments down-under; 12th international sedimentological congress. Canberra: Bur. Miner. Resour., Geol. and Geophys. 1986. p. 269.

OP-1823. C. J. Schmidt*, H. W. Smedes* and J. M. O'Neill. MONTANA. Syncompressional emplacement of the Boulder Batholith (Montana) and nearby plutons by pull-apart along old fault zones; a working hypothesis [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A89-A90.

OP-1824. J. C. Schmidt*, D. M. Rubin and Hiroshi Ikeda*. Flume simulation of sedimentation in recirculating flow [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 758.

OP-1825. J. W. Schmoker and T. C. Hester. Regional trends of sandstone porosity vs. vitrinite reflectance; preliminary framework [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1173-1174.

OP-1826. J. W. Schmoker and T. C. Hester. NORTH DAKOTA, OKLAHOMA. Formation resistivity as an indicator of oil generation; Bakken Formation of North Dakota and Woodford Shale of Oklahoma [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1345.

OP-1827. J. W. Schmoker and J. G. Palacas. IOWA. Porosity and organic geochemistry of Precambrian Midcontinent Rift system, Iowa; petroleum potential of one-billion-year-old rocks [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1344-1345.

OP-1828. D. W. Scholl and A. J. Stevenson. Was the Aleutian Basin more enclosed, its deeps oxygen deficient, and the geothermal gradient steepened in the middle Tertiary? Implications for the petroleum potential of the Bering Sea [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1000.

OP-1829. D. W. Scholl and A. J. Stevenson. ALASKA. Regional factors affecting petroleum potential of the Aleutian accretionary prism [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 758.

OP-1830. A. P. Schultz. Giant landslides on rocky slopes in the Valley and Ridge Province of the Southern and Central Appalachians [abstr.] Annual Meeting - Association of Engineering Geologists, *in* Engineering geology for the 90's. October 1990. p. 107.

OP-1831. M. S. Schulz and J. R. Hein. MARIANA ISLANDS. Genetic significance of textural and compositional variations in hydrothermal manganese oxide deposits of the Mariana island arc [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1000.

OP-1832. W. C. Schwab, W. W. Danforth and K. M. Scanlon. PUERTO RICO. A giant submarine slope failure on the insular slope north of Puerto Rico; a response of Arecibo Basin strata to tectonic stress [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1000.

OP-1833. W. C. Schwab, R. E. Kayen and H. J. Lee. Steady-state analysis of a carbonate-sediment slope failure on Horizon Guyot [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1000.

OP-1834. D. H. Scott and J. M. Dohm. Chronology and global distribution of fault and ridge systems on Mars [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 976-977.

OP-1835. D. H. Scott and J. M. Dohm. Tectonic setting of Martian volcanoes and deep-seated intrusives [abstr.] LPI Technical Report, *in* MEVTV workshop on the Evolution of magma bodies on Mars. (P. J. Mouginis-Mark, editor and others). v. 90, no. 04, 1990. p. 52-53.

OP-1836. D. H. Scott and J. M. Dohm. Evidence for multiple flooding episodes in Kasei Valles, Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 267-268.

OP-1837. D. H. Scott and J. R. Underwood*. Mottled terrain; a continuing Martian enigma [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 269-270.

OP-1838. R. B. Scott. NEVADA. Significance of mild extension of a relatively stable area within highly extended terrane, southeastern Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 81.

OP-1839. W. E. Scott. Patterns of post 15-ka volcanism in the Cascade Arc [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 119.

OP-1840. Paul Segall. Earthquakes triggered by fluid extraction [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 394-395.

OP-1841. Paul Segall and P. T. Delaney*. HAWAII. Horizontal deformation of Kilauea Volcano [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 237.

OP-1842. K. W. Shanley* and P. J. McCabe. Tidal influence in fluvial strata; a key element in high-resolution sequence stratigraphic correlation [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 762.

OP-1843. A. M. Shapiro. Solute movement in heterogeneous porous media; a discussion of the position and arrival time analyses [abstr.] Eos, Transactions, American Geophysical Union, *in* 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 875.

OP-1844. M. B. Shasby and E. F. Binnian. Baseline studies for monitoring global climatic change in the Arctic environment; a remote sensing-spatial data base approach [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 15.

OP-1845. D. R. Shawe. NEVADA. Structural trends imply large gold resources in Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 103-104.

OP-1846. K. M. Shedlock. SOUTH CAROLINA. The South Carolina seismic net; past and future [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 160.

OP-1847. E. A. Shinn, B. H. Lidz, A. C. Hine* and J. L. Kindinger. FLORIDA. Carbonate slope and platform accumulations; lower Florida Keys [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 763.

OP-1848. E. M. Shoemaker and C. S. Shoemaker. Geology of the Connolly Basin impact structure, Western Australia [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 1008-1009.

OP-1849. E. M. Shoemaker and C. S. Shoemaker. Proterozoic impact record of Australia [abstr.] LPI Contribution, *in* Abstracts for the International workshop on Meteorite impact on the early Earth. 746, 1990. p. 47-48.

OP-1850. E. M. Shoemaker, C. S. Shoemaker and J. B. Plescia*. Gravity investigation of the Connolly Basin impact structure; Western Australia [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 1010-1011.

OP-1851. R. R. Shroba, J. W. Whitney, E. M. Taylor and K. F. Fox, Jr. NEVADA. Quaternary movement on north-trending faults at Yucca Mountain, Nevada; preliminary results [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 83.

OP-1852. H. G. Siegrist, Jr.*, C. A. Edwards and R. H. Randall*. MARIANA ISLANDS. Shallow reef-front detrital sediments in the Mariana Islands [abstr.], *in* Sediments down-under; 12th international sedimentological congress. Canberra: Bur. Miner. Resour., Geol. and Geophys. 1986. p. 275-276.

OP-1853. N. J. Silberling. NEVADA. Allochthonous terranes of western Nevada; current status [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 101.

OP-1854. N. J. Silberling and K. M. Nichols. UTAH. Tectonic implications of widespread anoxia on the Mississippian shelf, western and northern Utah [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 83-84.

OP-1855. A. M. Simmons*, R. A. Young* and G. B. Haxel. ARIZONA. Middle Tertiary volcanism in the northern Aquarius Mountains-upper Trout Creek area, west-central Arizona; preliminary report [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 84.

OP-1856. F. W. Simonds and R. B. Scott. NEVADA. Hydrothermal alteration at the Calico Hills, Nye County, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 126.

OP-1857. D. Simpson* and W. Leith. Satellite image analysis of the Soviet JVE site [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 393.

OP-1858. D. W. Simpson*, R. D. Borcherdt, C. J. Langer, J. R. Filson and Edward Cranswick. The Armenian earthquake of December 7, 1988; aftershock and ground motion studies [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 394.

OP-1859. K. W. Sims*, B. M. Loeffler*, T. G. Lindeman*, J. B. Noblett* and Kiyoto Futa. NEW MEXICO. Mafic inclusions in the Tschicoma Formation, Jemez volcanic field, New Mexico [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 244.

OP-1860. V. B. Sisson*, T. L. Pavlis* and Cynthia Dusel-Bacon. ALASKA. Metamorphic constraints on Cretaceous crustal extension in the Yukon crystalline terrane, east-central Alaska [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 122.

OP-1861. B. D. Smith, R. J. Bisdorf, W. D. Heran, D. D. Fitterman and A. T. Mazzella*. MISSISSIPPI. Helicopter geophysical survey to detect brine, Brookhaven oil field, Mississippi [abstr.] SEG Abstracts, *in* Society of Exploration Geophysicists, 59th annual international meeting; expanded abstracts with biographies; 1989 technical program. 59, Vol. 1, November 2, 1989. p. 134-137.

OP-1862. G. I. Smith. CALIFORNIA. Short climatic cycles at about 10 ka recorded by sediments deposited in Searles Lake, California; evidence of climatic instability [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 85.

OP-1863. G. I. Smith. CALIFORNIA. Searles Lake, California; a multi-billion-dollar "salt" deposit [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 124.

OP-1864. R. A. Smith, R. B. Alexander and C. J. Schmitt*. Lead concentrations in fish in relation to lead concentrations and sources in major U.S. rivers [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 ENVR 184.

OP-1865. R. L. Smith, G. R. Aiken, D. M. McKnight, Carol Bowles, L. G. Miller and J. H. Duff. Biogeochemical processes in a permanently ice-covered Antarctic dry valley lake [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1138.

OP-1866. W. K. Smith. Registration; perspectives from the geological engineering side [abstr.] Annual Meeting - Association of Engineering Geologists, *in* Engineering geology for the 90's. October 1990. p. 36-37.

OP-1867. J. P. Smoot and P. E. Olsen*. The use of massive mudstones in paleoclimatic interpretations of the early Mesozoic Newark Supergroup of eastern North America [abstr.], *in* Sediments down-under; 12th international sedimentological congress. Canberra: Bur. Miner. Resour., Geol. and Geophys. 1986. p. 282.

OP-1868. G. L. Snyder, R. P. Hall*, D. J. Hughes* and K. R. Ludwig. WYOMING. Mafic intrusives in Precambrian rocks of the Wyoming Province and Belt Basin [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 249.

OP-1869. E. C. Spiker, P. G. Hatcher and V. J. Comer. Depletion of ^{13}C in sedimentary organic matter by selective preservation [abstr.] Chemical Congress of North America, Abstracts of Papers, *in* Third chemical congress of North America; book of abstracts. 3, 1988 GEOC 93.

OP-1870. P. D. Spudis. Composition and structure of the lunar crust; a regional perspective [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodésique et Géophysique Internationale (UGGI), XIX assemblée generale; résumés. 19, Vol. 1, 1987. p. 93.

OP-1871. P. D. Spudis, B. R. Hawke* and P. G. Lucey*. The lunar Crisium Basin; geology, rings, and deposits [abstr.] Abstracts of Papers Submitted to the Lunar and Planetary Science Conference. 20, Part 3, 1989. p. 1042-1043.

OP-1872. P. E. Stackelberg and S. F. Siwiec. A probability model to predict the quality of shallow ground water from land-use data [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 791.

OP-1873. J. D. Stanesco. NEW MEXICO. Sedimentology and depositional environments of Lower Permian Yeso Formation in northwestern New Mexico [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1174-1175.

OP-1874. R. G. Stanley, S. Y. Johnson, J. D. Obradovich, M. L. Tuttle, M. L. Thornton*, D. R. Vork*, M. V. Filewicz*, M. A. Mason* and C. C. Swisher*. CALIFORNIA. Age and depositional setting of the type Lospe Formation (lower Miocene), Santa Maria Basin, Central California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 770-771.

OP-1875. W. D. Stanley, W. J. Gwilliam* and G. A. Latham*. WASHINGTON. Are hydrocarbon source rocks hidden beneath volcanic flows in the southern Washington Cascades? [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 771.

OP-1876. W. D. Stanley, W. D. Heran, Viki Bankey and G. A. Abrams. IOWA. Configuration and structural setting of the Manson impact structure, Iowa, from surface and airborne geophysics [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1988 fall meeting. v. 69, no. 44, November 1, 1988. p. 1167.

OP-1877. Hubert Staudigel*, Alan Zindler*, K. H. Park* and M. S. Pringle. Radiogenic isotope systematics of Pacific Ocean seamount provinces [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 421.

OP-1878. H. J. Stein, D. L. Kelley*, J. F. Kaminsky* and I. R. Gordon*. UTAH. The geology and ore deposits at the West Tintic mining district, Utah [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 59.

OP-1879. M. G. Steltenpohl*, M. J. Kunk and J. F. Sutter. ALABAMA, GEORGIA. ^{40}Ar-^{39}Ar thermochronology of the southernmost Alabama-Georgia piedmonts; implications for Alleghanian tectonometamorphism [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 64.

OP-1880. C. R. Stern*, F. A. Frey*, Kiyoto Futa and R. E. Zartman. Trace-element and Sr, Nd, and Pb isotopic composition of Pliocene and Quaternary alkali basalts of the Patagonian Plateau lavas of southernmost South America [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 254.

OP-1881. R. W. Sternberg*, D. A. Cacchione, D. E. Drake* and Kate Kranck*. Suspended sediment transport in the benthic boundary layer of an estuarine tidal channel [abstr.], *in* Sediments down-under; 12th international sedimentological congress. Canberra: Bur. Miner. Resour., Geol. and Geophys. 1986. p. 287.

OP-1882. A. J. Stevenson, T. R. Bruns, P. R. Carlson and M. R. Dobson*. ALASKA. Sediment transport and fan deposition in the Gulf of Alaska; effects of transform motion on deep sea sedimentation [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1003.

OP-1883. A. J. Stevenson, M. B. Underwood*, D. W. Scholl and T. L. Vallier. Sedimentation in the central segment of the Aleutian Trench; sources, transport, and depositional style [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 771-772.

OP-1884. D. B. Stewart. Northern Appalachian geodynamics; repeatedly displaced (and reinterpreted) Paleozoic terrane boundaries above lower crust extended and recrystallized in the Mesozoic [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 73.

OP-1885. J. H. Stewart. Position of Paleozoic continental margin in northwestern Mexico; present knowledge and speculations [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 86-87.

OP-1886. R. E. Stoffregen*, R. O. Rye and P. M. Bethke. COLORADO. Relationship between magmatic and hydrothermal processes in the Summitville, Colorado gold deposit [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 256.

OP-1887. Paul Stone and C. H. Stevens*. CALIFORNIA. Triassic marine strata in east-central California [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 87.

OP-1888. M. Z. Stout*, J. Nicholls* and M. A. Kuntz. IDAHO. Fractionation and contamination processes, Craters of the Moon lava field, Idaho, 2000-2500 years BP [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 259.

OP-1889. S. G. Strait*, J. G. Fleagle*, T. M. Bown and E. R. Dumont*. Diversity in body size and dietary habits of fossil caenolestid marsupials from the Miocene of Argentina [abstr.] Journal of Vertebrate Paleontology, *in* Abstracts of papers; Fiftieth annual meeting, Society of Vertebrate Paleontology. (Hans-Peter Schultze, editor). v. 10, no. 3, Suppl. September 2, 1990. p. 44A.

OP-1890. G. D. Stricker. ALASKA. Alaska has 4.0 trillion tons of low-sulfur coal; is there a future for this resource? [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 772.

OP-1891. A. J. Sutton and K. A. McGee. A multiple-species volcanic gas sensor; testing and applications [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 262.

OP-1892. Keiko Suzuki-Kamata and Hiroki Kamata. Proximal facies of a low-aspect-ratio ignimbrite; the Tosu pyroclastic-flow deposit from Aso Caldera, Japan [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 262.

OP-1893. Amy Swancar. FLORIDA. Potential for contamination of the upper Floridan Aquifer in west-central Florida [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 64-65.

OP-1894. D. A. Swanson. WASHINGTON. A decade of dome growth at Mount St. Helens, 1980-89 [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 127.

OP-1895. B. A. Swift, M. W. Lee, C. W. Poag and W. F. Agena. NEW JERSEY. Seismic properties and modeling of an early Aalenian salt(?) layer in Baltimore Canyon Trough, offshore New Jersey [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 774.

OP-1896. K. I. Takahashi and D. K. Higley. COLORADO, NEBRASKA, WYOMING. Animated geographic information system of petroleum exploration through time in the Denver Basin of Colorado, Nebraska, and Wyoming [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 74, no. 8, August 1990. p. 1347.

OP-1897. K. L. Tanaka. Martian geologic "revolutions"; a tale of two processes [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 53-54.

OP-1898. Pascal Tarits*, J. H. Filloux*, J. C. Larsen* and D. P. Klein. HAWAII. Electromagnetic investigation of the Hawaiian swell [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 449.

OP-1899. Mitsunobu Tatsumoto, Yoichi Nakamura, A. R. Basu* and Harmon Craig*. HAWAII. U-Th-Pb and He isotopic variations in volcanic rocks from the Hawaiian and Cook-Austral Chains [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 850.

OP-1900. S. F. Tebbens*, G. K. Westbrook*, S. C. Cande*, S. D. Lewis and Nathan Bangs*. Preliminary interpretation of combined GLORIA and Seabeam imagery in the vicinity of the Chile margin triple junction [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 776.

OP-1901. P. G. Teleki, B. Bardocz* and R. E. Mattick. Stratigraphy and evolution of the Danube Basin, northwestern Hungary [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 776-777.

OP-1902. P. G. Teleki and N. T. Edgar. Circum-Atlantic Project [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1004.

OP-1903. M. E. Tennyson, M. A. Keller, M. V. Filewicz*, M. L. Thornton* and D. R. Vork*. CALIFORNIA. Early Miocene sedimentation and tectonics in western San Luis Obispo County, Central California [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 777.

OP-1904. D. H. Tepper and W. M. Kappel. NEW YORK. Hydrogeology of the Niagara Falls area; a project overview [abstr.] Canadian Continental Drilling Program Report, *in* Scientific drilling; southern Ontario Algonquin Arch Transect; proceedings of the 1989 workshop. (R. W. Yole, editor and others). v. 89, no. 2, 1989. p. 21.

OP-1905. M. J. Terman and E. P. Bell. The East Asia geographic map series [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1005.

OP-1906. D. J. Teskey*, S. D. Dods* and R. P. Kucks. New high resolution aeromagnetic survey of Lake Superior; a contribution to the Great Lakes International Multidisciplinary Program on Crustal Evolution (GLIMPCE) [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 129.

OP-1907. Wayne Thatcher. Order and diversity in the modes of Circum-Pacific earthquake recurrence [abstr.] Eos, Transactions, American Geophysical Union, *in* AGU 1989 spring meeting. v. 70, no. 15, April 11, 1989. p. 395.

OP-1908. P. K. Theobald, D. E. Detra*, D. J. Grimes*, D. B. Smith*, J. B. McHugh* and W. H. Ficklin*. NEVADA. The geochemical characterization of 460 feet of segmented alluvial core near the Rabbit Creek Deposit in the Getchell District [abstr.], *in* Geology and ore deposits of the Great Basin; programs with abstracts. (Bob Cuffney, chairperson). Geol. Soc. Nevada, 1990. p. 121.

OP-1909. T. G. Theodore and J. M. Hammarstrom. NEVADA. Petrochemistry and fluid-inclusion study of skarns from the northern Battle Mountain mining district, Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 60-61.

OP-1910. R. L. Thiessen*, A. J. Watkinson*, J. R. Eliason* and M. J. Ader. Review of the relationship of fractures to stress systems and their implications for remote sensing and geologic spatial analysis [abstr.] Proceedings of the Thematic Conference on Remote Sensing for Exploration Geology, *in* Proceedings of the Seventh thematic conference on Remote sensing for exploration geology; methods, integration, solutions. 7, 1989. p. 1331-1332.

OP-1911. J. M. Thomas, D. H. Schaefer and M. D. Dettinger. NEVADA, UTAH. Use of geochemical data to trace groundwater flow, which could affect oil migration, in carbonate-rock aquifers of the eastern Great Basin, Nevada and Utah [abstr.], *in* Oil fields and geology of the Pine Valley, Eureka County area, Nevada; Nevada Petroleum Society 1990 fieldtrip guidebook. (D. M. Flanigan, editor and others). Reno, NV: Nev. Pet. Soc. June 1990. p. 56.

OP-1912. R. A. Thompson and C. M. Johnson*. Early-rift basaltic volcanism of the northern Rio Grande Rift [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 268.

OP-1913. T. W. Thompson* and H. J. Moore. A radar-echo model for Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 283-284.

OP-1914. C. H. Thorman, K. B. Ketner, W. E. Brooks, L. W. Snee and R. A. Zimmermann. NEVADA. Late Mesozoic-Cenozoic tectonics in northeastern Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 47.

OP-1915. C. H. Thorman, K. B. Ketner and Fred Peterson. The Elko Orogeny; Late Jurassic orogenesis in the Cordilleran Miogeocline [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 88.

OP-1916. C. R. Thorn and W. L. Dam. Use of geographic information system to display water-quality data from San Juan Basin [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1175.

OP-1917. A. B. Till. ALASKA. Proterozoic and Mesozoic metamorphic events in the western Brooks Range [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 131.

OP-1918. A. B. Till, J. A. Dumoulin, S. W. Nelson and J. M. Schmidt. ALASKA. Transect across Proterozoic to middle Paleozoic rocks in the metamorphic core of the western Brooks Range [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 131.

OP-1919. R. P. Tollo* and David Gottfried. Early Jurassic quartz normative magmatism of the eastern North American Province; evidence for independent magmas and distinct sources [abstr.] Bulletin - New Mexico Bureau of Mines & Mineral Resources, *in* Continental magmatism; abstracts. 131, 1990. p. 270.

OP-1920. R. P. Tollo* and David Gottfried. NEW JERSEY. Petrochemistry of basalts from eight Passaic Tunnel cores, Newark Basin, New Jersey; implications for the petrogenesis of Newark Supergroup volcanics [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 75.

OP-1921. M. E. Torresan, D. A. Clague, C. L. Jacobs* and J. G. Moore. Maturation of large scale mass wasting along the Hawaiian Ridge [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1005-1006.

OP-1922. M. E. Torresan. HAWAII. GLORIA mosaic of the U.S. Hawaiian Exclusive Economic Zone [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1005.

OP-1923. R. M. Tosdal. CALIFORNIA, ARIZONA. Jurassic low-angle ductile shear zones, SE California and SW Arizona; thrust faults, extensional faults, or rotated high-angle faults? [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 89.

OP-1924. Fabio Trincardi*, M. Canu*, M. E. Field and W. R. Normark. Seismic facies and basin history related to sea level cycles and tectonism; Paola slope basin, eastern Tyrrhennian margin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 780-781.

OP-1925. D. M. Triplehorn* and R. B. Finkelman. KENTUCKY. Replacement of glass shards by aluminum phosphates in a Middle Pennsylvanian tonstein from eastern Kentucky [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A52.

OP-1926. A. H. Truesdell, N. L. Nehring*, D. J. DesMarais* and Emanuel Mazor*. Geochemistry of gases in the hydrothermal system of Cerro Prieto, Mexico [abstr.] Proceedings of Pacific Geothermal Conference, *in* Proceedings of the Pacific geothermal conference 1982; incorporating the 4th New Zealand geothermal

workshop; Parts 1 and 2. (New Zealand, University of Auckland Geothermal Institute). 4, 1982. p. 271.

OP-1927. J. F. Tull*, S. R. Jacobson*, W. B. Moore*, R. W. Stanton, A. G. Harris, J. E. Repetski and N. H. Bostick. ALABAMA. Tectonic setting of the Erin Slate, Alabama Appalachians [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Southeastern Section, 39th annual meeting. v. 22, no. 4, March 1990. p. 66-67.

OP-1928. C. E. Turner-Peterson and N. S. Fishman. Late Jurassic weather forecast, Four Corners area; dry, hot, and partly sunny [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1176.

OP-1929. M. L. Tuttle. The 1986 Lake Nyos gas disaster in Cameroon West Africa; causes and effects [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 424.

OP-1930. D. C. Twichell. Facies analysis based on seismic-reflection and sidescan-sonar data [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 75.

OP-1931. D. C. Twichell and Suzanne O'Connell*. Comparison of GLORIA and SeaMarc side-scan sonar images on the lower Mississippi Fan, eastern Gulf of Mexico [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 781.

OP-1932. G. F. Ulmishek. Major petroleum basins of the USSR; basins on Hercynian accreted terranes and fold belts [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 782-783.

OP-1933. G. F. Ulmishek. Major petroleum basins of the USSR; cratonic basins and rifts [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 783.

OP-1934. Yasuhiro Umeda* and M. J. Rymer. CALIFORNIA. The high acceleration area and the source process of the 1989 Loma Prieta, California, earthquake [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 896.

OP-1935. M. B. Underwood*, M. M. Laughland and T. J. Wiley*. ALASKA. Thermal maturity, tectonostratigraphic terranes, and regional tectonic history; example from Kandik Basin, Alaska [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1176.

OP-1936. R. D. Van der Hilst*, W. Spekman and E. R. Engdahl*. Use of P and pP phase data for relocation of ISC hypocenters and for 3D imaging of subduction zones below Japan [abstr.] Eos, Transactions, American Geophysical Union, *in* The 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 897.

OP-1937. P. C. Van Metre. ARIZONA. Water-quality relations between surface water and ground water in the Puerco River basin near Chambers, Arizona [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 799.

OP-1938. E. R. Verbeek and M. A. Grout. COLORADO. Variation in fracture-network characteristics among coexisting lithologies of Mesaverde Group, DeBeque Canyon, western Colorado [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1177.

OP-1939. R. A. Volkert and A. A. Drake, Jr.*. NEW JERSEY. New geologic map of the New Jersey Highlands [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Northeastern Section, 25th annual meeting. (G. M. Boone, chairperson). v. 22, no. 2, February 1990. p. 76-77.

OP-1940. Roland von Huene* and H. J. Lee. Mass wasting on Pacific convergent margins [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1008.

OP-1941. E. F. Vowinkel, W. A. Battaglin and T. S. Czarnik. NEW JERSEY. Comparison of relations between shallow ground-water quality and land use in two coastal plain aquifer systems in New Jersey [abstr.] Ground Water, *in* Ground-water flow systems and land use; relation to quality of shallow ground water; NWWA annual meeting and exposition educational program. v. 28, no. 5, 1990. p. 791.

OP-1942. A. R. Wallace. NEVADA. Miocene volcanism and precious-metal mineralization in northern Nevada [abstr.], *in* Geology and ore deposits of the Great Basin; program with abstracts. (Bob Cuffney, chairperson). Reno, NV: Geol. Soc. Nev. 1990. p. 51-52.

OP-1943. R. B. Wanty, J. K. Pitman and T. D. Fouch. UTAH. Diagenetic reactions in sandstones of the Red Wash oil field, Uinta Basin, Utah [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 787.

OP-1944. C. S. Weaver. Seismological constraints on the geometry of the Juan de Fuca Plate [abstr.] International Union of Geodesy and Geophysics, General Assembly. 19, Vol. 1, 1987. p. 118.

OP-1945. C. S. Weaver, R. D. Norris and Chris Jonientz-Trisler*. Seismological monitoring in the Cascade Range, 1962-1989; earthquakes, eruptions, avalanches, and other curiosities [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 138.

OP-1946. J. N. Weaver, G. Cubilla* and R. Samuels*. Assessment of the Zent coal field; southeastern Costa Rica [abstr.] AAPG Bulletin, *in* Fifth Circum-Pacific energy and mineral resources conference; abstracts. v. 74, no. 6, June 1990. p. 1009.

OP-1947. J. N. Weaver and J. R. Gruber, Jr.*. MONTANA. Tertiary fluvial systems within the Bear Creek coal field, northern Big Horn Basin, Montana [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting. v. 75, no. 6, June 1991. p. 1143.

OP-1948. F. R. Weber. ALASKA. Correlations across the western part of the Tintina fault system and their implications for displacement history [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 138.

OP-1949. J. D. Webster* and W. A. Duffield. NEW MEXICO. Pre-eruptive abundances of H_2O, Cl, F, B, Sn, Mo, W, and other lithophile trace elements in Taylor Creek Rhyolite, New Mexico, U.S.A. [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A57.

OP-1950. R. E. Weems. VIRGINIA. Evidence for the James River headwaters lying west of the Blue Ridge by late Miocene time [abstr.] Virginia Journal of Science, *in* Virginia Academy of Science; Sixty-eighth annual meeting; abstracts of papers. (J. H. Martin, editor). v. 41, no. 2, 1989. p. 96.

OP-1951. S. I. Weiss*, K. A. Connors*, D. C. Noble* and E. H. McKee. NEVADA. Coeval crustal extension and magmatic activity in the Bullfrog Hills during the latter phases of Timber Mountain volcanism [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 92-93.

OP-1952. D. B. Westjohn. MICHIGAN. Hydraulic conductivities of Pennsylvanian and Mississippian sandstones from the Michigan Basin and their relation to mineralogy and borehole geophysical-log responses [abstr.], *in* Michigan; its geology and geologic resources; a second symposium, 1991; program and abstracts. Lansing, MI: Mich. Dep. Nat. Resour. 1991. p. 20.

OP-1953. R. L. Wheeler and A. C. Johnston*. Focal depths, nodal-plane dips, and their geologic associations in central and eastern North America [abstr.] Seismological Research Letters, *in* Seismological Society of America, Eastern Section, 62nd annual meeting. (Pradeep Talwani, chairperson). v. 61, no. 3-4, December 1990. p. 164.

OP-1954. R. J. Wilber*, R. B. Halley and J. D. Milliman*. Sediments of western Great Bahama Bank; facies patterns and depositional processes along a rapidly prograding leeward margin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 790.

OP-1955. R. J. Wilber*, J. D. Milliman* and R. B. Halley. Quaternary stratigraphy of western Great Bahama Bank; eustatic signatures in progradational slope units along a leeward margin [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 790.

OP-1956. L. A. Wilcox*, T. S. Dyman and J. B. Sosebee, Jr.*. Integrated PC-compatible petrographic database for petroleum reservoir characterization [abstr.] AAPG Bulletin, *in* AAPG annual convention with DPA/EMD divisions and SEPM, an associated society; technical program with abstracts. v. 74, no. 5, May 1990. p. 790-791.

OP-1957. D. F. Williams*, P. Jenkins*, M. Kuzmin*, Y. Bogdanov*, V. Fialkov*, E. Karabanov* and P. P. Hearn. Late Quaternary paleoproductivity and paleoclimate cycles in Lake Baikal, southeastern Siberia; evidence from organic carbon and stable isotopes [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 78.

OP-1958. R. S. Williams, Jr. Education and global change in the geosphere [abstr.] Proceedings (Arctic Science Conference), *in* Science education; 1988 Arctic science conference, Fairbanks, Alaska, proceedings, summaries of selected sessions and abstracts of papers. (American Association for the Advancement of Science). 39, 1988. p. 130.

OP-1959. R. S. Williams, Jr. and J. G. Ferrigno. Satellite monitoring of areal changes in the glacier component of the Earth's cryosphere [abstr.], *in* Abstracts; International conference on the role of the Polar regions in global change. (University of Alaska at Fairbanks, Geophysical Institute). Fairbanks, AK: Univ. Alaska at Fairbanks, 1990. p. 13.

OP-1960. V. S. Williams and Florian Maldonado. UTAH. Quaternary movement on the Little Salt Lake Fault, Parowan Valley, southwestern Utah [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, February 1990. p. 94.

OP-1961. F. H. Wilson and Nora Shew. ALASKA. Geochronological clues to the tectonic history of the Yukon-Tanana Terrane [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 141.

OP-1962. J. F. Windolph, Jr. and R. E. Weems. WEST VIRGINIA. The significance of a fossil fish (Tanypterichtys pridensis) from the Lower Carboniferous (Namurian) Pride Shale Member of the Bluestone Formation of West Virginia, USA [abstr.] Compte Rendu - Congrès International de Stratigraphie et de Géologie du Carbonifère = International Congress on Carboniferous Stratigraphy and Geology., *in* 11th international congress of Carboniferous stratigraphy and geology; abstracts of papers. 11, 1987. p. 102-103.

OP-1963. J. A. Wolfe. Climatic change near the Eocene-Oligocene boundary and the effects on the terrestrial flora of western North America [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1989 annual meeting. (R. F. Dymek, chairperson and others). v. 21, no. 6, 1989. p. A88-A89.

OP-1964. W. W. Wood. Use of ^{2}H and ^{18}O in defining solute balance in an evaporating lake-ground-water system [abstr.] Eos, Transactions, American Geophysical Union, *in* 1990 Western Pacific geophysics meeting. v. 71, no. 28, July 10, 1990. p. 873.

OP-1965. J. L. Wooden, V. C. Bennett*, J. M. Hanchar* and C. F. Miller*. CALIFORNIA. Lower crustal xenoliths in Tertiary dikes, Old Woman Mountains area, southeastern California; H, Pb, Nd, and Sr isotopic data [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 95.

OP-1966. J. L. Wooden and R. M. Tosdal. CALIFORNIA, ARIZONA. Common Pb isotopic evidence for sources of Mesozoic

and Tertiary magmatism in SE Calif. and SW Ariz. [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 95.

OP-1967. L. A. Wright*, B. W. Troxel* and Ed DeWitt. CALIFORNIA, NEVADA. Funeral Mountains metamorphic core complex, Death Valley region, California-Nevada [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, Cordilleran Section, 86th annual meeting. (M. L. Zoback, chairperson and others). v. 22, no. 3, March 1990. p. 95.

OP-1968. S. S. Wu, P. A. Garcia and Annie Howington-Kraus. Volumetric determinations of Valles Marineris of Mars [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 314-315.

OP-1969. S. S. Wu and Annie Howington-Kraus. Volumetric distributions of Mars topography [abstr.] LPI Technical Report, *in* Scientific results of the NASA-sponsored study project on Mars; evolution of volcanism, tectonics, and volatiles. (S. C. Solomon, editor and others). 90-06, 1990. p. 312-313.

OP-1970. S. K. Young*, J. A. Eluskie*, D. F. Sibley* and D. B. Westjohn. Diagenesis of the Marshall Sandstone [abstr.], *in* Michigan; its geology and geologic resources; a second symposium, 1991; program and abstracts. Lansing, MI: Mich. Dep. Nat. Resour. 1991. p. 21-22.

OP-1971. R. E. Zartman, T. S. Dyman, R. G. Tysdal and R. C. Pearson. MONTANA. U-Pb zircon ages of bentonitic beds from the Vaughn Member of the Mid-Cretaceous Blackleaf Formation, southwestern Montana [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 45.

OP-1972. R. S. Zech and Robyn Wright. Durango Delta; complications on San Juan Basin Cretaceous linear strandline theme [abstr.] AAPG Bulletin, *in* AAPG Rocky Mountain Section meeting; abstracts. v. 73, no. 9, September 1989. p. 1179-1180.

OP-1973. Marcos Zentilli*, Victor Maksaev*, A. P. Dickin*, B. R. Doe and C. E. Hedge. Homogeneous source of porphyry copper magmas in the Chilean Central Andes; restrictions from Pb, Nd, Sr isotopes and REE [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 144.

OP-1974. Zhang Humin*, D. P. Elston and Zhang Wenzhi*. Paleomagnetic poles from middle and late Proterozoic Dagushi, Huashan, and Sinean groups, Jingshan County, Hubei Province, South China [abstr.] International Geological Congress, Abstracts—Congres Geologique Internationale, Resumes, *in* Twenty-eighth international geological congress; abstracts. v. 28, no. 3, 1989. p. 434.

OP-1975. Willi Ziegler* and C. A. Sandberg. Concept of phylogenetic zone and standard zonation in conodont biostratigraphy [abstr.] CFS. Courier Forschungsinstitut Senckenberg, *in* 1st international Senckenberg conference and 5th European conodont symposium (ECOS 5); Contributions 1. (Willi Ziegler, editor). 102, 1988. p. 261.

OP-1976. R. A. Zierenberg, R. A. Koski and J. L. Morton. Cu-Au-rich sediment-hosted massive sulfide deposits from the Escanaba Trough, southern Gorda Ridge [abstr.] Abstracts with Programs - Geological Society of America, *in* Geological Society of America, 1990 annual meeting. v. 22, no. 7, 1990. p. 9.

OP-1977. R. A. Zierenberg, R. A. Koski, W. C. Shanks, III and W. E. Seyfried, Jr.*. OREGON. Subseafloor deposition of sulfide at the Turner-Albright ophiolite-hosted sulfide deposit, southwestern Oregon [abstr.] Program with Abstracts - Geological Association of Canada; Mineralogical Association of Canada; Canadian Geophysical Union, Joint Annual Meeting. 15, May 1990. p. 144.

OP-1978. M. D. Zoback* and M. L. Zoback. Regional in-situ stress patterns in North America [abstr.] SEG Abstracts, *in* Expanded abstracts of the 57th annual international Society of Exploration Geophysicists meeting and exposition. 57, 1987. p. 855.

OP-1979. J. E. Zollweg. Seismic monitoring at active silicic volcanoes; hypocentral accuracy and its importance in interpretation of volcanic processes [abstr.] International Union of Geodesy and Geophysics, General Assembly, *in* International Union of Geodesy and Geophysics (IUGG), XIX general assembly; abstracts—Union Géodesique et Géophysique Internationale (UGGI); XIX assemblée générale; résumés. 19, Vol. 2, 1987. p. 428.

INDEX

This is an index of Geological Survey publications issued in 1991 and articles by Geological Survey personnel in non-Geological Survey publications that came to our attention in 1991 divided into a general index, including subjects and areas, and an author index.

ABBREVIATIONS USED

A-	Antarctic Geologic Map
B	Bulletin
C	Circular
C-	Coal Investigations Map
CAT	Catalog
CF	Coal Map
CP-	Circum-Pacific Map Series
EV	Earthquakes and Volcanoes
GN	General Interest Publication
GP-	Geophysical Investigations Map
GQ-	Geologic Quadrangle Map
HA-	Hydrologic Investigations Atlas
HUM	Hydrologic Unit Map
I-	Miscellaneous Investigations Series
L-	Land Use and Land Cover Map
MF-	Miscellaneous Field Studies Map
MR-	Mineral Investigations Resources Map
MSB	Miscellaneous and Special Books
OC-	Oil and Gas Investigations Chart
OM-	Oil and Gas Investigations Map
OF	Open-File Report
OP	Outside Publication
P	Professional Paper
PB-,ADA	Report available only through the National Technical Information Service
PDE	Preliminary Determination of Epicenters
SGM	Special Geologic Map
SGMI	Geologic Map Index
SM	Special Map
STM	State Geologic Map
TWI	Techniques of Water-Resources Investigations
W	Water-Supply Paper
WRI	Water-Resources Investigations
YR	Yearbook

Outside journals and books are not available from the U.S. Geological Survey.

GENERAL

A

— Mineralogical maps showing distribution of ore-related minerals in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1975

mercury ores: Geochemistry and exploration criteria for epithermal cinnabar and stibnite vein deposits in the Kuskokwim River region, southwestern Alaska OP-377

— Lithologic and tectonic controls on mercury mineralization in the Bethel 1°×3° Quadrangle, southwestern Alaska C 1062

metal ores: Areas of mineral-resource favorability (with emphasis on gold and chromite) in the Anchorage 1°×3° Quadrangle, southern Alaska C 1062

— Comparative metallogeny of the Soviet Far East and Alaska C 1062

— Genesis of the Greens Creek (GC) volcanogenic massive sulfide (VMS) deposit, S.E. Alaska; a geochemical study OP-1690

— Geochemical orientation study for identification of metallic mineral resources in the Sitka Quadrangle, southeastern Alaska B 1950

— Geochemical studies in Alaska by the U.S. Geological Survey, 1989 B 1950

— Geology and geochemistry of mineralization in the Bethel Quadrangle, southwestern Alaska B 1950

— Gold associated with cinnabar- and stibnite-bearing deposits and mineral occurrences in the Kuskokwim River region, southwestern Alaska B 1950

— Interpretation of geochemical data from Admiralty Island, Alaska; evidence for volcanogenic massive sulfide mineralization B 1950

— Laser-microprobe studies of sulfur isotopes in stockwork and massive sulfide ores, Rua Cove Mine, south-central Alaska C 1062

— Lead isotope data base for sulfide occurrences from Alaska, December, 1989 OF 89-0688

— Low-level gold determinations by use of flow injection analysis-atomic absorption spectrophotometry; an application to precious-metal-resource assessment in the Iditarod 1° × 3° Quadrangle, southwestern Alaska C 1062

— Map showing locations of metalliferous lode and placer mineral occurrences, mineral deposits, prospects, and mines, Mount Hayes Quadrangle, eastern Alaska Range, Alaska MF-1996-C

— Oxygen, hydrogen, and sulfur isotope studies of Hg-Sb epithermal systems, southwestern Alaska OP-1412

— Pb-isotope results from syngenetic and epigenetic vein occurrences and implications for their genesis, Yukon-Tanana Terrane, Alaska OP-1290

— Stable isotope systematics of epithermal mercury-antimony mineralization, southwestern Alaska B 1950

— The use of heavy-mineral concentrate data to show geochemical favorability for zinc-lead-silver and copper-(cobalt) mineral occurrences in the Baird Mountains Quadrangle, Northwest Alaska MF-2151

mineral resources: 1990 annual report on Alaska's mineral resources C 1056

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1°×3° Quadrangle, Alaska OF 91-0023-A

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1°×3° Quadrangle, Alaska OF 91-0023-B

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-A

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-B

— Assessment of undiscovered mineral resources, Tongass National Forest, southeastern Alaska C 1062

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-A

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-B

— Geochemical maps showing distribution of anomalously abundant elements in stream-sediment and glacial-moraine samples from the Anchorage 1°×3° Quadrangle, southern Alaska I-1976

— Geochemical maps showing distribution of anomalously abundant elements in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1977

— Geochemical results, sample localities, and descriptions of some rocks from the Proterozoic Kilbuck Terrane, Goodnews Quadrangle, southwestern Alaska OF 90-0681

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-A

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-B

— Map showing locations of metalliferous lode and placer mineral occurrences, mineral deposits, prospects, and mines, Mount Hayes Quadrangle, eastern Alaska Range, Alaska MF-1996-C

— Mineral-resource assessment of the Goodnews 1° × 3° Quadrangle and parts of the Hagemeister Island and Nushagak Bay quadrangles, southwestern Alaska C 1062

— Mineral-resource potential of the Sitka 1° × 3° Quadrangle, southeastern Alaska C 1062

— Mineralogical maps showing distribution of ore-related minerals in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1975

— Minerals information sources in state agencies; Alaska C 1063

— Resource assessment of the Mount Katmai 1° × 2° Quadrangle and adjacent parts of the Naknek and Afognak quadrangles, Alaska Peninsula C 1062

— Tapping the potential mineral resources of Alaska YR

natural gas: Gas hydrate resource estimate, North Slope, Alaska OP-1304

— Impact origin of the Avak structure, Arctic Alaska, and genesis of the Barrow gas fields OP-1545

oil and gas fields: Borehole gravity surveys in the Cretaceous-Tertiary Sagavanirktok Formation, Kuparuk River oil field, Alaska OP-1224

petroleum: Arctic National Wildlife Refuge; petroleum potential in one of the last Alaskan frontiers OP-1602

— Geodynamics and petroleum potential, Brooks Range, Alaska OP-1492

— Geology, play descriptions, and petroleum resources of the Alaskan North Slope (petroleum provinces 58-60) OF 88-0450-Y

— New information on the Nuwok Member of Sagavanirktok Formation; implications for petroleum geology of the North Slope and Beaufort Sea; evidence from Carter Creek, Arctic National Wildlife Refuge (ANWR), Alaska OF 90-0656

— Oil-source rock correlation using carbon isotope data and biological marker compounds, Cook Inlet-Alaska Peninsula, Alaska OP-1603

— Petroleum geology of the coastal plain of the Arctic National Wildlife Refuge, northeastern Alaska OP-1650

— Petroleum source potential and thermal maturity of the Tertiary Usibelli Group of Suntrana, central Alaska B 1946

— Petrology and reservoir quality of the Katakturuk Dolomite, Arctic National Wildlife Refuge, Alaska OP-1191

— Regional factors affecting petroleum potential of the Aleutian accretionary prism OP-1829

— Stratigraphic correlation and interpretation of exploratory wells, Alaska Peninsula OF 90-0279

silver ores: Results of inductively coupled plasma-atomic emission spectroscopy analyses of minus 30-mesh stream-sediment samples from within and adjacent to the National Petroleum Reserve Alaska OF 90-0501

water resources: Location maps and list of U.S. Geological Survey reports on water resources in Alaska, 1950 to 1990 OF 91-0060

— Short papers on water supplies and engineering geology, Alaska Highway, 1943-1944 OF 91-0080

Alaska—engineering geology

foundations: Foundation conditions at Northway Hanger OF 91-0080

— Foundation conditions at the power house (Building No. 116) at Northway Airport OF 91-0080

— Foundation movement at Northway Repeater Station OF 91-0080

geologic hazards: Deep ocean tsunami and seismic wave observations; three recent Gulf of Alaska events OF 90-0098

highways: Short papers on water supplies and engineering geology, Alaska Highway, 1943-1944 OF 91-0080

waterways: Detection of coarse sediment movement using radio transmitters OP-157

Alaska—environmental geology

geologic hazards: Alaska Airlines operating procedures during the 1989-1990 Redoubt eruptions C 1065

— Alaska disasters: natural and manmade YR

— Alaska; floods and droughts W 2375

— Development of a prediction scheme for the volcanic ash fall from Redoubt Volcano C 1065

— Economic consequences of the 1989-90 Mt. Redoubt eruptions; assessment methodology and anecdotal empirical evidence C 1065

— Forecasting volcanic debris in Alaska C 1065

— Frequency and regional extent of ash eruptions from Alaskan volcanoes C 1065

— Grain impacts on an aircraft windscreen; the Redoubt 747 encounter C 1065

— Impact of volcanic ash from Redoubt Volcano eruption on GE CF6-80C2 turbofan engines C 1065

— Lightning detection and location as a remote ash-cloud monitor at Redoubt Volcano, Alaska C 1065

— New roles for airports in response to volcanic distribution C 1065

— NOAA's response to the Mount Redoubt eruptions of December 1989 C 1065

— Redoubt Volcano, Alaska YR

— The 1989-90 eruption of Redoubt Volcano; chronology, character and effects C 1065

— Using a personal computer to obtain predicted plume trajectories during the 1989-1990 eruption of Redoubt Volcano, Alaska C 1065

— Volcanic air-aircraft incidents in Alaska in the years prior to the December 15, 1989 747 Redoubt encounter C 1065

land use: Producing Alaska interim land cover maps from Landsat digital and ancillary data OP-308

maps: Producing Alaska interim land cover maps from Landsat digital and ancillary data OP-308

pollution: Anthropogenic water in the ice fog of Fairbanks, Alaska OP-1221

Alaska—geochemistry

isotopes: Oxygen, hydrogen, and sulfur isotope studies in the Juneau gold belt, southeastern Alaska; constraints on the origin of hydrothermal fluids OP-357

maps: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° × 3° Quadrangle, Alaska OF 91-0023-A

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° × 3° Quadrangle, Alaska OF 91-0023-B

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-A

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-A

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-B

— Geochemical maps showing distribution of anomalously abundant elements in stream-sediment and glacial-moraine samples from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1976

— Geochemical maps showing distribution of anomalously abundant elements in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1977

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-A

— Results of inductively coupled plasma-atomic emission spectroscopy analyses of minus 30-mesh stream-sediment samples from within and adjacent to the National Petroleum Reserve Alaska OF 90-0501

— The use of heavy-mineral concentrate data to show geochemical favorability for zinc-lead-silver and copper-(cobalt) mineral occurrences in the Baird Mountains Quadrangle, Northwest Alaska MF-2151

organic materials: Permafrost-associated gas hydrates of northern Alaska; a possible source of atmospheric methane OP-1306

surveys: Geochemical studies of plants and soils in the Beluga coal field, Alaska C 1033

trace elements: Biogeochemistry of selected plant materials, Alaska OF 91-0292

— Geochemical exploration criteria for epithermal cinnabar and stibnite deposits, southwestern Alaska C 1062

— Geochemistry and mineralogy of fumarolic deposits, Valley of Ten Thousand Smokes, Alaska; bulk chemical and mineralogical evolution of dacite-rich protolith OP-803

— Geochemistry and paleotectonic implications of metabasaltic rocks in the Valdez Group, southern Alaska B 1946

— Preliminary geochemistry of volcanic rocks from the McHugh Complex and Kachemak Terrane, southern Alaska OF 91-0134

— Rhyolitic calderas of the Yukon-Tanana Terrane, east central Alaska; volcanic remnants of a Mid-Cretaceous magmatic arc OP-39

Alaska—geochronology

absolute age: Development of an Alaskan radiocarbon data base as a subset of the International Radiocarbon Data Base (IRDB) B 1946

Cenozoic: Age and progression of volcanism, Wrangell volcanic field, Alaska OP-869

Cretaceous: K-Ar and $^{40}Ar/^{39}Ar$ ages of tuff beds at Ocean Point on the Colville River, Alaska B 1946

— U-Pb geochronology of Late Cretaceous and early Tertiary plutons in the northern Coast Mountains Batholith OP-338

Mesozoic: Geochronological clues to the tectonic history of the Yukon-Tanana Terrane OP-1961

— Proterozoic and Mesozoic metamorphic events in the western Brooks Range OP-1917

Oligocene: High-latitude application of $^{87}Sr/^{86}Sr$; correlation of Nuwok beds on North Slope, Alaska, to standard Oligocene chronostratigraphy: Comment OP-675

Paleocene: Rapid dewatering of the crust deduced from ages of mesothermal gold deposits OP-358

Paleogene: U-Pb geochronology of Late Cretaceous and early Tertiary plutons in the northern Coast Mountains Batholith OP-338

Proterozoic: A Sr, Nd, and Pb isotopic study of 2.07 Ga metaigneous rocks from the Kilbuck Terrane, southwestern Alaska OP-1653

— Isotopic evidence for early Proterozoic age of the Idono Complex, west-central Alaska OP-726

— Proterozoic and Mesozoic metamorphic events in the western Brooks Range OP-1917

— Proterozoic U-Pb zircon age of granite in the Kallarichuk Hills, western Brooks Range, Alaska; evidence for Precambrian basement in the schist belt B 1946

Alaska—geomorphology

changes of level: Interplay between arc tectonics and sea-level changes as revealed by sedimentation patterns in the Aleutians OP-237

— Tide gage measurements of uplift along the south coast of Alaska OP-921

glacial geology: A preliminary forecast of the advance of Hubbard Glacier and its influence on Russell Fiord, Alaska WRI 90-4172

— Advance induced retreat of the Mendenhall Glacier, Alaska OP-1656

— Air temperature and precipitation at Wolverine Glacier, Alaska; glacier growth in a warmer, wetter climate OP-690

— History of Russel Fiord and Hubbard Glacier, Alaska OP-1615

— One glacier's retreat, a global warming does not make; an argument for systematic monitoring of North American glaciers OP-1657

— Radar remote sensing of glacial features, Malaspina Glacier, Alaska OP-1659

— The Malaspina Glacier radar study; a SLAR investigation of glacial and periglacial features OP-543

— Wolverine Glacier, southern Alaska: surface altitude measurements snow continuing growth OP-1616

processes: Coastal erosion and accretion in the Arctic National Wildlife Refuge, Alaska; the influence of sea ice, permafrost, and climate OP-1212

shore features: Channel-forming processes active in Queen Inlet, Glacier Bay, Alaska OP-149

Alaska—geophysical surveys

acoustical surveys: GLORIA imagery of the Alaskan Exclusive Economic Zone OP-1524

electromagnetic surveys: Radar mapping of Malaspina Glacier, Alaska, with applications for global change investigations OP-1516

gravity surveys: Applications of gravity data to studies of framework geology, evaluation of mineral deposits, and mineral prospecting in northwestern Alaska C 1062

— Borehole gravity surveys in the Cretaceous-Tertiary Sagavanirktok Formation, Kuparuk River oil field, Alaska OP-1224

— Gravity; gravity-change and other geophysical measurements in Glacier Bay National Park and Preserve OP-56

— Simple Bouguer gravity anomaly maps of the Nenana Basin area, Alaska OF 91-0033

magnetic surveys: Aeromagnetic map of Alaska from lat 65°-68°N, long 141°-162°W; color-shaded relief GP-0992

— Map showing geologic interpretation of aeromagnetic data for the Chugach National Forest, Alaska MF-1645-H

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, August 1990 OF 90-0300-H

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, December 1990 OF 90-0300-L

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, February 1991 OF 91-0300-B

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, January 1991 OF 91-0300-A

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, July 1990 OF 90-0300-G

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, March 1991 OF 91-0300-C

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, November 1990 OF 90-0300-K

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, October 1990 OF 90-0300-J

— Preliminary geomagnetic data, College Observatory, Fairbanks, Alaska, September 1990 OF 90-0300-I

maps: Aeromagnetic map of Alaska from lat 65°-68°N, long 141°-162°W; color-shaded relief GP-0992

— Map showing geologic interpretation of aeromagnetic data for the Chugach National Forest, Alaska MF-1645-H

— Simple Bouguer gravity anomaly maps of the Nenana Basin area, Alaska OF 91-0033

remote sensing: A mesoscale data assimilation system adapted for trajectory calculations over Alaska C 1065

— Airborne lidar detection and in situ measurements of ash emissions from the 1990 volcanic eruptions of Mount Redoubt C 1065

— Analysis of satellite images of Redoubt Volcano plumes C 1065

— Baseline studies for monitoring global climatic change in the Arctic environment; a remote sensing-spatial data base approach OP-1844

— Malaspina Glacier research holds clues to possible global change scenarios OP-730

— Mount Redoubt: tracing volcanic ash plumes from space C 1065

— Producing Alaska interim land cover maps from Landsat digital and ancillary data OP-308

— Radar remote sensing of glacial features, Malaspina Glacier, Alaska OP-1659

— The Malaspina Glacier radar study; a SLAR investigation of glacial and periglacial features OP-543

— Utility of AVHRR sensor for remote sensing of Alaskan eruption clouds C 1065

seismic surveys: Crustal structure of accreted terranes in southern Alaska, Chugach Mountains and Copper River basin, flow seismic refraction results OP-332

— Data report for the 1987 seismic refraction survey; Alaska Range and Fairbanks South deployments OF 89-0321

— Seismic reflection/refraction mapping of faulting and regional dips in the eastern Alaska Range OP-120

surveys: Gravitational and seismic evidence for Tertiary structural basins in the Alaska Range and Tanana Lowland OP-1211

well-logging: Density data for drill cores from wells in the National Petroleum Reserve in Alaska OF 90-0342

— Inversion of borehole temperature data for Recent climatic changes: examples from the Alaskan Arctic and Antarctica OP-1303

Alaska—hydrogeology

bibliography: Location maps and list of U.S. Geological Survey reports on water resources in Alaska, 1950 to 1990 OF 91-0060

ground water: Sites to be drilled for water in the Fairbanks District OF 91-0080

— Study of water supply for the Alaska Wing stations OF 91-0080

— Water supplies for relay and repeater stations on the Alaska Highway OF 91-0080

hydrology: Hydrologic conditions at Anaktuvuk Pass, Alaska, 1989 OF 90-0591

maps: Location maps and list of U.S. Geological Survey reports on water resources in Alaska, 1950 to 1990 OF 91-0060

thermal waters: Fossil and active fumaroles in the 1912 eruptive deposits, Valley of Ten Thousand Smokes, Alaska OP-551

Alaska—oceanography

continental margin: Tectonics of the Aleutian subduction fault in the northern Gulf of Alaska from magnetic data OP-1430

continental slope: Preliminary lithostratigraphy of piston cores from the Beaufort Sea continental slope off northeastern Alaska OF 91-0034

Alaska—paleontology

Mollusca: Ordovician gastropods from Alaska OP-1795

— Pliocene and Pleistocene molluscs in marine transgressions of western and northern Alaska OP-1609

— Silurian and Devonian gastropods of Alaska OP-1229

Alaska—petrology

igneous rocks: Mafic and ultramafic rocks of the Dishna River area, north-central Iditarod Quadrangle, west-central Alaska B 1946

— Origin of the McKinley sequence of granitic rocks; constraints from Nd, Sr, and O isotopic data OP-1567

— The Sitkoh Bay alkalic plutonic suite: Silurian or older alkalic magmatism on eastern Chichagof Island, southeastern Alaska OF 90-0297

intrusions: Crawfish Inlet Pluton, Baranof Island, southeastern Alaska; a north-tilted Eocene body or an untilted enigma? OP-1242

maps: Metamorphic facies map of southeastern Alaska; distribution, facies, and ages of regionally metamorphosed rocks OF 91-0029

metamorphic rocks: Geology and age of Franklinian and older rocks in the Sadlerochit and Shubik mountains, Arctic National Wildlife Refuge, Alaska OP-1301

metamorphism: Development of inverted metamorphic isograds in the western metamorphic belt, Juneau, Alaska OP-466

— Evolution of the western part of the Coast plutonic metamorphic complex, south-eastern Alaska, USA; a summary OP-115

— High-pressure, medium-temperature early Mesozoic metamorphism and deformation within the Yukon-Tanana composite terrane, eastern Alaska OP-1357

— New thermobarometric evidence for high pressure, medium temperature metamorphism of two subterranes of the Yukon-Tanana composite terrane (YTT) in easternmost Alaska OP-1356

Alaska—sedimentary petrology

sedimentary rocks: Petrology and reservoir quality of the Katakturuk Dolomite, Arctic National Wildlife Refuge, Alaska OP-1191

Alaska—seismology

crust: Seismic reflection/refraction mapping of faulting and regional dips in the eastern Alaska Range OP-120

elastic waves: Wave propagation in subducted lithospheric slabs OP-278

interior: Wave propagation in subducted lithospheric slabs OP-278

Alaska—stratigraphy

Carboniferous: Conodont biostratigraphy and biofacies of the Wahoo Limestone (Carboniferous), Sadlerochit Mountains, Northeast Brooks Range, Alaska OP-1555

changes of level: Regional vertical tectonic displacement of shorelines in south-central Alaska during and between great earthquakes OP-832

Cretaceous: Correlations across the western part of the Tintina fault system and their implications for displacement history OP-1948

— Depositional and biostratigraphic framework of the Upper Cretaceous Kuskokwim Group, SW Alaska OP-1236

— Fossil pollen from nonmarine sedimentary rocks of the eastern Yukon-Tanana region, east-central Alaska B 1946

— Stratigraphy and chemical analyses of coal beds in the Upper Cretaceous and Tertiary Sagavanirktok Formation, east-central North Slope, Alaska C-0139-B

— Summary of Late Cretaceous environments near Ocean Point, North Slope, Alaska B 1946

— Thermal maturity, tectonostratigraphic terranes, and regional tectonic history: example from Kandik Basin, Alaska OP-1935

Devonian: Devonian-Mississippian carbonate sequence in the Maiyumerak Mountains, western Brooks Range, Alaska OP-1355

Mesozoic: Stratigraphic correlation and interpretation of exploratory wells, Alaska Peninsula OF 90-0279

Mississippian: Devonian-Mississippian carbonate sequence in the Maiyumerak Mountains, western Brooks Range, Alaska OP-1355

Oligocene: Oligocene age of strata on Unga Island, Shumagin Islands, southwestern Alaska B 1946

paleomagnetism: Magnetite and maghemite from hydrocarbon wells OP-1779

Quaternary: Aeolian sediments in Arctic Alaska as sources of paleo-environmental data OP-1271

— Bibliography of Quaternary geology, Copper River basin and adjacent areas, south-central Alaska OF 91-0107-A

— Bibliography of Quaternary geology, Copper River basin and adjacent areas, south-central Alaska OF 91-0107-B

Tertiary: Fossil pollen from nonmarine sedimentary rocks of the eastern Yukon-Tanana region, east-central Alaska B 1946

— Stratigraphic correlation and interpretation of exploratory wells, Alaska Peninsula OF 90-0279

— Stratigraphy and chemical analyses of coal beds in the Upper Cretaceous and Tertiary Sagavanirktok Formation, east-central North Slope, Alaska C-0139-B

Triassic: Significance of Triassic marble from Nakwasina Sound, southeastern Alaska B 1946

Alaska—structural geology

deformation: The nature and significance of post-thermal-peak shear zones west of the Great Tonalite Sill near Juneau, southeastern Alaska B 1946

faults: Geology along the Fairweather-Queen Charlotte fault system off Southeast Alaska and British Columbia from GLORIA images and seismic-reflection data OP-1253

neotectonics: Kinematics of late faults along Turnagain Arm, Mesozoic accretionary complex, south-central Alaska B 1946

— Regional vertical tectonic displacement of shorelines in south-central Alaska during and between great earthquakes OP-832

— Tide gage measurements of uplift along the south coast of Alaska OP-921

structural analysis: Cretaceous deformation and metamorphism in the Southwest Ruby Terrane, Alaska OP-1794

tectonics: Geochronological clues to the tectonic history of the Yukon-Tanana Terrane OP-1961

— Interplay between arc tectonics and sea-level changes as revealed by sedimentation patterns in the Aleutians OP-237

— Paleozoic and Mesozoic history of northern Alaska OP-1667

— Parautochthonous geologic framework of east-central Alaska OP-1350

— Shear sense in mylonites, and implications for transport of the Rampart Assemblage (Tozitna Terrane), Tanana Quadrangle, east-central Alaska B 1946

— Structure and tectonics of the Yukon-Tanana, southern Wickersham, and Seventymile terranes along the Trans-Alaskan Crustal Transect (TACT), east-central Alaska OP-1699

— Thermal maturity, tectonostratigraphic terranes, and regional tectonic history: example from Kandik Basin, Alaska OP-1935

— Transect across Proterozoic to middle Paleozoic rocks in the metamorphic core of the western Brooks Range OP-1918

Alaska—tectonophysics

crust: A northern Cordilleran ocean–continent transect: Sitka Sound, Alaska, to Atlin Lake, British Columbia OP-116

— Crustal model of northern Alaska from the Brooks Range to the Arctic Ocean basin OP-1419

— Crustal structure and evolution of the Alaska Range, Alaska OP-1244

— Crustal structure of accreted terranes in southern Alaska, Chugach Mountains and Copper River basin, flow seismic refraction results OP-332

— Data report for the 1987 seismic refraction survey; Alaska Range and Fairbanks South deployments OF 89-0321

maps: Floods of February 1980 in Southern California and central Arizona P 1494

pollution: Application of MINTEQA2 to the speciation of contaminants at Globe, Arizona OF 91-0088

— Chemical, geologic, and hydrologic data from the study of acidic contamination in the Miami Wash-Pinal Creek area, Arizona, water years 1988-89 OF 90-0395

— Effect of impurities in gypsum on contaminant transport at Pinal Creek, Arizona OF 91-0088

— Ground-water transport of polycyclic aromatic hydrocarbons in association with humic substances in the Pinal Creek basin, Globe, Arizona OF 91-0088

— Particle tracking analysis of flow in the stream-aquifer system in Pinal Creek basin, Arizona OF 91-0088

— Sequential-partial extraction of Pinal Creek aquifer material near Globe, Arizona for SO and PO OF 90-0656

— Simulation of copper, cobalt, and nickel sorption in an alluvial aquifer near Globe, Arizona OF 91-0088

— Solute transport in perennial streamflow at Pinal Creek, Arizona OF 91-0088

— The Globe, Arizona, research site; contaminants related to copper mining in a hydrologically integrated environment OF 91-0088

— Two geochemical mass transport codes; PHREEQM and MST1D, their use and limitations at the Pinal Creek toxic-waste site OF 91-0088

Arizona—geochemistry

maps: Petrochemistry of igneous rocks, Silver City 1° × 2° Quadrangle, New Mexico and Arizona I-1310-H

trace elements: An ash flow caldera in cross section; ongoing field and geochemical studies of the mid-Tertiary Turkey Creek Caldera, Chiricahua Mountains, SE Arizona OP-245

— Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California P 1406-C

— Geology and gold deposits of the Oatman District, northwestern Arizona B 1857-I

— Geology, geochemistry, and mineralogy of the Ridenour Mine breccia pipe, Arizona OF 90-0504

— Trace-element trends at Pinal Creek, Arizona OF 91-0088

Arizona—geochronology

absolute age: Arizona radiometric ages, HyperCard stack OF 90-0704-A

— Arizona radiometric ages, HyperCard stack OF 90-0704-B

— K/Ar and fission-track ages (dates) of volcanic, intrusive, altered, and metamorphic rocks in the Mohave Mountains area, west-central Arizona OP-760

Cretaceous: Common Pb isotopic evidence for sources of Mesozoic and Tertiary magmatism in SE Calif. and SW Ariz. OP-1966

— Implications of low-temperature cooling history of a transect across the Colorado Plateau–Basin and Range boundary, west central Arizona OP-130

Mesozoic: Resetting of Rb-Sr ages of volcanic rocks by low-grade burial metamorphism OP-28

Miocene: Geology and gold deposits of the Oatman District, northwestern Arizona B 1857-I

Oligocene: An ash flow caldera in cross section; ongoing field and geochemical studies of the mid-Tertiary Turkey Creek Caldera, Chiricahua Mountains, SE Arizona OP-245

Pleistocene: Age and geomorphic history of Meteor Crater, Arizona, from cosmogenic ^{36}Cl and ^{14}C in rock varnish OP-825

— In situ ^{10}Be-^{26}Al exposure ages at Meteor Crater, Arizona OP-775

— In situ ^{10}Be-^{26}Al exposure ages at Meteor Crater, Arizona OP-1696

Pliocene: Magnetostratigraphy of the San Francisco volcanic field, Arizona B 1929

Quaternary: Magnetostratigraphy of the San Francisco volcanic field, Arizona B 1929

Tertiary: Implications of low-temperature cooling history of a transect across the Colorado Plateau–Basin and Range boundary, west central Arizona OP-130

Arizona—geomorphology

fluvial features: Channel evolution and hydrologic variations in the Colorado River basin; factors influencing sediment and salt loads OP-341

— Relation of sediment load and flood-plain formation to climatic variability, Paria River drainage basin, Utah and Arizona OP-375

landform evolution: Cretaceous-Eocene (Laramide) landscape development and Oligocene-Pliocene drainage reorganization of transition zone and Colorado Plateau, Arizona OP-275

Arizona—geophysical surveys

electromagnetic surveys: Digital image processing of airborne geophysical data for uranium-mineralized breccia pipes exploration in northwestern Arizona OP-587

magnetic surveys: Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona OF 90-0685-A

— Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona OF 90-0685-B

— Detailed profiles of southeastern Arizona obtained by a truck-mounted magnetometer; a step toward better utilization of the information content of geophysical data C 1062

magnetotelluric surveys: Audio-magnetotelluric investigation at Turkey Creek Caldera, Chiricahua Mountains, southeastern Arizona OF 90-0508

— Crustal resistivity structure from magnetotelluric soundings in the Colorado Plateau–Basin and Range provinces, central and western Arizona OP-576

— One and two-dimensional inversion of magnetotelluric data across the Basin-Range–Colorado Plateau, Virgin Mountains area, NW Arizona and SW Nevada OF 89-0573

maps: Gravity and aeromagnetic anomaly maps of the Ajo and Lukeville 1° × 2° quadrangles, southwestern Arizona I-2139

remote sensing: Application of Landsat thematic mapper digital data to the exploration for uranium mineralized breccia pipes in northwestern Arizona OP-588

seismic surveys: Anatomy of a metamorphic core complex; seismic refraction/wide-angle reflection profiling in southeastern California and western Arizona OP-696

surveys: Geophysical methods for water resource investigations in south and central Arizona OP-1071

— Gravity and aeromagnetic anomaly maps of the Ajo and Lukeville 1° × 2° quadrangles, southwestern Arizona I-2139

— Introduction to Special section on the California-Arizona Crustal Transect; CACTIS, Part 3 OP-971

Arizona—hydrogeology

bibliography: Historic water-quality data, Puerco River basin, Arizona and New Mexico OF 91-0196

ground water: Analytical results for total and partial metal extractions in aquifer material, Pinal Creek, Globe, Arizona OF 91-0111

— Annual summary of ground-water conditions in Arizona, spring 1983 to spring 1984 OF 85-0410

— Annual summary of ground-water conditions in Arizona, spring 1984 to spring 1985 OF 86-0422-W

— Colloidal-facilitated transport of inorganic contaminants in ground water; Part I, Sampling considerations OP-851

— Estimates of consumptive use and ground-water return flow and the effect of rising and sustained high river stage on the method of estimation in Cibola Valley, Arizona and California, 1983 and 1984 WRI 89-4194

— Geohydrology and chemical quality of ground water, San Bernardino National Wildlife Refuge, Arizona WRI 90-4190

— Hydrochemical zoning in the Pinal Creek alluvium OF 91-0088

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New

Mexico, Colorado, Arizona, and Utah HA-0720-D

— Simulation of ground-water flow and potential land subsidence, Avra Valley, Arizona WRI 90-4178

— Solid-phase variations in an aquifer as the aqueous solution changes, Globe, Arizona OF 91-0088

hydrology: Basin characteristics and streamflow statistics in Arizona as of 1989 WRI 91-4041

— Description of water-quality synoptic experiments in the Colorado River OF 91-0088

— Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming OF 87-0547

— Low-flow sediment transport in the Colorado River OP-388

— Lower Colorado River Accounting System (LCRAS) computer program and documentation OF 91-0179

— Measurement of stream reaeration at Pinal Creek, Arizona OF 91-0088

— Trend analysis of selected water-quality constituents in the Verde River basin, central Arizona WRI 90-4128

— Water-quality relations between surface water and ground water in the Puerco River basin near Chambers, Arizona OP-1937

maps: Historic water-quality data, Puerco River basin, Arizona and New Mexico OF 91-0196

— Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah HA-0720-B

— Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-F

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

— Predevelopment hydrology of the Gila River Indian Reservation, south-central Arizona WRI 89-4174

Arizona—mineralogy

miscellaneous minerals: Manganese minerals and associated fine particulates in the Pinal Creek streambed OF 91-0088

organic compounds: First early Mesozoic amber in the Western Hemisphere OP-642

Arizona—petrology

igneous rocks: Pb isotope constraints on the origin of Proterozoic diabases of California and Arizona OP-1443

inclusions: Geochemistry of deep crustal xenoliths from the southern Colorado Plateau, northern Arizona OP-1685

intrusions: Intrusion of horizontal dikes; tectonic significance of middle Proterozoic diabase sheets widespread in the upper crust of the Southwestern United States OP-496

— Isotopic constraints on the petrogenesis of Proterozoic diabase in southwestern USA OP-406

— Late Cretaceous plutonism and cooling in the Maria fold and thrust belt, west-central Arizona OP-1337

magmas: Synextensional dioritic magmatism within and beneath metamorphic core complexes, southern Arizona and southeastern California; integration of structural, petrologic, and seismic refraction data OP-1462

maps: Lithologic map of the western part of the Springerville volcanic field, east-central Arizona I-1993

metamorphic rocks: Mylonites aren't so hot; the cold facts OP-1338

volcanism: Middle Tertiary volcanism in the northern Aquarius Mountains-upper Trout Creek area, west-central Arizona; preliminary report OP-1855

— The Cretaceous Tucson Mountains caldera: an asymmetrical trap-door subsidence structure OP-1583

Arizona—soils

water regimes: Flow in the unsaturated zone, Tucson, Arizona OF 88-0329

Arizona—stratigraphy

Cretaceous: Cretaceous strata of the Black Mesa area, northeastern Arizona OP-1397

— Late Cretaceous paleomagnetism of the Tucson Mountains; implications for regional deformation in south central Arizona OP-1438

— Late Cretaceous paleomagnetism of the Tucson Mountains; implications for vertical axis rotations in south central Arizona OP-400

— Molluscan paleoecology and sedimentation patterns of the Cenomanian-Turonian extinction interval in the southern Colorado Plateau region OP-271

— The Bisbee Group of the Tombstone Hills, southeastern Arizona: stratigraphy, structure, metamorphism, and mineralization C 1062

Jurassic: Late Jurassic weather forecast, Four Corners area; dry, hot, and partly sunny OP-1928

— Paleogeography and tectonic setting of the Jurassic nagnatic arc in southern Arizona; progress and problems OP-1789

Mesozoic: Sedimentology and revised nomenclature for the upper part of the Upper Triassic Chinle Formation and the Lower Jurassic Wingate Sandstone, northwestern New Mexico and northeastern Arizona OP-247

Miocene: Magnetic fabric, flow directions, and source area of the lower Miocene Peach Springs Tuff in Arizona, California, and Nevada OP-465

— Paleomagnetic data bearing on the geometry and timing of detachment faulting in the Mojave Mountains, Arizona OP-1728

Paleozoic: Paleozoic rocks of Grand Canyon OP-706

Permian: Members of the Toroweap and Kaibab formations, Lower Permian, northern Arizona and southwestern Utah OP-998

Proterozoic: Depositional environment of the carbonate members of the middle Proterozoic Mescal Limestone, Apache Group, central and southern Arizona OP-1192

Triassic: Fluvial sandstone beds in Petrified Forest Member of Upper Triassic Chinle Formation, Northwest New Mexico and Northeast Arizona OP-1791

Arizona—structural geology

faults: Geologic setting and Tertiary structural evolution of southwestern Arizona and southeastern California OP-958

— Geometry and evolution of joint and minor fault patterns in Bryce, Zion, and Grand Canyon (Utah, Arizona) OP-1234

— Paleomagnetic data bearing on the geometry and timing of detachment faulting in the Mojave Mountains, Arizona OP-1728

— Upended crustal slabs and low-angle extensional faults in the Colorado River extensional corridor; geologic map of the Mohave Mountains area, western Arizona OP-1490

folds: Disharmonic drape folds associated with upper-crustal extension in the southern Basin and Range OP-1489

tectonics: A contribution to the structural history of the Vidal-Parker region, California and Arizona P 1430

— Description and development of the Cordilleran orogenic belt in the Southwestern United States and northern Mexico P 1512

— Jurassic low-angle ductile shear zones, SE California and SW Arizona; thrust faults, extensional faults, or rotated high-angle faults? OP-1923

— Structural evolution of the southern Baboquivari Mountains, south central Arizona and north central Sonora OP-372

Arizona—tectonophysics

crust: A review of the regional geophysics of the Arizona transition zone OP-453

— Crustal resistivity structure from magnetotelluric soundings in the Colorado Plateau–Basin and Range provinces, central and western Arizona OP-576

— Introduction to Special section on the California-Arizona Crustal Transect; CACTIS, Part 3 OP-971

— Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting OP-45

— Industrial minerals in California; economic importance, present availability, and future development B 1958

— Industrial-mineral supply and demand B 1958

— Introduction B 1958

— Production and demand for industrial minerals in California B 1958

— Responsibility for action on the recommendations B 1958

— Summary, conclusions, and recommendations B 1958

— The importance of industrial minerals in our everyday lives B 1958

— The variety, uses, and demand for industrial-mineral resources in California B 1958

— Where do we go from here? B 1958

manganese ores: Microbanded manganese formations; protoliths in the Franciscan Complex, California P 1502

maps: Exploratory wells drilled in the Los Angeles 1:100,000 Quadrangle, California (to accompany preliminary map of exploratory wells showing bottom-hole geology drilled in the Los Angeles 1:100,000 Quadrangle) OF 90-0627

metal ores: Alteration mineral assemblage and trace-element zoning in the Bodie mining district, Mono County California; a comparison to the "hot spring" model OF 90-0656

— Alteration mineral assemblage and trace-element zoning in the Bodie mining district, Mono County, California; a comparison to the "hot spring" model OP-1471

— Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part III; Mineral deposits C 1062

mineral resources: Analytical data for stream and playa sediment samples from the Kingman 1° by 2° Quadrangle, Arizona, California and Nevada OF 90-0444

— Analytical data for stream-sediment and soil samples from the Walker Lake 1° by 2° Quadrangle, California and Nevada OF 90-0431

— Analytical data for stream-sediment samples from the Death Valley 1° by 2° Quadrangle, California and Nevada OF 90-0438

— Analytical data for stream-sediment samples from the Las Vegas 1° by 2° Quadrangle, Arizona, California and Nevada OF 90-0442

— Analytical data for stream-sediment samples from the Mariposa 1° by 2° Quadrangle, California and Nevada OF 90-0440

— Analytical results and sample locality map of stream-sediment and panned-concentrate samples from the Garberville 1:100,000 Quadrangle (southwest quarter of the Redding, California 1:250,000 Quadrangle), Humboldt, Trinity, Shasta, Tehama, and Mendocino counties, California OF 91-0271

— Analytical results and sample locality map of stream-sediment, and panned-concentrate samples from the Hayfork 1:100,000 Quadrangle (northwest quarter of the Redding, California 1:250,000 Quadrangle), Trinity and Humboldt counties, California OF 90-0491

— Effects and challenges of Hispanic immigration on resources in Southern California B 1958

— Mercury-sulfur-gypsum mineralization at Crater, California; a suggestion of gold mineralization at depth C 1062

— Mineral summaries; U.S. Bureau of Land Management wilderness study areas in California outside the California desert OF 90-0096

— Minerals information sources in state agencies; California C 1063

— Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part IV, A model for the evaluation of Cenozoic basins for concealed mineral systems C 1062

natural gas: Submarine landslides associated with shallow seafloor gas and gas hydrates off Northern California OP-1378

oil and gas fields: Abundances of major elements and sedimentary components in Miocene and early Pliocene cuttings from a well in the South Elwood oil field area, offshore Santa Barbara-Ventura Basin, Southern California OF 89-0079

— Exploratory wells drilled in the Los Angeles 1:100,000 Quadrangle, California (to accompany preliminary map of exploratory wells showing bottom-hole geology drilled in the Los Angeles 1:100,000 Quadrangle) OF 90-0627

— Fission-track analysis as thermal-history indicator; Los Angeles Basin, California OP-1682

— Mass properties of conventional core samples from the Monterey Formation, Union-Humble Bell Fee 156, West Cat Canyon oil field, Santa Maria Basin, California OF 91-0146

— Stratigraphic sequence of the Monterey and Sisquoc formations in the Hondo oil field, Santa Barbara Channel, California OP-1499

petroleum: Introduction to stratigraphy and hydrocarbon occurrence in Oligocene and Miocene rocks of the Santa Barbara-Ventura and Santa Maria basins of California OP-552

— Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California; a core workshop OP-553

— The nature and distribution of fluid inclusions in the Monterey Formation in the vicinity of the Santa Maria Basin, California; implications for petroleum migration OP-1230

— Thermal history of the Los Angeles Basin; evidence from fission-track analysis OP-1683

— Thermal modeling using biomarkers in the Santa Maria Basin, California OP-1540

salt: Searles Lake, California; a multi-billion-dollar "salt" deposit OP-1863

water resources: Water resources of the Descanso area, San Diego County, California WRI 90-4014

California—engineering geology

earthquakes: A compilation of the geology and measured and estimated shear-wave velocity profiles at strong-motion stations that recorded the Loma Prieta, California, earthquake OF 91-0311

— A model for real time advisories of large earthquakes ($M \geq 7$) OF 90-0098

— Computer programs and data bases useful for prediction of ground motion resulting from earthquakes in California and the conterminous United States OF 91-0338

— Damage and intensity survey of the October 17, 1989 Loma Prieta earthquake OF 90-0656

— Directional site resonances observed from the 1 October 1987 Whittier Narrows, California, earthquake and the 4 October aftershock OP-1089

— Earthquake explanations OP-604

— Geology and land use OP-123

— Initial overview of the San Francisco Bay and Santa Cruz Mountains ground motion OP-110

— Liquefaction and foundation failure of Chevron oil and gasoline tanks at Moss Landing, California OP-1076

— Loma Prieta earthquake OP-945

— Loma Prieta earthquake; putting the pieces together OP-273

— Loma Prieta, California, earthquake of October 17, 1989; logs of original and acquired videotapes and release forms OF 90-0411

— Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms OF 90-0454-A

— Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms OF 90-0454-B

— Maps showing elevation of bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California OF 90-0496

— Offshore and onshore liquefaction at Moss Landing spit, Central California; results of the October 17, 1989, Loma Prieta earthquake OP-383

— Photographs of the October 17th 1989 Loma Prieta, California earthquake OF 90-0547

— Preliminary map of landslide features and coseismic fissures, in the Summit Road area of the Santa Cruz Mountains, triggered by the Loma Prieta earthquake of October 17, 1989 OF 90-0688

— Real-time earthquake warning OF 90-0098

— Seismic monitoring in Southern California; plans for the future and present realities OF 90-0098

— Seismicity and strong motion data OP-628

— Site response across downtown Santa Cruz, California OP-202

— Strong-motion records from earthquakes of June 13, 1988, November 10, 1988, and April 3, 1989, on the Calaveras Fault, Central California OF 90-0481

— Surface displacements in the 1906 San Francisco and 1989 Loma Prieta earthquakes OP-946

— The application of foreshocks to real-time earthquake hazard assessment in Southern California OF 90-0098

— The Rodgers Creek fault zone, CA; slip rate and earthquake recurrence estimates OP-1256

geologic hazards: Depth to bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California OP-1238

— Liquefaction susceptibility in the San Bernardino Valley and vicinity, Southern California; a regional evaluation B 1898

— Loma Prieta, California, earthquake of October 17, 1989; logs of original and acquired videotapes and release forms OF 90-0411

— Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms OF 90-0454-A

— Loma Prieta, California, earthquake of October 17, 1989; scenes from original U.S.G.S. and acquired videotapes and release forms OF 90-0454-B

— Maps showing elevation of bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California OF 90-0496

— Seismicity and strong motion data OP-628

land subsidence: Evaluation of selected data to assess the causes of subsidence in the Sacramento-San Joaquin Delta, California OF 91-0193

— Solution of the one-dimensional consolidation theory equation with a pseudospectral method OP-947

maps: Liquefaction susceptibility in the San Bernardino Valley and vicinity, Southern California; a regional evaluation B 1898

— Maps showing elevation of bedrock and implications for design of engineered structures to withstand earthquake shaking in San Mateo County, California OF 90-0496

— Maps showing geology and liquefaction potential of northern Monterey and southern Santa Cruz counties, California MF-1199

— Preliminary map of landslide features and coseismic fissures, in the Summit Road area of the Santa Cruz Mountains, triggered by the Loma Prieta earthquake of October 17, 1989 OF 90-0688

nuclear facilities: Factors affecting the recognition of faults exposed in exploratory trenches B 1947

slope stability: Instrumental shaking thresholds for seismically induced landslides and preliminary report on landslides triggered by the October 17, 1989, Loma Prieta, California earthquake OF 91-0108

— Relations between landslides and structural coseismic fractures in the Summit Road area triggered by the October 17, 1989, Loma Prieta, California, earthquake OP-1452

waterways: Analyses of United States Geological Survey sediment transport data for some California streams OP-673

— Effect of the Port of Los Angeles on the industrial-mineral industry B 1958

— Monitoring scour at the State Route 32 bridge across the Sacramento River at Hamilton City, California OP-93

— Review of water-management models and results of simulations for the Truckee-Carson rivers system, California and Nevada OF 90-0393

California—environmental geology

bibliography: Santa Clara County, California, environmental geology; selected references OF 91-0026

conservation: Aggregate resources; California's effort under SMARA to ensure their continued availability B 1958

ecology: Assessing adverse effects of contaminants at the San Francisco Bay toxics site OF 91-0088

— Seasonal occurrences of ostracodes in lakes and streams of the San Francisco Peninsula, California OF 91-0118

geologic hazards: Alert level criteria for unrest in the Long Valley-Mono Craters region, eastern California OP-1479

— California; floods and droughts W 2375

— Development of alert criteria for future volcanic unrest in Long Valley Caldera, California OF 90-0658

— Drought in California, 1987-90 YR

— Response plans for volcanic hazards in the Long Valley Caldera and Mono Craters area, California OF 91-0270

— Results of seismological monitoring in the Cascade Range, 1962-1989; earthquakes, eruptions, avalanches, and other curiosities OP-1114

— Submarine canyon processes; potential hazards, Monterey Canyon, California OP-1427

land use: California minerals-permitting issues B 1958

— Challenges for the State legislative and executive bodies B 1958

— Geology and land use OP-123

— Land access and permitting from an industry/bureaucrat perspective B 1958

— Land-access and permitting problems for resource availability B 1958

— Mineral summaries; U.S. Bureau of Land Management wilderness study areas in California outside the California desert OF 90-0096

— Mining-problem resolution in high-growth areas of California B 1958

— Public-lands-access issues B 1958

— The role of the applicant and the counties B 1958

maps: Floods of February 1980 in Southern California and central Arizona P 1494

pollution: A potential source area for selenium and mercury in agricultural drainage water at Kesterson Reservoir, San Joaquin Valley, California C 1033

— Air quality and toxics B 1958

— Chemical modeling of acid mine waters in the Western United States OF 91-0088

— Environmental concerns related to selenium in the Western United States C 1033

— Geochemical investigation of an oil spill in San Francisco Bay, California OF 91-0130

— Geologic sources, mobilization, and transport of selenium from the California Coast Ranges to the western San Joaquin Valley; a reconnaissance study WRI 90-4070

— Interaction of shallow ground water and subsurface drains; implications for selenium transport and distribution in the western San Joaquin Valley, California OP-1382

— Overview of San Francisco Bay estuary toxic contaminants study OF 91-0088

— Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California C 1033

— Pollution studies of Drakes Estero, and Abbotts Lagoon; Point Reyes National Seashore, California, USA OF 91-0145

— Quaternary geology and pollution problems; an example from the San Francisco Bay area, California C 1033

— Relation of selenium at Kesterson National Wildlife Refuge to potential soil-forming source rocks C 1033

— The production and variability of acid mine drainage at Iron Mountain, California; a Superfund site undergoing rehabilitation OP-1700

— Trace metal concentrations of three streams to Lake Tahoe, California and Nevada OP-161

— Tracking spilled oil in San Francisco Bay sediment OP-1488

— Transport and transformation of dissolved rice pesticides in the Sacramento River delta, California OF 91-0088

— Transport and transformation of dissolved rice pesticides in the Sacramento River delta, California OF 91-0227

— Water quality; what we have learned YR

waste disposal: Methods for selection and hydrologic description of potential landfill sites in southeastern San Diego County, California WRI 90-4021

California—geochemistry

isotopes: Chemical and isotopic evolution of fluids in the active Long Valley hydrothermal system OP-1740

— Paleogeographic reconstruction of the northern Salinian Block using Sr isotopic properties OP-1278

maps: Analytical results and sample locality map of stream-sediment and panned-concentrate samples from the Garberville 1:100,000 Quadrangle (southwest quarter of the Redding, California 1:250,000 Quadrangle), Humboldt, Trinity, Shasta, Tehama, and Mendocino counties, California OF 91-0271

— Analytical results and sample locality map of stream-sediment, and panned-concentrate samples from the Hayfork 1:100,000 Quadrangle (northwest quarter of the Redding, California 1:250,000 Quadrangle), Trinity and Humboldt counties, California OF 90-0491

organic materials: Observations of gas hydrates in marine sediments, offshore Northern California OP-121

selenium: Dissimilatory reduction of selenate in anoxic sediments and by anaerobic bacterial cultures OP-1718

— Geochemical evidence for Se mobilization by the weathering of pyritic shale, San Joaquin Valley, California, U.S.A. OP-847

trace elements: A potential source area for selenium and mercury in agricultural drainage water at Kesterson Reservoir, San Joaquin Valley, California C 1033

— Contamination of basaltic magma by mafic crust at Amboy and Pisgah craters, Mojave Desert, California OP-349

— Cooperative studies by the U.S. Geological Survey and the U.S. National Park Service in environmental biogeochemistry C 1033

— Geochemical relations and distribution of selected trace elements in ground water of the northern part of the western San Joaquin Valley, California OF 90-0108

— Marion Peak Quadrangle, Fresno County, California; analytic data B 1986

— Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California C 1033

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Klamath Basin, California and Oregon, 1988-89 WRI 90-4203

— Relation of selenium at Kesterson National Wildlife Refuge to potential soil-forming source rocks C 1033

— San Joaquin Valley RASA Phase II; regional to site-specific approaches to evaluating regional geochemical processes and trace-element distribution OP-1353

— Seasonal and spatial biogeochemical trends for chaparral vegetation and soil geochemistry in the Santa Monica Mountains National Recreation Area, CA OF 91-0005

— Selenium sources in the Diablo Range, western Fresno County, California C 1064

— Uptake and physiological antagonism of selenium and sulfur in alfalfa and wheat under field conditions, San Joaquin Valley, California OF 91-0016

— Water-quality data, San Joaquin Valley, California, April 1987 to September 1988 OF 91-0074

California—geochronology

Cenozoic: The late Cenozoic section at Willow Wash, east-central California: a tephrochronologic rosetta stone OF 91-0290

Cretaceous: Common Pb isotopic evidence for sources of Mesozoic and Tertiary magmatism in SE Calif. and SW Ariz. OP-1966

Miocene: A reinterpretation of the timing, position, and significance of part of the Sacramento Mountains detachment fault, southeastern California OP-970

— Application of paleomagnetism for absolute age-dating and correlating in the Miocene Monterey Formation of California OP-1538

— Fission-track analysis as thermal-history indicator; Los Angeles Basin, California OP-1682

Neogene: High temperature annealing of fission tracks in fluorapatite, Sante Fe Springs oil field, Los Angeles Basin, California OP-1681

Pleistocene: A ^{36}Cl chronology of lacustrine sedimentation in the Pleistocene Owens River system OP-523

— An investigation of hornblende weathering as a relative age indicator of glacial tills, eastern Sierra Nevada, California OP-1329

— Fission-track age (400,000 yr) of the Rockland Tephra, based on inclusion of zircon grains lacking fossil fission tracks OP-716

California—geomorphology

erosion features: Constant watershed growth and fault offset in the San Timoteo Badlands, Southern California OP-1668

glacial geology: A late Pleistocene ice field in the Mokelumne drainage, north-central Sierra Nevada OP-1291

landform description: Detailed side and overhead views of geologic features from joint panoramic and blimp operations OP-1283

— Ground-squirrel mounds and related patterned ground along the San Andreas Fault in Central California OF 91-0149

maps: Digital representation of morphology in the San Jose 1:100,000 sheet, California OP-1177

— Oblique map of Yosemite Valley, Yosemite National Park, central Sierra Nevada, California I-2149

California—geophysical surveys

acoustical surveys: Surficial characteristics of the bay floor of South San Francisco, San Pablo, and Suisun bays, California OF 90-0665

electrical surveys: Geoelectrical studies on the Panoche Fan area of the San Joaquin Valley, California C 1033

— Ground-water exploration using deep Schlumberger soundings at Edwards-AFB, California; Part I, Graham Ranch and Rogers Lake OF 90-0536

— Schlumberger sounding near Medicine Lake, California OP-1175

gravity surveys: Complete Bouguer anomaly and isostatic gravity maps of the Fresno 1° × 2° Quadrangle, California OF 91-0106

— Isostatic residual gravity map of Edwards Air Force Base and vicinity, Kern, Los Angeles, and San Bernardino counties, California OF 90-0664

— Principal facts for more than 700 new gravity stations in the San Francisco North and San Francisco South quadrangles, California OF 91-0103

— Updated principal facts for gravity data compiled for the Fresno 1 by 2 degree sheet, California OF 91-0004-A

— Updated principal facts for gravity data compiled for the Fresno 1 by 2 degree sheet, California OF 91-0004-B

heat flow: Thermal evolution of the Sierra Nevada; tectonic implications of new heat flow data OP-902

magnetic surveys: Aeromagnetic gridded data for a portion of the San Jose 1° × 2° Quadrangle, California OF 91-0030

— Aeromagnetic map of Palo Alto and vicinity, California OF 91-0336

— Possible tectonomagnetic effect observed from mid-1989, to mid-1990, in Long Valley Caldera, California OP-752

magnetotelluric surveys: Sensitivity of the Parkfield telluric monitoring array OP-1386

maps: Aeromagnetic map of Palo Alto and vicinity, California OF 91-0336

— Complete Bouguer anomaly and isostatic gravity maps of the Fresno 1° × 2° Quadrangle, California OF 91-0106

— Isostatic residual gravity map of Edwards Air Force Base and vicinity, Kern, Los Angeles, and San Bernardino counties, California OF 90-0664

remote sensing: Detailed side and overhead views of geologic features from joint panoramic and blimp operations OP-1283

— Larger scale image mapping with SPOT OP-1057

— Lithologic mapping using AVIRIS data near Mountain Pass, California OP-1542

seismic surveys: Anatomy of a metamorphic core complex; seismic refraction/wide-angle reflection profiling in southeastern California and western Arizona OP-696

— Detection of unsaturation beneath a water table by seismic refraction OP-1485

— Differences in magma storage in different volcanic environments as revealed by seismic tomography; silicic volcanic centers and subduction-related volcanoes OP-516

— Initial shallow seismic tests in the Panoche Fan area, Fresno County, California C 1033

— Seismic measurements of the internal properties of fault zones OP-736

— Special section on EDGE and related seismic projects, onshore-offshore California OP-735

surveys: Application of geophysical methods to the study of pollution associated with abandoned and injection wells C 1033

— Introduction to Special section on the California-Arizona Crustal Transect; CACTIS, Part 3 OP-971

— Status of data, major results, and plans for geophysical activities, Yucca Mountain Project OP-787

well-logging: Near-surface velocities and attenuation at two boreholes near Anza, California, from logging data OP-312

California—hydrogeology

ground water: An efficient deterministic-probabilistic approach to modeling regional ground-water flow; 2, Application to Owens Valley, California OP-396

— Calibration of a texture-based model of a ground-water flow system, western San Joaquin Valley, California OF 90-0573

— Detection of unsaturation beneath a water table by seismic refraction OP-1485

— Documentation of model input and output values for the geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California OF 91-0482

— Documentation of model input and output values for the ground-water resources of Honey Lake valley, Lassen County, California, and Washoe County, Nevada OF 91-0068

— Estimates of consumptive use and ground-water return flow and the effect of rising and sustained high river stage on the method of estimation in Cibola Valley, Arizona and California, 1983 and 1984 WRI 89-4194

— Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California P 1406-C

— Geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California WRI 89-4099

— Ground water in the Central Valley, California; a summary report P 1401-A

— Ground-water exploration using deep Schlumberger soundings at Edwards-AFB, California; Part I, Graham Ranch and Rogers Lake OF 90-0536

— Influence of redox potential on selenium distribution in ground water, Mendota, western San Joaquin Valley, California OF 90-0138

— Quantity and quality of ground-water inflow to the San Joaquin River, California WRI 91-4019

— Relation of nitrate concentration and ground-water movement through a water-table lake in San Francisco, California OP-1442

— Removal of barometric pressure response from water level data OP-853

— Texture and depositional history of late Pleistocene-Holocene alluvium in the central part of the western San Joaquin Valley, California OP-609

hydrology: A branched hydrodynamic model of the Sacramento-San Joaquin Delta, California OP-1153

— Assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt by using a simple hydrochemical model WRI 90-4000

— Executive summary; assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt using a simple hydrochemical model OF 90-0357

— Geohydrology and evapotranspiration at Franklin Lake playa, Inyo County, California OF 90-0356

— Hydrologic, meteorological, and unsaturated-zone moisture-content data, Franklin Lake playa, Inyo County, California OF 89-0595

— Lower Colorado River Accounting System (LCRAS) computer program and documentation OF 91-0179

— Preliminary investigation of the effect of hillslope hydrology on the mechanics of solute exchange between streams and subsurface gravel zones OF 91-0088

— Suspended-sediment factors, Lake Tahoe basin, California-Nevada OP-462

— Urban hydrology in the desert, Antelope Valley, California OP-94

maps: Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California OF 90-0355

— Geohydrology, water quality, and water budgets of Golden Gate Park and the Lake Merced area in the western part of San Francisco, California WRI 90-4080

— Ground-water-quality assessment of the Carson River basin, Nevada and California; analysis of available water-quality data through 1987 OF 89-0382

— Surface-water hydrology of Honey Lake valley, Lassen County, California, and Washoe County, Nevada OF 90-0177

springs: Chemical analyses of the water from the GTA-1 Well, Parkfield, California, and other nearby spring and well waters OF 91-0003

— Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California OF 90-0355

— Chemical and isotopic data for water from wells, springs, and streams in carbonate-rock terrane of southern and eastern Nevada and southeastern California, 1985-88 OF 89-0422

— Methods for selection and hydrologic description of potential landfill sites in southeastern San Diego County, California WRI 90-4021

thermal waters: Sodium and chloride data from selected streams in the Lassen area, north-central California, and their relation to thermal-fluid discharge from the Lassen hydrothermal system WRI 90-4201

— Sources and fractionation processes influencing the isotopic distribution of H, O and C in the Long Valley hydrothermal system, California, U.S.A. OP-1133

California—mineralogy

carbonates: Gaylussite formation at Mono Lake, California OP-88

chromates: Wattersite $Hg^{+1}{}_4Hg^{+2}Cr^{+6}O_6$, a new mineral from Clear Creek claim, San Benito County, California OP-878

California—oceanography

continental margin: Cruise Report of R/V S.P. Lee, Leg 4, 1990, California continental borderland OF 90-0502

— Special section on EDGE and related seismic projects, onshore-offshore California OP-735

continental shelf: Distribution and control of bed-forms on the continental shelf, Gulf of the Farallones, California OP-1522

— Offshore and onshore liquefaction at Moss Landing spit, Central California: results of the October 17, 1989, Loma Prieta earthquake OP-383

estuaries: Comparison of recording current meters in shallow waters of San Francisco Bay, California WRI 90-4018

— Description of salinity, temperature, chlorophyll, suspended-sediment, and velocity data,

— Tests to explore the utility of gravity anomalies and topographic data as possible predictors of locations of seismicity for two areas in California OF 90-0642

— The 1988 and 1990 Upland earthquakes; left-lateral faulting adjacent to the central Transverse Ranges OP-429

— The high acceleration area and the source process of the 1989 Loma Prieta, California, earthquake OP-1934

— Time-to-failure analysis of seismicity preceding the 1989 Loma Prieta earthquake OF 90-0666

— Waveform data from aftershocks of the 1990 Upland, California earthquake recorded on a small-aperture seismic array OF 91-0047

— Western Nevada and eastern California earthquakes, 1985 B 1954

elastic waves: Attenuation and scattering of high-frequency shear waves at local and regional distances in South Africa, New York State and Southern California OP-1399

— Quantitative measurements of shear wave polarizations at the Anza seismic network, Southern California; implications for shear wave splitting and earthquake prediction OP-201

— Seismic excitation by the space shuttle Columbia OP-548

maps: Map of earthquake epicenters in the San Francisco Bay area, California; 1972-1989 OF 91-0299

observatories: The Southern California Network Bulletin, January-December, 1988 OF 90-0499

— The Southern California Network Bulletin, January-December, 1989 OF 90-0483

California—soils

pedogenesis: Rates of soil development in the southern Great Basin OP-1450

— Soil development on stable landforms and implications for landscape studies OP-418

water regimes: Soil water and vegetation responses to precipitation and changes in depth to ground water in Owens Valley, California W 2370-G

California—stratigraphy

Cenozoic: The Cenozoic evolution of the San Joaquin Valley, California P 1501

changes of level: Change in the size of Walker Lake during the past 5000 years OP-80

Cretaceous: Age and origin of Cretaceous planktonic foraminifers from limestone of the Franciscan Complex near Laytonville, California OP-979

— An unusual Late Cretaceous fauna from an oyster-rich interval in the Santa Cruz Mountains of California B 1934

— Checklists of Jurassic and Cretaceous macrofauna from U.S. Geological Survey collections within the San Jose 1:100,000 map sheet, California OF 90-0534

— Late Cretaceous pollen from the Salinian(?) suspect terrane at Pigeon Point, San Mateo County, California OF 90-0523

— Paleoecology and biogeography of Late Cretaceous molluskan assemblages near Loma Prieta, California OP-1368

— Paleogeographic significance of conglomerate clast assemblages in the Great Valley Sequence, Central California OP-1315

— Paleolatitudinal implications of late Campanian molluscan assemblages near Loma Prieta and Pigeon Point, California OP-1367

— Review of the Great Valley Sequence, eastern Diablo Range and northern San Joaquin Valley, Central California OP-59

Holocene: Change in the size of Walker Lake during the past 5000 years OP-80

— Short climatic cycles at about 10 ka recorded by sediments deposited in Searles Lake, California; evidence of climatic instability OP-1862

Jurassic: Checklists of Jurassic and Cretaceous macrofauna from U.S. Geological Survey collections within the San Jose 1:100,000 map sheet, California OF 90-0534

— Concordant paleolatitudes from ophiolite sequences in the Northern California Coast Ranges, U.S.A. OP-672

— Paleomagnetism of Lower Jurassic chert within the Franciscan Complex, Northern California, indicates deposition at the paleoequator and accretion near 7° north paleolatitude OP-1439

— Review of the Great Valley Sequence, eastern Diablo Range and northern San Joaquin Valley, Central California OP-59

Mesozoic: Conglomerate stratigraphy and tectonics in the Franciscan assemblage of Northern California and implications for Cordilleran tectonics OF 91-0050

— Distribution and juxtaposition of Mesozoic lithotectonic elements in the basement of the Santa Maria Basin, California B 1995-B

— Lithofacies and petrofacies map of upper Mesozoic rocks near Coalinga in the southern Diablo Range, California OM-0221

Miocene: 190-km post-middle Miocene offset on the Tolay-Hayward-Calaveras fault system superposed on large-scale Late Cretaceous to early Eocene translation OP-1629

— Age and depositional setting of the type Lospe Formation (lower Miocene), Santa Maria Basin, Central California OP-1874

— Application of paleomagnetism for absolute age-dating and correlating in the Miocene Monterey Formation of California OP-1538

— Biomarker variations in relation to paleogeography in the Saltos Shale Member of the Monterey Formation, Cuyama Basin, California OP-1581

— Early Miocene sedimentation and tectonics in western San Luis Obispo County, Central California OP-1903

— Introduction to stratigraphy and hydrocarbon occurrence in Oligocene and Miocene rocks of the Santa Barbara-Ventura and Santa Maria basins of California OP-552

— Magnetic fabric, flow directions, and source area of the lower Miocene Peach Springs Tuff in Arizona, California, and Nevada OP-465

— Magnetic polarity stratigraphy of the Monterey Formation, Shell Beach, Pismo Basin, California OP-1537

— Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California: a core workshop OP-553

— Stratigraphic sequence of the Monterey and Sisquoc formations in the Hondo oil field, Santa Barbara Channel, California OP-1499

Mississippian: Paleogeographic and structural significance of an Upper Mississippian facies boundary in southern Nevada and east-central California OP-1021

Neogene: Neogene paleoceanographic events recorded in an active-margin setting: Humboldt Basin, California OP-699

Oligocene: Introduction to stratigraphy and hydrocarbon occurrence in Oligocene and Miocene rocks of the Santa Barbara-Ventura and Santa Maria basins of California OP-552

— Miocene and Oligocene petroleum reservoirs of the Santa Maria and Santa Barbara-Ventura basins, California: a core workshop OP-553

Paleocene: Review of the Great Valley Sequence, eastern Diablo Range and northern San Joaquin Valley, Central California OP-59

Paleogene: Paleogeographic implications of an erosional remnant of Paleogene rocks southwest of the Sur-Nacimiento fault zone, southern Coast Ranges, California OP-1084

Paleozoic: Stratigraphic affinity and structural implications of late Paleozoic fossils in the Ritter Range Pendant, eastern Sierra Nevada, California OP-1425

Pleistocene: An early Pleistocene pluvial lake in Fish Lake valley, Nevada-California: ringside resort for the eruption of the Bishop Tuff OF 91-0290

— Deformational structures of possible earthquake origin in Pleistocene shelf siltstone, San Francisco, California OP-1299

Quaternary: Lithology, mineralogy, and paleontology of Quaternary lake deposits in Long Valley Caldera, California OF 89-0413

— Quaternary geologic map of the San Jose East Quadrangle, Santa Clara County, California OF 90-0427

— Sr-isotopic variation in the Quaternary: the record from glacial and interglacial marine terraces OP-1591

Tertiary: Benthic foraminifera from the Laurel Quadrangle, California OF 91-0013

— Earthquakes and Volcanoes, v. 22, no. 4 EV

— Preliminary determination of epicenters monthly listing April-June 1990 OF 90-0600-B

— Preliminary determination of epicenters monthly listing January-March 1990 OF 90-0600-A

— Preliminary determination of epicenters monthly listing July-September 1990 OF 90-0600-C

— Preliminary determination of epicenters monthly listing October-December 1989 OF 89-0600-D

— Preliminary determination of epicenters monthly listing October-December 1990 OF 90-0600-D

— Preliminary determination of epicenters. Monthly listing for April 1991 PDE

— Preliminary determination of epicenters. Monthly listing for August 1990 PDE

— Preliminary determination of epicenters. Monthly listing for December 1990 PDE

— Preliminary determination of epicenters. Monthly listing for February 1991 PDE

— Preliminary determination of epicenters. Monthly listing for January 1991 PDE

— Preliminary determination of epicenters. Monthly listing for July 1990 PDE

— Preliminary determination of epicenters. Monthly listing for June 1991 PDE

— Preliminary determination of epicenters. Monthly listing for March 1991 PDE

— Preliminary determination of epicenters. Monthly listing for May 1991 PDE

— Preliminary determination of epicenters. Monthly listing for November 1990 PDE

— Preliminary determination of epicenters. Monthly listing for October 1990 PDE

— Preliminary determination of epicenters. Monthly listing for September 1990 PDE

— United States earthquakes, 1985 B 1954

catalogs—stratigraphy

biostratigraphy: Checklists of Jurassic and Cretaceous macrofauna from U.S. Geological Survey collections within the San Jose 1:100,000 map sheet, California OF 90-0534

catalogs—structural geology

fractures: Fracture data for the Divide Creek and Wolf Creek anticlines area, southern Piceance Basin, northwestern Colorado OF 88-0204

salt domes: Salt-dome locations in the Gulf Coastal Plain, south-central United States WRI 90-4060

catalogs—volcanology

volcanoes: Global summary of volcano-deformation monitoring OF 90-0651

— The Cascade volcanoes; monitoring history and current land management OF 91-0031

catastrophes *see under* geologic hazards

caves *see under* solution features *under* geomorphology

Cenozoic *see* Eocene; Holocene; Miocene; Neogene; Oligocene; Paleocene; Paleogene; Pleistocene; Pliocene; Tertiary
see under geochronology *under* Alaska; California; New Mexico
see under stratigraphy *under* Antarctica; Atlantic Coastal Plain; California; Gulf Coastal Plain; Indian Ocean; Mariana Islands; Marshall Islands; Southern U.S.; Vanuatu; Western Hemisphere

Central America *see* Belize; Costa Rica; El Salvador; Guatemala; Honduras; Panama

Central America—economic geology

mineral resources: Cooperative mineral activities in Latin America YR

— Latin American mineral-resource data available through the U.S. Geological Survey C 1062

Cephalopoda *see under* Mollusca

ceramic materials *see* clays
see under mineral deposits, genesis
see under ore guides *under* mineral assessment

ceramic materials—resources

models: Descriptive model of wollastonite skarn OF 91-0011-A

changes of level *see* isostasy
see under geomorphology *under* Alaska; Great Lakes region; Illinois; Indiana; Louisiana
see under stratigraphy *under* Alaska; California; Great Lakes region; Hawaii; Italy; Louisiana; Maryland; Nevada; Pacific Ocean; South Africa; South Carolina; Virginia; Western U.S.

changes of level—interpretation

glaciation: Is the extent of glaciation limited by marine gas-hydrates? OP-808

channels *see under* waterways
see under fluvial features *under* geomorphology
see under planar bedding structures *under* sedimentary structures
see under rivers and streams *under* hydrology

chemical analysis *see* spectroscopy; X-ray analysis

chemical analysis—methods

atomic absorption: Determination of gold in samples of rock, soil, stream sediment and heavy-mineral concentrate by flame and graphite furnace atomic absorption spectrophotometry following dissolution by HBr-Br_2 OF 90-0668

— Determination of gold, tellurium, and thallium, in rock, stream-sediment, and soil samples by flame, and gold by graphite furnace, atomic absorption spectrophotometry following dissolution by HF, aqua regia, and HBr-Br_2 OF 90-0668

— Determination of mercury in geologic materials by continuous flow-cold vapor-atomic absorption spectrophotometry OF 90-0668

— Trace-level determination of arsenic and selenium using continuous-flow hydride generation atomic absorption spectrophotometry (HG-AAS) OF 90-0668

electrolytic analysis: Determination of chloride in geologic materials by ion-selective electrode following $KMNO_4$-H_2SO_4-HF dissolution OF 90-0668

— Determination of fluoride in rock, soil, and stream-sediment samples by ion-selective electrode following Na_2CO_3-K_2CO_3-KNO_3 fusion and dissolution with citric acid OF 90-0668

— Determination of fluoride in silicates and sediments by ion-selective electrode following a sodium carbonate-zinc oxide fusion OF 90-0668

— Determination of fluoride in silicates by ion-selective electrode following $LiBO_4$ fusion and HNO_3 dissolution OF 90-0668

emission spectroscopy: Direct-current arc emission spectrographic method for the semiquantitative analysis of rock, stream-sediment, soil, and heavy-mineral-concentrate samples OF 90-0668

flame photometry: Flame photometric determination of K_2O and Na_2O in rocks and mineral separates OF 90-0668

gas chromatography: Enzyme-linked immunosorbent assay compared with gas chromatography/mass spectrometry for the determination of triazine herbicides in water OP-1059

inductively coupled plasma methods: Determination of water extractable boron in soil and stream-sediment samples by inductively coupled plasma-atomic emission spectroscopy OF 90-0668

— Elemental analysis of geologic materials by inductively coupled plasma-atomic emission spectrometry OF 90-0668

— Organometallic halide extraction applied to the analysis of geologic materials for 10 elements by inductively coupled plasma-atomic emission spectrometry OF 90-0668

liquid chromatography: Liquid chromatographic determination of atrazine and its degradation products in water WRI 89-4193

neutron activation analysis: Determination of twenty-nine elements in eight Argonne Premium Coal samples by instrumental neutron activation analysis OP-802

— Determination of uranium and thorium in geologic materials by delayed neutron counting OF 90-0668

nuclear magnetic resonance: Application of liquid-state NMR spectroscopy to humic substances OP-1018

— Detection of poly(ethylene glycol) residues from nonionic surfactants in surface water by

China—sedimentary petrology

sedimentation: Organic tissues in Tertiary lacustrine and palustrine rocks from the Jiyang and Pingyi rift depressions, Shandong Province, Eastern China OP-876

China—stratigraphy

Proterozoic: Paleomagnetic poles from middle and late Proterozoic Dagushi, Huashan, and Sinean groups, Jingshan County, Hubei Province, South China OP-1974

China—structural geology

fractures: Analysis of fractures from borehole televiewer logs in a 500 m deep hole at Xiaguan, Yunnan Province, Southwest China OP-1171

salt tectonics: Copper deposition by fluid mixing in deformed strata adjacent to a salt diapir, Dongchuan area, Yunnan Province, China OP-890

chlorides *see under* minerals

chlorine—analysis

electrolytic analysis: Determination of chloride in geologic materials by ion-selective electrode following $KMNO_4$-H_2SO_4-HF dissolution OF 90-0668

chlorine—geochemistry

metasedimentary rocks: Anomalous chlorine in iron-rich strata, Yellowjacket Formation, Lemhi County, Idaho; analytical data and discussion OF 90-0721

surface water: Sodium and chloride data from selected streams in the Lassen area, north-central California, and their relation to thermal-fluid discharge from the Lassen hydrothermal system WRI 90-4201

tree rings: Use of tree-ring chemistry to document historical ground-water contamination events OP-1097

chromates *see under* minerals

chromite ores *see under* economic geology *under* Philippine Islands

chromium—geochemistry

marine sediments: Cretaceous/Tertiary boundary of DSDP Site 596, South Pacific OP-1172

circulation in the ocean *see* ocean circulation

clastic rocks *see under* sedimentary rocks

clastic sediments *see under* sediments

clay mineralogy—areal studies

Colorado: Investigation of foundation problems related to heaving of soils and weathered bedrock in the Pierre Shale southwest of Denver, Colorado OF 91-0281

Colorado Plateau: Jurassic Lake T'oo'dichi'; a large alkaline, saline lake, Morrison Formation, eastern Colorado Plateau OP-1072

Haiti: Tektites in Cretaceous-Tertiary boundary rocks on Haiti OF 90-0635

Iowa: Clay mineralogy and bulk rock composition of selected core and cutting samples from the Amoco Eischeid #1 well, Carroll County, Iowa; a reconnaissance study from X-ray powder diffraction analysis OP-842

Oklahoma: Mineralogy and petrography of Permian rocks in the Central Oklahoma Aquifer OF 90-0678

Pakistan: Mineralogy and thermal properties of clay deposits in the Salt Range and Kala Chitta Range, Punjab Province, Pakistan OF 90-0657

Utah: Ground-water chemistry and diagenetic reactions in Tertiary sandstones of the Green River and Wasatch formations, Uinta Basin, Utah B 1787-X

Wyoming: Petrology, diagenesis, and sedimentology of oil reservoirs in Upper Cretaceous Shannon Sandstone Beds, Powder River basin, Wyoming B 1917-C

— Whole-rock and clay mineralogies of deeply-buried rocks, Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming OF 90-0673

clay mineralogy—experimental studies

reflectance: Visible and near-infrared (0.4- to 2.5 μm) reflectance spectra of selected mixed-layer clays and related minerals OP-214

clays *see* ceramic materials
see under mineral deposits, genesis
see under economic geology *under* Pakistan
see under ore guides *under* mineral assessment

clays—resources

models: Descriptive model of lithium in smectites of closed basins OF 91-0011-A

climate *see under* changes *under* ecology
see under circulation *under* atmosphere

climate change *see* paleoclimatology

climate, ancient *see* paleoclimatology

coal *see* lignite
see under applications *under* well-logging
see under bibliography *under* economic geology; geochemistry
see under biochemistry *under* gymnosperm flora
see under economic geology *under* Alaska; Antarctica; Appalachians; Arkansas; Colorado; Costa Rica; data processing; Iowa; Kansas; Maryland; Midwest; Missouri; Montana; Nebraska; New Mexico; Oklahoma; Pakistan; Pennsylvania; Rocky Mountains; symposia; United States; Utah; West Virginia; Western U.S.; Wyoming
see under evaluation *under* mining geology
see under general *under* mining geology
see under geochemistry *under* data processing; metals; rare earths; sulfur
see under interpretation *under* well-logging
see under organic residues *under* sedimentary rocks
see under sedimentary rocks *under* standard materials
see under symposia *under* economic geology
see under water quality *under* hydrology

coal—exploration

methods: Applications of thermal maturation studies to energy exploration OP-779

coal—genesis

geochemistry: Thermochemistry of the formation of fossil fluids OP-914

processes: Slide set describing aspects of the origin of coal, coal mining, and peat formation OF 91-0390

coal—geochemistry

analysis: Analysis of eight Argonne Premium Coal samples by X-ray fluorescence spectrometry OP-284

— Automated semiquantitive direct-current-arc spectrographic analysis of eight Argonne Premium Coal Ash samples OP-975

— Determination of selected elements in whole coal and in coal ash from the eight Argonne Premium Coal samples by atomic absorption spectrometry, atomic emission spectrometry, and ion-selective electrode OP-241

— Determination of twenty-nine elements in eight Argonne Premium Coal samples by instrumental neutron activation analysis OP-802

hydration: Rehydration of desiccated Argonne premium coal samples OF 90-0482

standard materials: The characterization of USGS coal standard CLB-1; a preliminary report OP-1519

trace elements: Chemistry and origin of minor and trace elements in selected vitrinite concentrates from bituminous and anthracitic coals OP-1724

— What we don't know about the occurrence and distribution of the trace elements in coal OP-294

coal—properties

chemical properties: The role of coal characterization in the control of acid precipitation C 1033

cobalt—geochemistry

chemically precipitated rocks: Geological, geochemical, geophysical, and oceanographic data and interpretations of seamounts and Co-rich ferromanganese crusts from the Marshall Islands KORDI-USGS R.V. Farnella Cruise F10-89-CP OF 90-0407

shale: Bedrock geochemistry and the environment C 1033

cobalt ores *see under* economic geology *under* Idaho

Coelenterata *see* corals

Colombia—geomorphology

processes: Controls on the composition of fluvial sands from a tropical weathering environment; sands of the Orinoco River drainage basin, Venezuela and Colombia OP-540

— Weathering processes and the composition of inorganic material transported through the Orinoco River system, Venezuela and Colombia OP-1009

Colombia—volcanology

Galeras: Earthquakes and Volcanoes, v. 22, no. 4 EV

Colorado—areal geology

maps: Geohydrologic evaluation of the upper part of the Mesaverde Group, northwestern Colorado WRI 90-4020

— Geologic and structure contour map of the Ute Mountain Ute Indian Reservation and adjacent areas, Southwest Colorado and Northwest New Mexico I-2083

— Geologic map of the East Portal Quadrangle, Boulder, Gilpin, and Grand counties, Colorado I-2212

— Geologic map of the Gothic Quadrangle, Gunnison County, Colorado GQ-1689

— Geologic map of the Hoy Mountain Quadrangle, Daggett and Uintah counties, Utah, and Moffat County, Colorado GQ-1695

— Geologic map of the northwestern part of the Uncompahgre Uplift, Grand County, Utah, and Mesa County, Colorado, with emphasis on Proterozoic rocks I-2088

— Geology of a fault-controlled cave in Precambrian crystalline rocks in Clear Creek canyon, Jefferson County, Colorado OF 91-0144

— Petrography and geochemistry B 1937

— Reconnaissance geologic map of parts of the Twin Peaks and Blanca Peak quadrangles, Alamosa, Costilla, and Huerfano counties, Colorado MF-2169

— Reconnaissance geologic map of parts of the Zapata Ranch and Mosca Pass quadrangles, Alamosa and Huerfano counties, Colorado MF-2168

San Juan Basin: Analysis of spatial geologic data using surface modeling and geographic information system software; applications to regional geologic mapping, San Juan structural basin, New Mexico, Colorado, Arizona, and Utah OP-1317

Colorado—economic geology

coal: Coal geology and preliminary coal zone correlations in the Fruitland Formation, western part of the Southern Ute Indian Reservation, La Plata County, Colorado C-0138

— Coal resources of the Castle Rock 1/2°×1° Quadrangle and adjacent area, Colorado OP-262

— Coal resources of the San Juan Basin OP-288

— Coal resources of Upper Cretaceous Fruitland Formation in the Southern Ute Indian Reservation, southwestern Colorado P 1505-D

— Coal-bed methane resources and Fruitland Formation coal-bed geology, San Juan Basin, New Mexico and Colorado OP-1373

— Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah C-0134

— Thermal maturity of Upper Cretaceous coals, San Juan Basin, New Mexico and Colorado OP-1375

energy sources: Evolution of the San Juan Basin, Colorado, and New Mexico basin analysis case study OP-1788

— Recent geologic studies in the San Juan Basin; highlights and new direction OP-1073

gold ores: Gold deposits of the Boulder County gold district, Colorado B 1857-I

— Relationship between magmatic and hydrothermal processes in the Summitville, Colorado gold deposit OP-1886

— Stable isotope systematics and magmatic and hydrothermal processes in the Summitville, CO gold deposit OF 90-0626

maps: Coal geology and preliminary coal zone correlations in the Fruitland Formation, western part of the Southern Ute Indian Reservation, La Plata County, Colorado C-0138

— Coal resources of the Castle Rock 1/2°×1° Quadrangle and adjacent area, Colorado OP-262

— Coal resources of Upper Cretaceous Fruitland Formation in the Southern Ute Indian Reservation, southwestern Colorado P 1505-D

— Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah C-0134

— Mine maps of silver-lead-zinc epithermal deposits in the Lake City area, Hinsdale County, San Juan Mountains, southwestern Colorado MF-2152

metal ores: A reply to the discussion of sherman-type deposits by Brian J. Skinner OP-602

— ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado OF 91-0027-A

— ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado OF 91-0027-B

— Carbonate-hosted sulfide deposits of the central Colorado mineral belt OP-71

— Carbonate-hosted sulfide deposits of the central Colorado mineral belt; introduction, general discussion, and summary OP-70

— Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part I, Geologic framework, mineralogy, and cave morphology OP-1070

— Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part II, Fluid inclusion, stable isotope, and rock geochemistry data and a model of ore deposition OP-603

— Mine maps of silver-lead-zinc epithermal deposits in the Lake City area, Hinsdale County, San Juan Mountains, southwestern Colorado MF-2152

— Origin of the ore deposits at Gilman, Colorado; Part III, Fission-track and fluid inclusion studies OP-757

— Origin of the ore deposits at Gilman, Colorado; Part IV, Stable isotope geochemistry OP-69

— Origin of the ore deposits at Gilman, Colorado; Part VI, Discussion and genetic model OP-68

— Preliminary chemical modeling of epithermal processes at Creede, Colorado; the role of fluid mixing as an ore deposition mechanism OP-833

— Regional geologic and tectonic setting of the central Colorado mineral belt OP-1100

— The use of lead-isotope geochemistry to evaluate economic potential for gold-silver mineralization; an example from the North Amethyst vein system and the Creede mining district, Colorado C 1062

mica deposits: Pink and violet micas; composition, nomenclature, and genesis of muscovite and lepidolite micas from pegmatites and metamorphic rocks in northern New Mexico and central Colorado OP-1647

mineral resources: Minerals information sources in state agencies; Colorado C 1063

natural gas: Geochemistry of coal-generated hydrocarbons and source rock potential of coal beds OP-1781

— Vitrinite reflectance data from Cretaceous and Tertiary rocks, San Juan Basin, New Mexico and Colorado OF 90-0659

oil and gas fields: Thermal and fluid migration history in the Niobrara Formation, Berthoud oil field, Denver Basin, Colorado OP-215

oil shale: Correlation and oil-shale assays of measured sections of the LaClede Bed of the Laney Member of the Green River Formation in outcrops along the western margins of Washakie Basin, Wyoming, and Sand Wash Basin, Colorado I-2211

petroleum: Animated geographic information system of petroleum exploration through time in the Denver Basin of Colorado, Nebraska, and Wyoming OP-1896

— Comparison of sandstone diagenesis and reservoir development within two Lower Cretaceous J Sandstone fields, Denver Basin, Colorado OP-1475

— Crude oil and source rock correlation, Northwest Colorado OP-1636

— Geology and petroleum resources, Paradox Basin Province OF 88-0450-U

— Hydrocarbon exploration plays in the Colorado Park Basin province OP-687

— Oil-generating coals of the San Juan Basin, New Mexico and Colorado, U.S.A. OP-183

— Petroleum geochemistry of San Juan Sag, Colorado OP-1296

— Petroleum source rock quality and thermal maturation of the Mississippian Spergen and Pennsylvanian Morrow Formation OP-135

— Source rock evaluation, oil-source rock correlation, and kinetic modeling; San Juan Sag, CO OP-1297

— Source rock maturation, San Juan Sag OP-1428

— Stabilization of kerogen thermal maturation; evidence from geothermometry and burial history reconstruction, Niobrara Limestone, Berthoud oil field, western Denver Basin, Colorado OP-1206

— Thermal maturation and oil generation history of Pennsylvanian (Desmoinesian) black shales of Powder River and northern Denver basins OP-1295

— Use of comparative geothermometry to reconstruct burial history and timing of oil generation and migration in Niobrara Formation, Berthoud State 4 well, Denver Basin, Colorado OP-1322

uranium ores: The Boston Peak fen; a multidisciplinary case study of a uraniferous mountain wetland OF 90-0656

— The Boston Peak Fen; a multidisciplinary case study of a uraniferous mountain wetland OP-1720

water resources: Summary of water-resources activities of the U.S. Geological Survey in Colorado; fiscal year 1991 OF 91-0210

— Water-quality data-collection activities in Colorado and Ohio; Phase III, Evaluation of existing data for use in assessing regional water-quality conditions and trends OF 89-0391

Colorado—engineering geology

foundations: Investigation of foundation problems related to heaving of soils and weathered bedrock in the Pierre Shale southwest of Denver, Colorado OF 91-0281

impact statements: Estimated water-quality conditions and potential downstream channel effects of the proposed Rock Creek and Wolford Mountain reservoirs, north-central Colorado WRI 89-4177

petroleum engineering: Heterogeneity of eolian sandstones and enhanced oil recovery OP-1819

— Petrology and reservoir properties of Point Lookout Sandstone, Southern Ute Indian Reservation, La Plata County, Colorado OP-1530

— Prediction of fracture networks at depth in low-permeability reservoir rocks, Piceance and Washakie basins, Western United States OP-1431

Colorado—environmental geology

ecology: Chemical composition of the wetland vegetation receiving the acid mine-drainage waters of St. Kevin Gulch, Leadville, Colorado OF 91-0088

— Phosphate uptake by algae in a stream contaminated by acid mine drainage, St. Kevin Gulch, Leadville, Colorado OF 91-0088

geologic hazards: Colorado; floods and droughts W 2375

pollution: Acid mine drainage and wetlands OF 90-0656

— Comparison of rates of hydrologic and chemical processes in a stream affected by acid mine drainage OF 91-0088

— Physical, chemical, and biological processes in waters affected by acid mine drainage; from headwater streams to downstream reservoirs OF 91-0088

— Predictive modeling of copper, cadmium, and zinc partitioning between streamwater and bed sediment from a stream receiving acid-mine drainage, St. Kevin Gulch, Colorado OF 91-0088

— Use of environmental variables to estimate metal loads in streams, upper Arkansas River basin, Colorado OF 91-0088

— Use of mass-flow calculations to identify processes controlling water quality in a subalpine wetland receiving acid mine drainage, St. Kevin Gulch, Colorado OF 91-0088

— Use of variation in solute concentrations to identify interactions of the substream zone with instream transport OF 91-0088

Colorado—geochemistry

isotopes: Isotopic composition of Oligocene mafic volcanic rocks in the northern Rio Grande Rift; evidence for contributions of ancient intraplate and subduction magmatism to evolution of the lithosphere OP-533

nitrogen: Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected daily for 11 months from 0.3-, 0.6-, 1.2-, and 2.0-m depths OF 90-0686

organic materials: Effect of organic matter coprecipitation and sorption with hydrous iron oxides on electrophoretic mobility of particles in acid-mine drainage OF 91-0088

— Evaluation of visible and near-infrared and thermal-infrared reflectance spectra for studying thermal alteration of Pierre Shale, Wolcott, Colorado OP-889

— Use of Rock-Eval pyrolysis and vitrinite reflectance data in characterizing type and maturity of organic matter in coal, Upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico and Colorado OP-1569

trace elements: Analytical results for sedge samples collected on the wetland receiving acid mine drainage waters from St. Kevin Gulch, Leadville, Colorado OF 91-0126

— Coupled manganese and carbon-isotopic events in marine carbonates at the Cenomanian-Turonian boundary OP-845

— Oligocene basaltic volcanism of the northern Rio Grande Rift; San Luis Hills, Colorado OP-1056

— Particulate and colloidal organic material and associated trace metals in Pueblo Reservoir, Colorado OF 91-0088

— Precaldera lavas of the Southeast San Juan volcanic field; parent magmas and crustal interactions OP-193

weathering: Data from laboratory dissolution experiments using a welded tuff from Snowshoe Mountain near Creede, Colorado OF 87-0550

Colorado—geochronology

Cretaceous: Reconnaissance fission-tract geochronology of the Aspen mining district, central Colorado OP-131

Oligocene: The Fish Canyon Tuff, a potential standard for the ^{40}Ar-^{39}Ar and fission-track dating methods OP-1274

Tertiary: Origin of the ore deposits at Gilman, Colorado; Part III, Fission-track and fluid inclusion studies OP-757

Colorado—geomorphology

fluvial features: Influence of crustal structure on the course of Arkansas River, south-central Colorado; some observations OF 90-0508

maps: Surficial geologic map of the Steamboat Springs 30′ × 60′ Quadrangle, Grand, Jackson, and Routt counties, Colorado I-1825

— Surficial geologic map of the Walden 30′ × 60′ Quadrangle, Jackson, Larimer, and Routt counties, Colorado I-1824

mass movements: Measurement of ridge-spreading movements (sackungen) at Bald Mountain, Lake County, Colorado, 1975-1989 OF 90-0543

solution features: Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part I, Geologic framework, mineralogy, and cave morphology OP-1070

— Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part II, Fluid inclusion, stable isotope, and rock geochemistry data and a model of ore deposition OP-603

Colorado—geophysical surveys

electromagnetic surveys: Amplitude, velocity, and dispersion tomography at the Idaho Springs test facility using a fiber-optic borehole radar and radio-frequency digital data acquisition system OF 90-0414

— Sedimentology of eolian sand dunes by multifrequency ground penetrating radar OF 90-0414

magnetic surveys: The importance of total magnetization in aeromagnetic interpretation of

volcanic areas; an illustration from the San Juan Mountains, Colorado OP-1421

radioactivity surveys: Soil gas radon compared to aerial and ground gamma-ray measurements at study sites near Greeley and Fort Collins, Colorado OF 90-0648

remote sensing: Mapping minerals with imaging spectroscopy near Canon City, Colorado C 1062

seismic surveys: Investigation of foundation problems related to heaving of soils and weathered bedrock in the Pierre Shale southwest of Denver, Colorado OF 91-0281

surveys: Application of geophysical methods to the study of pollution associated with abandoned and injection wells C 1033

Colorado—hydrogeology

ground water: Geohydrologic, geochemical, and geologic controls on the occurrence of radon in ground water near Conifer, Colorado, USA OP-610

— Geophysical log investigation of formation changes produced by hydraulic fracture simulation in a crystalline-bedrock aquifer OP-800

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

— The role of a geographic information system in modeling of groundwater flow in the San Juan Basin regional aquifer system, New Mexico, Colorado, Arizona, and Utah OP-559

— Water-level changes in the High Plains Aquifer underlying parts of South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, and Texas; predevelopment through nonirrigation season 1988-89 WRI 90-4153

hydrology: Analysis of water-quality data and sampling programs at selected sites in north-central Colorado WRI 90-4005

— Data that describe at-a-point temporal variations in the transport rate and particle-size distribution of bedload: East Fork River, Wyoming, and Fall River, Colorado OF 90-0193

— Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming OF 87-0547

— Hydrologic relations between streamflow and subalpine wetlands in Grand County, Colorado WRI 90-4129

— Hydrology and paleohydrology used to improve the understanding of flood hydrometeorology in Colorado OP-526

— Particulate and colloidal organic material in Pueblo Reservoir, Colorado; influence of autochthonous source on chemical composition OP-855

— Preliminary investigation of the effect of hillslope hydrology on the mechanics of solute exchange between streams and subsurface gravel zones OF 91-0088

— Sediment discharge in Fortification Creek and the effect of sedimentation rate on the proposed Rampart Reservoir, northwestern Colorado WRI 90-4103

— Sediment loads and flow hydraulics during floods OP-1746

— The chemistry of iron, aluminum, and dissolved organic material in three acidic, metal-enriched, mountain streams, as controlled by watershed and in-stream processes OP-708

— Transition metal geochemistry of the upper Arkansas River, Colorado OF 91-0088

— Transport of invertebrates and detritus in streams OP-1061

— Variation in streambed material, bedload and benthic invertebrates OP-1092

— Water quality of Fountain and Monument creeks, south-central Colorado, with emphasis on relation of water quality to stream classifications WRI 88-4132

— Water-quality and sediment-transport characteristics in Kenney Reservoir, White River basin, northwestern Colorado WRI 90-4071

maps: Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah HA-0720-B

— Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-F

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

— Maps showing hydrostatic levels and general ground-water quality for an area near Conifer, Colorado MF-2165

— Summary of water-resources activities of the U.S. Geological Survey in Colorado; fiscal year 1991 OF 91-0210

Colorado—paleobotany

Spermatophyta: Taxonomic revision of the Spermatopsida of the Oligocene Creede flora, southern Colorado B 1923

Colorado—petrology

crystalline rocks: Crystalline rocks of the Strawberry Lake area, Front Range, Colorado B 1937

— Petrography and geochemistry B 1937

— Petrology B 1937

metasomatism: Potassium metasomatism in the Creede mining district, San Juan volcanic field, Colorado OP-1815

volcanism: Structural, eruptive, and intrusive evolution of the Grizzly Peak Caldera, Sawatch Range, Colorado OP-326

Colorado—sedimentary petrology

diagenesis: Comparison of sandstone diagenesis and reservoir development within two Lower Cretaceous J Sandstone fields, Denver Basin, Colorado OP-1475

sedimentary rocks: Acid-insoluble residue/carbonate content of the Upper Cretaceous Niobrara Formation, Berthoud Field, Denver Basin, Colorado: a key factor for understanding natural fracturing in chalks? OF 91-0330

— Sedimentology and paleoecology of the Eagle Valley Evaporite (Middle Pennsylvanian), Eagle Basin, Colorado OP-1820

sedimentary structures: Bedding scales of a complex eolian dune using ground-penetrating radar OP-1818

Colorado—stratigraphy

Cretaceous: Coal geology and preliminary coal zone correlations in the Fruitland Formation, western part of the Southern Ute Indian Reservation, La Plata County, Colorado C-0138

— Coal resources of Upper Cretaceous Fruitland Formation in the Southern Ute Indian Reservation, southwestern Colorado P 1505-D

— Contrasting styles of fault control on position of pre-Dakota unconformity and on depositional environments of Dakota Sandstone, northern San Juan Basin, Colorado OP-1787

— Coupled manganese and carbon-isotopic events in marine carbonates at the Cenomanian-Turonian boundary OP-845

— Cretaceous rocks of the Piceance Basin area, northwestern Colorado OP-1511

— Cretaceous stratigraphy of the San Juan Basin, New Mexico and Colorado OP-1374

— Development of Laramide-style subsidence trends during Late Cretaceous foreland basin deposition, Northwest Colorado OP-1512

— Durango Delta: complications on San Juan Basin Cretaceous linear strandline theme OP-1972

— Geologic framework and stratigraphy of Cretaceous and Tertiary rocks of the Southern Ute Indian Reservation, southwestern Colorado P 1505-B,C

— Geologic framework of Cretaceous and Tertiary rocks in the Southern Ute Indian Reservation and adjacent areas in the northern San Juan Basin, southwestern Colorado P 1505-B,C

— Late Cretaceous and Tertiary paleogeographic reconstructions: Uinta and Piceance basins, northeastern Utah and northwestern Colorado OF 90-0656

— Late Cretaceous and Tertiary paleogeographic reconstructions: Uinta and Piceance basins, northeastern Utah and northwestern Colorado OP-1398

— Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Gar-

field County, Colorado, and Grand and Uintah counties, Utah C-0134

— Middle Cretaceous stratigraphy on the south and east sides of the Uinta Basin, northeastern Utah and northwestern Colorado B 1787-P

— Stratigraphic cross sections of Upper Cretaceous rocks across San Juan Basin, northwestern New Mexico and southwestern Colorado OP-1649

— Stratigraphic cross sections of Upper Cretaceous rocks in the northern San Juan Basin, Southern Ute Indian Reservation, southwestern Colorado P 1505-B,C

— Stratigraphy and correlation of Middle Cretaceous rocks around Uinta Basin, northeastern Utah and northwestern Colorado OP-1648

— Stratigraphy of the Mesaverde Group in the central and eastern greater Green River basin, Wyoming, Colorado, and Utah P 1508

— Subsidence and infilling patterns during deposition of Upper Cretaceous Mancos Shale, Northwest Colorado and Northeast Utah OP-1513

— The Cretaceous/Tertiary boundary interval, Raton Basin, Colorado and New Mexico, and its content of shock-metamorphosed minerals; evidence relevant to the K/T boundary impact-extinction theory OP-517

— Thermal and fluid migration history in the Niobrara Formation, Berthoud oil field, Denver Basin, Colorado OP-215

— Utility of San Juan Basin silcretes OP-1406

Eocene: Correlation and oil-shale assays of measured sections of the LaClede Bed of the Laney Member of the Green River Formation in outcrops along the western margins of Washakie Basin, Wyoming, and Sand Wash Basin, Colorado I-2211

— Godiva Rim Member; a new stratigraphic unit of the Green River Formation in Southwest Wyoming and Northwest Colorado P 1506-C

— Northwest-southeast surface and subsurface correlations of the intertongued Wasatch and Green River formations, Sand Wash Basin, Northwest Colorado MF-2166

— Revised stratigraphic nomenclature for the Wasatch and Green River formations of Eocene age, Wyoming, Utah, and Colorado P 1506-B

— Transverse and longitudinal gilbert-type deltas, Tertiary Coalmont Formation, North Park Basin, Colorado, USA OP-313

Jurassic: Correlation of Middle Jurassic San Rafael Group and related rocks from Kane Springs, Utah to Uravan, Colorado OC-0134

— Jurassic Lake T'oo'dichi'; a large alkaline, saline lake, Morrison Formation, eastern Colorado Plateau OP-1072

— Late Jurassic weather forecast, Four Corners area; dry, hot, and partly sunny OP-1928

maps: Stratigraphy of the Mesaverde Group in the central and eastern greater Green River basin, Wyoming, Colorado, and Utah P 1508

Paleocene: Northwest-southeast surface and subsurface correlations of the intertongued Wasatch and Green River formations, Sand Wash Basin, Northwest Colorado MF-2166

— Utility of San Juan Basin silcretes OP-1406

Paleozoic: Geologic evolution of Uinta-Piceance Basin Province, northwestern Colorado and northeastern Utah OP-1514

Pennsylvanian: Application of porphyrin and other biological marker geochemistry to paleoenvironmental assessment; Pennsylvanian black shales, northern Denver Basin OP-1635

— Middle Pennsylvanian paleoecology and paleoenvironments of the Eagle Basin, Colorado OP-1584

— New interpretations of Pennsylvanian and Permian stratigraphy, San Juan Basin and Southeast Paradox Basin OP-1496

— Structural control on distribution of sedimentary facies in the Pennsylvanian Minturn Formation of north-central Colorado B 1787-Y

Phanerozoic: Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line A-A′, Uinta and Piceance Basin area; Eagle Basin, Colorado, to eastern Basin and Range area, Utah I-2184-A

— Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line B-B′, Uinta and Piceance basin area; west-central Uinta Basin, Utah to eastern Piceance Basin, Colorado I-2184-B

Proterozoic: Geologic map of the northwestern part of the Uncompahgre Uplift, Grand County, Utah, and Mesa County, Colorado, with emphasis on Proterozoic rocks I-2088

Tertiary: Geologic framework and stratigraphy of Cretaceous and Tertiary rocks of the Southern Ute Indian Reservation, southwestern Colorado P 1505-B,C

— Geologic framework of Cretaceous and Tertiary rocks in the Southern Ute Indian Reservation and adjacent areas in the northern San Juan Basin, southwestern Colorado P 1505-B,C

— Late Cretaceous and Tertiary paleogeographic reconstructions: Uinta and Piceance basins, northeastern Utah and northwestern Colorado OP-1398

— The Cretaceous/Tertiary boundary interval, Raton Basin, Colorado and New Mexico, and its content of shock-metamorphosed minerals; evidence relevant to the K/T boundary impact-extinction theory OP-517

Triassic: Paleoclimatic cycles and tectonic controls on fluvial lacustrine, and eolian strata in Upper Triassic Chinle Formation, San Juan Basin OP-1352

Colorado—structural geology

fractures: Fracture data for the Divide Creek and Wolf Creek anticlines area, southern Piceance Basin, northwestern Colorado OF 88-0204

— Fracture history of the Divide Creek and Wolf Creek anticlines and its relation to Laramide basin-margin tectonism, southern Piceance Basin, northwestern Colorado OF 88-0010

— Variation in fracture-network characteristics among coexisting lithologies of Mesaverde Group, DeBeque Canyon, western Colorado OP-1938

isostasy: The decompensative gravity anomaly and deep structure of the region of the Rio Grande Rift OP-200

tectonics: Contrasting styles of fault control on position of pre-Dakota unconformity and on depositional environments of Dakota Sandstone, northern San Juan Basin, Colorado OP-1787

— Development of Laramide-style subsidence trends during Late Cretaceous foreland basin deposition, Northwest Colorado OP-1512

— Evolution of the San Juan Basin, Colorado, and New Mexico basin analysis case study OP-1788

— Late Laramide thrust related and evaporite-domed anticlines in the southern Piceance Basin, northeastern Colorado Plateau OP-390

— Regional geologic and tectonic setting of the central Colorado mineral belt OP-1100

— Subsidence and infilling patterns during deposition of Upper Cretaceous Mancos Shale, Northwest Colorado and Northeast Utah OP-1513

Colorado—tectonophysics

crust: The decompensative gravity anomaly and deep structure of the region of the Rio Grande Rift OP-200

Colorado Plateau—economic geology

maps: Map showing the distribution of uranium deposit clusters in the Colorado Plateau uranium province MF-2080

uranium ores: Map showing the distribution of uranium deposit clusters in the Colorado Plateau uranium province MF-2080

Colorado Plateau—geomorphology

fluvial features: Channel evolution and hydrologic variations in the Colorado River basin; factors influencing sediment and salt loads OP-341

landform evolution: Cretaceous-Eocene (Laramide) landscape development and Oligocene-Pliocene drainage reorganization of transition zone and Colorado Plateau, Arizona OP-275

Colorado Plateau—hydrogeology

ground water: Paleohydrogeology of the Colorado Plateau: background and conceptual models OP-908

Colorado Plateau—petrology

magmas: Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting OP-45

D

data processing—economic geology

coal: A geographic information system data base for coal and water resources of the Powder River coal region, southeastern Montana OF 90-0568

— Bibliography of publications containing major, minor, and trace element data from the National Coal Resources Data System OF 91-0123

— What we don't know about the occurrence and distribution of the trace elements in coal OP-294

evaporite deposits: Ground-water control of evaporite deposition OP-1154

metal ores: ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado OF 91-0027-A

— ASCII database of principal lode mines and mineralized areas in southern Summit County, Colorado OF 91-0027-B

— Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OF 90-0424-A

— Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OF 90-0424-B

mineral resources: Examples of graphical data displays used in the resource study B 1942

petroleum: A microcomputer program for energy assessment and aggregation using the triangular probability distribution OP-211

— FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model OF 90-0509-A

— FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model OF 90-0509-B

— Interactive Macintosh display of petroleum exploration through time across the continental United States OF 90-0676

water resources: Introduction OF 90-0198

— National Water Information System user's manual; Volume 2, Chapter 5, Water-Use Data System; Part 1, Site-Specific Water-Use Data System (SSWUDS) OF 90-0198

— Site-Specific Water-Use Data System (SSWUDS) OF 90-0198

— Site-Specific Water-Use Data System (SWUDS) data elements dictionary OF 90-0198

— Site-Specific Water-Use Data System (SWUDS) key-to-disk (KEYDISK) data entry program OF 90-0198

— Site-Specific Water-Use Data System (WUDS) menus OF 90-0198

— The High Plains regional aquifer; estimating 1980 ground water pumpage for irrigation OP-441

— Water-Use Data System (WUDS) OF 90-0198

data processing—engineering geology

earthquakes: Computer programs and data bases useful for prediction of ground motion resulting from earthquakes in California and the conterminous United States OF 91-0338

foundations: Hydraulic analysis of the Scholarie Creek Bridge OP-330

geologic hazards: Earthquake phenomena observation system (EPOS); new JMA system for earthquake prediction and tsunami warning services OF 90-0098

— Plans for national flood frequency by microcomputer OP-530

land subsidence: Simulation of vertical compaction in models of regional ground-water flow OP-615

rock mechanics: Fortran benchmark programs WetC3D and 3DModel4; user's guide OF 91-0328

waterways: Urban watershed data for the United States OP-334

data processing—environmental geology

pollution: A steady-state unsaturated-zone model to simulate pesticide transport WRI 90-4164

— Intelligent data analyzer: herbicide transport in the Cedar River, Iowa OP-1060

— Polluted sediments in Boston Harbor–Massachusetts Bay: progress report on the Boston Harbor data management file OF 91-0331

— Radon potential defined by exploratory data analysis and geographic information systems B 1908

— Summary of data for onsite and laboratory analyses of precipitation runoff from carbonate-rock surfaces, National Acid Precipitation Assessment Program, June 1984 to September 1986 OF 87-0461

data processing—general

applications: Selected papers in the applied computer sciences 1990 B 1908

catalogs: USGS Library/SIGCAT CD-ROM compendium OF 91-0040

computer programs: An installation guide to the PC-based time-series data-management and plotting program BOB OF 90-0634-A

— An installation guide to the PC-based time-series data-management and plotting program BOB OF 90-0634-B

— FREQFIT; a computer program which performs numerical regression and statistical chi-squared goodness of fit analysis OF 89-0139

— Geographic information system analysis applied to mapping subsurface brine, Brookhaven oil field, Mississippi OP-980

— MacLwfTiff: Scitex Hanshake/LWF to compressed TIFF OF 91-0576

— MacTiffLwf: uncompressed TIFF Scitex Hanshake LWF OF 91-0577

— Parity Fixer (PFX): an RSX-11M/M-Plus utility for creating memory parity error regions in system-controlled partitions OF 91-0329

— PSTRANS; a Macintosh II program to convert ARC/INFO postscript to Adobe Illustrator format OF 91-0294

— SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis OF 90-0616-A

— SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis OF 90-0616-B

— SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis OF 90-0616-C

data bases: Using GIS to link health and earth science data bases YR

data handling: Arctic Data Interactive; a hypermedia system YR

— Government data dissemination on CD-ROM OP-1623

— Mass storage system for earth science data YR

geographic information systems: Canadian Centre for Inland Waters, GIS applications OF 91-0020

— Data management systems for the Great Lakes mapping program OF 91-0020

— Evaluating geographic information systems technology OP-393

— GIS data interchange in Michigan OF 91-0020

— GIS development and support for earth sciences OP-809

— GIS production applications in Ontario OF 91-0020

— Knowledge-based GIS techniques applied to geological engineering OP-1079

manuals: An RSX-11M/M-Plus device driver for the Advanced Computer Communications ACP 5100/6100 communications interface OF 91-0262

data processing—geochemistry

chemical analysis: A computer program for semiquantitative mineral analysis by X-ray powder diffraction OP-493

— Computer-generated templates to convert degrees 2Θ to interplanar spacings OP-843

coal: Analytical data for bituminous coals and associated rocks from Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma OF 90-0669

hydrochemistry: User's manual for WATEQ4F, with revised thermodynamic data base and test cases for calculating speciation of major, trace,

and redox elements in natural waters OF 91-0183

igneous rocks: Mineral chemistry of the Pioneer Batholith, Beaverhead County, southwestern Montana; microprobe data tables for feldspar, amphibole, mica, pyroxene, and accessory minerals OF 90-0652

data processing—geochronology

absolute age: Arizona radiometric ages, HyperCard stack OF 90-0704-A

— Arizona radiometric ages, HyperCard stack OF 90-0704-B

— Development of an Alaskan radiocarbon data base as a subset of the International Radiocarbon Data Base (IRDB) B 1946

— UDATE1; a computer program for the calculation of uranium-series isotopic ages OP-881

data processing—geomorphology

landform description: How to construct four paper models that describe island coral reefs OF 91-0131-A

— How to construct four paper models that describe island coral reefs OF 91-0131-B

data processing—geophysical methods

electrical methods: A BASIC program to transform continuous polar dipole-dipole resistivity soundings to half-Schlumberger soundings OP-1170

electromagnetic methods: A synthetic pulse GPR based on a network analyser OF 90-0414

— Ground penetrating radar data processing and modeling OF 90-0414

— Ground penetrating radar system hardware design OF 90-0414

methods: CD ROM archive and atlas production; vehicles from data integration OF 91-0284

remote sensing: Fully automated analysis of reflectance spectra to identify and map minerals using imaging spectrometers OP-180

seismic methods: A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections OF 91-0303-A

— A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections OF 91-0303-B

— A VAX and MS-DOS computer program package for depth conversion of digitized, line-drawing interpretations of seismic sections OF 91-0303-C

— Computer programs in HP 9845 BASIC for modeling and interpreting multiple-layer, plane-interface shallow refraction seismics OF 90-0473

— ISOEDIT; a program for interactive editing of seismic reflection velocity models OF 89-0310-A

— ISOEDIT; a program for interactive editing of seismic reflection velocity models OF 89-0310-B

— Linearized inversion of reflection traveltimes B 1965

— Multichannel data acquisition and processing OP-982

well-logging: Bibliography of well-log applications; cumulative edition (through 1 September 1990) OF 90-0637-A

— Bibliography of well-log applications; cumulative edition (through 1 September 1990) OF 90-0637-B

— Bibliography of well-log applications; cumulative edition (through 1 September 1990) OF 90-0637-C

— FORMATIONTOPS (version 1); a system to retrieve formation tops data OF 90-0530

data processing—geophysical surveys

electromagnetic surveys: Low-frequency ice radar studies on ice streams B and C, West Antarctica OP-475

magnetic surveys: Aeromagnetic gridded data for a portion of the San Jose 1°×2° Quadrangle, California OF 91-0030

well-logging: Geophysical logs and core measurements for forty boreholes at Yucca Mountain, Nevada GP-1001

data processing—hydrogeology

catalogs: The Water Data Sources Directory of the National Water Data Exchange, central region OF 91-0053

— The Water Data Sources Directory of the National Water Data Exchange, northeastern region OF 91-0083

— The Water Data Sources Directory of the National Water Data Exchange, southeastern region OF 90-0185

— The Water Data Sources Directory of the National Water Data Exchange; foreign organizations OF 91-0085

— The Water Data Sources Directory of the NAWDEX, western region OF 90-0599

ground water: A computer program for calculating subregional water budgets using results from the U.S. Geological Survey modular three-dimensional finite-difference ground-water flow model OF 90-0392

— A digital simulation of the glacial-aquifer system in the northern three-fourths of Brown County, South Dakota WRI 88-4198

— A finite-element model for simulation of two-dimensional steady-state ground-water flow in confined aquifers OF 90-0187

— A literature survey of information on well installation and sample collection procedure used in investigations of ground-water contamination by organic compounds OF 90-0378

— An efficient deterministic-probabilistic approach to modeling regional groundwater flow; 2, Application to Owens Valley, California OP-396

— Analysis of ground-water flow in the A-Sand Aquifer at Paramaribo, Suriname, South America WRI 90-4036

— Analysis of the effects of hypothetical changes in ground-water withdrawal from the Floridan aquifer system in the area of Glynn County, Georgia WRI 90-4027

— Assessment of hydrogeologic conditions with emphasis on water quality and wastewater injection, Southwest Sarasota and West Charlotte counties, Florida OF 90-0709

— Compilation of ground-water level measurements obtained by the U.S. Geological Survey in Puerto Rico, 1958-85 OF 88-0701

— Computer software for converting ground-water and water-quality data from the National Water Information System for use in a geographic information system WRI 90-4200

— Computerized stratified random site-selection approaches for design of ground-water-quality sampling network WRI 90-4101

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states P 1409-D

— Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model TWI 06-A2

— Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states OF 91-0479

— Documentation of model input and output values for the geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California OF 91-0482

— Geohydrologic evaluation of the upper part of the Mesaverde Group, northwestern Colorado WRI 90-4020

— Geohydrology and hydrochemistry of the Ozark Plateaus aquifer systems OP-505

— Geohydrology and simulated effects of large ground-water withdrawals on the Mississippi River alluvial aquifer in northwestern Mississippi W 2292

— Geohydrology and simulation of ground-water flow in the Mesilla Basin, Dona Ana County, New Mexico, and El Paso County, Texas OF 88-0305

— Geohydrology of regional aquifer systems in Cretaceous and older rocks underlying the central United States OP-963

— Geohydrology of the Great Plains aquifer system, central United States OP-443

— Geohydrology of the regional aquifer system, western Snake River plain, southwestern Idaho P 1408-G

— Geohydrology, ground-water quality, and simulated ground-water flow, Geauga County, Ohio WRI 90-4026

— Ground-water flow in the New Jersey coastal plain OF 87-0528

— Ground-water information manual; coal mine permit applications OP-868

— Preconditioned conjugate-gradient 2 (PCG2), a computer program for solving ground-water flow equations WRI 90-4048

— Regional evaluation of hydrologic factors and effects of pumping, St. Peter-Jordan Aquifer, Iowa WRI 90-4009

— Selected geologic and hydrologic data for the regional carbonate-bedrock and glacial aquifers in western Ohio OF 90-0590

— Significance of chemical boundaries to ground-water management of coastal aquifers OP-37

— Simulated effects of future pumpage on the High Plains Aquifer, west-central United States OP-1117

— Simulation of ground-water flow in the Cambrian-Ordovician aquifer system in the Chicago-Milwaukee area of the northern Midwest OP-1165

— Simulation of ground-water in coastal southern New Jersey OP-1005

— Simulation of the effects of ground-water withdrawal from a well field adjacent to the Rio Grande, Santa Fe County, New Mexico WRI 89-4184

— Statistical comparisons of ground-water quality underlying different land uses in central Florida OP-894

— The computer model SHARP, a quasi-three-dimensional finite-difference model to simulate freshwater and saltwater flow in layered coastal aquifer systems WRI 90-4130

— The role of a geographic information system in modeling of groundwater flow in the San Juan Basin regional aquifer system, New Mexico, Colorado, Arizona, and Utah OP-559

— Use of electronic data-logging equipment to monitor hydrologic parameters in a humid cave environment in Wind Cave National Park, South Dakota OP-380

hydrology: Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota OF 90-0593

— Applications of hydrologic information automatically extracted from digital elevation models OP-531

— Archiving on-line data to optical disk OF 90-0575

— Assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt by using a simple hydrochemical model WRI 90-4000

— Characterization and simulation of rainfall-runoff relations for headwater basins in western King and Snohomish counties, Washington WRI 89-4052

— Flood simulation for a large reservoir system in the lower Colorado River basin, Texas W 2375

— Geographic information system/watershed model interface OP-298

— Lower Colorado River Accounting System (LCRAS) computer program and documentation OF 91-0179

— Manual for comparing methods of designing hydrologic-data-collection networks OF 90-0389

— Monthly climatic time series data for the Pacific Ocean and western Americas OF 91-0092

— Operational guidelines for assistance centers of the National Water Data Exchange OF 90-0352

— Plan for developing a water-use data program in Rhode Island WRI 90-4207

— Preparation of average annual runoff map of the United States, 1951-80 OF 87-0535

— Regionalization of flood discharges for rural, unregulated streams in New York, excluding Long Island WRI 90-4197

— Review of water-management models and results of simulations for the Truckee-Carson rivers system, California and Nevada OF 90-0393

— Simulation of flood hydrographs for small basins in Missouri WRI 90-4045

— Software quality assurance in the National Water Information System OF 91-0218

— Solute transport with multisegment, equilibrium-controlled reactions; a feed forward simulation method OP-891

— State water-data reports; a digital representation of the hydrologic records of the United States for water-year 1990 OF 91-0463

— Stream-aquifer system in the upper Bear River valley, Wyoming WRI 89-4173

— Users manual for ANNIE, a computer program for interactive hydrologic analyses and data management WRI 89-4080

data processing—maps

automatic cartography: A user's manual for a method of map scanning and digital editing for thematic map production and data-base construction C 1054

— An interactive program to display user-generated or file-based maps on a personal computer monitor OF 87-0676

— Cartographic production for the Louisiana barrier island erosion study; 1, Processing land features OF 91-0272

— Cartographic production for the Louisiana barrier island erosion study; 4, Processing contours for color fill OF 91-0305

— Computer-assisted map revision; Bolivia YR

— Conversion of raster image data to vector cartographic data OF 91-0304

— Digital revision of the New Jersey State base map YR

— Digital spatial data technology and applications B 1908

— DLGGSM: a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base OF 90-0459-A

— DLGGSM: a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base OF 90-0459-B

— E2MCOD: a program to determine and list digital line graph (DLG) line attributes from a CD-ROM titled 1:2,000,000-scale digital line graph (DLG) and E2MGSM: a program to retrieve DLG line data from a CD-ROM titled 1:2,000,000-scale digital line graph and convert those data to a GSMAP database OF 91-0345

— Generating color separations of geologic maps on the computer B 1908

— GEOTRANS: an interface program from GEOPROGRAM to a geographic information system OF 90-0615

— GSMAP system version 7.0: graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates OF 91-0001-A

— GSMAP system version 7.0: graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates OF 91-0001-B

— GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS) OF 90-0539-A

— GSMGRASS: a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS) OF 90-0539-B

— McMap; version 2.0 basemap generation for the Apple Macintosh OF 90-0452-A

— McMap; version 2.0 basemap generation for the Apple Macintosh OF 90-0452-B

— Notes on a method to transform digitized coordinates to geographic coordinates OF 91-0017

— Promoting the spatial data transfer standard OF 91-0020

— Quality map products from digital data YR

— Transportation planning and geologic maps YR

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-A

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-B

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-C

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-D

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-E

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-F

data bases: U.S. Geological Survey Eastern Mapping Center; Experience in constructing a digital cartographic data base OP-1020

environmental geology maps: Great Lakes coastal mapping workshop OF 91-0020

information systems: Building partnerships for geographic data sharing YR

libraries: Mapping system technology for tomorrow's geoscience library OP-1580

topographic maps: Continuing evolution in mapping technology YR

— Your best view of the U.S. OP-1051

data processing—methods

Email: Electronic mail YR

geographic information systems: Use of a geographic information system for the analysis of water resources conditions and issues OP-734

graphic methods: Applications of user-supplied transformations in computer-graphics programs B 1908

— Generation and distribution of graphical depictions of volcanic ash plumes C 1065

— GSMROSE, a program to plot rose diagrams from linear data in GSDRAW and GSMAP data bases, using a microcomputer (IBM PC or compatible) and plotter OF 90-0488-A

— GSMROSE, a program to plot rose diagrams from linear data in GSDRAW and GSMAP data bases, using a microcomputer (IBM PC or compatible) and plotter OF 90-0488-B

— Linking digital technology to printing technology for producing publication-quality color graphics B 1908

— Microcomputer graphic presentations YR

— Technical manual for a UNIX-based device-independent vector graphic system OF 91-0002

statistical analysis: An empirical coverage test for the g-sample problem OP-790

— Less than obvious; statistical treatment of data below the detection limit OP-446

data processing—oceanography

estuaries: Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida W 2376

— Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida OF 88-0076

data processing—petrology

igneous rocks: Compilation of modal analyses of volcanic rocks from the Nevada Test Site area, Nye County, Nevada OF 90-0087

data processing—sedimentary petrology

sedimentary rocks: Archive collections OF 89-0020

— Chemical composition of ferromanganese crusts in the world ocean; a review and comprehensive database OF 89-0020

— Computer database development OF 89-0020

— Data OF 89-0020

— Data interpretation and mapping OF 89-0020

data processing—seismology

earthquakes: Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas OF 90-0683

— Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas OF 90-0683-A

— Seismic monitoring in Southern California; plans for the future and present realities OF 90-0098

— Spatial variations in stress within the 1987 Whittier Narrows, California, aftershock sequence; new techniques and results OP-719

elastic waves: Estimating trajectories of supersonic objects using arrival times of sonic booms OF 91-0048

methods: Replace the HYPO71 format OP-622

observatories: Jordan seismic system; final project OF 90-0667

seismic sources: A C language implementation of the SRO (Murdock) detector/analyzer OF 87-0158

volcanology: A networked computer configuration for seismic monitoring of volcanic eruptions OF 90-0422

data processing—stratigraphy

Quaternary: The use of total lake-surface area as an indicator of climatic change; examples from the Lahontan Basin OP-81

data processing—structural geology

fractures: Review of the relationship of fractures to stress systems and their implications for remote sensing and geologic spatial analysis OP-1910

data processing—volcanology

instruments: The Hawaiian Volcano Observatory polling telemetry system for low frequency data acquisition OF 90-0525

volcanoes: Global summary of volcano-deformation monitoring OF 90-0651

debris flows *see under* slope stability

deformation *see* geophysics; structural analysis

deformation—experimental studies

compression: Comparison of pore-water extraction by triaxial compression and high-speed centrifugation methods OP-1162

shear: Comparative geometry of the San Andreas Fault, California, and laboratory fault zones OP-739

strain: Multicycle slip distribution along a laboratory fault OP-567

stress: Quasi-static fault growth and shear fracture energy in granite OP-645

deformation—field studies

cataclasis: A reinterpretation of the timing, position, and significance of part of the Sacramento Mountains detachment fault, southeastern California OP-970

compression: Bowers Swell; evidence for a zone of compressive deformation concentric with Bowers Ridge, Bering Sea OP-678

creep: Earthquake explanations OP-604

— Historic creep rate and potential for seismic slip along the Hayward Fault, California OP-632

— The velocity field along the San Andreas Fault in Central and Southern California OP-641

ductile deformation: Late Cretaceous and early Tertiary plutonism and deformation in the Skagit gneiss complex, North Cascade Range, Washington and British Columbia OP-427

fault zones: Geology of the Northern Andes; an overview OP-154

recrystallization: Neodymium isotopic evidence for early Proterozoic units in the Watersmeet gneiss dome, northern Michigan. Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin B 1904-G,H

— Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin B 1904-G,H

shear: Shear sense in mylonites, and implications for transport of the Rampart Assemblage (Tozitna Terrane), Tanana Quadrangle, east-central Alaska B 1946

— The nature and significance of post-thermal-peak shear zones west of the Great Tonalite Sill near Juneau, southeastern Alaska B 1946

strain: Comparative strain measurement of the NRLM tunnel by an interferometer and a distance meter OF 90-0098

— Deformation of landslide surfaces as indicators of movement processes OF 91-0108

— Global summary of volcano-deformation monitoring OF 90-0651

— Strain accumulation along the Denali Fault at the Nenana River and Delta River crossings, Alaska OP-918

— Strain accumulation in western Washington OP-920

— Strain measurements and the potential for a great subduction earthquake off the coast of Washington OP-917

— Use of longitudinal strain in identifying driving and resisting elements of landslides OP-66

stress: In situ stress analysis of wellbore breakouts from Oklahoma and the Texas Panhandle B 1866-F

deformation—theoretical studies

creep: Implications of fault creep studies for the mechanics of faulting OF 90-0098

Delaware—economic geology

water resources: Water use in the St. Jones River basin, Kent County, Delaware, 1983-86 WRI 90-4094

Delaware—engineering geology

waterways: Report of the River Master of the Delaware River for the period December 1, 1988 to November 30, 1989 OF 90-0551

Delaware—environmental geology

geologic hazards: Delaware; floods and droughts W 2375

pollution: Distribution of dissolved atrazine and two metabolites in the unconfined aquifer, southeastern Delaware OF 91-0088

Delaware—hydrogeology

ground water: Chlorofluoromethanes (CCl_3F and CCl_2F_2); use as an age-dating tool and hydrologic tracer in shallow ground-water systems OF 91-0088

— Effects of land use and ground-water flow on shallow ground-water quality, Delmarva Peninsula, Delaware, Maryland, and Virginia OP-1441

— Hydrogeologic framework of the coastal plain of Maryland, Delaware, and the District of Columbia P 1404-E

maps: Altitude and configuration of the water-level surface in the lower Paleozoic and Precambrian crystalline rocks of the Red Clay Creek basin, Chester County, Pennsylvania, and New Castle County, Delaware, June through October 1989 and March 1990 WRI 91-4004

— Climatic atlas of the Delaware River basin P 1392

Delaware—seismology

maps: Seismicity map of the states of Delaware and Maryland MF-1281

deltas *see under* fluvial features *under* geomorphology

dendrochronology *see* tree rings

deposition of ores *see* mineral deposits, genesis

deuterium *see* hydrogen; tritium

deuterium—geochemistry

alunite: The stable isotope geochemistry of acid-sulfate alteration and vein forming alunite OF 91-0257

gold ores: Accretionary tectonics, fluid migration, and gold genesis in the Pacific Border Ranges and Coast Mountains, southern Alaska OP-356

— Stable isotope systematics and magmatic and hydrothermal processes in the Summitville, CO gold deposit OF 90-0626

metal ores: Stable isotope systematics of epithermal mercury-antimony mineralization, southwestern Alaska B 1950

ore-forming fluids: Oxygen, hydrogen, and sulfur isotope studies in the Juneau gold belt, southeastern Alaska; constraints on the origin of hydrothermal fluids OP-357

plutonic rocks: Evolution of hydrothermal fluids in the Alta Stock, central Wasatch Mountains, Utah B 1977

skarn: Tertiary meteoric hydrothermal systems and their relation to ore deposition, northwestern United States and southern British Columbia OP-205

thermal waters: Sources and fractionation processes influencing the isotopic distribution of H, O and C in the Long Valley hydrothermal system, California, U.S.A. OP-1133

water: Estimating groundwater exchange with lakes: 1, The stable isotope mass balance method OP-581

— Isotope content and temperature of precipitation in southern Nevada, August 1983-August 1986 OF 87-0463

— Stable isotopes in precipitation and ground water in the Yucca Mountain region, southern Nevada; paleoclimatic implications OP-79

Devonian *see under* stratigraphy *under* Alabama; Alaska; Belgium; British Columbia; France; Germany; Michigan; Montana; Morocco; Nevada; North America; Ontario; Utah; Vermont; Western U.S.; Wisconsin

Devonian—sedimentary petrology

sedimentation: Unusually large subsidence and sea-level events during middle Paleozoic time; new evidence supporting mantle convection models for supercontinent assembly: Comment OP-664

Devonian—stratigraphy

biogeography: Early and Middle Devonian gastropod biogeography OP-95

— Rugose coral distribution as a test of Devonian palaeogeographic models OP-812

diabase *see under* igneous rocks

diagenesis *see* sedimentation

diagenesis—cementation

effects: Evolution of porosity in "deep" sandstones of the Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming OF 90-0078

lithofacies: Shoreline deposits and diagenesis resulting from two late Pleistocene highstand near +5 and +6 metres, Durban, South Africa OP-199

precipitation: Origin of late dolomite cement by CO_2-saturated deep basin brines: evidence from the Ozark region, central United States OP-612

sandstone: Diagenesis of the Marshall Sandstone OP-1970

diagenesis—dolomitization

hardground: A dolomitized shelfedge hardground in the northern Gulf of Mexico OP-327

ore-forming fluids: The significance of Rb-Sr glauconite ages, Bonneterre Formation, Missouri; Late Devonian-Early Mississippian brine migration in the Midcontinent OP-1019

diagenesis—effects

absolute age: High-latitude application of $^{87}Sr/^{86}Sr$: correlation of Nuwok beds on North Slope, Alaska, to standard Oligocene chronostratigraphy: Comment OP-675

aquifers: Ground-water chemical evolution and diagenetic processes in the upper Floridan Aquifer, southern South Carolina and northeastern Georgia OF 89-0027

reservoir properties: Petrology, diagenesis, and sedimentology of oil reservoirs in Upper Cretaceous Shannon Sandstone Beds, Powder River basin, Wyoming B 1917-C

diagenesis—environment

coastal environment: Shoreline deposits and diagenesis resulting from two late Pleistocene highstand near +5 and +6 metres, Durban, South Africa OP-199

lacustrine environment: Uranium and diagenesis in evaporitic lacustrine mudstone of the Oligocene White River Group, Dawes County, Nebraska B 1956

diagenesis—geochemistry

organic materials: Organic ligands and metal-organic complexing in ore fluids of sedimentary origin C 1058

— The role of organic matter in weathering processes C 1033

E

earthquakes—aftershocks

probability: Applications of the USGS aftershock sequence model and guidelines for drafting aftershock forecasts OF 90-0341

stress drops: High-frequency spectral falloff of earthquakes, fractal dimension of complex rupture, b value, and the scaling of strength on faults OP-323

earthquakes—causes

pore pressure: Earthquakes triggered by fluid extraction OP-1840

earthquakes—detection

programs: Earthquake research in the U.S. Geological Survey OP-436

earthquakes—effects

ground motion: Incorporation of site effects in stochastic source models for prediction of earthquake ground motion OP-546

— Observations constraining near-source ground motion estimated from locally recorded seismograms OP-701

— Summary comments; practical ground motion estimates OP-142

— The strong-motion network operated by the U.S. Geological Survey OP-670

rupture: Evidence for and implications of self-healing pulses of slip in earthquake rupture OP-439

earthquakes—epicenters

data: Earthquake data report, April 1990 OF 90-0604-A

— Earthquake data report, April 1990 OF 90-0604-B

— Earthquake data report, August 1990 OF 90-0608-A

— Earthquake data report, August 1990 OF 90-0608-B

— Earthquake data report, December 1990 OF 90-0612-A

— Earthquake data report, December 1990 OF 90-0612-B

— Earthquake data report, July 1990 OF 90-0607-A

— Earthquake data report, July 1990 OF 90-0607-B

— Earthquake data report, June 1990 OF 90-0606-A

— Earthquake data report, June 1990 OF 90-0606-B

— Earthquake data report, March 1990 OF 90-0603-A

— Earthquake data report, March 1990 OF 90-0603-B

— Earthquake data report, May 1990 OF 90-0605-A

— Earthquake data report, May 1990 OF 90-0605-B

— Earthquake data report, November 1990 OF 90-0611-A

— Earthquake data report, November 1990 OF 90-0611-B

— Earthquake data report, October 1990 OF 90-0610-A

— Earthquake data report, October 1990 OF 90-0610-B

— Earthquake data report, September 1990 OF 90-0609-A

— Earthquake data report, September 1990 OF 90-0609-B

— Preliminary determination of epicenters monthly listing April-June 1990 OF 90-0600-B

— Preliminary determination of epicenters monthly listing January-March 1990 OF 90-0600-A

— Preliminary determination of epicenters monthly listing July-September 1990 OF 90-0600-C

— Preliminary determination of epicenters monthly listing October-December 1989 OF 89-0600-D

— Preliminary determination of epicenters monthly listing October-December 1990 OF 90-0600-D

— Preliminary determination of epicenters. Monthly listing for April 1991 PDE

— Preliminary determination of epicenters. Monthly listing for August 1990 PDE

— Preliminary determination of epicenters. Monthly listing for December 1990 PDE

— Preliminary determination of epicenters. Monthly listing for February 1991 PDE

— Preliminary determination of epicenters. Monthly listing for January 1991 PDE

— Preliminary determination of epicenters. Monthly listing for July 1990 PDE

— Preliminary determination of epicenters. Monthly listing for June 1991 PDE

— Preliminary determination of epicenters. Monthly listing for March 1991 PDE

— Preliminary determination of epicenters. Monthly listing for May 1991 PDE

— Preliminary determination of epicenters. Monthly listing for November 1990 PDE

— Preliminary determination of epicenters. Monthly listing for October 1990 PDE

— Preliminary determination of epicenters. Monthly listing for September 1990 PDE

identification: Traveltimes for global earthquake location and phase identification OP-558

earthquakes—focal mechanism

fault planes: Fault orientations in extensional and conjugate strike-slip environments and their implications OP-1048

laboratory studies: Multicycle slip distribution along a laboratory fault OP-567

theoretical studies: Deterministic frequency-wavenumber methods and direct measurements of rupture propagation during earthquakes using a dense array; theory and methods OP-362

earthquakes—focus

phase velocity: The effect of S-wave arrival times on the accuracy of hypocenter estimation OP-365

earthquakes—general

popular geology: Earthquakes and Volcanoes, v. 22, no. 2 EV

— Earthquakes and Volcanoes, v. 22, no. 3 EV

— Earthquakes and Volcanoes, v. 22, no. 4 EV

earthquakes—genesis

periodicity: Repeating earthquakes: characteristics and implications OF 90-0098

subduction zones: Loci and maximum size of thrust earthquakes and the mechanics of the shallow region of subduction zones OF 90-0098

— Mantle phase changes and deep-earthquake faulting in subducting lithosphere OP-571

earthquakes—magnitude

models: Stochastic summation of empirical Green's functions OP-1125

earthquakes—prediction

aftershocks: Prediction of large aftershocks on the basis of quiescence OF 90-0098

current research: Conclusions from social science research on earthquake prediction research in the United States for the period of 1974 through 1988 OF 90-0098

— National Earthquake Hazards Reduction Program, summaries of technical reports: Volume XXIX OF 90-0054

— National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXX OF 90-0334

— National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXXI OF 90-0680

— Proceedings of Conference XLVI: the 7th U.S.–Japan seminar on Earthquake prediction OF 90-0098

— Summary: seventh U.S.–Japan earthquake prediction research seminar; use of real-time earthquake information for hazard warning OF 90-0098

foreshocks: Foreshocks, aftershocks and earthquake recurrence OF 90-0098

ground motion: Optimum strong-motion array geometry for source inversion OP-504

observations: Coseismic changes in groundwater radon OF 90-0098

paleoseismology: Studying prehistoric earthquakes may help reduce hazards of future earthquakes OP-206

precursors: Classification of earthquake precursors and regularity of precursor appearance OF 90-0098

— Earthquake prediction; the seismic cycle pursued OP-633

— Removal of barometric pressure response from water level data OP-853

— To capture an earthquake OP-274

programs: New directions in the U.S. earthquake prediction program OF 90-0098

shallow-focus earthquakes: Regional variation in the seismicity before large shallow earthquakes OF 90-0098

East Pacific Ocean Islands—geochemistry

volcanic rocks: U-Th-Pb and He isotopic variations in volcanic rocks from the Hawaiian and Cook-Austral Chains OP-1899

Eastern Hemisphere *see* Africa; Antarctic Ocean; Antarctica; Arctic Ocean; Asia; Atlantic Ocean; Europe; Indian Ocean; USSR

Eastern U.S. *see* Connecticut; Delaware; District of Columbia; Florida; Georgia; Maine; Maryland; Massachusetts; New England; New Hampshire; New Jersey; New York; North Carolina; Pennsylvania; Rhode Island; South Carolina; Vermont; Virginia; West Virginia

Eastern U.S.—economic geology

petroleum: Organic geochemistry of Jurassic shales from the Newark Supergroup; maturation by hydrothermal fluids OP-1552

water resources: The Water Data Sources Directory of the National Water Data Exchange, northeastern region OF 91-0083

Eastern U.S.—environmental geology

ecology: Hydrologic effects of climate change in the Delaware River basin OP-1086

pollution: Summary of data for onsite and laboratory analyses of precipitation runoff from carbonate-rock surfaces, National Acid Precipitation Assessment Program, June 1984 to September 1986 OF 87-0461

Eastern U.S.—geomorphology

landform description: Contrasting soils and landscapes of the Piedmont and coastal plain, Eastern United States OP-677

— Extraction of terrain-features from digital elevation models OP-848

Eastern U.S.—hydrogeology

hydrology: Applications of hydrologic information automatically extracted from digital elevation models OP-531

— Climate factor for small-basin flood frequency OP-629

— Effects of climate change on watershed runoff OP-1151

— Simulation of precipitation by weather-type analysis OP-692

Eastern U.S.—oceanography

continental margin: Atlas of the U.S. Exclusive Economic Zone, Atlantic continental margin I-2054

— Submarine processes of the middle Atlantic continental rise based on GLORIA imagery OP-926

— Toward a capability for predicting transport of sediments on the continental shelf and slope and in submarine canyons along the northeast coast of the United States C 1033

continental shelf: Sediment movement along the U.S. east coast continental shelf; I. Estimates of bottom stress using the Grant-Madsen model and near-bottom wave and current measurements OP-657

— Sediment movement along the U.S. east coast continental shelf; II, Modelling suspended sediment concentration and transport rate during storms OP-658

estuaries: Effects of runoff changes and sea level rise on salinity in the Delaware River estuary OP-1102

Eastern U.S.—stratigraphy

Carboniferous: A climate change model for the origin of Carboniferous coal-bearing strata in the Eastern United States OP-1275

maps: Quaternary geologic map of the Blue Ridge 4° × 6° Quadrangle, United States I-1420 (NJ-17)

Quaternary: Quaternary geologic map of the Blue Ridge 4° × 6° Quadrangle, United States I-1420 (NJ-17)

echinoderms—echinoids

Pliocene: Reconnaissance geology of a Pliocene marine embayment near Loreto, Baja California Sur, Mexico OP-709

ecology *see under* birds; fish; ostracods; plants
see under atmospheric precipitation *under* hydrology
see under environmental geology *under* Arctic region; California; Colorado; Eastern U.S.; education; Florida; Great Lakes region; New York; Washington
see under limnology *under* hydrology
see under reclamation *under* land use
see under rivers and streams *under* hydrology
see under rodents *under* mammals

ecology—analysis

lacustrine environment: Chemical characteristics of aquatic fulvic acid isolated from Lake Fryxell, Antarctica OP-7

ecology—changes

aquatic environment: Aquatic cycling of selenium; implications for fish and wildlife C 1064

— Preliminary results of the Department of the Interior's irrigation drainage studies C 1064

arid environment: Proceedings of the 1990 Billings land reclamation symposium on Selenium in arid and semiarid environments, Western United States C 1064

— Selenium issues in drastically disturbed land reclamation planning in arid and semiarid environments C 1064

climate: Effects of climatic change on the Thornthwaite moisture index OP-694

estuarine environment: Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida W 2376

— Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida OF 88-0076

greenhouse effect: Hydrologic effects of climate change in the Delaware River basin OP-1086

pollution: Geologic sources, mobilization, and transport of selenium from the California Coast Ranges to the western San Joaquin Valley; a reconnaissance study WRI 90-4070

terrestrial environment: Ground-water levels and quality at Crex Meadows Wildlife Area, Burnett County, Wisconsin WRI 89-4129

wetlands: Hydrologic effects of well-field operations in a wetland, Dade County, Florida WRI 90-4143

— Hydrologic relations between streamflow and subalpine wetlands in Grand County, Colorado WRI 90-4129

ecology—fish

fluvial environment: Available habitat for salmon and steelhead trout in the lower Puyallup, White, and Carbon rivers in western Washington WRI 89-4125

— Fishes in the forested flood plain of the Ochlockonee River, Florida, during flood and drought conditions WRI 90-4202

ecology—mammals

terrestrial environment: Ground-squirrel mounds and related patterned ground along the San Andreas Fault in Central California OF 91-0149

ecology—observations

aquatic environment: Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Angostura Reclamation Unit, southwestern South Dakota, 1988-89 WRI 90-4152

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Belle Fourche Reclamation Project, western South Dakota, 1988-89 WRI 90-4192

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Klamath Basin, California and Oregon, 1988-89 WRI 90-4203

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Riverton Reclamation Project, Wyoming, 1988-89 WRI 90-4187

estuarine environment: Chemical, tissue, and physical data from water and bottom material in the lower Calcasieu River, Louisiana OF 89-0420

— Description of salinity, temperature, chlorophyll, suspended-sediment, and velocity data,

South San Francisco Bay, California, February-April 1987 OF 89-0619

— Louisiana hydrologic atlas map No. 6; water-quality survey of the Barataria Basin, 1988 WRI 90-4170

— Plankton studies in San Francisco Bay, California; XI, Chlorophyll distribution and hydrographic properties of San Francisco Bay, 1988-89 OF 90-0562

— Water-quality trends and basin activities and characteristics for the Albemarle-Pamlico estuarine system, North Carolina and Virginia OF 90-0398

fluvial environment: Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the American Falls Reservoir area, Idaho, 1988-89 WRI 90-4120

— Surface water-quality assessment of the Kentucky River basin, Kentucky; analysis of available water-quality data through 1986 OF 90-0360

— Transport of invertebrates and detritus in streams OP-1061

— Variation in streambed material, bedload and benthic invertebrates OP-1092

— Water-quality and sediment-transport characteristics in Kenney Reservoir, White River basin, northwestern Colorado WRI 90-4071

lagoonal environment: Sediment facies of Enewetak Atoll lagoon P 1513-B

paludal environment: Concentrations of metals in bed material in the area of Congaree Swamp National Monument and in water in Cedar Creek, Richland County, South Carolina OF 90-0370

— Geohydrology and chemical quality of ground water, San Bernardino National Wildlife Refuge, Arizona WRI 90-4190

terrestrial environment: Cooperative studies by the U.S. Geological Survey and the U.S. National Park Service in environmental biogeochemistry C 1033

ecology—ostracods

fresh-water environment: Seasonal occurrences of ostracodes in lakes and streams of the San Francisco Peninsula, California OF 91-0118

marine environment: Tectonic events and climatic change; opportunities for speciation in Cenozoic marine Ostracoda OP-210

ecology—plants

arid environment: Holocene vegetation of the Hornaday Mountains of northwestern Sonora, Mexico OP-1082

— Soil water and vegetation responses to precipitation and changes in depth to ground water in Owens Valley, California W 2370-G

estuarine environment: Data on the distribution and abundance of submersed aquatic vegetation in the tidal Potomac River and transition zone of the Potomac Estuary, Maryland, Virginia, and the District of Columbia, 1988 OF 90-0123

— Phytoplankton productivity and biomass in the Charlotte Harbor estuarine system, Florida OP-714

paludal environment: Analytical results for sedge samples collected on the wetland receiving acid mine drainage waters from St. Kevin Gulch, Leadville, Colorado OF 91-0126

terrestrial environment: Seasonal and spatial biogeochemical trends for chaparral vegetation and soil geochemistry in the Santa Monica Mountains National Recreation Area, CA OF 91-0005

economic geology—bibliography

coal: Bibliography of publications containing major, minor, and trace element data from the National Coal Resources Data System OF 91-0123

petroleum: USGS Branch of Petroleum Geology bibliography, 1989 OF 90-0674

economic geology—data processing

computer programs: A microcomputer program for energy assessment and aggregation using the triangular probability distribution OP-211

graphic display: Examples of graphical data displays used in the resource study B 1942

petroleum: FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model OF 90-0509-A

— FASPU English and metric version; analytic petroleum resource appraisal microcomputer programs for play analysis using a reservoir-engineering model OF 90-0509-B

— FORMATIONTOPS (version 1); a system to retrieve formation tops data OF 90-0530

economic geology—history

emerald: Geology of the world emerald deposits; a brief review OP-550

economic geology—practice

associations: Scientific-society assistance B 1958

economic geology—symposia

coal: Peat and coal; origin, facies, and coalification OP-660

gold ores: Introduction to a workshop on Gold deposits related to greenstone belts in Brazil: Belo Horizonte, Brazil, 1986 B 1980-A

industrial minerals: Industrial minerals in California; economic importance, present availability, and future development B 1958

mineral resources: Palynology of ore deposits OP-874

Ecuador—economic geology

gold ores: A reconnaissance study of gold mineralization associated with garnet skarn at Nambija, Zamora Province, Ecuador C 1062

education—economic geology

college-level education: Examples of applied research B 1958

— Image problems and the role of the university community B 1958

popular geology: A case study of a public resource education program in Nevada B 1958

— Educating the public about industrial-mineral issues B 1958

education—environmental geology

ecology: Education and global change in the geosphere OP-1958

popular geology: Natural hazards and public perception: earth scientists can make the difference OP-810

education—general

college-level education: Cooperative activities of the U.S. Geological Survey with Historically Black Colleges and Universities, fiscal years 1983-90 OF 91-0093

field trips: Geovideos for teacher training and field trip planning OP-1332

objectives: Does the Federal government have a role in science education? Yes! OP-1729

— Innovative education programs of the U.S. Geological Survey's Western region OP-1417

— Role of the federal government in geoscience education OP-811

education—geomorphology

materials: How to construct four paper models that describe island coral reefs OF 91-0131-A

— How to construct four paper models that describe island coral reefs OF 91-0131-B

education—hydrogeology

materials: A study guide for a beginning course in ground-water hydrology; Part I, Course participants OF 90-0183

education—volcanology

materials: Make your own paper model of a volcano OF 91-0115-A

— Make your own paper model of a volcano OF 91-0115-B

Egypt—geochronology

Precambrian: Geology, age, and origin of the Meatiq Dome; implications for the Precambrian stratigraphy and tectonic evolution of the Eastern Desert of Egypt OP-1029

Egypt—hydrogeology

ground water: Application of geophysical well log analysis to characterization of aquifers in the Sinai region, Republic of Egypt WRI 90-4194

Egypt—structural geology

tectonics: Geology, age, and origin of the Meatiq Dome; implications for the Precambrian stra-

Florida—economic geology

titanium ores: Induced-polarization response of some titanium-bearing placer deposits in the Southeastern United States OP-1160

water resources: Public-supply water use in Florida, 1987 OF 90-0596

— Water resources activities in Florida, 1990-91 OF 91-0078

Florida—engineering geology

land subsidence: Examples of sinkhole subsurface structure, in Florida, as revealed by ground penetrating radar OF 90-0414

Florida—environmental geology

ecology: Fishes in the forested flood plain of the Ochlockonee River, Florida, during flood and drought conditions WRI 90-4202

geologic hazards: Florida; floods and droughts W 2375

pollution: Application of geophysical techniques for assessing ground-water contamination near a landfill at Stuart, Florida OP-893

— Potential for contamination of the upper Floridan Aquifer in west-central Florida OP-1893

— Quantity and quality of stormwater runoff from western Daytona Beach, Florida, and adjacent areas WRI 90-4002

Florida—geochemistry

isotopes: Radium and radon in Charlotte Harbor Estuary, Florida OP-727

trace elements: Cooperative studies by the U.S. Geological Survey and the U.S. National Park Service in environmental biogeochemistry C 1033

Florida—geophysical surveys

electromagnetic surveys: Very low frequency electromagnetics mapping of a freshwater lens at Key West, Florida OP-591

seismic surveys: Seismic stratigraphy of the western Florida shelf OP-1203

Florida—hydrogeology

ground water: An assessment of the flow of variable-salinity ground water in the middle confining unit of the Floridan aquifer system, west-central Florida WRI 89-4142

— Aqueous geochemistry of the Biscayne Aquifer, Southeast Florida OP-1773

— Assessment of hydrogeologic conditions with emphasis on water quality and wastewater injection, Southwest Sarasota and West Charlotte counties, Florida OF 90-0709

— Calibration and sensitivity analysis of a ground-water flow model of the coastal lowlands aquifer system in parts of Louisiana, Mississippi, Alabama, and Florida WRI 89-4189

— Effect of spray irrigation of treated wastewater on water quality of the surficial aquifer system, Reedy Creek Improvement District, central Florida WRI 88-4174

— Geohydrologic framework and an analysis of a well-plugging program, Lee County, Florida WRI 90-4063

— Geohydrologic units of the coastal lowlands aquifer system, south-central United States OF 90-0173

— Geohydrology and regional ground-water flow of the coastal lowlands aquifer system in parts of Louisiana, Mississippi, Alabama, and Florida; a preliminary analysis WRI 88-4100

— Geology, hydrology, and water quality of the surficial aquifer system in Volusia County, Florida WRI 90-4069

— Ground water atlas of the United States: Segment 6, Alabama, Florida, Georgia, and South Carolina HA-0730-G

— Hydrologic effects of well-field operations in a wetland, Dade County, Florida WRI 90-4143

— Potential for ground-water development in central Volusia County, Florida WRI 90-4010

— Potential saltwater intrusion into freshwater aquifers during exploration for and mining of phosphorite off the Southeastern United States C 1033

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1989 OF 90-0188

— Statistical comparisons of ground-water quality underlying different land uses in central Florida OP-894

— Summary of hydrogeologic, water-quality, and biological data from two small basins, Southeast Hillsborough County, Florida OF 89-0395

— Very low frequency electromagnetics mapping of a freshwater lens at Key West, Florida OP-591

— Water-resources potential of the freshwater lens at Key West, Florida WRI 90-4115

hydrology: A method to estimate canal leakage to the Biscayne Aquifer, Dade County, Florida WRI 90-4135

— National Water-Quality Assessment Program: the Georgia-Florida coastal plain OF 91-0152

— Preliminary report on the hydrology of Lake Five-O and vicinity, Bay County, Florida WRI 90-4148

maps: Ground-water recharge in Florida; a pilot study in Okaloosa, Pasco, and Volusia counties WRI 90-4195

— Ground-water sources and 1985 withdrawals in Florida OP-196

— Potentiometric surface of the intermediate aquifer system, west-central Florida, May 1990 OF 90-0555

— Potentiometric surface of the intermediate aquifer system, west-central Florida, September 1990 OF 91-0087

— Potentiometric surface of the upper Floridan Aquifer in the Northwest Florida Water Management District, May 1990 OF 90-0586

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, May 1990 OF 90-0557

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1989 OF 90-0188

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1990 OF 91-0190

— Potentiometric surface of the upper Floridan Aquifer in the Suwannee River Water Management District, Florida, May 1990 OF 90-0582

— Potentiometric surface of the upper Floridan Aquifer, west-central Florida, May 1990 OF 90-0556

— Potentiometric surface of the Upper Floridan Aquifer, west-central Florida, September 1990 OF 91-0090

Florida—oceanography

continental margin: Seabed measurements of modern corrosion rates on the Florida Escarpment OP-806

estuaries: Phytoplankton productivity and biomass in the Charlotte Harbor estuarine system, Florida OP-714

— Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida W 2376

— Tidal-flow, circulation, and flushing changes caused by dredge and fill in Hillsborough Bay, Florida OF 88-0076

reefs: Multiple outer-reef tracts along the South Florida bank margin: outlier reefs, a new windward-margin model OP-630

sedimentation: Carbonate slope and platform accumulations; lower Florida Keys OP-1847

— High-energy carbonate-sand accumulation, the Quicksands, Southwest Florida Keys OP-336

— Sedimentological effects of strong southward flow in the Straits of Florida OP-1404

Florida—sedimentary petrology

sediments: Organic geochemical studies of the humification process in low-moor peat OP-424

Florida—stratigraphy

Eocene: Anaerobic diagenesis within Recent, Pleistocene, and Eocene marine carbonate frameworks OP-910

G

gems—occurrence

global: Geology of the world emerald deposits; a brief review OP-550

genesis of ore deposits *see* mineral deposits, genesis

geochemical methods *see under* mineral assessment
see under mineral assessment *under* gold ores; metal ores; mineral resources

geochemical prospecting *see* geochemical methods

geochemistry—bibliography

coal: Bibliography of publications containing major, minor, and trace element data from the National Coal Resources Data System OF 91-0123

environment: Bibliography of selected geochemical studies of the environment by the U.S. Geological Survey C 1033

organic materials: Bibliography on sampling ground water for organic compounds OF 90-0564

geochemistry—classification

toxic materials: Properties and hazards of 108 selected substances; 1990 edition OF 90-0408

geochemistry—data processing

hydrochemistry: User's manual for WATEQ4F, with revised thermodynamic data base and test cases for calculating speciation of major, trace, and redox elements in natural waters OF 91-0183

geochemistry—geochemical cycle

carbon: Geochemistry of dissolved inorganic carbon in a coastal plain aquifer; 2, Modeling carbon sources, sinks, and $\delta^{13}C$ evolution OP-711

— Influence of deep-sea benthic processes on atmospheric CO_2 OP-1031

— Pedogenic isotopic indicators of climate and carbon cycling in Fish Lake valley, Nevada OF 91-0296

— Volcanology: Etna's greenhouse pump OP-343

methane: Consumption of atmospheric methane in soils of central Panama; effects of agricultural development OP-554

selenium: Aquatic cycling of selenium; implications for fish and wildlife C 1064

— Proceedings of the 1990 Billings land reclamation symposium on Selenium in arid and semiarid environments, Western United States C 1064

— Selenium geochemistry; a conspectus C 1064

— Selenium mobility in soils and its absorption, translocation, and metabolism in plants C 1064

— Solubility, sorption, and redox relationships for selenium in reclaimed environments; a review C 1064

vanadium: Vanadium accumulation in carbonaceous rocks; a review of geochemical controls during deposition and diagenesis OP-113

geochemistry—methods

monitoring: Monitoring geochemical processes with geophysics C 1033

sample preparation: A method for the concentration of fine-grained rutile (TiO_2) from sediment and sedimentary rocks by chemical leaching OP-194

spectroscopy: The use of spectroscopy in environmental geochemical studies C 1033

geochemistry—practice

programs: Environmental Geochemistry Program C 1033

geochemistry—processes

chemical fractionation: Organic ligands and metal-organic complexing in ore fluids of sedimentary origin C 1058

— Subalkaline andesite from Valu Fa Ridge, a back-arc spreading center in southern Lau Basin: petrogenesis, comparative chemistry, and tectonic implications OP-1080

complexing: Surface complexation modeling in aqueous geochemistry OP-225

diffusion: Evidence for the diffusion of aquatic fulvic acid from the sediments of Lake Fryxell, Antarctica OP-8

hydration: Rehydration of desiccated Argonne premium coal samples OF 90-0482

— The effect of sample hydration on ^{13}C CPMAS NMR spectra of fulvic acids OP-425

hydrolysis: The hydrolysis of Suwannee River fulvic acid OP-23

oxidation: Heterogeneous electrochemical reactions associated with oxidation of ferrous oxide and silicate surfaces OP-1132

precipitation: Chemical composition of ferromanganese crusts in the world ocean; a review and comprehensive database OF 89-0020

— Origin of late dolomite cement by CO_2-saturated deep basin brines; evidence from the Ozark region, central United States OP-612

reactions: Water-rock interactions OP-560

reduction: Geochemistry of dissolved inorganic carbon in a coastal plain aquifer; 1, Sulfate from confining beds as an oxidant in microbial CO_2 production OP-162

— Microbial reduction of uranium OP-653

— Microbial uranium reduction OF 91-0088

— Rapid assay for microbially reducible ferric iron in aquatic sediments OP-652

— Thermochemistry of the formation of fossil fluids OP-914

solution: Data from laboratory dissolution experiments using a welded tuff from Snowshoe Mountain near Creede, Colorado OF 87-0550

— Ground-water chemical evolution and diagenetic processes in the upper Floridan Aquifer, southern South Carolina and northeastern Georgia OF 89-0027

sorption: Mass arrival of sorptive solute in heterogeneous porous media OP-217

— Simulation of molybdate sorption with the diffuse layer surface-complexation model OF 91-0088

geochemistry—properties

Eh: Influence of redox potential on selenium distribution in ground water, Mendota, western San Joaquin Valley, California OF 90-0138

— Quantitative redox control and measurement in hydrothermal experiments OP-173

pH: Assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt by using a simple hydrochemical model WRI 90-4000

— Executive summary; assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt using a simple hydrochemical model OF 90-0357

— Isopleth maps showing regional variations in pH of stream water and ground water in relation to geologic setting and known mineral deposits, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire I-2161-A

solubility: Quartz solubility in hydrothermal seawater; an experimental study and equation describing quartz solubility for up to 0.5 M NaCl solutions OP-1091

— The effect of surfactants and emulsions on water solubility of organic contaminants OF 91-0088

thermodynamic properties: Fluid-mineral interactions; a tribute to H. P. Eugster OP-1003

— Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram OP-452

— Revised values for the thermodynamic properties of boehmite, AlO(OH), and related species and phases in the system Al-H-O OP-451

— The thermodynamic properties of dumortierite $Si_3B[Al_{6.75}\square_{0.25}O_{17.25}(OH)_{0.75}]$ OP-450

— Thermodynamic properties for bunsenite, NiO, magnetite, Fe_3O_4, and hematite, Fe_2O_3, with comments on selected oxygen buffer reactions OP-448

— Thermodynamic properties of anthophyllite and talc: corrections and discussion of calorimetric data OP-449

geochemistry—surveys

Alaska: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1° × 3° Quadrangle, Alaska OF 91-0023-A

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concen-

trate samples from the Livengood 1° × 3° Quadrangle, Alaska OF 91-0023-B

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area: Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-A

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-B

— Biogeochemistry of selected plant materials, Alaska OF 91-0292

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-A

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-B

— Geochemical maps showing distribution of anomalously abundant elements in stream-sediment and glacial-moraine samples from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1976

— Geochemical maps showing distribution of anomalously abundant elements in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1977

— Geochemical studies in Alaska by the U.S. Geological Survey, 1989 B 1950

— Geochemical studies of plants and soils in the Beluga coal field, Alaska C 1033

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-A

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-B

— Results of inductively coupled plasma-atomic emission spectroscopy analyses of minus 30-mesh stream-sediment samples from within and adjacent to the National Petroleum Reserve Alaska OF 90-0501

— The use of heavy-mineral concentrate data to show geochemical favorability for zinc-lead-silver and copper-(cobalt) mineral occurrences in the Baird Mountains Quadrangle, Northwest Alaska MF-2151

Arizona: Analytical data for stream and playa sediment samples from the Kingman 1° by 2° Quadrangle, Arizona, California and Nevada OF 90-0444

— Analytical data for stream-sediment samples from the Las Vegas 1° by 2° Quadrangle, Arizona, California and Nevada OF 90-0442

— Geology, geochemistry, and mineralogy of the Ridenour Mine breccia pipe, Arizona OF 90-0504

California: Analytical data for stream-sediment and soil samples from the Walker Lake 1° by 2° Quadrangle, California and Nevada OF 90-0431

— Analytical data for stream-sediment samples from the Death Valley 1° by 2° Quadrangle, California and Nevada OF 90-0438

— Analytical data for stream-sediment samples from the Mariposa 1° by 2° Quadrangle, California and Nevada OF 90-0440

— Analytical results and sample locality map of stream-sediment and panned-concentrate samples from the Garberville 1:100,000 Quadrangle (southwest quarter of the Redding, California 1:250,000 Quadrangle), Humboldt, Trinity, Shasta, Tehama, and Mendocino counties, California OF 91-0271

— Analytical results and sample locality map of stream-sediment, and panned-concentrate samples from the Hayfork 1:100,000 Quadrangle (northwest quarter of the Redding, California 1:250,000 Quadrangle), Trinity and Humboldt counties, California OF 90-0491

Great Plains: The mode of occurrence of extractable elements in soils from the Northern Great Plains C 1033

— Vegetation studies in the Northern Great Plains C 1033

Idaho: Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho OF 90-0545

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Burnt Creek Wilderness Study Area, Custer County, Idaho OF 90-0653

— Analytical results and sample locality maps of rock samples from the northwestern Idaho Falls and the northeastern Hailey 1° by 2° quadrangles, Idaho OF 90-0645

— Geochemical stratigraphy of the Yellowjacket Formation (middle Proterozoic) in the area of the Idaho cobalt belt, Lemhi County, Idaho OF 90-0234-A

— Geochemical stratigraphy of the Yellowjacket Formation (middle Proterozoic) in the area of the Idaho cobalt belt, Lemhi County, Idaho OF 90-0234-B

Kansas: Summary geochemical maps of the Joplin 1° × 2° Quadrangle, Kansas and Missouri MF-2125-A

Minnesota: Gold contents of 469 outcrop and 1466 B-horizon soil samples from the northwestern part of the Duluth Complex, northeastern Minnesota OF 91-0293

Missouri: Geochemical data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri: 1989-90 OF 90-0351

— Geochemical studies of subsurface carbonate rocks B 1942

— Geochemical studies: the Missouri experience C 1033

— Geochemistry of basal Cambrian sandstones in parts of Missouri, Arkansas, and Kansas B 1942

— Written communication on environmental geochemistry in Missouri C 1033

Montana: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Sleeping Giant Wilderness Study Area (MT-075-111), Lewis and Clark County, Montana OF 90-0469

— Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho: Part A, Geological interpretation OF 91-0028-A

— Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho: Part B, Geochemical data OF 91-0028-B

Nevada: Analytical data for stream and playa sediment samples from the Caliente 1° by 2° Quadrangle, Nevada OF 90-0433

— Analytical data for stream-sediment and playa-sediment samples from Lovelock 1° by 2° Quadrangle, Nevada OF 90-0437

— Analytical data for stream-sediment and soil samples from the Elko 1° by 2° Quadrangle, Nevada OF 90-0435

— Analytical data for stream-sediment and soil samples from the Goldfield 1° by 2° Quadrangle, Nevada OF 90-0441

— Analytical data for stream-sediment and soil samples from the McDermitt 1° by 2° Quadrangle, Nevada OF 90-0434

— Analytical data for stream-sediment and soil samples from the Reno 1° by 2° Quadrangle, Nevada OF 90-0430

— Analytical data for stream-sediment and soil samples from the Wells 1° by 2° Quadrangle, Nevada OF 90-0432

— Analytical data for stream-sediment and soil samples from the Winnemucca and Ely 1° by 2° quadrangles, Nevada OF 90-0443

— Analytical data for stream-sediment samples from the Lund 1° by 2° Quadrangle, Nevada OF 90-0436

— Analytical data for stream-sediment samples from the Millett 1° by 2° Quadrangle, Nevada OF 90-0439

— Analytical data for stream-sediment samples from the Tonopah 1° by 2° Quadrangle, Nevada OF 90-0445

— Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada OF 90-0461

— Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-A

— Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-B

— Gold, silver, and mercury rock chemistry for the Adelaide mining district, Sonoma Range, Humboldt County, Nevada OF 89-0689

New Mexico: Petrochemistry of igneous rocks, Silver City 1° × 2° Quadrangle, New Mexico and Arizona I-1310-H

New York: Regional exploration geochemistry of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

— Tabulated analytical results, floppy disc, and sample locality maps for nonmagnetic and selected paramagnetic heavy-mineral concentrates from stream sediment, Glens Falls 1°×2° Quadrangle, New York, Vermont, and New Hampshire OF 90-0675

Oregon: Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Hawk Mountain Wilderness Study Area, Harney County, Oregon OF 90-0465

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the South Fork and Sand Hollow Wilderness Study Areas, Crook County, Oregon OF 90-0535

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, rock, and soil samples from the Rincon Wilderness Study Area, Harney County, Oregon OF 90-0403

Pennsylvania: Fractionation of palladium and platinum in a Mesozoic diabase sheet, Gettysburg Basin, Pennsylvania; implications for mineral exploration OP-374

Philippine Islands: Platinum-group element abundance and distribution in chromite deposits of the Acoje Block, Zambales ophiolite complex, Philippines OP-40

Saudi Arabia: An evaluation and geochemical survey of the Farah Garan East Prospect, Southeast Asir, Kingdom of Saudi Arabia OF 90-0421

— Reconnaissance geochemical survey of the Farah Garan-Kutam mineral belt, Kingdom of Saudi Arabia OF 91-0039

United States: Modern aerial gamma-ray spectrometry and regional potassium map of the conterminous United States OP-256

— The state of soil and plant geochemical surveys C 1033

Utah: Analyses of rock samples from the Central mining and intrusive area, Marysvale, Utah OF 90-0529

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples in and adjacent to the Scorpion Wilderness Study Area, Garfield and Kane counties, Utah OF 90-0624

— Analytical results and sample locality maps of stream-sediment, heavy-mineral-concentrate, and rock samples from the Negro Bill Canyon (UT-060-138) and the Mill Creek Canyon (UT-060-139A) Wilderness Study Areas, Grand County, Utah OF 90-0464

— Chemical analyses including gold for 373 rock and stream-sediment samples from the Richfield 1° × 2° Quadrangle, Utah OF 91-0318

Vermont: Analyses and descriptions of geochemical samples from the Big Branch and Peru Peak wildernesses and the Wilder Mountain Roadless Area, Rutland and Bennington counties, Vermont OF 90-0682

— Distribution of gold, molybdenum, tin, and selected other elements in the vicinity of Mount Ascutney, Windsor County, Vermont B 1887

— Geochemistry of stream sediments and heavy-mineral concentrates from the Orange County copper district, east-central Vermont B 1887

— Some controls on trace-element concentrations, especially uranium, in selected peat deposits of Vermont and New Hampshire B 1887

Western U.S.: Biogeochemical baselines and the importance of species, plant parts, and season; the U.S. Geological Survey's studies of big sagebrush in the West C 1033

— Geochemical survey of the Sauk Sequence of the Western United States OF 90-0617

Wyoming: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Oregon Buttes Wilderness Study Area (WY-040-324), Sweetwater County, Wyoming OF 91-0012

— Selenium in soils and plants from native and irrigated lands at the Kendrick Reclamation Project area, Wyoming C 1064

geochemistry—symposia

environment: Proceedings of a U.S. Geological Survey workshop on Environmental geochemistry C 1033

geochemistry—textbooks

gases: Geochemistry of gaseous elements and compounds OP-251

manuals: A primer on sediment-trace element chemistry OF 91-0076

— Quality assurance manual for the Branch of Geochemistry, U.S. Geological Survey OF 90-0668

geochronology *see* absolute age

geochronology—data processing

computer programs: UDATE1: a computer program for the calculation of uranium-series isotopic ages OP-881

geochronology—exposure age

Pleistocene: In situ ^{10}Be-^{26}Al exposure ages at Meteor Crater, Arizona OP-775

geochronology—fission-track dating

apatite: Origin of the ore deposits at Gilman, Colorado; Part III, Fission-track and fluid inclusion studies OP-757

Cenozoic: Geology of volcanic and subvolcanic rocks of the Raton-Springer area, Colfax and Union counties, New Mexico P 1507

minerals: Implications of low-temperature cooling history of a transect across the Colorado Plateau–Basin and Range boundary, west central Arizona OP-130

— Reconnaissance fission-tract geochronology of the Aspen mining district, central Colorado OP-131

tuff: K/Ar and fission-track ages of tuff beds at the Three Kids Mine, Clark County, Nevada; implications for manganese mineralization OP-578

— New fission-track ages of Mio-Pliocene tuffs in the Sierras Pampeanas and Precordillera of Argentina OP-1038

zircon: Fission-track age (400,000 yr) of the Rockland Tephra, based on inclusion of zircon grains lacking fossil fission tracks OP-716

— K/Ar and fission-track ages (dates) of volcanic, intrusive, altered, and metamorphic rocks in the Mohave Mountains area, west-central Arizona OP-760

— The effect of χ-damage on the fission-track annealing in zircon OP-1526

geochronology—paleomagnetism

Cenozoic: Magnetostratigraphy of the San Francisco volcanic field, Arizona B 1929

Cretaceous: Rapid formation of Ontong Java Plateau by Aptian mantle plume volcanism OP-1043

Pleistocene: ^{40}Ar/^{39}Ar age of the Lathrop Wells volcanic center, Yucca Mountain, Nevada OP-1075

Pliocene: Integrated geochronology of a classic Pliocene fossil site in Florida; linking marine and terrestrial biochronologies OP-542

geochronology—racemization

shells: Dating lacustrine episodes in the eastern Sahara by the epimerization of isoleucine in ostrich eggshells OP-724

— Time-to-failure analysis of seismicity preceding the 1989 Loma Prieta earthquake OF 90-0666

prediction: A model for real time advisories of large earthquakes (M ≥ 7) OF 90-0098

— Conclusions from social science research on earthquake prediction research in the United States for the period of 1974 through 1988 OF 90-0098

— Earthquake fault slip estimation from geologic, geodetic and seismological observations; implications for earthquake mechanics and prediction research OF 90-0098

— Earthquake prediction; the seismic cycle pursued OP-633

— Earthquake-induced liquefaction features in the coastal setting of South Carolina and in the fluvial setting of the New Madrid seismic zone P 1504

— Earthquakes in aseismic zones OP-207

— Evidence of strong earthquake shaking in the lower Wabash Valley from prehistoric liquefaction features OP-784

— Historic creep rate and potential for seismic slip along the Hayward Fault, California OP-632

— Loma Prieta earthquake; putting the pieces together OP-273

— National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXX OF 90-0334

— Prediction probabilities from foreshocks OP-5

— Proceedings of Conference XLVI: the 7th U.S.–Japan seminar on Earthquake prediction OF 90-0098

— Real-time earthquake warning OF 90-0098

— Relations among fault behavior, subsurface geology, and three-dimensional velocity models OP-720

— Strain measurements and the potential for a great subduction earthquake off the coast of Washington OP-917

— Studying prehistoric earthquakes may help reduce hazards of future earthquakes OP-206

— Summary; seventh U.S.–Japan earthquake prediction research seminar; use of real-time earthquake information for hazard warning OF 90-0098

— Tecumseh's prophecy; preparing for the next New Madrid earthquake; a plan for an intensified study of the New Madrid seismic zone C 1066

— Tests to explore the utility of gravity anomalies and topographic data as possible predictors of locations of seismicity for two areas in California OF 90-0642

— The application of foreshocks to real-time earthquake hazard assessment in Southern California OF 90-0098

seismic risk: Program for earthquake hazards assessment in the Pacific Northwest C 1067

strong motion: A compilation of the geology and measured and estimated shear-wave velocity profiles at strong-motion stations that recorded the Loma Prieta, California, earthquake OF 91-0311

— Seismicity and strong motion data OP-628

— Strong-motion records from earthquakes of June 13, 1988, November 10, 1988, and April 3, 1989, on the Calaveras Fault, Central California OF 90-0481

— Strong-motion seismograph data B 1954

waste disposal: Seismicity and shear strain in the southern Great Basin of Nevada and California OP-363

geologic hazards—effects

landforms: Cartographic data aid response to national emergencies YR

geologic hazards—faults

field studies: Ground-squirrel mounds and related patterned ground along the San Andreas Fault in Central California OF 91-0149

maps: Geologic map of the Cholame Quadrangle, San Luis Obispo County, California MF-2170

— Preliminary map of young faults in the United States as a guide to possible fault activity MF-0916

site exploration: Factors affecting the recognition of faults exposed in exploratory trenches B 1947

geologic hazards—floods

climate effects: Climate and floods W 2375

controls: Analysis of alternative modifications for reducing backwater flooding at the Honey Creek coal strip mine reclamation site in Henry County, Missouri WRI 90-4068

— Flood and drought functions of the U.S. Army Corps of Engineers W 2375

damage: Floods in West Virginia, Virginia, Pennsylvania, and Maryland, November 1985 WRI 88-4213

— Floods of February 1980 in Southern California and central Arizona P 1494

digital simulation: Flood simulation for a large reservoir system in the lower Colorado River basin, Texas W 2375

drainage basins: Floods in the Nishnabotna River basin, Iowa OF 91-0171

frequency: Climatic variability and flood frequency of the Santa Cruz River, Pima County, Arizona OF 90-0553

— Regionalization of flood characteristics OP-1055

— Statistical frequency analysis of flood records OP-572

— Urban flood frequency and hydrograph analysis OP-915

— Use of paleoflood investigations to improve flood-frequency analyses of plains streams in Wyoming WRI 88-4209

highways: Update of flood-flow characteristics of Nancy Creek at Georgia Highway 400 extension near Atlanta, Georgia OF 90-0166

hydrographs: Simulation of flood hydrographs for small basins in Missouri WRI 90-4045

hydrology: National water summary 1988-89; hydrologic events and floods and droughts W 2375

mountains: Hydrometeorology of Rocky Mountain floods OP-527

occurrence: Alabama; floods and droughts W 2375

— Alaska; floods and droughts W 2375

— Arizona; floods and droughts W 2375

— Arkansas; floods and droughts W 2375

— California; floods and droughts W 2375

— Colorado; floods and droughts W 2375

— Connecticut; floods and droughts W 2375

— Delaware; floods and droughts W 2375

— Florida; floods and droughts W 2375

— Georgia; floods and droughts W 2375

— Hawaii; floods and droughts W 2375

— Idaho; floods and droughts W 2375

— Illinois; floods and droughts W 2375

— Indiana; floods and droughts W 2375

— Introduction to State summaries of floods and droughts W 2375

— Iowa; floods and droughts W 2375

— Kansas; floods and droughts W 2375

— Kentucky; floods and droughts W 2375

— Louisiana; floods and droughts W 2375

— Maine; floods and droughts W 2375

— Maryland and the District of Columbia; floods and droughts W 2375

— Massachusetts; floods and droughts W 2375

— Michigan; floods and droughts W 2375

— Minnesota; floods and droughts W 2375

— Mississippi; floods and droughts W 2375

— Missouri; floods and droughts W 2375

— Montana; floods and droughts W 2375

— Nebraska; floods and droughts W 2375

— Nevada; floods and droughts W 2375

— New Hampshire; floods and droughts W 2375

— New Jersey; floods and droughts W 2375

— New Mexico; floods and droughts W 2375

— New York; floods and droughts W 2375

— North Carolina; floods and droughts W 2375

— North Dakota; floods and droughts W 2375

— Ohio; floods and droughts W 2375

— Oklahoma; floods and droughts W 2375

— Oregon; floods and droughts W 2375

— Pennsylvania; floods and droughts W 2375

— Puerto Rico; floods and droughts W 2375

— Rhode Island; floods and droughts W 2375

— South Carolina; floods and droughts W 2375

— South Dakota; floods and droughts W 2375

— Tennessee; floods and droughts W 2375

— Texas; floods and droughts W 2375

— U.S. Virgin Islands; floods and droughts W 2375

— Utah; floods and droughts W 2375

— Vermont; floods and droughts W 2375

— Virginia; floods and droughts W 2375

— Washington; floods and droughts W 2375

— West Virginia; floods and droughts W 2375

— Wisconsin; floods and droughts W 2375

— Wyoming; floods and droughts W 2375

paleohydrology: Paleohydrology and its value in analyzing floods and droughts W 2375

prediction: A preliminary forecast of the advance of Hubbard Glacier and its influence on Russell Fiord, Alaska WRI 90-4172

— Flood forecasting and drought prediction by the National Weather Service W 2375

— Lake Nyos dam threat OP-647

— Technique for estimating depths of 100-year floods in Pennsylvania WRI 86-4195

programs: National flood insurance program; twenty years of progress toward decreasing nationwide flood losses W 2375

rainfall: Flooding in the Arkansas, Red, and Trinity rivers YR

regional patterns: Regionalization of flood discharges for rural, unregulated streams in New York, excluding Long Island WRI 90-4197

regression analysis: Flood characteristics of Mississippi streams WRI 91-4037

— Technique for estimating the magnitude and frequency of Missouri floods OF 91-0089

risk assessment: Water-surface profile and flood boundaries for the computed 100-year flood, Poplar River, Fort Peck Indian Reservation, Montana WRI 90-4169

shorelines: Storm-tide elevations produced by Hurricane Hugo along the South Carolina coast, September 21-22, 1989 OF 90-0386

statistical analysis: Application of a distributed-routing rainfall-runoff model to flood-frequency estimation in Somerset County, New Jersey WRI 89-4210

storms: Storm-surge flooding by Hurricane Hugo on the U.S. Virgin Islands, Puerto Rico, and South Carolina, September 1989 W 2375

geologic hazards—general

education: Natural hazards and public perception; earth scientists can make the difference OP-810

geologic hazards—human ecology

asbestos: Hazards associated with fibrous minerals C 1033

radon: Potential for indoor radon hazards; a first geologic estimate C 1033

— Radon potential defined by exploratory data analysis and geographic information systems B 1908

— Some basic facts about radioactive radon C 1033

— The role of National Uranium Resource Evaluation aerial gamma-ray data in assessment of radon hazard potential C 1033

— Uranium-series disequilibrium in Quaternary soils; significance for ^{222}Rn hazard assessment C 1033

toxic materials: Copper-molybdenum imbalances and the incidence of nutritional diseases in livestock and humans C 1033

geologic hazards—landslides

causes: Instrumental shaking thresholds for seismically induced landslides and preliminary report on landslides triggered by the October 17, 1989, Loma Prieta, California earthquake OF 91-0108

— Rainfall-soil moisture relations in landslide-prone areas of tropical rain forest, Puerto Rico OP-606

current research: Four contributions to 2nd seminar on Landslide hazards, Cosenza, Italy; March 5-6, 1990 OF 91-0108

inventory: Landslide inventory map of New York OP-292

maps: Preliminary map of landslide features and coseismic fissures, in the Summit Road area of the Santa Cruz Mountains, triggered by the Loma Prieta earthquake of October 17, 1989 OF 90-0688

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-A

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-B

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-C

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-D

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-E

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-F

natural dams: Landslide dams; hazards and mitigation OF 91-0108

risk assessment: Directions of the USGS landslide hazards reduction program OF 91-0108

storms: Map showing the distribution of debris flows during the New Year's Eve storm of 1987-1988 in southeastern Oahu, Hawaii OF 91-0129

geologic hazards—prediction

data processing: Earthquake phenomena observation system (EPOS); new JMA system for earthquake prediction and tsunami warning services OF 90-0098

geographic information systems: The decade for natural disaster reduction; seven questions for URISA OP-1183

geologic hazards—site exploration

radar methods: Software enhanced ground penetrating radar (GPR) detecting underground voids OF 90-0414

volcanic fields: Natural hazards associated with Lake Kivu and adjoining areas of the Birunga volcanic field, Rwanda and Zaire, Central Africa; final report OF 90-0691

waste disposal: Runoff and land modification W 2367

— U and Sr isotopes in ground water and calcite, Yucca Mountain, Nevada; evidence against upwelling water OP-1028

— U.S. Geological Survey Committee for the Advancement of Science in the Yucca Mountain Project, symposium on Fractures, hydrology, and Yucca Mountain; abstracts and summary OF 91-0125

geologic hazards—storms

damage: Hurricane Hugo and Puerto Rico YR

— Hurricane Hugo and the South Carolina coast YR

— Hurricane Hugo, September 1989 YR

water supply: USGS employee restores water supply to St. Croix Disaster Relief Center YR

geologic hazards—tsunamis

prediction: On mitigating rapid onset natural disasters; Project THRUST (tsunami hazards reduction utilizing systems technology) OF 90-0098

geologic hazards—volcanoes

controls: Mitigation of the effects of volcanic ash on aircraft operating and support systems C 1065

data acquisition: The Hawaiian Volcano Observatory polling telemetry system for low frequency data acquisition OF 90-0525

detection: Automated detection of volcanic ash clouds, evaluation of hazards to aviation, and global notification; an integrated system C 1065

effects: Overview of the effects and influence of the activity of Mount St. Helens in the 1980s OP-822

— Volcanic activity OP-935

rivers: Influence of crustal structure on the course of Arkansas River, south-central Colorado: some observations OF 90-0508

terraces: Use of paleoflood investigations to improve flood-frequency analyses of plains streams in Wyoming WRI 88-4209

geomorphology—impact features

meteor craters: Proterozoic impact record of Australia OP-1849

— The collision of solid bodies OP-961

geomorphology—interpretation

physiographic provinces: Perspective physiographic diagram of Vanuatu OP-15

geomorphology—lacustrine features

lakes: Lakes divided: the origin of Lake Crescent and Lake Sutherland, Clallam County, Washington OP-648

geomorphology—landform description

islands: How to construct four paper models that describe island coral reefs OF 91-0131-A

— How to construct four paper models that describe island coral reefs OF 91-0131-B

landscapes: Soil development on stable landforms and implications for landscape studies OP-418

mounds: Ground-squirrel mounds and related patterned ground along the San Andreas Fault in Central California OF 91-0149

physiographic provinces: Contrasting soils and landscapes of the Piedmont and coastal plain, Eastern United States OP-677

surficial geology: Quaternary geology and pollution problems: an example from the San Francisco Bay area, California C 1033

— Surficial geology B 1942

topography: Extraction of terrain-features from digital elevation models OP-848

— Geology of the La Vida Mission Quadrangle, San Juan and McKinley counties, New Mexico B 1940

— Potomac and Blue Ridge toponymic tour OP-791

geomorphology—landform evolution

fault scarps: Segmentation and the coseismic behavior of Basin and Range normal faults; examples from east-central Idaho and southwestern Montana, USA OP-208

landscapes: Cretaceous-Eocene (Laramide) landscape development and Oligocene-Pliocene drainage reorganization of transition zone and Colorado Plateau, Arizona OP-275

— Geomorphologic environment and age of supergene enrichment of the Cuajone, Quellaveco, and Toquepala porphyry copper deposits, southeastern Peru OP-178

geomorphology—maps

barrier islands: Shoreline changes of the Isles Dernieres barrier island arc, Louisiana, from 1853 to 1989 I-2186

eolian features: Geologic map of the major Quaternary eolian features, northern and central coastal Peru I-2162

oblique maps: Oblique map of Yosemite Valley, Yosemite National Park, central Sierra Nevada, California I-2149

shaded relief maps: Geographic map of the Circum-Pacific region: Arctic Sheet OP-391

— Landforms of the conterminous United States; a digital shaded-relief portrayal I-2206

surficial geology maps: Effects of urbanization on peak streamflows in four Connecticut communities, 1980-84 WRI 89-4167

— Geologic map emphasizing the surficial deposits of the Farmington 30′ × 60′ Quadrangle, New Mexico and Colorado I-1978

— Glacial history and geohydrology of the Irondequoit Creek valley, Monroe County, New York WRI 88-4145

— Map showing surficial and generalized bedrock geology and accompanying side-looking airborne radar image of the Radford 30′ × 60′ Quadrangle, Virginia and West Virginia I-2170-A

— Reconnaissance surficial geologic map of the mountainous parts of Loudoun County, Virginia OF 90-0205

— Surficial geologic map of parts of Union and Snyder counties, Pennsylvania I-2051

— Surficial geologic map of the Brigham City Segment and adjacent parts of the Weber and Collinston segments, Wasatch fault zone, Box Elder and Weber counties, Utah I-1979

— Surficial geologic map of the Skykomish and Snoqualmie rivers area, Snohomish and King counties, Washington I-1745

— Surficial geologic map of the Steamboat Springs 30′ × 60′ Quadrangle, Grand, Jackson, and Routt counties, Colorado I-1825

— Surficial geologic map of the Townsend Quadrangle, Middlesex and Worcester counties, Massachusetts, and Hillsborough County, New Hampshire GQ-1677

— Surficial geologic map of the Walden 30′ × 60′ Quadrangle, Jackson, Larimer, and Routt counties, Colorado I-1824

topographic maps: Cartographic data aid response to national emergencies YR

— Continuing evolution in mapping technology YR

— DLGGSM: a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base OF 90-0459-A

— DLGGSM: a program to load data from 1:24,000-scale and 1:100,000-scale topographic maps stored in the digital line graph-3 (optional) format into a GSMAP data base OF 90-0459-B

— Your best view of the U.S. OP-1051

geomorphology—mass movements

debris avalanches: Record of prehistoric debris avalanches on the north flank of Mount St. Helens Volcano, Washington OP-431

landslides: Landslide dams; hazards and mitigation OF 91-0108

— Summary of geotechnical and hydrologic data collected through April 30, 1990, for the Alani-Paty Landslide, Manoa Valley, Honolulu, Hawaii OF 90-0531

— Use of longitudinal strain in identifying driving and resisting elements of landslides OP-66

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-A

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-B

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-C

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-D

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-E

— Vermont landslide map; digital version, a digital data set for IBM PC and compatible microcomputers OF 90-0621-F

mudflows: Mechanics of mud flows in curved channels with uneven beds OP-985

sackungen: Measurement of ridge-spreading movements (sackungen) at Bald Mountain, Lake County, Colorado, 1975-1989 OF 90-0543

slopes: The role of soil processes in determining mechanisms of slope failure and hillslope development in a humid-tropical forest, eastern Puerto Rico OP-967

geomorphology—processes

denudation: Seepage-induced cliff recession and regional denudation OP-458

erosion: Coastal ice and sediment samples: shoreface and ice profiles (southern Lake Michigan, February, December 1989, and February, April 1990) OF 90-0537

— Erosion and deterioration of the Isles Dernieres barrier island arc, Louisiana, U.S.A.: 1853 to 1988 OP-691

— Massive sediment bypassing of a wide tidal inlet; Cat Island Pass, Louisiana OP-520

— Runoff and land modification W 2367

— Sediment discharge from a montane basin, Puerto Rico: implications of erosion processes and rates in the humid tropics OP-966

— Weathering processes and the composition of inorganic material transported through the Ori-

noco River system, Venezuela and Colombia OP-1009

sedimentation: Controls on the composition of fluvial sands from a tropical weathering environment; sands of the Orinoco River drainage basin, Venezuela and Colombia OP-540

— Controls on the location of the sand/mud contact beneath a barrier island; central Isles Dernieres, Louisiana OP-235

— Distribution and textural character of surficial sediments, Isles Dernieres to Ship Shoal region, Louisiana OP-1139

geomorphology—shore features

barrier islands: Louisiana barrier island erosion study; correction for the effect of relative sea level change on historical bathymetric survey comparisons, Isles Dernieres area, Louisiana OF 91-0276

coastlines: Coasts in crisis C 1075

— Great Lakes coastal mapping workshop OF 91-0020

dunes: Reworked eolianites; Bahaman highstand anomalies OP-1202

fjords: A preliminary forecast of the advance of Hubbard Glacier and its influence on Russell Fiord, Alaska WRI 90-4172

— Channel-forming processes active in Queen Inlet, Glacier Bay, Alaska OP-149

landscapes: Our changing landscape; Indiana Dunes National Lakeshore C 1085

shoals: Holocene sand shoals offshore of the Mississippi River delta plain OP-815

geomorphology—solution features

caverns: Hydrology of the cavernous limestones of the Mammoth Cave area, Kentucky W 1837

caves: Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part I, Geologic framework, mineralogy, and cave morphology OP-1070

— Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part II, Fluid inclusion, stable isotope, and rock geochemistry data and a model of ore deposition OP-603

karst: Hydrogeology of the karst of Puerto Rico P 1012

— Karst hydrogeology in the United States of America OP-1068

geomorphology—volcanic features

calderas: Recent ground movement and seismic activity in Campi Flegrei, southern Italy; episodic growth of a resurgent dome OP-259

— Structural, eruptive, and intrusive evolution of the Grizzly Peak Caldera, Sawatch Range, Colorado OP-326

cinder cones: Geomorphic assessment of late Quaternary volcanism in the Yucca Mountain area, southern Nevada; implications for the proposed high-level radioactive waste repository: Comment OP-1135

craters: A model for dome eruptions at Mount St. Helens, Washington based on subcritical crack growth OP-229

— Regularities in growth of the Mount St. Helens dacite dome 1980-1986 OP-1035

landform description: Bandera Crater OP-688

— Geology of volcanic and subvolcanic rocks of the Raton-Springer area, Colfax and Union counties, New Mexico P 1507

shield volcanoes: Lava domes modeled as brittle shells that enclose pressurized magma, with application to Mount St. Helens OP-515

stratovolcanoes: Make your own paper model of a volcano OF 91-0115-A

— Make your own paper model of a volcano OF 91-0115-B

volcanic fields: Three-dimensional perspective diagrams of the Morococala volcanic field, west-central Bolivia MF-2145

geophysical methods—acoustical methods

interpretation: Ground-truthing 6.5 kHz side scan sonographs; what are we really imaging? OP-337

side-scanning methods: Using side-scan sonar to look at buried surfaces OP-1498

geophysical methods—electrical methods

applications: Monitoring geochemical processes with geophysics C 1033

data processing: A BASIC program to transform continuous polar dipole-dipole resistivity soundings to half-Schlumberger soundings OP-1170

instruments: Operating manual for the U.S. Geological Survey Minimonitor, 1988 revised edition, analog-voltage model OF 89-0403

geophysical methods—electromagnetic methods

applications: Electromagnetic tomography of grout penetration in fractures OF 90-0414

interpretation: Approximate inversion of high-frequency electromagnetic soundings using complex image theory OP-19

— Study of patterns of subsurface current contributions in transient electromagnetic methods OP-1506

— What pipes can do to your transient EM interpretation OP-1385

microwave methods: Influence of wavelength, antenna height, and soil roughness in nearfield microwave detection of buried dielectric objects OF 90-0414

— Microwave antenna arrays for nearfield detection of buried objects OF 90-0414

radar methods: Calibration and forward modeling of ground penetrating radar data OF 90-0414

— Condition assessment of reinforced concrete using radar OF 90-0414

— Directional antenna for borehole radar measurements OF 90-0414

— Directive antenna array for a borehole radar OF 90-0414

— Emulation of a phased array by application of F-K filtering to single fold GPR data OF 90-0414

— Experience with ground penetrating radar in geotechnical applications OF 90-0414

— Extending time average dielectric mixing laws to lower frequencies; the dispersion time average mixing law OF 90-0414

— Ground penetrating radar using a frequency sweeping signal OF 90-0414

— High frequency electrical properties OF 90-0414

— Impact of antenna pattern on survey design and data interpretation OF 90-0414

— Measurements and modeling of ground penetrating radar field strengths in a large laboratory set up OF 90-0414

— Modeling and tomographic inversion of cross borehole radar in layered media OF 90-0414

— Modifications of radar scattering signatures by antenna parameters OF 90-0414

— Reverse time migration applied to ground penetrating radar OF 90-0414

— Selected bibliography on ground penetrating radar OP-786

— Some field, laboratory, and theoretical investigations of fresh water, ice, and soil layers using short pulse radar OF 90-0414

— The effect of saturation history on electrical properties of the unsaturated zone OF 90-0414

— Third international conference on Ground penetrating radar: abstracts of the technical meeting OF 90-0414

— Velocity estimation from fixed-offset ground penetrating radar data OF 90-0414

— Velocity, attenuation, dispersion and diffraction tomography OF 90-0414

techniques: Fast evaluation of radial and vertical magnetic fields near a rectangular loop source on a layered Earth OP-18

geophysical methods—magnetic methods

instruments: An automatic, quasi-absolute, geomagnetic calibration system OF 91-0350

— Magnetometer calibration device OF 91-0351

geophysical methods—methods

applications: Application of geophysical methods to the study of pollution associated with abandoned and injection wells C 1033

— Application of geophysics to water prospecting in arid and semi-arid areas; proceedings of the 1990 international symposium OP-163

— Proceedings of the Symposium on the Application of geophysics to engineering and environmental problems OP-302

the Illinois Beach State Park nearshore zone OF 91-0284

— Coastal ice and sediment samples: shoreface and ice profiles (southern Lake Michigan, February, December 1989, and February, April 1990) OF 90-0537

— Eolian sand transport in the backshore–foredune portion of the Lake Michigan shoreline, Indiana OF 91-0284

— Geochemical, paleomagnetic, and magnetic-petrologic studies of Holocene sediments in southern Lake Michigan; records of depositional conditions OF 91-0284

— Lake ice influence on the coastal profile and sediment transport, and overlooked processes in southern Lake Michigan OF 91-0284

— Late Holocene coastal evolution of the central Chicago lakeshore and model for related evolution of the Chicago River OF 91-0284

— Mathematical trends in the erosional evolution of a logarithmic-spiral bay on the Illinois shore OF 91-0284

— Nearshore dynamics, ice formation, and sediment transport OF 91-0284

— Preliminary survey of littoral drift sand deposits along the Illinois shore of Lake Michigan from Waukegan to Evanston OF 91-0284

— Preservation of patterns of shoreline behavior in the southern part of the Lake Michigan basin OF 91-0284

— Rates of sedimentation in southern Lake Michigan and their relation to changing lake levels OF 91-0284

— Relative lake level changes in the upper Great Lakes; reconstructing the pattern of postglacial warping with accuracy OF 91-0284

— Video monitoring of ice processes OF 91-0284

Great Lakes—geophysical surveys

magnetic surveys: High resolution aeromagnetic survey of Lake Superior OP-1047

seismic surveys: Deep crustal structure of the Precambrian basement beneath northern Lake Michigan, Midcontinent North America OP-145

— Preliminary interpretation of the high-resolution seismic stratigraphy beneath Lake Michigan OF 91-0021

— The Chippewa unconformity and the preservation of low lake-level features; observations from high-resolution seismic-reflection profiles OF 91-0284

surveys: Indiana Shoals; a dynamic sedimentary environment OF 91-0284

Great Lakes—hydrogeology

hydrology: Stratigraphy, descriptions, and physical properties of sediments cored in Lake Michigan OF 90-0478

Great Lakes—stratigraphy

Holocene: Holocene history of Lake Michigan; the ostracode record OF 91-0284

Quaternary: Preliminary interpretation of the high-resolution seismic stratigraphy beneath Lake Michigan OF 91-0021

— Stratigraphy, descriptions, and physical properties of sediments cored in Lake Michigan OF 90-0478

Great Lakes—tectonophysics

crust: Crustal attenuation and associated basalt flow extrusion in the Keweenawan Rift, Lake Superior, from deep seismic reflection profiles OP-1218

— New high resolution aeromagnetic survey of Lake Superior; a contribution to the Great Lakes International Multidisciplinary Program on Crustal Evolution (GLIMPCE) OP-1906

Great Lakes region—areal geology

maps: Quaternary geologic map of the Lake Erie 4° × 6° Quadrangle, United States and Canada I-1420 (NK-17)

Great Lakes region—economic geology

maps: Map showing mineral deposits of the Midcontinent Rift, Lake Superior region, United States and Canada MF-2153

metal ores: Introduction B 1932

— Mineral deposits of the Midcontinent Rift, Lake Superior region, United States and Canada C 1062

— The Midcontinent of the United States; permissive terrane for an olympic dam-type deposit? B 1932

mineral resources: Map showing mineral deposits of the Midcontinent Rift, Lake Superior region, United States and Canada MF-2153

Great Lakes region—engineering geology

shorelines: Development of a GIS for the U.S. Great Lakes shoreline OF 91-0020

Great Lakes region—environmental geology

ecology: Great Lakes CoastWatch data distribution OF 91-0020

land use: Great Lakes states GIS OF 91-0020

maps: Great Lakes coastal mapping workshop OF 91-0020

Great Lakes region—geochronology

Holocene: Geologic setting of the Olson tree site, southern Lake Michigan OP-1289

Great Lakes region—geomorphology

changes of level: Modeling beach and nearshore profile response to lake level change and storm wave forcing OF 91-0284

— Relative lake level changes in the upper Great Lakes; reconstructing the pattern of postglacial warping with accuracy OF 91-0284

Great Lakes region—stratigraphy

changes of level: Preliminary interpretation of the high-resolution seismic stratigraphy beneath Lake Michigan OF 91-0021

Precambrian: Neodymium isotopic evidence for early Proterozoic units in the Watersmeet gneiss dome, northern Michigan. Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin B 1904-G,H

Quaternary: Quaternary geologic map of the Lake Erie 4° × 6° Quadrangle, United States and Canada I-1420 (NK-17)

Great Lakes region—structural geology

tectonics: Tectonic imbrication and foredeep development in the Penokean Orogen, east-central Minnesota; an interpretation based on regional geophysics and the results of test-drilling. The Penokean Orogeny in Minnesota and upper Michigan: a comparison of structural geology B 1904-C,D

Great Lakes region—tectonophysics

crust: Deep crustal structure of the Precambrian basement beneath northern Lake Michigan, Midcontinent North America OP-145

— Great Lakes tectonic zone in Marquette area, Michigan; implications for Archean tectonics in north-central United States B 1904-E

— High resolution aeromagnetic survey of Lake Superior OP-1047

— Observations of airgun shots at lake-bottom and land seismographs in the U.S. Great Lakes region, project GLIMPCE OP-1633

Great Plains—economic geology

petroleum: Future petroleum resource potential of Northern Rocky Mountain-Great Plains area OP-1737

— Future petroleum resource potential, Northern Rocky Mountain-Great Plains area OP-823

Great Plains—environmental geology

pollution: Water quality; what we have learned YR

— Work plan for regional reconnaissance for selected herbicides and nitrate in ground water of the Mid-continental United States, 1991 OF 91-0059

Great Plains—geochemistry

surveys: Vegetation studies in the Northern Great Plains C 1033

trace elements: The mode of occurrence of extractable elements in soils from the Northern Great Plains C 1033

Great Plains—geophysical surveys

remote sensing: The High Plains regional aquifer; mapping irrigated agriculture using Landsat data OP-1050

— Measurement of hydraulic conductivity distribution; a manual of practice OP-731

hydrochemistry: Analytical results for total and partial metal extractions in aquifer material, Pinal Creek, Globe, Arizona OF 91-0111

— Geohydrology and hydrochemistry of the Ozark Plateaus aquifer systems OP-505

impact statements: Long-term effects of surface coal mining on ground-water levels and quality in two small watersheds in eastern Ohio WRI 90-4136

irrigation: The High Plains regional aquifer; mapping irrigated agriculture using Landsat data OP-1050

maps: Geohydrologic units of the coastal lowlands aquifer system, south-central United States OF 90-0173

— Hydrogeologic maps of the Central Oklahoma Aquifer, Oklahoma OF 90-0579

— Hydrogeologic unit map of the Piedmont and Blue Ridge provinces of North Carolina WRI 90-4035

— Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-F

models: Comparison of aquifer storage coefficients computed using anisotropic and isotropic analytical models OP-854

— Simulation of vertical compaction in models of regional ground-water flow OP-615

— Solution of the one-dimensional consolidation theory equation with a pseudospectral method OP-947

monitoring: Construction, lithologic, and geophysical data from monitoring wells in Albuquerque, Bernalillo County, New Mexico OF 90-0578

— Results of test drilling in Howell Township, Monmouth County, New Jersey WRI 90-4062

permeability: Determining areas of large permeability and large well yield in regional aquifers using hydrochemical, hydrological, and structural discontinuity analysis OP-1549

— Techniques for appraisal of ground-water resources on atoll islands; case studies from Micronesia OP-22

programs: Regional Aquifer-System Analysis program OP-1030

properties: Application of ground-penetrating-radar methods in hydrogeologic studies OP-83

pump tests: Memorandum No. 3 on the pumping test of the Army test well on Mracek land near Silver City, New Mexico OF 91-0081

— Pumping test on well at N-0 OF 91-0080

— Water well for fire protection on the Canadian side of Watson Lake Airfield OF 91-0080

pumping: Ground-water pumpage from the Columbia Plateau regional aquifer system, Washington, 1984 WRI 87-4135

— Ground-water pumpage from the Gulf Coast aquifer systems, 1960-85, south-central United States WRI 89-4180

— Simulated effects of future pumpage on the High Plains Aquifer, west-central United States OP-1117

— The High Plains regional aquifer; estimating 1980 ground water pumpage for irrigation OP-441

recharge: Beneficial effects of groundwater entry into liquid-dominated geothermal systems OP-639

regional patterns: Regional stratigraphy and subsurface geology of Cenozoic deposits, Gulf Coastal Plain, south-central United States OF 91-0066

salt-water intrusion: Ground-water chemical evolution and diagenetic processes in the upper Floridan Aquifer, southern South Carolina and northeastern Georgia OF 89-0027

sandstone: Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

stratigraphic units: Stratigraphy of the unsaturated zone and uppermost part of the Snake River Plain Aquifer at the Idaho Chemical Processing Plant and Test Reactors area, Idaho National Engineering Laboratory, Idaho WRI 91-4010

systems: Geohydrologic systems in Kansas with emphasis on systems in Upper Cambrian through Lower Cretaceous rocks HA-0722-A

testing: Determination of specific storage by measurement of aquifer compression near a pumping well OP-879

— Geohydrologic evaluation of spring sites at Social Circle, Georgia, December 5-8, 1988 OF 89-0236

— Methods for selection and hydrologic description of potential landfill sites in southeastern San Diego County, California WRI 90-4021

— Shortcuts and special problems in aquifer tests W 1545-C

— Summary of aquifer tests in Mississippi, June 1942 through May 1988 WRI 90-4155

thermal regime: Interaction of cold-water aquifers with exploited reservoirs of the Cerro Prieto geothermal system OP-1069

thickness: Geology, structure, and thickness of hydrogeologic units in part of the Columbia Plateau, Oregon WRI 86-4001

transmissivity: A method to estimate canal leakage to the Biscayne Aquifer, Dade County, Florida WRI 90-4135

two-layer models: Documentation of model input and output values for the geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California OF 91-0482

water management: Effects of present and projected ground-water withdrawals on the Twin Cities aquifer system, Minnesota WRI 90-4001

— Significance of chemical boundaries to ground-water management of coastal aquifers OP-37

— Transferring model-operating responsibility from a federal to a state agency OP-877

— Withdrawals from the Edwards-Trinity aquifer system and contiguous hydraulically connected units, west-central Texas, December 1974 through March 1977 WRI 91-4021

water quality: Estimating water quality from geophysical logs OP-545

— Geohydrology and water quality of the Roubidoux Aquifer, northeastern Oklahoma OF 90-0570

— Geology and hydrologic assessment of coastal plain aquifers in the Waldorf area, Charles County, Maryland; Part 1, Geology, hydrogeologic framework, and water quality OP-1143

— Mineralogy and petrography of Permian rocks in the Central Oklahoma Aquifer OF 90-0678

water supply: Hydrogeology, chemical quality, and availability of ground water in the upper Floridan Aquifer, Albany area, Georgia WRI 87-4145

— Hydrogeology, water quality, and effects of increased municipal pumpage of the Saco River valley glacial aquifer; Bartlett, New Hampshire to Fryeburg, Maine WRI 88-4179

— Outline of ground-water conditions at Albuquerque, New Mexico OF 91-0081

water wells: Prediction of uranium adsorption by crystalline rocks; the key role of reactive surface area OP-1106

— Spacing of wells W 1545-C

water yield: Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah HA-0720-B

— Stream-aquifer relations and yield of stratified-drift aquifers in the Nashua River basin, Massachusetts WRI 88-4147

well-logging: Application of geophysical well log analysis to characterization of aquifers in the Sinai region, Republic of Egypt WRI 90-4194

— Borehole geophysics applied to ground-water investigations TWI 02-E2

ground water—artesian waters

aquifers: The effects of overburden stress on the specific storage and hydraulic conductivity of artesian aquifers OP-949

experimental studies: Laboratory simulation of the effects of overburden stress on the specific storage of shallow artesian aquifers OP-948

graphic methods: Type curves for nonsteady radial flow in an infinite leaky artesian aquifer W 1545-C

karst hydrology: Hydrogeology of the karst of Puerto Rico P 1012

ground water—composition

chemical composition: Chemical analyses of the water from the GTA-1 Well, Parkfield, California, and other nearby spring and well waters OF 91-0003

— Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii OF 91-0133-A

— Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii OF 91-0133-B

ground water—geochemistry

carbon: Geochemistry of dissolved inorganic carbon in a coastal plain aquifer; 1, Sulfate from confining beds as an oxidant in microbial CO_2 production OP-162

— Geochemistry of dissolved inorganic carbon in a coastal plain aquifer; 2, Modeling carbon sources, sinks, and $\delta^{13}C$ evolution OP-711

carbon dioxide: Production and carbon isotopic composition of bacterial CO_2 in deep coastal plain sediments of South Carolina OP-712

denitrification: Denitrification in nitrate-contaminated groundwater: occurrence in steep vertical geochemical gradients OP-988

dispersion: Solute movement in heterogeneous porous media; a discussion of the position and arrival time analyses OP-1843

evolution: Geochemical evolution of water in the Madison Aquifer in parts of Montana, South Dakota, and Wyoming P 1273-F

humic acids: The importance of humic substance-mineral particle complexes in the modeling of contaminant transport in sediment-water systems OP-1130

hydrochemistry: Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California OF 90-0355

— Hydrogeochemical data from an acidic deposition study at McDonalds Branch basin in the New Jersey pinelands, 1983-86 OF 88-0500

— Sequential extraction analyses of drill core samples, Central Oklahoma Aquifer OF 91-0347

inventory: Physical and chemical data for ground water in the Michigan Basin, 1986-89 OF 90-0368

isotopes: Estimating groundwater exchange with lakes; 1, The stable isotope mass balance method OP-581

— U and Sr isotopes in ground water and calcite, Yucca Mountain, Nevada; evidence against upwelling water OP-1028

organic acids: Microbial production of organic acids in aquitard sediments and its role in aquifer geochemistry OP-710

organic materials: Bibliography on sampling ground water for organic compounds OF 90-0564

— Purgeable organic compounds in ground water at the Idaho National Engineering Laboratory, Idaho; 1988 and 1989 OF 90-0367

pH: Corrosive groundwater in the New Jersey coastal plain OP-57

— Isopleth maps showing regional variations in pH of stream water and ground water in relation to geologic setting and known mineral deposits, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire I-2161-A

radioactive isotopes: Background concentrations of selected radionuclides, organic compounds, and chemical constituents in ground water in the vicinity of the Idaho National Engineering Laboratory WRI 91-4015

— Radium and radon in Charlotte Harbor Estuary, Florida OP-727

— Uranium, radium, and radon in ground water from the rock aquifers of the Piedmont Province and the Kirkwood-Cohansey aquifer system of the Coastal Plain Province, New Jersey OP-1037

radon: Coseismic changes in groundwater radon OF 90-0098

— Geohydrologic, geochemical, and geologic controls on the occurrence of radon in ground water near Conifer, Colorado, USA OP-610

reactions: Data from laboratory dissolution experiments using a welded tuff from Snowshoe Mountain near Creede, Colorado OF 87-0550

— Geochemistry of rock-water reactions in basalt aquifers of the Columbia River plateau C 1033

— Ground-water chemistry and diagenetic reactions in Tertiary sandstones of the Green River and Wasatch formations, Uinta Basin, Utah B 1787-X

selenium: Influence of redox potential on selenium distribution in ground water, Mendota, western San Joaquin Valley, California OF 90-0138

— Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California C 1033

site exploration: Water chemistry W 2367

sorption: Mass arrival of sorptive solute in heterogeneous porous media OP-217

stable isotopes: Stable isotopes in precipitation and ground water in the Yucca Mountain region, southern Nevada; paleoclimatic implications OP-79

trace elements: Chemical and isotopic data for water from wells, springs, and streams in carbonate-rock terrane of southern and eastern Nevada and southeastern California, 1985-88 OF 89-0422

— Geochemical relations and distribution of selected trace elements in ground water of the northern part of the western San Joaquin Valley, California OF 90-0108

tritium: Tritium in ground water in Mississippi, 1989-90 OF 91-0177

water quality: Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California P 1406-C

ground water—hydrodynamics

aquifers: Ground-water movement in a rectangular aquifer bounded by four canals W 1545-C

— The cone of depression and the area of diversion around a discharging well in an infinite strip aquifer subject to uniform recharge W 1545-C

boreholes: Measurement of vertical flow in borehole UE-3e 4 using geophysical logs, Nevada Test Site, Nye County, Nevada WRI 90-4185

discharge: Chart for determination of the percentage of pumped water being diverted from a stream or drain W 1545-C

dispersion: Macrodispersion in sand-shale sequences OP-370

finite element analysis: A finite-element model for simulation of two-dimensional steady-state ground-water flow in confined aquifers OF 90-0187

fracture zones: Investigation of flow distribution in a fracture zone using differential radar measurements OF 90-0414

fractures: Flow and tracer transport in a single fracture; a stochastic model and its relation to some field observations OP-371

— Flow through variable aperture fractures OF 91-0125

— Fluid flow in rough-walled fractures OF 91-0125

— Modeling of flow and solute transport through a variable aperture partially saturated fracture OF 91-0125

— Modeling of flow and transport in fracture networks OF 91-0125

— Potential mechanisms for fracture flow in the unsaturated zone at Yucca Mountain; effects of air entrapment within matrix blocks OP-589

— Void structure and flow in single fractures OF 91-0125

hydraulic conductivity: Evaluation of hydraulic conductivities calculated from multiport-permeameter measurements OP-1148

hydrostatic pressure: The transition from hydrostatic to greater than hydrostatic fluid pressure in presently active continental hydrothermal systems in crystalline rock OP-320

karst hydrology: Karst hydrogeology in the United States of America OP-1068

manuals: A study guide for a beginning course in ground-water hydrology; Part I, Course participants OF 90-0183

mathematical methods: Relative efficiency of four parameter-estimation methods in steady-state and transient ground-water flow models OP-464

measurement: Thermal-pulse flowmeter for measuring slow water velocities in boreholes OF 87-0121

models: Comment on the treatment of residual water content in "A consistent set of parametric models for the two-phase flow of immiscible fluids in subsurface" by L. Luckner et al. OP-774

— The complex variable boundary element method in engineering analysis OP-498

numerical models: Preconditioned conjugate-gradient 2 (PCG2), a computer program for solving ground-water flow equations WRI 90-4048

porous materials: Absorption of water into porous blocks of various shapes and sizes OP-1174

— Radial flow in heterogeneous porous media: an analysis of specific discharge OP-758

unconsolidated materials: Progress in the understanding of groundwater flow through the aquitard of the Llobregat Delta; Barcelona, Spain OP-674

ground water—levels

alluvium aquifers: A concept of the shallow ground-water system along the North Platte River, south-central Wyoming WRI 89-4078

— Ground-water levels in the alluvial aquifer in eastern Arkansas, 1988 OF 90-0383

— Ground-water levels in the alluvial aquifer in eastern Arkansas, 1989 OF 90-0558

altitude: Altitude and configuration of the water-level surface in the lower Paleozoic and Precambrian crystalline rocks of the Red Clay Creek basin, Chester County, Pennsylvania, and New Castle County, Delaware, June through October 1989 and March 1990 WRI 91-4004

changes: Groundwater levels in Nebraska, 1989 OP-272

— Removal of barometric pressure response from water level data OP-853

— Streamflow losses and ground-water level changes along the Big Lost River at the Idaho National Engineering Laboratory, Idaho WRI 90-4067

— Water-level changes in the High Plains Aquifer underlying parts of South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, and Texas; predevelopment through nonirrigation season 1988-89 WRI 90-4153

controls: Ground-water hydrology of Pahvant Valley and adjacent areas, Utah OP-485

data acquisition: Hydrologic data for the Jemez Mountains, New Mexico OF 90-0176

drainage basins: Effects of channel modifications on the hydrology of Chicod Creek basin, North Carolina, 1975-87 WRI 90-4031

drawdown: Chart for the computation of drawdowns in the vicinity of a discharging well W 1545-C

— Drawdown patterns in aquifers having a straight-line boundary W 1545-C

— Drawdowns caused by a well discharging under equilibrium conditions from an aquifer bounded by a finite straight-line source W 1545-C

— Special drawdown scales for predicting water-level changes throughout heavily pumped areas W 1545-C

— Use of a slide rule in solving ground-water problems by the nonequilibrium formula W 1545-C

floodplains: Liquefaction susceptibility in the San Bernardino Valley and vicinity, Southern California; a regional evaluation B 1898

fluctuations: Effects of surface coal mining and reclamation on the geohydrology of six small watersheds in west-central Indiana W 2368-B

hydrographs: Ground-water levels and quality at Crex Meadows Wildlife Area, Burnett County, Wisconsin WRI 89-4129

— Hydrologic, meteorological, and unsaturated-zone moisture-content data, Franklin Lake playa, Inyo County, California OF 89-0595

interpretation: Effect of sensor error on interpretation of long-term water-level data OP-884

maps: Maps showing hydrostatic levels and general ground-water quality for an area near Conifer, Colorado MF-2165

measurement: Compilation of ground-water level measurements obtained by the U.S. Geological Survey in Puerto Rico, 1958-85 OF 88-0701

— January 1986 water levels, and data related to water-level changes, western and south-central Kansas OF 86-0317

— Use of electronic data-logging equipment to monitor hydrologic parameters in a humid cave environment in Wind Cave National Park, South Dakota OP-380

monitoring: Adequacy of available hydrogeologic data for evaluation of declining ground-water levels in the Fort Rock Basin, south-central Oregon WRI 89-4057

— Ground-water data for Michigan, 1989 OF 91-0055

— Ground-water levels and tritium concentrations at the Maxey Flats low-level radioactive waste disposal site near Morehead, Kentucky, June 1984 to April 1989 WRI 90-4189

— Infiltration and evapotranspiration within the Albuquerque, New Mexico, area with a section on historical water-resource trends during the 1954-80's period of urban growth WRI 90-4055

— Monitoring the hydrologic system for potential effects on geothermal and ground-water development in the Long Valley Caldera, Mono County, California, U.S.A. OP-286

— Results of test drilling and hydrologic monitoring in the Indian Bathtub area, Owyhee County, southwestern Idaho, January 1989 through September 1990 OF 90-0597

numerical models: Ground-water resources and simulated effects of withdrawals in the East Shore area of Great Salt Lake, Utah OP-179

potentiometric surface: Geohydrology and water quality of Cenozoic and Mesozoic units in Southeast Missouri HA-0719

— Louisiana ground-water map No. 3: Potentiometric surface, 1989, and water-level changes, 1980-89, of the Sparta Aquifer in north-central Louisiana WRI 90-4183

— Potentiometric surface of the alluvial aquifer and hydrologic conditions in the central Aguirre Quadrangle, Puerto Rico, March 1986 WRI 87-4160

— Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Guayama Quadrangle, Puerto Rico, March 1986 WRI 87-4162

— Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Salinas Quadrangle, Puerto Rico, March 1986 WRI 87-4161

— Potentiometric surface of the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March to April, 1987 WRI 89-4116

— Potentiometric surface of the alluvial aquifer and hydrologic conditions near Gurabo and Juncos, Puerto Rico, March 1988 WRI 90-4059

— Potentiometric surface of the intermediate aquifer system, west-central Florida, May 1990 OF 90-0555

— Potentiometric surface of the intermediate aquifer system, west-central Florida, September 1990 OF 91-0087

— Potentiometric surface of the principal aquifer and hydrologic conditions in the Ponce-Juana Diaz area, Puerto Rico, April-May, 1987 WRI 89-4115

— Potentiometric surface of the upper Floridan Aquifer in the Northwest Florida Water Management District, May 1990 OF 90-0586

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, May 1990 OF 90-0557

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1989 OF 90-0188

— Potentiometric surface of the upper Floridan Aquifer in the St. Johns River Water Management District and vicinity, Florida, September 1990 OF 91-0190

— Potentiometric surface of the upper Floridan Aquifer in the Suwannee River Water Management District, Florida, May 1990 OF 90-0582

— Potentiometric surface of the upper Floridan Aquifer, west-central Florida, May 1990 OF 90-0556

— Potentiometric surface of the Upper Floridan Aquifer, west-central Florida, September 1990 OF 91-0090

— Potentiometric-surface map of the Eutaw-McShan Aquifer in northeastern Mississippi, August through December 1987 WRI 90-4157

— Water-level maps of the Mississippi River valley alluvial aquifer in eastern Arkansas, 1987 WRI 90-4089

pumping: Reclamation by tubewell drainage in Rechna Doab and adjacent areas, Punjab region, Pakistan W 1608-O

seasonal variations: Evaluation of selected data to assess the causes of subsidence in the Sacramento-San Joaquin Delta, California OF 91-0193

seepage: Preliminary report on the hydrology of Lake Five-O and vicinity, Bay County, Florida WRI 90-4148

testing: Drilling and geohydrologic data for test hole USW UZ-1, Yucca Mountain, Nye County, Nevada OF 90-0354

water management: Hydrologic effects of well-field operations in a wetland, Dade County, Florida WRI 90-4143

water supply: Geohydrology and simulated effects of large ground-water withdrawals on the Mississippi River alluvial aquifer in northwestern Mississippi W 2292

water table: Elevation of the water-table surface for the alluvial aquifer and hydrologic conditions in the Santa Isabel-Juana Diaz area, Puerto Rico, March 1986 WRI 87-4123

— Soil water and vegetation responses to precipitation and changes in depth to ground water in Owens Valley, California W 2370-G

water wells: Hydrogeologic data from selected wells and test holes in and adjacent to the Nevada Test Site, Nye County, Nevada, through 1986 OF 87-0536

ground water—models

mathematical models: Mathematical model analysis of the Eagle Valley ground-water basin, west-central Nevada OP-27

pumping: The artificial alkalization of an acidic lake by ground-water addition OP-1405

solutes: Macrodispersion in sand-shale sequences OP-370

water balance: Simulation of the effects of ground-water withdrawal from a well field adjacent to the Rio Grande, Santa Fe County, New Mexico WRI 89-4184

ground water—movement

alluvium aquifers: Hydrogeologic inferences from drillers' logs and from gravity and resistivity surveys in the Amargosa Desert, southern Nevada OP-783

confined aquifers: An assessment of the flow of variable-salinity ground water in the middle confining unit of the Floridan aquifer system, west-central Florida WRI 89-4142

controls: Hydrogeologic factors affecting flow in the ground-water systems of the coalfields of southwestern Virginia OP-1158

data processing: Solving groundwater flow problems by conjugate-gradient methods and the strongly implicit procedure OP-463

digital simulation: Analysis of ground-water flow in the A-Sand Aquifer at Paramaribo, Suriname, South America WRI 90-4036

— Geohydrology and simulation of ground-water flow in the "400-foot," "600-foot," and adjacent aquifers, Baton Rouge area, Louisiana OP-585

— Geohydrology and simulation of ground-water flow in the Mesilla Basin, Dona Ana County, New Mexico, and El Paso County, Texas OF 88-0305

— Geohydrology, ground-water quality, and simulated ground-water flow, Geauga County, Ohio WRI 90-4026

— Ground-water flow in the New Jersey coastal plain OF 87-0528

discharge: Geohydrology and evapotranspiration at Franklin Lake playa, Inyo County, California OF 90-0356

drainage: Specific yield; laboratory experiments showing the effect of time on column drainage W 1662-B

effects: Erosion of seacliffs by groundwater OP-777

hydraulic conductivity: Estimates of hydraulic conductivity from aquifer-test analyses and specific-capacity data, Gulf Coast regional aquifer systems, south-central United States WRI 90-4121

interpretation: Flow system considerations in collection and interpretation of ground-water quality samples OP-1777

karst hydrology: Hydrology of the cavernous limestones of the Mammoth Cave area, Kentucky W 1837

models: A digital simulation of the glacial-aquifer system in the northern three-fourths of Brown County, South Dakota WRI 88-4198

— An efficient deterministic-probabilistic approach to modeling regional groundwater flow; 1, Theory OP-1164

— An efficient deterministic-probabilistic approach to modeling regional groundwater flow; 2, Application to Owens Valley, California OP-396

— Paleohydrogeology of the Colorado Plateau: background and conceptual models OP-908

— Simulation of ground-water flow in the Cambrian-Ordovician aquifer system in the Chicago-Milwaukee area of the northern Midwest OP-1165

— The role of a geographic information system in modeling of groundwater flow in the San Juan Basin regional aquifer system, New Mexico, Colorado, Arizona, and Utah OP-559

monitoring: Characterization of ground-water flow and chemical transport beneath two irrigated fields in south-central Kansas, 1988 WRI 90-4065

numerical models: A computer program for calculating subregional water budgets using results from the U.S. Geological Survey modular three-dimensional finite-difference ground-water flow model OF 90-0392

— Calibration of a texture-based model of a ground-water flow system, western San Joaquin Valley, California OF 90-0573

— Definition of the geohydrologic framework and preliminary simulation of ground-water flow in the Mississippi Embayment aquifer system, Gulf Coastal Plain, United States WRI 86-4364

— Geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California WRI 89-4099

— Geohydrology and simulation of ground-water flow in the carbonate rocks of the Valley Creek basin, eastern Chester County, Pennsylvania WRI 89-4169

— Simulation of ground-water flow and potential land subsidence, Avra Valley, Arizona WRI 90-4178

— Simulation of ground-water flow in the coastal plain aquifer system of North Carolina OF 90-0372

regional patterns: Calibration and sensitivity analysis of a ground-water flow model of the coastal lowlands aquifer system in parts of Louisiana, Mississippi, Alabama, and Florida WRI 89-4189

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states P 1409-D

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states OF 90-0560

— Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states OF 91-0479

— Geohydrology and regional ground-water flow of the coastal lowlands aquifer system in

parts of Louisiana, Mississippi, Alabama, and Florida; a preliminary analysis WRI 88-4100

— Geohydrology of the regional aquifer system, western Snake River plain, southwestern Idaho P 1408-G

— Ground-water-flow systems in the Powder River structural basin, Wyoming and Montana WRI 85-4229

— Gulf Coast Regional Aquifer-System Analysis; a Kentucky perspective WRI 90-4138

— Hydrogeologic framework of the coastal plain of Maryland, Delaware, and the District of Columbia P 1404-E

— Hydrology of the Mississippi River valley alluvial aquifer, south-central United States OF 90-0358

— Hydrology of the Texas Gulf Coast aquifer systems OF 91-0064

— Interbed storage changes and compaction in models of regional groundwater flow OP-614

— Regional evaluation of hydrologic factors and effects of pumping, St. Peter-Jordan Aquifer, Iowa WRI 90-4009

saturated zone: Water and tritium movement in the saturated zone W 2367

seepage: Seepage-induced cliff recession and regional denudation OP-458

simulation: Simulation of ground-water flow in the Cambrian-Ordovician aquifer system in the Chicago-Milwaukee area of the northern Midwest OP-1165

site exploration: Geohydrology of test well USW H-1, Yucca Mountain, Nye County, Nevada WRI 84-4032

— Results of hydrologic research at a low-level radioactive-waste disposal site near Sheffield, Illinois W 2367

submarine environment: Groundwater processes in the submarine environment OP-873

tectonic controls: Friction, overpressure and fault normal compression OP-140

three-dimensional models: Analysis of the effects of hypothetical changes in ground-water withdrawal from the Floridan aquifer system in the area of Glynn County, Georgia WRI 90-4027

tracers: Geochemical investigations of hydraulic connections between the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park WRI 91-4052

unsaturated zone: Water and tritium movement in the unsaturated zone W 2367

unsteady flow: Apparent dispersion in transient groundwater flow OP-369

waste disposal: Water movement and trench stability at a simulated arid burial site for low-level radioactive waste near Beatty, Nevada OP-21

water balance: Quantity and quality of groundwater inflow to the San Joaquin River, California WRI 91-4019

water supply: Estimates of consumptive use and ground-water return flow and the effect of rising and sustained high river stage on the method of estimation in Cibola Valley, Arizona and California, 1983 and 1984 WRI 89-4194

ground water—pollution

analysis: Application of geophysical techniques for assessing ground-water contamination near a landfill at Stuart, Florida OP-893

— Determination of trace levels of herbicides and their degradation products in surface and ground waters by gas chromatography/ion-trap mass spectrometry OP-819

brines: Effects of oil production on water resources in the Kentucky River basin, Kentucky WRI 90-4191

colloidal materials: Use of colloid filtration theory in modeling movement of bacteria through a contaminated sandy aquifer OP-422

data acquisition: A literature survey of information on well installation and sample collection procedure used in investigations of ground-water contamination by organic compounds OF 90-0378

data bases: Ground-water information manual: coal mine permit applications OP-868

detection: A preliminary investigation of the hydrogeology and contamination in the area of an abandoned manufactured gas plant in Albany, Georgia WRI 90-4141

— Application of geophysical methods to the study of pollution associated with abandoned and injection wells C 1033

— Application of stable-isotope techniques to environmental geochemistry C 1033

— Delineation of ground-water contamination using soil-gas analyses near Jackson, Tennessee WRI 90-4137

— Extent and source of organic solvents in ground water in the Argonne Road area near Spokane, Washington WRI 89-4121

— Geohydrology and the occurrence of volatile organic compounds in ground water, Culpeper Basin of Prince William County, Virginia WRI 90-4032

— Reconnaissance of the occurrence of agricultural chemicals in ground water in Haywood, Lake, Obion, and Shelby counties, Tennessee WRI 90-4064

— Texture and depositional history of late Pleistocene-Holocene alluvium in the central part of the western San Joaquin Valley, California OP-609

field studies: Detailed geophysical investigation of a shallow sandy aquifer OF 90-0414

hazardous waste: Application of marine seismic profiling to a ground water contamination study, Aberdeen Proving Ground, Maryland OP-501

herbicides: Work plan for regional reconnaissance for selected herbicides and nitrate in ground water of the Mid-continental United States, 1991 OF 91-0059

history: Use of tree-ring chemistry to document historical ground-water contamination events OP-1097

hydrochemistry: Chemical, geologic, and hydrologic data from the study of acidic contamination in the Miami Wash-Pinal Creek area, Arizona, water years 1988-89 OF 90-0395

measurement: Prospecting for zones of contaminated ground-water discharge to streams using bottom-sediment gas bubbles OP-1095

metals: Hazardous wastes from large-scale metal extraction OP-743

monitoring: Hydrogeologic reconnaissance of the Swope Oil Superfund Site and vicinity, Camden and Burlington counties, New Jersey OF 89-0402

— Note on use of producing well as a monitoring well, with special reference to a proposed well at Sandia Corporation, Albuquerque, New Mexico OF 91-0081

— Tensiometers; theory, construction, and use OP-1010

oil spills: Factors controlling mass transfer at an organic-liquid/ground water interface OF 91-0088

— Preliminary investigation of soil and ground-water contamination at a U.S. Army Petroleum Training Facility, Fort Lee, Virginia, September-October 1989 OF 90-0387

— The chemistry of silica-organic complexation in a petroleum-contaminated aquifer OF 91-0088

oil storage: Assessment of ground-water contamination from a leaking underground storage tank at a defense supply center near Richmond, Virginia WRI 90-4091

organic materials: Trace organic compounds in ground water in south-central Kansas as inferred from gas chromatography with flame-ionization detection OP-444

pollutants: Colloidal-facilitated transport of inorganic contaminants in ground water: Part I, Sampling considerations OP-851

— Groundwater contamination in the United States OP-733

— Organic contamination of ground water at Gas Works Park, Seattle, Washington OP-1074

— Organic substance structures that facilitate contaminant transport and transformations in aquatic sediments OP-623

— Overview of U.S. Geological Survey investigations of the distribution of triazine herbicides in water in the upper Midwestern United States OP-1518

— Properties and hazards of 108 selected substances: 1990 edition OF 90-0408

prediction: Hydrogeology and preliminary assessment of the potential for contamination of

the Memphis Aquifer in the Memphis area, Tennessee WRI 90-4092

radioactive waste: Geochemical data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri; 1989-90 OF 90-0351

— Hydrologic conditions and distribution of selected chemical constituents in water, Snake River Plain Aquifer, Idaho National Engineering Laboratory, Idaho, 1986 to 1988 WRI 91-4047

— Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990 OF 90-0552

— Hydrological, meteorological, and geohydrological data for an unsaturated zone study near the Radioactive Waste Management Complex, Idaho National Engineering Laboratory, Idaho; 1987 OF 90-0114

runoff: Effects of storm-water runoff on local ground-water quality, Clarksville, Tennessee WRI 90-4044

sampling: Nutrients, pesticides, surfactants, and trace metals in ground water from the Howe and Mud Lake areas upgradient from the Idaho National Engineering Laboratory, Idaho OF 90-0565

selenium: Interaction of shallow ground water and subsurface drains; implications for selenium transport and distribution in the western San Joaquin Valley, California OP-1382

— Selenium in waters in and adjacent to the Kendrick Project, Natrona County, Wyoming W 2023

toxic materials: A methodology for relating regions of corrosive ground water to hydrogeologic variables in the New Jersey coastal plain OP-58

— Toxic substances hydrology; surface- and ground-water contamination C 1033

tracers: The role of physical and chemical heterogeneity in the interpretation of small-scale tracer tests involving microorganisms OF 91-0088

transport: A pilot study for delineation of areas contributing water to wellfields at Jackson, Tennessee WRI 89-4201

— A steady-state unsaturated-zone model to simulate pesticide transport WRI 90-4164

— Estimating groundwater exchange with lakes; 2, Calibration of a three-dimensional, solute transport model to a stable isotope plume OP-580

— Governing equations and model approximation errors associated with the effects of fluid-storage transients on solute transport in aquifers WRI 90-4156

— Ground-water contamination and movement at the Defense General Supply Center, Richmond, Virginia WRI 90-4113

— Particle tracking analysis of recharge areas on Long Island, New York OP-139

— Particle-tracking analysis of flow paths and traveltimes from hypothetical spill sites within the capture area of a wellfield OP-42

— Reevaluation of large-scale dispersivities for a waste chloride plume; effects of transient flow OP-368

— Simulation of reactive multispecies transport in two-dimensional ground-water-flow systems OF 91-0088

tritium: Tritium in ground water at the Idaho National Engineering Laboratory, Idaho WRI 90-4090

volatiles: Mapping zones of contaminated ground-water discharge using creek-bottom-sediment vapor samplers, Aberdeen Proving Grounds, Maryland OP-1096

waste disposal: Geophysical and chemical investigations of ground water at five industrial or waste-disposal sites in Logan Township, Gloucester County, New Jersey, 1983-87 WRI 90-4004

water quality: Quality of water in an inactive uranium mine and its effects on the quality of water in Blue Creek, Stevens County, Washington, 1984-85 WRI 89-4110

— Very low frequency electromagnetics mapping of a freshwater lens at Key West, Florida OP-591

water treatment: Isolation and characterization of autotrophic, hydrogen-oxidizing, denitrifying bacteria from ground water as potential agents for bioremediation of nitrate contamination OF 91-0088

water wells: Preliminary delineation of contaminated water-bearing fractures intersected by open-hole bedrock wells OP-1138

ground water—recharge

alluvium aquifers: Tentative computation of recharge of Pecos Valley shallow-water basin and of effect of pumping by present holders of water rights OF 91-0081

artificial recharge: A preliminary assessment of the potential for artificial recharge in eastern Arkansas WRI 90-4123

bolsons: Summary of data from the 1981-83 pilot study and 1985-89 operations of the Hueco bolson recharge project, Northeast El Paso, Texas OF 90-0175

distribution: Distribution of ground-water recharge, Oahu, Hawaii OF 91-0079

infiltration: Summary of infiltration rates in arid and semiarid regions of the world, with an annotated bibliography OF 87-0043

movement: Hydrology of Heber and Round valleys, Wasatch County, Utah, with emphasis on simulation of ground-water flow in Heber Valley OP-872

numerical analysis: Geochemistry and hydrology of the Zunil geothermal system, Guatemala OP-2

— Numerical simulation of hydrothermal circulation in the Cascade Range, north-central Oregon OP-508

numerical models: Predevelopment hydrology of the Gila River Indian Reservation, south-central Arizona WRI 89-4174

rates: Ground-water recharge in Florida; a pilot study in Okaloosa, Pasco, and Volusia counties WRI 90-4195

— Recharge rates and aquifer hydraulic characteristics for selected drainage basins in middle and East Tennessee WRI 90-4015

unsaturated zone: Mapping vadose zones in groundwater recharge areas with ground penetrating radar OF 90-0414

water management: Importance of return flow as a component of water use OF 90-0197

wetlands: Some comments on the relation between ground water and wetlands OP-152

ground water—resources

analysis: Use of a geographic information system for the analysis of water resources conditions and issues OP-734

bibliography: Selected references for the Puget-Willamette Lowland Regional Aquifer-System Analysis, Puget Sound lowland, Washington OF 90-0584

controls: Factors affecting well productivity in the fractured rocks of the Maryland Piedmont OP-3

exploration: Ground-water exploration using deep Schlumberger soundings at Edwards-AFB, California; Part 1, Graham Ranch and Rogers Lake OF 90-0536

fresh water: Water-resources potential of the freshwater lens at Key West, Florida WRI 90-4115

information systems: National Water Information System user's manual; Volume 2, Chapter 5, Water-Use Data System; Part 1, Site-Specific Water-Use Data System (SSWUDS) OF 90-0198

— Site-Specific Water-Use Data System (WUDS) menus OF 90-0198

inventory: Records of wells and chemical analyses of ground water in Deuel and Hamlin counties, South Dakota OF 90-0391

manuals: Basic ground-water hydrology W 2220

models: Documentation of model input and output values for the ground-water resources of Honey Lake valley, Lassen County, California, and Washoe County, Nevada OF 91-0068

popular geology: A primer on water GN

programs: The U.S. Geological Survey Federal-State Cooperative Water-Resources Program, fiscal year 1989 OF 90-0353

water management: A review of groundwater management models OP-373

— Automation of data systems; Minnesota's approach for water-use data B 1908

— Determination of water use in Rockford and Kankakee areas, Illinois WRI 90-4166

— Ground-water use by public-supply systems in Tennessee in 1988 OF 91-0176

— Hydrogeology, water quality, and ground-water development alternatives in the lower Wood River ground-water reservoir, Rhode Island WRI 89-4031

— Plan for developing a water-use data program in Rhode Island WRI 90-4207

— Public-supply water use in Florida, 1987 OF 90-0596

— Risk aversion in conjunctive water use OP-112

— Summary of reported water use for Arkansas counties, 1989 OF 91-0203

— Water use in the St. Jones River basin, Kent County, Delaware, 1983-86 WRI 90-4094

— Water withdrawal and use in Maryland, 1987 OF 90-0572

water supply: Estimated use of water in North Dakota in 1985 and trends during 1960-85 WRI 89-4003

— Further drilling at Namao OF 91-0080

— Geohydrology and evaluation of water-resource potential of the upper Floridan Aquifer in the Albany area, southwestern Georgia OF 91-0052

— Geohydrology of the Morrison Formation in the western San Juan basin, New Mexico WRI 89-4069

— Geohydrology, water quality, and water budgets of Golden Gate Park and the Lake Merced area in the western part of San Francisco, California WRI 90-4080

— Geology and hydrologic assessment of coastal plain aquifers in the Waldorf area, Charles County, Maryland; Part 2, Water-supply potential of the aquifers OP-310

— Grande Prairie Air Base water supply OF 91-0080

— Ground-water availability and quality in eastern Bernalillo County and vicinity, central New Mexico WRI 89-4127

— Ground-water resources of selected high volcanic islands of Truk with emphasis on small village supplies WRI 88-4163

— Ground-water resources of Snohomish County, Washington W 1135

— Ground-water supplies in the vicinity of Clovis, New Mexico OF 91-0081

— Ground-water supplies near Carlsbad, New Mexico OF 91-0081

— Ground-water supplies near Cerillos, New Mexico OF 91-0081

— Hydrogeology and ground-water resources of Somerset County, Maryland OP-1128

— Memorandum No. 2 on ground-water supplies in the vicinity of Ft. Bayard, New Mexico OF 91-0081

— Memorandum on ground-water supplies near Valmont, New Mexico OF 91-0081

— Memorandum on the water supply of Alamogordo, New Mexico OF 91-0081

— Memorandum on water supply for the proposed airbase near Hobbs, New Mexico OF 91-0081

— Possible sources of water supply at Namao OF 91-0080

— Potential for ground-water development in central Volusia County, Florida WRI 90-4010

— Short papers on water supplies and engineering geology, Alaska Highway, 1943-1944 OF 91-0080

— Study of water supply for the Alaska Wing stations OF 91-0080

— The availability of irrigation water at the Alamogordo Air Base OF 91-0081

— The effect of 1988 drought on water resources in Wisconsin OF 90-0149

— The role of ground water in ameliorating long-term water scarcity OP-223

— Water availability and vulnerability of ground water to contamination in northwestern Hardin County, Kentucky WRI 90-4133

— Water supplies for maintenance stations in the Dawson Creek District OF 91-0080

— Water supplies for relay and repeater stations on the Alaska Highway OF 91-0080

— Water supply at Namao OF 91-0080

— Water withdrawals in the Black Warrior-Tombigbee Basin and Alcorn County, Mississippi, 1985-87 WRI 90-4061

— Well water supply at Namao OF 91-0080

ground water—salt-water intrusion

brines: Salt-dome locations in the Gulf Coastal Plain, south-central United States WRI 90-4060

controls: Geohydrologic framework and an analysis of a well-plugging program, Lee County, Florida WRI 90-4063

geophysical surveys: Application of geophysics in the delineation of the freshwater/saline-water interface in the Michigan Basin OP-1131

mining: Potential saltwater intrusion into freshwater aquifers during exploration for and mining of phosphorite off the Southeastern United States C 1033

numerical models: The computer model SHARP, a quasi-three-dimensional finite-difference model to simulate freshwater and saltwater flow in layered coastal aquifer systems WRI 90-4130

simulation: Simulation of ground-water in coastal southern New Jersey OP-1005

water wells: Memorandum No. 2 concerning magnesium brine wells of the Emro Corporation near Carlsbad, New Mexico OF 91-0081

well-logging: Verification of geophysically determined depths to saltwater near the Herring River (Cape Cod National Seashore), Wellfleet, Massachusetts OF 91-0321

ground water—surveys

Alaska: Hydrologic conditions at Anaktuvuk Pass, Alaska, 1989 OF 90-0591

— Sites to be drilled for water in the Fairbanks District OF 91-0080

Arizona: Annual summary of ground-water conditions in Arizona, spring 1983 to spring 1984 OF 85-0410

— Annual summary of ground-water conditions in Arizona, spring 1984 to spring 1985 OF 86-0422-W

Arkansas: Summary and analysis of water-use data collection in eastern Arkansas WRI 90-4177

British Columbia: Ground water conditions at Fort Nelson Airport OF 91-0080

California: Ground water in the Central Valley, California; a summary report P 1401-A

— Water resources of the Descanso area, San Diego County, California WRI 90-4014

Colorado: Geophysical log investigation of formation changes produced by hydraulic fracture simulation in a crystalline-bedrock aquifer OP-800

— Summary of water-resources activities of the U.S. Geological Survey in Colorado; fiscal year 1991 OF 91-0210

Florida: Geology, hydrology, and water quality of the surficial aquifer system in Volusia County, Florida WRI 90-4069

— Ground-water sources and 1985 withdrawals in Florida OP-196

— Water resources activities in Florida, 1990-91 OF 91-0078

Georgia: Ground-water conditions in Georgia, 1989 OF 90-0706

Great Plains: Geohydrology of the Great Plains aquifer system, central United States OP-443

— The High Plains regional aquifer: geohydrology OP-1116

Hawaii: Modeling a regional aquifer containing a narrow transition between fresh water and salt water using solute-transport simulation; Part 1, Theory and methods OP-1094

— Water resources of the island of Kahoolawe, Hawaii; preliminary findings WRI 89-4209

Iowa: A summary of water-resources activities for the U.S. Geological Survey in Iowa, fiscal year 1990 OF 90-0583

— Hydrologic data for the Big Spring basin, Clayton County, Iowa, water year 1989 OF 91-0063

— Permitted water use in Iowa, 1985 OF 86-0302

— Water resources of Northeast Iowa OP-489

Kansas: Geohydrologic data for the South Fork Ninnescah River valley and adjacent uplands in Pratt and Kingman counties, south-central Kansas OF 91-0186

Louisiana: Geohydrology and simulation of flow in the Chicot Aquifer system of southwestern Louisiana OP-781

— Water-resources activities of the Louisiana District, 1988-89 OF 91-0201

Maryland: Water resources of Washington County, Maryland OP-249

Massachusetts: Ground water modeling and particle tracking analysis of recharge areas to public water supply wells in stratified drift aquifers OP-55

Michigan: Hydrology and land use in Grand Traverse County, Michigan WRI 90-4122

— Water resources activities in Michigan, 1985 OF 85-0566

— Water resources activities in Michigan, 1988 OF 88-0340

Midwest: Geohydrologic framework and ground-water flow in the Michigan Basin OP-671

— Geohydrology of regional aquifer systems in Cretaceous and older rocks underlying the central United States OP-963

— Ground-water and surface-water interactions in Minnesota and Wisconsin wetlands OP-126

— Regional aquifer systems of the United States; aquifers of the Midwestern area OP-1033

— The Cambrian-Ordovician regional aquifer system in the northern Midwest; a summary OP-1166

Mississippi: Freshwater use in Mississippi, 1985 WRI 88-4229

Montana: Reconnaissance of ground-water resources of the Fort Peck Indian Reservation, northeastern Montana WRI 91-4032

— Water-resources activities of the U.S. Geological Survey in Montana, October 1989 through September 1991 OF 91-0191

New England: A plan for the study of the hydrogeology of bedrock of New England OF 90-0374

New Hampshire: Hydrogeology of the Cocheco River basin, southeastern New Hampshire WRI 87-4130

New Mexico: Aquifer-characteristic and water-chemistry data from wells on or near Navajo tribal lands in the Zuni River basin and Whitewater Arroyo drainage, west-central New Mexico OF 90-0147

— Ground-water conditions in the vicinity of Orogrande, New Mexico OF 91-0081

— Ground-water conditions near Belen, New Mexico OF 91-0081

— Ground-water conditions near Cambray, Luna County, New Mexico OF 91-0081

— Ground-water conditions near Deming, New Mexico OF 91-0081

— Ground-water conditions near Separ, New Mexico OF 91-0081

— Ground-water conditions near Wilna, New Mexico OF 91-0081

— Preliminary report on ground-water conditions southwest of Portales OF 91-0081

— Short papers on water resources in New Mexico, 1937-57 OF 91-0081

— Well drilling, water-quality sampling and aquifer testing on Acoma Pueblo lands, November 1, 1988 to March 8, 1989 OP-584

North Carolina: Ground-water study of the central coastal plain, North Carolina OF 90-0192

— U.S. Geological Survey: North Carolina's water resources: a partnership with state, Federal, and local agencies OF 91-0077

North Dakota: Water-resources activities, North Dakota District, fiscal year 1990 OF 91-0188

Ohio: Current water-resources activities in Ohio, 1987 OF 87-0102

— Current water-resources activities in Ohio, 1991 OF 91-0096

— Ohio-Indiana carbonate-bedrock and glacial regional aquifer system analysis; plan of study OP-134

— Water-resources activities in Ohio, 1988 OF 88-0196

Oregon: Ground-water data for the Portland Basin, Oregon and Washington OF 90-0126

Pennsylvania: Geohydrology and ground-water resources of Philadelphia, Pennsylvania W 2346

— Water-resources investigations in Pennsylvania: programs and activities of the U.S. Geological Survey, 1990-91 OF 91-0214

Puerto Rico: Water resources investigations in Puerto Rico and the U.S. Virgin Islands, 1986-88 OF 90-0122

Rhode Island: Ground-water resources of Rhode Island OF 91-0199

South Carolina: Water use in South Carolina, 1985 WRI 89-4098

South Dakota: Water resources of Hutchinson and Turner counties, South Dakota WRI 90-4093

— Water-resources activities of the U.S. Geological Survey in South Dakota; fiscal years 1989-90 OF 91-0091

Tennessee: Water-resources investigations in Tennessee: programs and activities of the U.S. Geological Survey, 1990-91 OF 91-0051

Texas: Compilation of hydrologic data for the Edwards Aquifer, San Antonio area, Texas, 1989, with 1934-89 summary OP-761

— The relative importance of pH, charge, and water solubility on the movement of organic solutes in soils and ground water OP-668

United Arab Emirates: Application of uphole data from petroleum seismic surveys to ground-water investigations, Abu Dhabi (United Arab Emirates) OP-1155

Utah: Base of moderately saline ground water in San Juan County, Utah OP-497

— Ground-water conditions in the Grand County area, Utah, with emphasis on the Mill Creek-Spanish Valley area OP-90

— Water resources activities in Utah by the U.S. Geological Survey, October 1, 1988 to September 30, 1989 OF 90-0589

Virginia: Ground-water hydrology and quality in the Valley and Ridge and Blue Ridge physiographic provinces of Clarke County, Virginia WRI 90-4134

West Virginia: Water resources of the Elk River basin, West Virginia OP-686

ground water—water quality

agriculture: Effect of agricultural chemicals on groundwater quality in the New Jersey coastal plain OP-650

analysis: Ground-water-quality assessment of the Carson River basin, Nevada and California: analysis of available water-quality data through 1987 OF 89-0382

aquifers: Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-L

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-J

data acquisition: Geohydrologic, ground-water quality, and streamflow data for the stratified-drift aquifers in the lower Merrimack and coastal river basins, southeastern New Hampshire OF 89-0390

— Geologic setting and water quality of selected basins in the active coal-mining areas of Ohio, 1987-88 WRI 90-4109

— Real-time hydrologic data OP-169

dissolved materials: Changes in ground-water quality caused by river-water intrusion in the Potomac Group aquifer system of northwestern Charles County, Maryland OP-470

drainage basins: Historic water-quality data, Puerco River basin, Arizona and New Mexico OF 91-0196

— Summary of hydrogeologic, water-quality, and biological data from two small basins, Southeast Hillsborough County, Florida OF 89-0395

H

— Use of longitudinal strain in identifying driving and resisting elements of landslides OP-66

Hawaii—environmental geology

geologic hazards: Hawaii; floods and droughts W 2375

Hawaii—geochemistry

igneous rocks: Implications of Sr, Nb, Pb, and He isotopes for recycled continental crust in the evolution of the Hawaiian hot spot OP-1372

isotopes: Terrestrial primordial neon OP-911

nitrogen: Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected regularly for 13 months at a site on the summit of Kilauea Volcano OF 90-0661

noble gases: Possible solar noble-gas component in Hawaiian basalts OP-488

Hawaii—geochronology

Cretaceous: Paleomagnetic evidence for Cretaceous age of two volcanoes on the south flank of the island of Hawaii OP-901

Holocene: Crustal subsidence rate off Hawaii determined from $^{234}U/^{238}U$ ages of drowned coral reefs OP-655

Hawaii—geophysical surveys

acoustical surveys: Cruise report, Hawaiian GLORIA Cruise F12-89-HW OF 91-0127

— GLORIA mosaic of the U.S. Hawaiian Exclusive Economic Zone OP-1922

electrical surveys: The location and mapping of hydrologic regimes and thermal waters in Hawaii; the use of electrical geophysical techniques OP-549

seismic surveys: Multichannel seismic evidence for a subcrustal intrusive complex under Oahu and a model for Hawaiian volcanism OP-1243

surveys: Cruise report; GLORIA survey of part of the Hawaiian Exclusive Economic Zone, F1-90-HW OF 90-0345

Hawaii—hydrogeology

ground water: Can electrical geophysical methods detect the salinity transition zone beneath ground water lenses? OP-1527

— Distribution of ground-water recharge, Oahu, Hawaii OF 91-0079

— Modeling a regional aquifer containing a narrow transition between fresh water and salt water using solute-transport simulation; Part 1, Theory and methods OP-1094

thermal waters: Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii OF 91-0133-A

— Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii OF 91-0133-B

Hawaii—petrology

igneous rocks: Picritic glasses from Hawaii OP-177

— The Ninole Basalt; implications for the structural evolution of Mauna Loa Volcano, Hawaii OP-637

Hawaii—seismology

earthquakes: Block tectonics of the island of Hawaii from a focal mechanism analysis of basal slip OP-129

— Characteristics of seismic waves composing Hawaiian volcanic tremor and gas-piston events observed by a near-source array OP-290

— Hawaii earthquakes, 1985 B 1954

Hawaii—stratigraphy

changes of level: Crustal subsidence rate off Hawaii determined from $^{234}U/^{238}U$ ages of drowned coral reefs OP-655

Pleistocene: Anaerobic diagenesis within Recent, Pleistocene, and Eocene marine carbonate frameworks OP-910

Hawaii—structural geology

neotectonics: Block tectonics of the island of Hawaii from a focal mechanism analysis of basal slip OP-129

— Horizontal ground deformation patterns and magma storage during the Puu Oo eruption of Kilauea Volcano, Hawaii, episodes 22-42 OP-477

Hawaii—tectonophysics

continental drift: Paleomagnetic evidence for Cretaceous age of two volcanoes on the south flank of the island of Hawaii OP-901

mantle: Electromagnetic investigation of the Hawaiian swell OP-1898

Hawaii—volcanology

Hawaii Volcanoes National Park: The Hawaiian Volcano Observatory polling telemetry system for low frequency data acquisition OF 90-0525

Kilauea: Degassing history of water, sulfur, and carbon in submarine lavas from Kilauea Volcano, Hawaii OP-236

— Distribution of metals between particulate and gaseous forms in a volcanic plume OP-469

— Fractal properties of tremor and gas piston events observed at Kilauea Volcano, Hawaii OP-174

— Geometry of the September 1971 eruptive fissure at Kilauea Volcano, Hawaii OP-258

— Horizontal deformation of Kilauea Volcano OP-1841

— Kilauea Volcano, Hawaii YR

— Tabulation of CO_2, SO_2, and He concentrations in summit fumarole gases and wind and rainfall data at Kilauea Volcano, Hawaii for the period June 1987–February 1989 OF 90-0507

— Underwater observations of active lava flows from Kilauea Volcano, Hawaii OP-1065

Mahukona: Geology and petrology of Mahukona Volcano, Hawaii OP-175

— Mahukona; the missing Hawaiian volcano: Comment OP-176

maps: Geologic map of Hualalai Volcano, Hawaii I-2213

Mauna Loa: The Ninole Basalt; implications for the structural evolution of Mauna Loa Volcano, Hawaii OP-637

regional: Fractal hierarchies of magma transport in Hawaii and critical self-organization of tremor OP-953

heat flow *see under* geophysical surveys *under* California; Montana; Pacific Ocean; Wyoming
see under symposia *under* tectonophysics
see under tectonophysics *under* Basin and Range Province; Honduras; Pacific Ocean; symposia; United States; Western U.S.

heat flow—interpretation

numerical models: Forward and inverse techniques in geothermal modelling OP-156

paleoclimatology: Borehole studies; climate plumbs the depths OP-913

heavy mineral deposits *see under* placers; titanium ores
see under economic geology *under* Appalachians; Atlantic Coastal Plain; Atlantic Ocean
see under techniques *under* mineral assessment

heavy mineral deposits—mineral assessment

sampling: A procedure for assessing heavy-mineral resources potential of continental shelf sediments OP-389

helium—geochemistry

soils: Factors affecting concentrations of helium and carbon dioxide in soil gases OP-468

— Helium soil-gas survey of the Crownpoint area, New Mexico; evaluation of the regional distribution OP-864

— Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected daily for 11 months from 0.3-, 0.6-, 1.2-, and 2.0-m depths OF 90-0686

— Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected regularly for 13 months at a site on the summit of Kilauea Volcano OF 90-0661

helium—isotopes

basalts: Possible solar noble-gas component in Hawaiian basalts OP-488

He-4/He-3: Coupled variations in helium isotopes and fluid chemistry; Shoshone Geyser Basin, Yellowstone National Park OP-438

— Terrestrial primordial neon OP-911

hydrogeology—data processing

aquifers: A digital simulation of the glacial-aquifer system in the northern three-fourths of Brown County, South Dakota WRI 88-4198

— Analysis of the effects of hypothetical changes in ground-water withdrawal from the Floridan aquifer system in the area of Glynn County, Georgia WRI 90-4027

— Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model TWI 06-A2

— Geohydrologic evaluation of the upper part of the Mesaverde Group, northwestern Colorado WRI 90-4020

— Geohydrology and simulated effects of large ground-water withdrawals on the Mississippi River alluvial aquifer in northwestern Mississippi W 2292

— Regional evaluation of hydrologic factors and effects of pumping, St. Peter-Jordan Aquifer, Iowa WRI 90-4009

— Selected geologic and hydrologic data for the regional carbonate-bedrock and glacial aquifers in western Ohio OF 90-0590

computer programs: Site-Specific Water-Use Data System (SWUDS) key-to-disk (KEYDISK) data entry program OF 90-0198

data storage: Archiving on-line data to optical disk OF 90-0575

drainage basins: Characterization and simulation of rainfall-runoff relations for headwater basins in western King and Snohomish counties, Washington WRI 89-4052

geographic information systems: Geographic information system/watershed model interface OP-298

— The role of a geographic information system in modeling of groundwater flow in the San Juan Basin regional aquifer system, New Mexico, Colorado, Arizona, and Utah OP-559

— Use of a geographic information system for the analysis of water resources conditions and issues OP-734

ground water: A computer program for calculating subregional water budgets using results from the U.S. Geological Survey modular three-dimensional finite-difference ground-water flow model OF 90-0392

— A finite-element model for simulation of two-dimensional steady-state ground-water flow in confined aquifers OF 90-0187

— A literature survey of information on well installation and sample collection procedure used in investigations of ground-water contamination by organic compounds OF 90-0378

— Analysis of ground-water flow in the A-Sand Aquifer at Paramaribo, Suriname, South America WRI 90-4036

— Assessment of hydrogeologic conditions with emphasis on water quality and wastewater injection, Southwest Sarasota and West Charlotte counties, Florida OF 90-0709

— Computerized stratified random site-selection approaches for design of ground-water-quality sampling network WRI 90-4101

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states P 1409-D

— Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states OF 91-0479

— Documentation of model input and output values for the geohydrology and ground-water-flow simulation of the Surprise Spring basin aquifer system, San Bernardino County, California OF 91-0482

— Geohydrology and simulation of ground-water flow in the Mesilla Basin, Dona Ana County, New Mexico, and El Paso County, Texas OF 88-0305

— Geohydrology of the regional aquifer system, western Snake River plain, southwestern Idaho P 1408-G

— Ground-water flow in the New Jersey coastal plain OF 87-0528

— Preconditioned conjugate-gradient 2 (PCG2), a computer program for solving ground-water flow equations WRI 90-4048

— Simulation of the effects of ground-water withdrawal from a well field adjacent to the Rio Grande, Santa Fe County, New Mexico WRI 89-4184

— Solving groundwater flow problems by conjugate-gradient methods and the strongly implicit procedure OP-463

hydrochemistry: User's manual for WATEQ4F, with revised thermodynamic data base and test cases for calculating speciation of major, trace, and redox elements in natural waters OF 91-0183

hydrology: Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota OF 90-0593

— Plan for developing a water-use data program in Rhode Island WRI 90-4207

— Regionalization of flood discharges for rural, unregulated streams in New York, excluding Long Island WRI 90-4197

— Review of water-management models and results of simulations for the Truckee-Carson rivers system, California and Nevada OF 90-0393

— State water-data reports; a digital representation of the hydrologic records of the United States for water-year 1990 OF 91-0463

— Users manual for ANNIE, a computer program for interactive hydrologic analyses and data management WRI 89-4080

information systems: Computer software for converting ground-water and water-quality data from the National Water Information System for use in a geographic information system WRI 90-4200

— Software quality assurance in the National Water Information System OF 91-0218

instruments: Use of electronic data-logging equipment to monitor hydrologic parameters in a humid cave environment in Wind Cave National Park, South Dakota OP-380

limnology: Assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt by using a simple hydrochemical model WRI 90-4000

manuals: Introduction OF 90-0198

— National Water Information System user's manual; Volume 2, Chapter 5, Water-Use Data System; Part 1, Site-Specific Water-Use Data System (SSWUDS) OF 90-0198

NAWDEX: Operational guidelines for assistance centers of the National Water Data Exchange OF 90-0352

salt-water intrusion: The computer model SHARP, a quasi-three-dimensional finite-difference model to simulate freshwater and saltwater flow in layered coastal aquifer systems WRI 90-4130

water management: Automation of data systems; Minnesota's approach for water-use data B 1908

— Lower Colorado River Accounting System (LCRAS) computer program and documentation OF 91-0179

hydrogeology—experimental studies

drainage: Specific yield; laboratory experiments showing the effect of time on column drainage W 1662-B

unsaturated zone: Experimental testing of transient unsaturated flow theory at low water content in a centrifugal field OP-773

hydrogeology—history

Hydrologic Instrumentation Facility: History of the applications and development section of the Hydrologic Instrumentation Facility, Gulf Coast Hydroscience Center, Stennis Space Center, Mississippi OF 90-0380

hydrogeology—instruments

flowmeters: A new approach and methodologies for characterizing the hydrogeologic properties of aquifers OP-732

— Measurement of hydraulic conductivity distribution; a manual of practice OP-731

— Thermal-pulse flowmeter for measuring slow water velocities in boreholes OF 87-0121

manuals: Streamgaging cableways OF 91-0084

samplers: The use of a standpipe to evaluate ground water samplers OP-1040

sensors: Operating manual for the U.S. Geological Survey Minimonitor, 1988 revised edition, analog-voltage model OF 89-0403

tensiometers: Tensiometers; theory, construction, and use OP-1010

hydrogeology—methods

manuals: Shortcuts and special problems in aquifer tests W 1545-C

statistical analysis: Less than obvious: statistical treatment of data below the detection limit OP-446

— Some statistical observations OP-573

hydrogeology—nomenclature

sediments: Criteria for a sediment data set OP-351

hydrogeology—philosophy

hydrology: Reflections on hydrology OP-685

hydrogeology—practice

current research: The changing emphasis of the U.S. Geological Survey activities in ground-water hydrology in the 1980's OP-885

planning: WRD project and report management guide OF 91-0224

publications: Report planning, preparation, and review guide OF 89-0275

hydrogeology—symposia

hydrology: Hydrological research basins and the environment OP-14

— Transferring models to users OP-521

— U.S. Geological Survey Toxic Substances Hydrology Program; abstracts of the technical meeting, Monterey, California, March 11-15, 1991 OF 91-0088

hydrogeology—techniques

field studies: A field method for measurement of infiltration W 1544-F

manuals: Borehole geophysics applied to ground-water investigations TWI 02-E2

slide rules: Use of a slide rule in solving ground-water problems by the nonequilibrium formula W 1545-C

hydrogeology—textbooks

manuals: A primer on sediment-trace element chemistry OF 91-0076

— A study guide for a beginning course in ground-water hydrology; Part I, Course participants OF 90-0183

— Basic ground-water hydrology W 2220

popular geology: A primer on water GN

hydrogeology—theoretical studies

aquifers: A method to estimate canal leakage to the Biscayne Aquifer, Dade County, Florida WRI 90-4135

— Governing equations and model approximation errors associated with the effects of fluid-storage transients on solute transport in aquifers WRI 90-4156

— Solution of the one-dimensional consolidation theory equation with a pseudospectral method OP-947

artesian waters: The effects of overburden stress on the specific storage and hydraulic conductivity of artesian aquifers OP-949

ground water: An efficient deterministic-probabilistic approach to modeling regional ground-water flow; 1, Theory OP-1164

hydrologic cycle: Detectability of the effects of a hypothetical temperature increase on the Thornthwaite moisture index OP-693

soils: The temperature dependence of ponded infiltration under isothermal conditions OP-197

hydrologic cycle *see under* hydrology
see under theoretical studies *under* hydrogeology

hydrology

see ground water; hydrogeology
see under bibliography *under* hydrogeology
see under data processing *under* hydrogeology
see under floods *under* geologic hazards
see under hydrogeology *under* Alaska; Arizona; Arkansas; Basin and Range Province; bibliography; California; catalogs; Colorado; Connecticut; data processing; District of Columbia; Eastern U.S.; Florida; Georgia; Great Lakes; Great Plains; Idaho; Illinois; Indiana; Iowa; Kansas; Louisiana; Mars; Maryland; Massachusetts; Michigan; Midwest; Minnesota; Mississippi; Missouri; Montana; Nebraska; Nevada; New England; New Jersey; New Mexico; New York; North Carolina; North Dakota; Ohio; Oklahoma; Oregon; Pacific region; Pennsylvania; Puerto Rico; Rhode Island; Rocky Mountains; symposia; Tennessee; Texas; United States; Utah; Venezuela; Victoria; Virginia; Washington; West Virginia; Western Hemisphere; Wisconsin; Wyoming
see under philosophy *under* hydrogeology
see under symposia *under* hydrogeology

hydrology—atmospheric precipitation

ecology: Soil water and vegetation responses to precipitation and changes in depth to ground water in Owens Valley, California W 2370-G

floods: Hydrometeorology of Rocky Mountain floods OP-527

hydrochemistry: Isotope content and temperature of precipitation in southern Nevada, August 1983-August 1986 OF 87-0463

rainfall: Rainfall-soil moisture relations in landslide-prone areas of tropical rain forest, Puerto Rico OP-606

— Tabulation of CO_2, SO_2, and He concentrations in summit fumarole gases and wind and rainfall data at Kilauea Volcano, Hawaii for the period June 1987–February 1989 OF 90-0507

runoff: Geographic estimation of runoff-model parameters OP-928

simulation: Simulation of precipitation by weather-type analysis OP-692

water quality: Precipitation-quality monitoring in southern Mississippi, 1982-87 OF 89-0266

hydrology—geochemistry

hydrolysis: The hydrolysis of Suwannee River fulvic acid OP-23

isotopes: Determination of chemical processes in coal mine spoil in west-central Missouri using sulfur and oxygen isotopes OP-92

— Stable isotopes in precipitation and ground water in the Yucca Mountain region, southern Nevada: paleoclimatic implications OP-79

pH: Isopleth maps showing regional variations in pH of stream water and ground water in relation to geologic setting and known mineral deposits, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire I-2161-A

phosphorus: Phosphorus in the Truckee River between Vista and Patrick, Storey and Washoe counties, Nevada, August 1984 WRI 89-4175

radium: Radium isotopes in the lower Mississippi River OP-582

selenium: Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California C 1033

site exploration: Water chemistry W 2367

trace elements: A primer on sediment-trace element chemistry OF 91-0076

weathering: Weathering process research: pedology and soil geochemistry in drainage basins C 1033

hydrology—glaciers

floods: A preliminary forecast of the advance of Hubbard Glacier and its influence on Russell Fiord, Alaska WRI 90-4172

hydrology—hydrologic cycle

current research: Hydrological research basins and the environment OP-14

drainage: Specific yield; laboratory experiments showing the effect of time on column drainage W 1662-B

drainage basins: Characterization and simulation of rainfall-runoff relations for headwater basins in western King and Snohomish counties, Washington WRI 89-4052

evapotranspiration: Estimates of consumptive use and ground-water return flow and the effect of rising and sustained high river stage on the method of estimation in Cibola Valley, Arizona and California, 1983 and 1984 WRI 89-4194

— Evapotranspiration and droughts W 2375

infiltration: Infiltration and evapotranspiration within the Albuquerque, New Mexico, area with a section on historical water-resource trends during the 1954-80's period of urban growth WRI 90-4055

— Summary of infiltration rates in arid and semiarid regions of the world, with an annotated bibliography OF 87-0043

models: Climate factor for small-basin flood frequency OP-629

popular geology: A primer on water GN

runoff: Runoff and land modification W 2367

tracers: Environmental tracers OP-490

water balance: Detectability of the effects of a hypothetical temperature increase on the Thornthwaite moisture index OP-693

— Simulation of the effects of ground-water withdrawal from a well field adjacent to the Rio Grande, Santa Fe County, New Mexico WRI 89-4184

water management: Importance of return flow as a component of water use OF 90-0197

watersheds: Application of the DR3M watershed model on a small urban basin OP-1054

wetlands: Hydrologic and water-quality characteristics of a wetland receiving wastewater effluent in St. Joseph, Minnesota OP-125

— Some comments on the relation between ground water and wetlands OP-152

hydrology—instruments

cables: Streamgaging cableways OF 91-0084

current meters: Comparison of recording current meters in shallow waters of San Francisco Bay, California WRI 90-4018

infiltrometers: A field method for measurement of infiltration W 1544-F

hydrology—limnology

acidification: Assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt by using a simple hydrochemical model WRI 90-4000

— Executive summary; assessing the response of Emerald Lake, an alpine watershed in Sequoia National Park, California, to acidification during snowmelt using a simple hydrochemical model OF 90-0357

ecology: Seasonal occurrences of ostracodes in lakes and streams of the San Francisco Peninsula, California OF 91-0118

evaporation: A comparison of short-term measurements of lake evaporation using eddy correlation and energy budget methods OP-1011

— Meteorologic and hydrologic data collected for computing evaporation from Devils Lake, North Dakota, 1986-88 OP-950

— Simulation of lake evaporation with application to modeling lake level variations of Harney-Malheur Lake, Oregon OP-494

gases: Natural hazards associated with Lake Kivu and adjoining areas of the Birunga volcanic field, Rwanda and Zaire, Central Africa; final report OF 90-0691

geologic hazards: Lake Nyos dam threat OP-647

models: Estimating groundwater exchange with lakes; 2, Calibration of a three-dimensional, solute transport model to a stable isotope plume OP-580

organic materials: Chemical characteristics of aquatic fulvic acid isolated from Lake Fryxell, Antarctica OP-7

paleolimnology: A ^{36}Cl chronology of lacustrine sedimentation in the Pleistocene Owens River system OP-523

— Lake Baikal in the Soviet Union YR

— Report of a workshop on the Correlation of marine and terrestrial records of climate changes in the Western U.S. OF 91-0140

playas: Geohydrology and evapotranspiration at Franklin Lake playa, Inyo County, California OF 90-0356

— Hydrologic, meteorological, and unsaturated-zone moisture-content data, Franklin Lake playa, Inyo County, California OF 89-0595

sedimentation: Stratigraphy, descriptions, and physical properties of sediments cored in Lake Michigan OF 90-0478

sediments: Evidence for the diffusion of aquatic fulvic acid from the sediments of Lake Fryxell, Antarctica OP-8

seismic profiles: Preliminary interpretation of the high-resolution seismic stratigraphy beneath Lake Michigan OF 91-0021

water quality: Preliminary report on the hydrology of Lake Five-O and vicinity, Bay County, Florida WRI 90-4148

— Water quality of lakes and streams in Voyageurs National Park, northern Minnesota, 1977-84 WRI 88-4016

wetlands: Differences in oxygen productivity rates and reaeration coefficients for wetland reaches of Natty Pond Brook, Massachusetts OP-805

hydrology—methods

data processing: A bridge scour measurement data base system OP-601

— Automation of data systems: Minnesota's approach for water-use data B 1908

— Computer software for converting groundwater and water-quality data from the National Water Information System for use in a geographic information system WRI 90-4200

— Extraction of terrain-features from digital elevation models OP-848

— National Water Information System user's manual; Volume 2, Chapter 5, Water-Use Data System; Part 1, Site-Specific Water-Use Data System (SSWUDS) OF 90-0198

— Operational guidelines for assistance centers of the National Water Data Exchange OF 90-0352

— Sediment monitoring in the United States OP-792

— Use of a geographic information system for the analysis of water resources conditions and issues OP-734

— Users manual for ANNIE, a computer program for interactive hydrologic analyses and data management WRI 89-4080

gauging: Evaluation of selected methods for determining streamflow during periods of ice effect OF 90-0554

graphic methods: Technique for estimating the magnitude and frequency of Missouri floods OF 91-0089

statistical analysis: Estimating flow characteristics at ungauged sites OP-871

hydrology—models

basin management: Applications of hydrologic information automatically extracted from digital elevation models OP-531

numerical models: Simulation of flood hydrographs for small basins in Missouri WRI 90-4045

hydrology—pollution

acid rain: Chemical, geologic, and hydrologic data from the study of acidic contamination in the Miami Wash-Pinal Creek area, Arizona, water years 1988-89 OF 90-0395

— Hydrogeochemical data from an acidic deposition study at McDonalds Branch basin in the New Jersey pinelands, 1983-86 OF 88-0500

— Programs and analytical methods for the U.S. Geological Survey acid rain quality-assurance project WRI 90-4029

— Summary of data for onsite and laboratory analyses of precipitation runoff from carbonate-rock surfaces, National Acid Precipitation Assessment Program, June 1984 to September 1986 OF 87-0461

— Summary of data from onsite and laboratory analysis of precipitation runoff from carbonate-stone surfaces, National Acid Precipitation Assessment Program, June 1984 to November 1987 OF 89-0246

— The role of coal characterization in the control of acid precipitation C 1033

analysis: Determination of trace levels of herbicides and their degradation products in surface and ground waters by gas chromatography/ion-trap mass spectrometry OP-819

brines: Effects of oil production on water resources in the Kentucky River basin, Kentucky WRI 90-4191

detection: Application of stable-isotope techniques to environmental geochemistry C 1033

metals: Surface-water-quality assessment of the lower Kansas River basin, Kansas and Nebraska; concentrations of major metals and trace elements in streambed sediments, 1987 OF 90-0581

radioactive waste: Geochemical data for the Weldon Spring Chemical Plant site and vicinity

property, St. Charles County, Missouri; 1989-90 OF 90-0351

— Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990 OF 90-0552

— Hydrological, meteorological, and geohydrological data for an unsaturated zone study near the Radioactive Waste Management Complex, Idaho National Engineering Laboratory, Idaho; 1987 OF 90-0114

— Microclimate, evapotranspiration, and tritium release by plants W 2367

sampling: Nutrients, pesticides, surfactants, and trace metals in ground water from the Howe and Mud Lake areas upgradient from the Idaho National Engineering Laboratory, Idaho OF 90-0565

selenium: Geologic sources, mobilization, and transport of selenium from the California Coast Ranges to the western San Joaquin Valley; a reconnaissance study WRI 90-4070

— Selenium in waters in and adjacent to the Kendrick Project, Natrona County, Wyoming W 2023

— Total and water extractable selenium in soils and stream sediments, and total selenium in alfalfa from the Marty II study area, South Dakota OF 90-0330

toxic materials: Toxic substances hydrology; surface- and ground-water contamination C 1033

trace metals: Concentrations of metals in bed material in the area of Congaree Swamp National Monument and in water in Cedar Creek, Richland County, South Carolina OF 90-0370

transport: Collection and analysis of colloidal particles transported in the Mississippi River, U.S.A. OP-863

— Intelligent data analyzer; herbicide transport in the Cedar River, Iowa OP-1060

water quality: Quality of water in an inactive uranium mine and its effects on the quality of water in Blue Creek, Stevens County, Washington, 1984-85 WRI 89-4110

wetlands: Analytical results for sedge samples collected on the wetland receiving acid mine drainage waters from St. Kevin Gulch, Leadville, Colorado OF 91-0126

hydrology—rivers and streams

acidification: Assessment of stream acidification in the Catskill Mountains of New York OP-755

atlas: Climatic atlas of the Delaware River basin P 1392

baseflow: Base-flow investigation on the Sacramento River, September 25, 1985, near Sunspot, Otero County, New Mexico OF 89-0239

bedload: Channel instability in a strip-mined basin OP-722

— Modeling sediment transport in an ephemeral river OP-503

— Numerical modeling of unsteady sediment-laden flow OP-594

— Sediment in Lake Taneycomo, Missouri, 1913 to 1987 OP-85

— Sediment transport in the Lower Mississippi River, 1983-1985 OP-227

— Uncertainty in estimates of suspended sediment load OP-346

— Variation in streambed material, bedload and benthic invertebrates OP-1092

channels: Channel evolution and hydrologic variations in the Colorado River basin; factors influencing sediment and salt loads OP-341

— Effects of channel modifications on the hydrology of Chicod Creek basin, North Carolina, 1975-87 WRI 90-4031

— Neotectonic effects on sinuosity and channel migration, Belle Fourche River, western South Dakota OP-367

discharge: Available habitat for salmon and steelhead trout in the lower Puyallup, White, and Carbon rivers in western Washington WRI 89-4125

— Calculation of conservative-tracer and flume-discharge measurements on a small mountain stream OF 91-0088

— Effects of surface coal mining and reclamation on the geohydrology of six small watersheds in west-central Indiana W 2368-B

— Flow and sediment transport in rough channels OP-764

— Gages for measuring fluvial-sediment concentration OP-977

— Monthly mean discharge at and between selected streamflow-gaging stations along the Mississippi, Minnesota, and St. Croix rivers, 1932-87 OF 90-0186

— Peak-flow data-collection methods for streams in arid areas OP-187

— Plans for national flood frequency by microcomputer OP-530

— Regionalization of flood characteristics OP-1055

— Techniques for computing discharge at four navigation dams on the Illinois and Des Plaines rivers in Illinois WRI 89-4106

— Urban flood frequency and hydrograph analysis OP-915

drainage basins: Basin characteristics and streamflow statistics in Arizona as of 1989 WRI 91-4041

— Selected data for stream subbasins in the Le Sueur River basin, south-central Minnesota OF 91-0062

— Selected data for stream subbasins in the Watonwan River basin, south-central Minnesota OF 91-0061

— Water resources of the Elk River basin, West Virginia OP-686

ecology: Fishes in the forested flood plain of the Ochlockonee River, Florida, during flood and drought conditions WRI 90-4202

estuaries: Implementation of a hydrodynamic model for the upper Potomac Estuary OP-924

— Land drainage and estuarine salinity response OP-46

floods: Analysis of alternative modifications for reducing backwater flooding at the Honey Creek coal strip mine reclamation site in Henry County, Missouri WRI 90-4068

— Application of a distributed-routing rainfall-runoff model to flood-frequency estimation in Somerset County, New Jersey WRI 89-4210

— Climatic variability and flood frequency of the Santa Cruz River, Pima County, Arizona OF 90-0553

— Flood characteristics of Mississippi streams WRI 91-4037

— Flood simulation for a large reservoir system in the lower Colorado River basin, Texas W 2375

— Flooding in the Arkansas, Red, and Trinity rivers YR

— Floods in the Floyd River basin, Iowa OF 86-0476

— Floods in the Nishnabotna River basin, Iowa OF 91-0171

— Floods in West Virginia, Virginia, Pennsylvania, and Maryland, November 1985 WRI 88-4213

— Floods of February 1980 in Southern California and central Arizona P 1494

— Hydrology and paleohydrology used to improve the understanding of flood hydrometeorology in Colorado OP-526

— Regionalization of flood discharges for rural, unregulated streams in New York, excluding Long Island WRI 90-4197

— Technique for estimating depths of 100-year floods in Pennsylvania WRI 86-4195

— Update of flood-flow characteristics of Nancy Creek at Georgia Highway 400 extension near Atlanta, Georgia OF 90-0166

— Use of paleoflood investigations to improve flood-frequency analyses of plains streams in Wyoming WRI 88-4209

— Water-surface profile and flood boundaries for the computed 100-year flood, Poplar River, Fort Peck Indian Reservation, Montana WRI 90-4169

gauging: Manual for comparing methods of designing hydrologic-data-collection networks OF 90-0389

hydraulic conductivity: Stream-aquifer relations and yield of stratified-drift aquifers in the Nashua River basin, Massachusetts WRI 88-4147

hydraulics: High-resolution two-dimensional advective transport OP-986

hydrochemistry: Chemical and isotopic data for water from wells, springs, and streams in carbonate-rock terrane of southern and eastern Nevada and southeastern California, 1985-88 OF 89-0422

— Sodium and chloride data from selected streams in the Lassen area, north-central California, and their relation to thermal-fluid discharge from the Lassen hydrothermal system WRI 90-4201

— The chemistry of iron, aluminum, and dissolved organic material in three acidic, metal-enriched, mountain streams, as controlled by watershed and in-stream processes OP-708

irrigation: A concept of the shallow ground-water system along the North Platte River, south-central Wyoming WRI 89-4078

karst hydrology: Hydrogeology of the karst of Puerto Rico P 1012

models: A branched hydrodynamic model of the Sacramento-San Joaquin Delta, California OP-1153

— Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota OF 90-0593

— Comparison of models for single-thread streams OP-960

pollution: Atrazine in streams of the Midwestern United States YR

— Data on polychlorinated biphenyls, dieldrin, lead, and cadmium in Wisconsin and upper Michigan tributaries to Green Bay, July 1987 through April 1988 OF 89-0052

— Fate of acetone in an outdoor model stream with a nitrate supplement, southern Mississippi, U.S.A. OP-858

— Fox River polychlorinated biphenyl (PCB) bottom sediment data OP-1726

— Occurrence, distribution, and transport of herbicides and their degradation products in the lower Mississippi River and its tributaries OP-818

— Particulate and colloidal organic material in Pueblo Reservoir, Colorado: influence of autochthonous source on chemical composition OP-855

— Transport and fate of acetone in an outdoor model stream, Stennis Space Center near Bay St. Louis, Mississippi WRI 89-4141

— Transport and transformation of dissolved rice pesticides in the Sacramento River delta, California OF 91-0227

runoff: Effects of climate change on watershed runoff OP-1151

— Effects of runoff changes and sea level rise on salinity in the Delaware River estuary OP-1102

— Estimating surface-water runoff to Narragansett Bay, Rhode Island and Massachusetts WRI 89-4164

— Preparation of average annual runoff map of the United States, 1951-80 OF 87-0535

— Urban hydrology in the desert, Antelope Valley, California OP-94

sediment yield: Effects of land-management practices on sediment yields in northeastern Guilford County, North Carolina WRI 90-4127

sedimentation: Bottomland sedimentation near highway crossings OP-67

— Construction effects on sediment for two basins in Puerto Rico OP-340

— Data that describe at-a-point temporal variations in the transport rate and particle-size distribution of bedload: East Fork River, Wyoming, and Fall River, Colorado OF 90-0193

— Dendrogeomorphic analysis of wetland sedimentation OP-502

— History of the Federal Interagency Sedimentation Project OP-976

— Low-flow sediment transport in the Colorado River OP-388

— Mineralogical correlation of surficial sediment from area drainages with selected sedimentary interbeds at the Idaho National Engineering Laboratory, Idaho WRI 90-4147

— Relation of sediment load and flood-plain formation to climatic variability, Paria River drainage basin, Utah and Arizona OP-375

— Sediment discharge in Fortification Creek and the effect of sedimentation rate on the proposed Rampart Reservoir, northwestern Colorado WRI 90-4103

— Transport of invertebrates and detritus in streams OP-1061

— Variations in suspended sediment and associated trace element concentrations in selected riverine cross sections OP-492

streamflow: Annual maximum stages and discharges of selected streams in Virginia through 1988 OF 90-0587

— Annual peak discharges from small drainage areas in Montana through September 1989 OF 90-0577

— Effects of urbanization on peak streamflows in four Connecticut communities, 1980-84 WRI 89-4167

— Estimates of 7-day, 10-year low flow at ungaged streams in Puerto Rico WRI 84-4089

— Flow modeling in the Toutle River, Washington OP-959

— Gaged and estimated monthly streamflow during 1931-84 for selected sites in the Red River of the North basin in North Dakota and Minnesota WRI 90-4167

— Geohydrologic, ground-water quality, and streamflow data for the stratified-drift aquifers in the lower Merrimack and coastal river basins, southeastern New Hampshire OF 89-0390

— Hydrologic relations between streamflow and subalpine wetlands in Grand County, Colorado WRI 90-4129

— Low-flow and flow-duration characteristics of Mississippi streams WRI 90-4087

— Low-flow characteristics of natural streams in the Blue Ridge, Piedmont, and upper Coastal Plain physiographic provinces of South Carolina WRI 90-4188

— Low-flow characteristics of streams in Virginia W 2374

— Method for estimating low-flow characteristics of ungaged streams in Indiana W 2372

— Methods for estimating monthly streamflow characteristics at ungaged sites in western Montana W 2365

— Rainfall-runoff relations and expected streamflow in western Kansas OP-544

— Statistical summaries of selected Iowa streamflow data through September 30, 1988 OF 90-0170

— Statistical summaries of streamflow data in Oregon: Volume 1, Monthly and annual streamflow, and flow-duration values OF 90-0118

— Stream-aquifer system in the upper Bear River valley, Wyoming WRI 89-4173

— Streamflow losses and ground-water level changes along the Big Lost River at the Idaho National Engineering Laboratory, Idaho WRI 90-4067

— Surface water of Kiamichi River basin in southeastern Oklahoma OF 63-0152

suspended materials: Suspended-sediment factors, Lake Tahoe basin, California-Nevada OP-462

water balance: Quantity and quality of ground-water inflow to the San Joaquin River, California WRI 91-4019

water management: Lower Colorado River Accounting System (LCRAS) computer program and documentation OF 91-0179

— Report of the River Master of the Delaware River for the period December 1, 1988 to November 30, 1989 OF 90-0551

— Review of water-management models and results of simulations for the Truckee-Carson rivers system, California and Nevada OF 90-0393

water quality: Water quality of Fountain and Monument creeks, south-central Colorado, with emphasis on relation of water quality to stream classifications WRI 88-4132

— Water-quality trends in New Jersey streams WRI 90-4046

water supply: Possible sources of water supply at Namao OF 91-0080

— Water availability and vulnerability of ground water to contamination in northwestern Hardin County, Kentucky WRI 90-4133

watersheds: Geographic information system/watershed model interface OP-298

wetlands: Factors affecting wetland retention of nutrients, metals, and organic materials OP-268

— Hydrologic regime of a floodplain wetland in Massachusetts OP-1032

hydrology—seepage

brines: Brine evolution and mineral deposition in hydrologically open evaporite basins OP-909

canals: A method to estimate canal leakage to the Biscayne Aquifer, Dade County, Florida WRI 90-4135

waste disposal: Water movement through a trench cover W 2367

hydrology—surveys

Alabama: Alabama; floods and droughts W 2375

Alaska: Alaska; floods and droughts W 2375

— Hydrologic conditions at Anaktuvuk Pass, Alaska, 1989 OF 90-0591

Arizona: Arizona; floods and droughts W 2375

— Predevelopment hydrology of the Gila River Indian Reservation, south-central Arizona WRI 89-4174

Arkansas: Arkansas; floods and droughts W 2375

— Summary and analysis of water-use data collection in eastern Arkansas WRI 90-4177

— Summary of reported water use for Arkansas counties, 1989 OF 91-0203

California: California; floods and droughts W 2375

— Surface-water hydrology of Honey Lake valley, Lassen County, California, and Washoe County, Nevada OF 90-0177

— Water resources of the Descanso area, San Diego County, California WRI 90-4014

Colorado: Colorado; floods and droughts W 2375

— Summary of water-resources activities of the U.S. Geological Survey in Colorado; fiscal year 1991 OF 91-0210

Columbia Plateau: Surface-water resources of the Columbia Plateau in parts of Washington, Oregon, and Idaho WRI 88-4105

Connecticut: Connecticut; floods and droughts W 2375

Delaware: Delaware; floods and droughts W 2375

— Water use in the St. Jones River basin, Kent County, Delaware, 1983-86 WRI 90-4094

Florida: Florida; floods and droughts W 2375

— Water resources activities in Florida, 1990-91 OF 91-0078

Georgia: Estimating urban flood-frequency characteristics OP-529

— Georgia; floods and droughts W 2375

Hawaii: Hawaii; floods and droughts W 2375

— Water resources of the island of Kahoolawe, Hawaii: preliminary findings WRI 89-4209

Idaho: Idaho; floods and droughts W 2375

Illinois: Illinois; floods and droughts W 2375

Indiana: Indiana; floods and droughts W 2375

Iowa: A summary of water-resources activities for the U.S. Geological Survey in Iowa, fiscal year 1990 OF 90-0583

— Hydrologic data for the Big Spring basin, Clayton County, Iowa, water year 1989 OF 91-0063

— Iowa; floods and droughts W 2375

— Permitted water use in Iowa, 1985 OF 86-0302

— Water resources of Northeast Iowa OP-489

Kansas: Geohydrologic data for the South Fork Ninnescah River valley and adjacent uplands in Pratt and Kingman counties, south-central Kansas OF 91-0186

— Kansas; floods and droughts W 2375

Kentucky: Kentucky; floods and droughts W 2375

Lesser Antilles: U.S. Virgin Islands; floods and droughts W 2375

Louisiana: Louisiana; floods and droughts W 2375

— Water-resources activities of the Louisiana District, 1988-89 OF 91-0201

Maine: Maine; floods and droughts W 2375

Maryland: Maryland and the District of Columbia; floods and droughts W 2375

— Water resources of Washington County, Maryland OP-249

— Water withdrawal and use in Maryland, 1987 OF 90-0572

Massachusetts: Massachusetts; floods and droughts W 2375

Michigan: Hydrology and land use in Grand Traverse County, Michigan WRI 90-4122

— Michigan; floods and droughts W 2375

— Water resources activities in Michigan, 1985 OF 85-0566

— Water resources activities in Michigan, 1988 OF 88-0340

Midwest: Ground-water and surface-water interactions in Minnesota and Wisconsin wetlands OP-126

Minnesota: Minnesota; floods and droughts W 2375

Mississippi: An alternative basin characteristic for estimating impervious area and urban flood frequency and its potential application in Mississippi OP-1000

— Freshwater use in Mississippi, 1985 WRI 88-4229

— Mississippi; floods and droughts W 2375

— Physical modeling of contracted flow OP-618

Missouri: Missouri; floods and droughts W 2375

Montana: Estimating firm yield and reliability of small reservoirs on ungaged streams in north-central Montana OP-486

— Hydrologic investigations in the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park WRI 91-4052

— Montana; floods and droughts W 2375

— Water-resources activities of the U.S. Geological Survey in Montana, October 1989 through September 1991 OF 91-0191

Nebraska: Nebraska; floods and droughts W 2375

Nevada: Nevada; floods and droughts W 2375

New Hampshire: New Hampshire; floods and droughts W 2375

New Jersey: New Jersey; floods and droughts W 2375

New Mexico: Hydrologic data for the Jemez Mountains, New Mexico OF 90-0176

— New Mexico; floods and droughts W 2375

New York: New York; floods and droughts W 2375

North Carolina: North Carolina; floods and droughts W 2375

— U.S. Geological Survey: North Carolina's water resources; a partnership with state, Federal, and local agencies OF 91-0077

North Dakota: Estimated use of water in North Dakota in 1985 and trends during 1960-85 WRI 89-4003

— North Dakota; floods and droughts W 2375

— Water-resources activities, North Dakota District, fiscal year 1990 OF 91-0188

Ohio: Current water-resources activities in Ohio, 1987 OF 87-0102

— Current water-resources activities in Ohio, 1991 OF 91-0096

— Ohio; floods and droughts W 2375

— Water-resources activities in Ohio, 1988 OF 88-0196

Oklahoma: Oklahoma; floods and droughts W 2375

Oregon: Oregon; floods and droughts W 2375

Pennsylvania: Pennsylvania; floods and droughts W 2375

— Water-resources investigations in Pennsylvania; programs and activities of the U.S. Geological Survey, 1990-91 OF 91-0214

Puerto Rico: A hydrologic excursion to Puerto Rico's southern plain OF 90-0365

— Puerto Rico; floods and droughts W 2375

— Water resources investigations in Puerto Rico and the U.S. Virgin Islands, 1986-88 OF 90-0122

Rhode Island: Rhode Island; floods and droughts W 2375

South America: Suspended-sediment budget for the Orinoco River OP-715

South Carolina: South Carolina; floods and droughts W 2375

— Water use in South Carolina, 1985 WRI 89-4098

South Dakota: South Dakota; floods and droughts W 2375

— Water resources of Hutchinson and Turner counties, South Dakota WRI 90-4093

— Water-resources activities of the U.S. Geological Survey in South Dakota; fiscal years 1989-90 OF 91-0091

Tennessee: Hydrologic unit map. 1974. State of Tennessee HUM

— Tennessee; floods and droughts W 2375

— Water-resources investigations in Tennessee; programs and activities of the U.S. Geological Survey, 1990-91 OF 91-0051

Texas: Texas; floods and droughts W 2375

United States: National water summary 1988-89; hydrologic events and floods and droughts W 2375

— Review of water year 1988 hydrologic conditions and water-related events W 2375

— Review of water year 1989 hydrologic conditions and water-related events W 2375

— Seasonal summaries of hydrologic conditions, water year 1988 W 2375

— Seasonal summaries of hydrologic conditions, water year 1989 W 2375

— State water-data reports; a digital representation of the hydrologic records of the United States for water-year 1990 OF 91-0463

Utah: Utah; floods and droughts W 2375

— Water resources activities in Utah by the U.S. Geological Survey, October 1, 1988 to September 30, 1989 OF 90-0589

Vermont: Vermont; floods and droughts W 2375

Virginia: Virginia; floods and droughts W 2375

Washington: Washington; floods and droughts W 2375

West Virginia: West Virginia; floods and droughts W 2375

Wisconsin: The effect of 1988 drought on water resources in Wisconsin OF 90-0149

— Wisconsin; floods and droughts W 2375

Wyoming: Wyoming; floods and droughts W 2375

hydrology—techniques

gauging: Automatic tracer-dilution method used for stage-discharge ratings and streamflow hydrographs on small Iowa streams WRI 89-4187

sample preparation: Methods for collection and processing of surface-water and bed-material samples for physical and chemical analyses OF 90-0140

sampling: Comments on sampling bedload in small rivers OP-366

— Mean square error of regression-based constituent transport estimates OP-347

— Measurement of scour at selected bridges in New York OP-137

hydrology—water quality

changes: Water-quality trends and basin activities and characteristics for the Albemarle-Pamlico estuarine system, North Carolina and Virginia OF 90-0398

coal: Relation between surface-water quality and the composition of coal in Pike County, Kentucky OP-563

data acquisition: Geologic setting and water quality of selected basins in the active coal-mining areas of Ohio, 1987-88 WRI 90-4109

dissolved materials: Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming OF 87-0547

drainage basins: Historic water-quality data, Puerco River basin, Arizona and New Mexico OF 91-0196

— National Water-Quality Assessment program; Nevada Basin and Range OF 91-0154

— Surface water-quality assessment of the Kentucky River basin, Kentucky; analysis of available water-quality data through 1986 OF 90-0360

— Water-quality characteristics of inflow to and outflow from B. Everett Jordan Lake, North Carolina, 1982-86 WRI 90-4096

— Water-quality characteristics of inflow to and outflow from Falls Lake, North Carolina, 1982-87 WRI 90-4097

estuaries: Data on the distribution and abundance of submersed aquatic vegetation in the tidal Potomac River and transition zone of the Potomac Estuary, Maryland, Virginia, and the District of Columbia, 1988 OF 90-0123

— Description of salinity, temperature, chlorophyll, suspended-sediment, and velocity data, South San Francisco Bay, California, February-April 1987 OF 89-0619

— Louisiana hydrologic atlas map No. 6; water-quality survey of the Barataria Basin, 1988 WRI 90-4170

impact statements: Estimated water-quality conditions and potential downstream channel effects of the proposed Rock Creek and Wolford Mountain reservoirs, north-central Colorado WRI 89-4177

— Use of elutriate tests and bottom-material analyses in simulating dredging effects on water quality of selected rivers and estuaries in Oregon and Washington, 1980-1983 WRI 89-4051

irrigation: Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the American Falls Reservoir area, Idaho, 1988-89 WRI 90-4120

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Angostura Reclamation Unit, southwestern South Dakota, 1988-89 WRI 90-4152

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Belle Fourche Reclamation Project, western South Dakota, 1988-89 WRI 90-4192

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Klamath Basin, California and Oregon, 1988-89 WRI 90-4203

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Riverton Reclamation Project, Wyoming, 1988-89 WRI 90-4187

— Trends in selected water-quality characteristics, Powder River and tributaries, Montana and Wyoming, water years 1968-88 and 1975-88 WRI 91-4029

monitoring: Effects of storm runoff on water quality in the White River and Fall Creek, Indianapolis, Indiana, June through October 1986 and 1987 WRI 89-4185

— External quality-assurance results for the National Atmospheric Deposition Program/National Trends Network during 1988 WRI 90-4030

— Operating manual for the U.S. Geological Survey Minimonitor, 1988 revised edition, analog-voltage model OF 89-0403

— Quality assurance for water-quality activities of the U.S. Geological Survey in Montana OF 91-0216

— Quality-assurance plan for water-resources activities of the U.S. Geological Survey in Montana; 1991 OF 91-0194

— Rhode Island streams, 1978-88; an update on water-quality conditions WRI 90-4082

— Water-quality data, San Joaquin Valley, California, April 1987 to September 1988 OF 91-0074

observations: Geohydrology and water quality of Kalamazoo County, Michigan, 1986-88 WRI 90-4028

programs: A perspective for the 1990's YR

— Concepts for a national water-quality assessment program C 1021

— Implementation plan for the National Water-Quality Assessment Program OF 90-0174

— Geochemical expression of poorly exposed metallization in the southeastern Challis volcanic field, Idaho; emphasis on biogeochemical methods OF 90-0656

— Mesozoic structural control of Tertiary mineralized veins in Champagne Creek area, Butte County, Idaho OF 90-0508

— Sediment-hosted mineral deposits of the eastern Hailey 2 degree Quadrangle, south-central Idaho OP-1582

— Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho OF 91-0259-A

— Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho OF 91-0259-B

— Tertiary meteoric hydrothermal systems and their relation to ore deposition, northwestern United States and southern British Columbia OP-205

— Tourmalinite and iron-formation in the Yellowjacket Formation, Idaho cobalt belt, Lemhi County, Idaho C 1062

mineral resources: Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho OF 90-0545

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Burnt Creek Wilderness Study Area, Custer County, Idaho OF 90-0653

— Analytical results and sample locality maps of rock samples from the northwestern Idaho Falls and the northeastern Hailey 1° by 2° quadrangles, Idaho OF 90-0645

— Idaho National Forest roadless areas YR

— Minerals information sources in state agencies; Idaho C 1063

— Preliminary mineral resource assessment of the Elk City 1° by 2° Quadrangle, Idaho and Montana OF 89-0016

silver ores: An assessment of metal endowments in revett-type sediment hosted Cu deposits in the Kootenai National Forest, Montana and Idaho OF 90-0470

— Maps showing mineral resource assessment for placer gold and silver, Dillon 1° × 2° Quadrangle, Idaho and Montana I-1803-F

water resources: Surface-water resources of the Columbia Plateau in parts of Washington, Oregon, and Idaho WRI 88-4105

Idaho—engineering geology

earthquakes: Strong ground motion data from the 1983 Borah Peak, Idaho earthquake recorded at the Idaho National Engineering Laboratory OP-519

mining geology: Characteristics of faults and shear zones in deep mines OP-1101

Idaho—environmental geology

geologic hazards: Idaho; floods and droughts W 2375

pollution: Nutrients, pesticides, surfactants, and trace metals in ground water from the Howe and Mud Lake areas upgradient from the Idaho National Engineering Laboratory, Idaho OF 90-0565

— Purgeable organic compounds in ground water at the Idaho National Engineering Laboratory, Idaho; 1988 and 1989 OF 90-0367

waste disposal: Hydrological, meteorological, and geohydrological data for an unsaturated zone study near the Radioactive Waste Management Complex, Idaho National Engineering Laboratory, Idaho; 1987 OF 90-0114

Idaho—geochemistry

maps: Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho OF 90-0545

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Burnt Creek Wilderness Study Area, Custer County, Idaho OF 90-0653

— Analytical results and sample locality maps of rock samples from the northwestern Idaho Falls and the northeastern Hailey 1° by 2° quadrangles, Idaho OF 90-0645

oxygen: Oxygen isotope map of the giant metamorphic-hydrothermal system around the northern part of the Idaho Batholith, U.S.A. OP-204

trace elements: Eocene plutonic rocks in south central Idaho OP-627

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the American Falls Reservoir area, Idaho, 1988-89 WRI 90-4120

— Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho OF 91-0259-A

— Some geochemical features of the Blackbird and Jackass zones of the Yellowjacket Formation (middle Proterozoic) in east-central Idaho OF 91-0259-B

Idaho—geophysical surveys

gravity surveys: Complete Bouguer gravity anomaly map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho MF-2160-B

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-A

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-B

magnetic surveys: Aeromagnetic map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho MF-2160-A

maps: Aeromagnetic map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho MF-2160-A

— Complete Bouguer gravity anomaly map of the Hailey and western part of the Idaho Falls 1° × 2° quadrangles, Idaho MF-2160-B

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-A

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-B

surveys: Regional aeromagnetic and gravity data bases for studies centered on the Idaho Batholith and Challis volcanic field C 1062

— Synthesis of geophysical and geological data centered on the Idaho Batholith and the Challis volcanic field, Idaho C 1062

well-logging: Digitized geophysical logs for selected wells on or near the Idaho National Engineering Laboratory, Idaho OF 90-0366

— Experimental suction drilling in basalts at the Idaho National Engineering Laboratory, Idaho WRI 90-4206

Idaho—hydrogeology

ground water: Background concentrations of selected radionuclides, organic compounds, and chemical constituents in ground water in the vicinity of the Idaho National Engineering Laboratory WRI 91-4015

— Geohydrology of the regional aquifer system, western Snake River plain, southwestern Idaho P 1408-G

— Hydrologic conditions and distribution of selected chemical constituents in water, Snake River Plain Aquifer, Idaho National Engineering Laboratory, Idaho, 1986 to 1988 WRI 91-4047

— Purgeable organic compounds in ground water at the Idaho National Engineering Laboratory, Idaho; 1988 and 1989 OF 90-0367

— Reevaluation of large-scale dispersivities for a waste chloride plume; effects of transient flow OP-368

— Tritium in ground water at the Idaho National Engineering Laboratory, Idaho WRI 90-4090

hydrology: Mineralogical correlation of surficial sediment from area drainages with selected sedimentary interbeds at the Idaho National Engineering Laboratory, Idaho WRI 90-4147

igneous rocks—mafic composition

petrology: Early Precambrian basic rocks of the USA OP-992

igneous rocks—peridotites

petrography: Petrology of chromite-bearing rocks from the lowermost cyclic units in the Stillwater Complex, Montana B 1674-E

igneous rocks—petrology

complexes: Geology, geochemistry, and isotopic character of the Colville igneous complex, northeastern Washington OP-147

igneous rocks—plutonic rocks

alkalic composition: Magnetic and gravity expression of Cretaceous alkalic plutonic complexes at Cuttingsville and Mount Ascutney, Vermont B 1887

— The Sitkoh Bay alkalic plutonic suite: Silurian or older alkalic magmatism on eastern Chichagof Island, southeastern Alaska OF 90-0297

composition: Mineral chemistry of the Pioneer Batholith, Beaverhead County, southwestern Montana: microprobe data tables for feldspar, amphibole, mica, pyroxene, and accessory minerals OF 90-0652

geochemistry: Distribution of gold, molybdenum, tin, and selected other elements in the vicinity of Mount Ascutney, Windsor County, Vermont B 1887

— Eocene plutonic rocks in south central Idaho OP-627

— Gold contents of 469 outcrop and 1466 B-horizon soil samples from the northwestern part of the Duluth Complex, northeastern Minnesota OF 91-0293

— New Sr, Nd, and Pb isotopic data from plutons in the northern Great Basin; implications for crustal structure and granite petrogenesis in the hinterland of the Sevier thrust belt OP-1156

— Regional differences in Pb isotopic compositions of feldspars in plutonic rocks of the northern Appalachian Mountains, U.S.A., and Canada; a geochemical method of terrane correlation OP-35

petrography: Petrography and geochemistry B 1937

petrology: Crystalline rocks of the Strawberry Lake area, Front Range, Colorado B 1937

— Petrology B 1937

igneous rocks—properties

physical properties: Density and magnetic susceptibility measurements of rocks in the Wichita Uplift and Slick Hills, southwestern Oklahoma OF 91-0269

igneous rocks—pyroclastics

age: Fission-track age (400,000 yr) of the Rockland Tephra, based on inclusion of zircon grains lacking fossil fission tracks OP-716

ash-flow tuff: Geochemistry and mineralogy of fumarolic deposits, Valley of Ten Thousand Smokes, Alaska; bulk chemical and mineralogical evolution of dacite-rich protolith OP-803

— Magnetic fabric, flow directions, and source area of the lower Miocene Peach Springs Tuff in Arizona, California, and Nevada OP-465

— Paleomagnetic investigation of Tertiary structural rotations at Yucca Mountain, southern Nevada OP-882

distribution: Occurrence of the Lava Creek B tephra layer in the northwestern Espanola Basin, New Mexico OP-230

ignimbrite: High-precision $^{40}Ar/^{39}Ar$ sanidine geochronology of ignimbrites in the Mogollon-Datil volcanic field, southwestern New Mexico OP-705

tuff: K/Ar and fission-track ages of tuff beds at the Three Kids Mine, Clark County, Nevada; implications for manganese mineralization OP-578

— New Ar-40/Ar-39 ages for the Spearhead and Civet Cat Canyon members of the Stonewall Flat Tuff, Nye County, Nevada; evidence for systematic errors in standard K-Ar age determinations on sanidine OP-430

— New fission-track ages of Mio-Pliocene tuffs in the Sierras Pampeanas and Precordillera of Argentina OP-1038

— Triaxial- and uniaxial-compression testing methods developed for extraction of pore water from unsaturated tuff, Yucca Mountain, Nevada OP-751

volcanic ash: Thermal properties of volcanic ash C 1065

— Volcanic ash characterization C 1065

— Volcanic ash: what it is and how it forms C 1065

igneous rocks—rhyolites

genesis: Modelling the petrogenesis of high Rb/Sr silicic magmas OP-402

— Rhyolitic calderas of the Yukon-Tanana Terrane, east central Alaska; volcanic remnants of a Mid-Cretaceous magmatic arc OP-39

— Temperature, size, and depth of the magma reservoir for the Taylor Creek Rhyolite, New Mexico OP-248

geochemistry: Volatiles and lithophile elements in Taylor Creek Rhyolite; constraints from glass inclusion analysis OP-1115

igneous rocks—ultramafics

ophiolite: Analysis and interpretation of the borehole televiewer log; information on the state of stress and the lithostratigraphy at Hole 504B OP-748

— Concordant paleolatitudes from ophiolite sequences in the Northern California Coast Ranges, U.S.A. OP-672

— The Marinduque intra-arc basin, Philippines; basin genesis and in situ ophiolite development in a strike-slip setting OP-912

igneous rocks—volcanic rocks

acidic composition: The track of the Yellowstone hotspot; volcanism, faulting, and uplift OF 90-0415

age: Volcanic geology and eruption frequency, Sao Miguel, Azores OP-744

composition: Geology, petrology and geochemistry of submarine volcanoes around Epi Island, New Hebrides island arc OP-203

distribution: Lithologic map of the western part of the Springerville volcanic field, east-central Arizona I-1993

genesis: An ash flow caldera in cross section: ongoing field and geochemical studies of the mid-Tertiary Turkey Creek Caldera, Chiricahua Mountains, SE Arizona OP-245

— Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting OP-45

— Precaldera lavas of the Southeast San Juan volcanic field: parent magmas and crustal interactions OP-193

geochemistry: Isotopic and chemical evidence concerning the genesis and contamination of basaltic and rhyolitic magma beneath the Yellowstone Plateau volcanic field OP-461

— Low sulfur content in submarine lavas; an unreliable indicator of subaerial eruption OP-224

— Mahukona: the missing Hawaiian volcano: Comment OP-176

— Major element, REE, and Pb, Nd and Sr isotopic geochemistry of Cenozoic volcanic rocks of Eastern China: implications for their origin from suboceanic-type mantle reservoirs OP-60

— Preliminary geochemistry of volcanic rocks from the McHugh Complex and Kachemak Terrane, southern Alaska OF 91-0134

— Terrestrial primordial neon OP-911

— Volcanism in the Sumisu Rift: I, Major element, volatile, and stable isotope geochemistry OP-474

granophyre: Low-K granophyres of the Stillwater Complex, Montana OP-219

mafic composition: Isotopic composition of Oligocene mafic volcanic rocks in the northern Rio Grande Rift; evidence for contributions of ancient intraplate and subduction magmatism to evolution of the lithosphere OP-533

— Oligocene basaltic volcanism of the northern Rio Grande Rift: San Luis Hills, Colorado OP-1056

modal analysis: Compilation of modal analyses of volcanic rocks from the Nevada Test Site area, Nye County, Nevada OF 90-0087

petrography: 16th cruise of the R/V Akademik Boris Petrov (Leg 1) (October 5–November 15, 1990): Soviet-U.S. collaborative geological

J

K

waste disposal: Hydrogeology and ground-water-quality conditions at the Emporia-Lyon County Landfill, eastern Kansas, 1988 WRI 90-4043

Kansas—geochemistry

maps: Summary geochemical maps of the Joplin 1°×2° Quadrangle, Kansas and Missouri MF-2125-A

organic materials: Geochemical and mineralogical clues to depositional environments for Pennsylvanian, metal-rich, black shales, Midcontinent region, USA OP-1456

trace elements: Geochemical and mineralogical comparison of the Upper Pennsylvanian Stark Shale Member of the Dennis Limestone, east-central Kansas, with the Middle Pennsylvanian Mecca Quarry Shale Member of the Carbondale Formation in Illinois and of the Linton Formation in Indiana C 1058

— Geochemistry of basal Cambrian sandstones in parts of Missouri, Arkansas, and Kansas B 1942

Kansas—hydrogeology

ground water: Characterization of ground-water flow and chemical transport beneath two irrigated fields in south-central Kansas, 1988 WRI 90-4065

— Effects of agricultural and petroleum-production land use on water quality in the High Plains Aquifer, south-central Kansas OP-1467

— Hydrogeology and ground-water-quality conditions at the Linn County Landfill, eastern Kansas, 1988-89 WRI 90-4117

— January 1986 water levels, and data related to water-level changes, western and south-central Kansas OF 86-0317

— Monitoring regional ground-water quality; statistical considerations and description of a monitoring network in Kansas WRI 90-4159

— Preliminary evaluation of the effects of an abandoned oil refinery on chemical quality of water in the Arkansas River valley, Arkansas City, Kansas, 1985-86 WRI 89-4190

— Reconnaissance hydrogeology of a small prairie watershed in the Flint Hills, Northeast Kansas OP-1754

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-L

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-J

hydrology: Geohydrologic data for the South Fork Ninnescah River valley and adjacent uplands in Pratt and Kingman counties, south-central Kansas OF 91-0186

— Rainfall-runoff relations and expected streamflow in western Kansas OP-544

— Surface-water-quality assessment of the lower Kansas River basin, Kansas and Nebraska; concentrations of major metals and trace elements in streambed sediments, 1987 OF 90-0581

maps: Geohydrologic systems in Kansas with emphasis on systems in Upper Cambrian through Lower Cretaceous rocks HA-0722-A

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the Ozark Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-K

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-L

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-J

Kansas—paleontology

Mollusca: Mytiloides hattini n. sp.; a guide fossil for the base of the Turonian in the Western Interior of North America OP-270

Kansas—petrology

fluid inclusions: Precipitation of saddle dolomite cement by CO_2; effervescence from upward-migrating basinal brines OP-1573

Kansas—sedimentary petrology

diagenesis: Origin of late dolomite cement by CO_2-saturated deep basin brines; evidence from the Ozark region, central United States OP-612

Kansas—soils

water regimes: Spatial variability in hydraulic conductivity of a silt-loam soil near Topeka, Kansas OF 91-0088

Kansas—stratigraphy

Pennsylvanian: Geochemical and mineralogical comparison of the Upper Pennsylvanian Stark Shale Member of the Dennis Limestone, east-central Kansas, with the Middle Pennsylvanian Mecca Quarry Shale Member of the Carbondale Formation in Illinois and of the Linton Formation in Indiana C 1058

— Midcontinent Virgilian (Upper Pennsylvanian) black shales in eastern Kansas C 1058

Kansas—structural geology

tectonics: Geologic history of the Anadarko Basin, western Oklahoma, North Texas Panhandle, and southwestern Kansas OP-1747

kaolin deposits *see* ceramic materials; clays

karst *see under* solution features *under* geomorphology

Kentucky—areal geology

maps: Quaternary geologic map of the Louisville 4°×6° Quadrangle, United States I-1420 (NJ-16)

Kentucky—environmental geology

geologic hazards: Kentucky: floods and droughts W 2375

pollution: Effects of oil production on water resources in the Kentucky River basin, Kentucky WRI 90-4191

— Relation between surface-water quality and the composition of coal in Pike County, Kentucky OP-563

— Water quality; what we have learned YR

Kentucky—geochemistry

trace elements: Surface water-quality assessment of the Kentucky River basin, Kentucky; analysis of available water-quality data through 1986 OF 90-0360

Kentucky—hydrogeology

ground water: Ground-water levels and tritium concentrations at the Maxey Flats low-level radioactive waste disposal site near Morehead, Kentucky, June 1984 to April 1989 WRI 90-4189

— Gulf Coast Regional Aquifer-System Analysis; a Kentucky perspective WRI 90-4138

— Hydrology of the cavernous limestones of the Mammoth Cave area, Kentucky W 1837

maps: Surface water-quality assessment of the Kentucky River basin, Kentucky: analysis of available water-quality data through 1986 OF 90-0360

— Water availability and vulnerability of ground water to contamination in northwestern Hardin County, Kentucky WRI 90-4133

springs: Water availability and vulnerability of ground water to contamination in northwestern Hardin County, Kentucky WRI 90-4133

Kentucky—sedimentary petrology

sedimentary rocks: Replacement of glass shards by aluminum phosphates in a Middle Pennsylvanian tonstein from eastern Kentucky OP-1925

Kentucky—stratigraphy

bibliography: Mississippian rocks in Kentucky P 1503

Mississippian: Mississippian rocks in Kentucky P 1503

Paleozoic: Late Paleozoic depositional trends in the central Appalachian Basin B 1839-E,F

Pennsylvanian: The Princess No. 6 Middle Pennsylvanian volcanic ash fall (tonstein), Kentucky and West Virginia, central Appalachian Basin OP-794

Quaternary: Quaternary geologic map of the Louisville 4° × 6° Quadrangle, United States I-1420 (NJ-16)

Kenya—geomorphology

glacial geology: Glaciers of Africa P 1386-G

M

CD-ROM titled 1:2,000,000-scale digital line graph (DLG) and E2MGSM; a program to retrieve DLG line data from a CD-ROM titled 1:2,000,000-scale digital line graph and convert those data to a GSMAP database OF 91-0345

— Generating color separations of geologic maps on the computer B 1908

— GEOTRANS; an interface program from GEOPROGRAM to a geographic information system OF 90-0615

— GSMAP system version 7.0; graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates OF 91-0001-A

— GSMAP system version 7.0; graphics programs and related utility programs for the IBM PC and compatible microcomputers to assist compilation and publication of geologic maps and illustrations using geodetic or Cartesian coordinates OF 91-0001-B

— GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS) OF 90-0539-A

— GSMGRASS; a program to convert a GSMAP data base into ASCII files that can be imported directly into the geographic resources analysis support system (GRASS) OF 90-0539-B

— Linking digital technology to printing technology for producing publication-quality color graphics B 1908

— MacTiffLwf; uncompressed TIFF Scitex Hanshake LWF OF 91-0577

— McMap; version 2.0 basemap generation for the Apple Macintosh OF 90-0452-A

— McMap; version 2.0 basemap generation for the Apple Macintosh OF 90-0452-B

— Notes on a method to transform digitized coordinates to geographic coordinates OF 91-0017

— Quality map products from digital data YR

— The revolution in cartography in the 1980s OP-749

— The U.S. Geological Survey and the National Digital Cartographic Data Base OP-1015

— Transportation planning and geologic maps YR

data bases: U.S. Geological Survey Eastern Mapping Center; Experience in constructing a digital cartographic data base OP-1020

engineering geology maps: Knowledge-based GIS techniques applied to geological engineering OP-1079

environmental geology maps: Great Lakes coastal mapping workshop OF 91-0020

hydrologic maps: Preparation of average annual runoff map of the United States, 1951-80 OF 87-0535

information systems: Building partnerships for geographic data sharing YR

methods: Cartography OP-64

— Halftone processes for planetary maps OP-506

paleogeographic maps: Mass balanced paleogeographic maps; background and input requirements OP-432

— Mass-balanced paleogeographic maps; modeling program and results OP-952

photogeologic maps: Larger scale image mapping with SPOT OP-1057

planets: Geologic mapping OP-1136

— History of planetary cartography OP-65

— Introduction OP-378

— Map formats and projections used in planetary cartography OP-63

— Planetary mapping OP-379

— Topographic mapping OP-1159

programs: The Antarctic mapping program OP-1014

topographic maps: Cartographic data aid response to national emergencies YR

— Continuing evolution in mapping technology YR

maps—economic geology

global: AAPG-CSD geologic provinces code map OP-717

Mariana Islands—economic geology

manganese ores: Genetic significance of textural and compositional variations in hydrothermal manganese oxide deposits of the Mariana island arc OP-1831

Mariana Islands—sedimentary petrology

reefs: Shallow reef-front detrital sediments in the Mariana Islands OP-1852

Mariana Islands—stratigraphy

Cenozoic: Late Cenozoic forearc volcanism in the Marianas island arc revealed from drilling at ODP Site 781 OP-1610

Mariana Islands—tectonophysics

plate tectonics: New evidence for crustal accretion in the outer Mariana fore arc; Cretaceous radiolarian cherts and mid-ocean ridge basalt-like lavas OP-536

marine geology *see* continental shelf; continental slope; oceanography
see under oceanography *under* Atlantic Ocean; Indian Ocean; Japan Sea; Pacific Ocean

marine geology—data processing

automatic cartography: Conversion of raster image data to vector cartographic data OF 91-0304

marine sediments *see under* sediments

Mars—areal geology

maps: Controlled photomosaic of the MTM 05117 Quadrangle, Arsia Mons region of Mars I-2216

— Controlled photomosaic of the MTM 05122 Quadrangle, Arsia Mons region of Mars I-2217

— Controlled photomosaic of the MTM 05127 Quadrangle, Arsia Mons region of Mars I-2218

— Controlled photomosaic of the MTM 10102 Quadrangle, Ascraeus Mons region of Mars I-2219

— Controlled photomosaic of the MTM 10107 Quadrangle, Ascraeus Mons region of Mars I-2220

— Controlled photomosaic of the MTM 10117 Quadrangle, Arsia Mons region of Mars I-2221

— Controlled photomosaic of the MTM 10122 Quadrangle, Arsia Mons region of Mars I-2171

— Controlled photomosaic of the MTM 10127 Quadrangle, Arsia Mons region of Mars I-2172

— Controlled photomosaic of the MTM 10137 Quadrangle, Olympus Mons region of Mars I-2229

— Controlled photomosaic of the MTM 15127 Quadrangle, Olympus Mons region of Mars I-2228

— Controlled photomosaic of the MTM 15132 Quadrangle, Olympus Mons region of Mars I-2227

— Controlled photomosaic of the MTM 20252 Quadrangle, Tyrrhena Patera region of Mars I-2222

— Controlled photomosaic of the MTM 20257 Quadrangle, Tyrrhena Patera region of Mars I-2223

— Controlled photomosaic of the MTM 25062 Quadrangle (revised), Kasei Vallis region of Mars I-2292

— Controlled photomosaic of the MTM 25067 Quadrangle (revised), Lunae Planum region of Mars I-2293

— Controlled photomosaic of the MTM 25257 Quadrangle, Tyrrhena Patera region of Mars I-2224

— Controlled photomosaic of the MTM 35082 Quadrangle, Mareotis/Tempe region of Mars I-2190

— Controlled photomosaic of the MTM 35087 Quadrangle, Mareotis/Tempe region of Mars I-2191

— Controlled photomosaic of the MTM 35092 Quadrangle, Mareotis/Tempe region of Mars I-2192

— Controlled photomosaic of the MTM 40082 Quadrangle, Mareotis/Tempe region of Mars I-2193

— Controlled photomosaic of the MTM 40087 Quadrangle, Mareotis/Tempe region of Mars I-2194

— Controlled photomosaic of the MTM 40092 Quadrangle, Mareotis/Tempe region of Mars I-2195

— Controlled photomosaic of the MTM 45067 Quadrangle, Tempe Fossae region of Mars I-2188

— Controlled photomosaic of the MTM 50063 Quadrangle, Tempe Fossae region of Mars I-2189

— Controlled photomosaic of the MTM 85080 Quadrangle (revised), Planum Australe region of Mars I-2270

— Controlled photomosaic of the Southern Polar area (MTM 90000; revised), Planum Australe region of Mars I-2269

— Geologic map of science study area 1B, West Mangala Valles region of Mars I-2087

— Geologic map of science study area 6, Memnonia region of Mars I-2084

— Geologic map of the Valles Marineris region, Mars (east half and west half) I-2010

— Geologic maps of science study area 3, Olympus Rupes, Mars (special MTM 15132 Quadrangle) I-2001

— Geologic maps of the western equatorial, eastern equatorial and polar regions of Mars I-1802-A,B,C

regional: Mars OP-151

Mars—atmosphere

composition: The effects of floods, volcanism and polar processes on the D/H ratio in the Martian atmosphere OP-1270

properties: Characteristics of the Martian atmospheric surface layer OP-1302

Mars—concepts

exobiology: Life of Mars; the water connection OF 90-0093-A

— Life of Mars; the water connection OF 90-0093-B

Mars—exploration

landing sites: The search for Mars lander/rover/returned-sample sites OP-1613

Mars—geomorphology

fluvial features: Evidence for multiple flooding episodes in Kasei Valles, Mars OP-1836

— Geologic mapping of lower Mangala Valles, Mars: evidence of flooding, sapping, debris flow, and volcanism OP-1282

lacustrine features: Mars Elysium Basin; geologic/volumetric analysis of a young lake and exobiologic implications OP-938

landform description: A physical model of the impacted Martian crust; hydrologic and mechanical properties and geologic implications OP-1599

— Mottled terrain; a continuing Martian enigma OP-939

— Mottled terrain; a continuing Martian enigma OP-1837

— Volumetric determinations of Valles Marineris of Mars OP-1968

— Volumetric distributions of Mars topography OP-1969

landform evolution: Valles Marineris, Mars; are pit chains formed by erosion and troughs by tectonism? OP-1589

maps: Indexes of Mars topographic maps published by the U.S. Geological Survey; June 1, 1990 I-2178

— Surface-material maps of Viking landing sites on Mars OP-1663

— Topographic map of Mars I-2179

— Topographic map of the Aeolis Northeast Quadrangle (MC-23 NE) of Mars I-2118

— Topographic map of the Aeolis Northwest Quadrangle (MC-23 NW) of Mars I-2121

— Topographic map of the Aeolis Southeast Quadrangle (MC-23 SE) of Mars I-2119

— Topographic map of the Aeolis Southwest Quadrangle (MC-23 SW) of Mars I-2120

— Topographic map of the Amenthes Northeast Quadrangle (MC-14 NE) of Mars I-2134

— Topographic map of the Amenthes Northwest Quadrangle (MC-14 NW) of Mars I-2137

— Topographic map of the Amenthes Southeast Quadrangle (MC-14 SE) of Mars I-2135

— Topographic map of the Amenthes Southwest Quadrangle (MC-14 SW) of Mars I-2136

— Topographic map of the Arabia Northeast Quadrangle (MC-12 NE) of Mars I-2098

— Topographic map of the Arabia Northwest Quadrangle (MC-12 NW) of Mars I-2101

— Topographic map of the Arabia Southeast Quadrangle (MC-12 SE) of Mars I-2099

— Topographic map of the Arabia Southwest Quadrangle (MC-12 SW) of Mars I-2100

— Topographic map of the Elysium Northeast Quadrangle (MC-15 NE) of Mars I-2126

— Topographic map of the Elysium Northwest Quadrangle (MC-15 NW) of Mars I-2129

— Topographic map of the Elysium Southeast Quadrangle (MC-15 SE) of Mars I-2127

— Topographic map of the Elysium Southwest Quadrangle (MC-15 SW) of Mars I-2128

— Topographic map of the Iapygia Northeast Quadrangle (MC-21 NE) of Mars I-2102

— Topographic map of the Iapygia Northwest Quadrangle (MC-21 NW) of Mars I-2105

— Topographic map of the Iapygia Southeast Quadrangle (MC-21 SE) of Mars I-2103

— Topographic map of the Iapygia Southwest Quadrangle (MC-21 SW) of Mars I-2104

— Topographic map of the Mare Tyrrhenum Northeast Quadrangle (MC-22 NE) of Mars I-2114

— Topographic map of the Mare Tyrrhenum Northwest Quadrangle (MC-22 NW) of Mars I-2117

— Topographic map of the Mare Tyrrhenum Southeast Quadrangle (MC-22 SE) of Mars I-2115

— Topographic map of the Mare Tyrrhenum Southwest Quadrangle (MC-22 SW) of Mars I-2116

— Topographic map of the Memnonia Southeast Quadrangle (MC-16 SE) of Mars I-2109

— Topographic map of the Memnonia Southwest Quadrangle (MC-16 SW) of Mars I-2110

— Topographic map of the Phoenicis Lacus Southeast Quadrangle (MC-17 SE) of Mars I-2132

— Topographic map of the Phoenicis Lacus Southwest Quadrangle (MC-17 SW) of Mars I-2133

— Topographic map of the Sinus Sabaeus Northeast Quadrangle (MC-20 NE) of Mars I-2122

— Topographic map of the Sinus Sabaeus Northwest Quadrangle (MC-20 NW) of Mars I-2125

— Topographic map of the Sinus Sabaeus Southeast Quadrangle (MC-20 SE) of Mars I-2123

— Topographic map of the Sinus Sabaeus Southwest Quadrangle (MC-20 SW) of Mars I-2124

— Topographic map of the Tharsis Northeast Quadrangle (MC-9 NE) of Mars I-2111

— Topographic map of the Tharsis Southeast Quadrangle (MC-9 SE) of Mars I-2112

— Topographic map of the Tharsis Southwest Quadrangle (MC-9 SW) of Mars I-2113

— Topographic maps of the polar, western, and eastern regions of Mars I-2160

mass movements: Valles Marineris landslides: evidence for mechanics of large rock avalanches OP-1621

volcanic features: Analyses and morphology of a lava flow, Ascraeus Mons, Mars OP-1662

— Dark materials in Valles Marineris; indications of the style of volcanism and magmatism on Mars OP-1407

— What if deposits in the Valles Marineris are volcanic? OP-1588

Mars—geophysical surveys

acoustical surveys: A radar-echo model for Mars OP-1913

infrared surveys: Analysis of Mariner 6 and 7 spectra for weak absorption features from 2 to 6 μm OP-1260

remote sensing: A radar-echo model for Mars OP-741

— Digital mosaic and elevation models of central Valles Marineris, Mars OP-1223

— Analytical data for stream-sediment and soil samples from the Wells 1° by 2° Quadrangle, Nevada OF 90-0432

— Analytical data for stream-sediment and soil samples from the Winnemucca and Ely 1° by 2° quadrangles, Nevada OF 90-0443

— Analytical data for stream-sediment samples from the Death Valley 1° by 2° Quadrangle, California and Nevada OF 90-0438

— Analytical data for stream-sediment samples from the Las Vegas 1° by 2° Quadrangle, Arizona, California and Nevada OF 90-0442

— Analytical data for stream-sediment samples from the Lund 1° by 2° Quadrangle, Nevada OF 90-0436

— Analytical data for stream-sediment samples from the Mariposa 1° by 2° Quadrangle, California and Nevada OF 90-0440

— Analytical data for stream-sediment samples from the Millett 1° by 2° Quadrangle, Nevada OF 90-0439

— Analytical data for stream-sediment samples from the Tonopah 1° by 2° Quadrangle, Nevada OF 90-0445

— Geochemical maps showing distribution of anomalously abundant elements in stream-sediment and glacial-moraine samples from the Anchorage 1°×3° Quadrangle, southern Alaska I-1976

— Geochemical maps showing distribution of anomalously abundant elements in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1977

— Tabulated analytical results, floppy disc, and sample locality maps for nonmagnetic and selected paramagnetic heavy-mineral concentrates from stream sediment, Glens Falls 1°×2° Quadrangle, New York, Vermont, and New Hampshire OF 90-0675

surveys: Summary geochemical maps of the Joplin 1°×2° Quadrangle, Kansas and Missouri MF-2125-A

techniques: CHIM surface set-up for unipolar extraction OF 90-0462

— Experience of analysis of CHIM samples for gold OF 90-0462

— Experience of finding gold deposits in western Uzbekistan using the CHIM method OF 90-0462

— Finding buried gold mineralizations OF 90-0462

— Geochemical orientation study for identification of metallic mineral resources in the Sitka Quadrangle, southeastern Alaska B 1950

— Gold exploration in southern Yakutiya using the CHIM method OF 90-0462

— Patterns of electrochemical leaching of elements in the simplest physico-chemical system; Report 1 OF 90-0462

— Possible uses of the CHIM method for explorations of covered gold deposits OF 90-0462

— Quality assurance manual for the Branch of Geochemistry, U.S. Geological Survey OF 90-0668

— Selected translations of the Russian literature on the electrogeochemical sampling technique called CHIM (chastichnoe izvlechennye metallov) OF 90-0462

— The exploration of ore deposits by the CHIM method OF 90-0462

— The movement of ions in rocks under the influence of an electrical current; Report 2 OF 90-0462

trace elements: An evaluation and geochemical survey of the Farah Garan East Prospect, Southeast Asir, Kingdom of Saudi Arabia OF 90-0421

— Analyses and descriptions of geochemical samples from the Big Branch and Peru Peak wildernesses and the Wilder Mountain Roadless Area, Rutland and Bennington counties, Vermont OF 90-0682

— Analyses of rock samples from the Central mining and intrusive area, Marysvale, Utah OF 90-0529

— Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho OF 90-0545

— Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada OF 90-0461

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1°×3° Quadrangle, Alaska OF 91-0023-A

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Livengood 1°×3° Quadrangle, Alaska OF 91-0023-B

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Oregon Buttes Wilderness Study Area (WY-040-324), Sweetwater County, Wyoming OF 91-0012

— Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Sleeping Giant Wilderness Study Area (MT-075-111), Lewis and Clark County, Montana OF 90-0469

— Analytical results and sample locality map of stream-sediment and panned-concentrate samples from the Garberville 1:100,000 Quadrangle (southwest quarter of the Redding, California 1:250,000 Quadrangle), Humboldt, Trinity, Shasta, Tehama, and Mendocino counties, California OF 91-0271

— Analytical results and sample locality map of stream-sediment, and panned-concentrate samples from the Hayfork 1:100,000 Quadrangle (northwest quarter of the Redding, California 1:250,000 Quadrangle), Trinity and Humboldt counties, California OF 90-0491

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Burnt Creek Wilderness Study Area, Custer County, Idaho OF 90-0653

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the Hawk Mountain Wilderness Study Area, Harney County, Oregon OF 90-0465

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples from the South Fork and Sand Hollow Wilderness Study Areas, Crook County, Oregon OF 90-0535

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples in and adjacent to the Scorpion Wilderness Study Area, Garfield and Kane counties, Utah OF 90-0624

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-A

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, pebble, and rock samples from the Craig Study Area; Craig, Dixon Entrance, Ketchikan, and Prince Rupert quadrangles, Alaska OF 91-0036-B

— Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, rock, and soil samples from the Rincon Wilderness Study Area, Harney County, Oregon OF 90-0403

— Analytical results and sample locality maps of rock samples from the northwestern Idaho Falls and the northeastern Hailey 1° by 2° quadrangles, Idaho OF 90-0645

— Analytical results and sample locality maps of stream-sediment, heavy-mineral-concentrate, and rock samples from the Negro Bill Canyon (UT-060-138) and the Mill Creek Canyon (UT-060-139A) Wilderness Study Areas, Grand County, Utah OF 90-0464

— Carbonate-hosted gold mineralization of hydrothermal-replacement origin adjacent to a syenitic stock at Cuttingsville, Vermont, and the potential for other syenite-related gold deposits in New England B 1887

— Chemical analyses including gold for 373 rock and stream-sediment samples from the Richfield 1° × 2° Quadrangle, Utah OF 91-0318

— Chemical analyses of rock samples collected in east-central Idaho during a study of mineralization in the northern Lemhi Range, Lemhi County, Idaho OF 90-0655

— Distribution of gold, molybdenum, tin, and selected other elements in the vicinity of Mount Ascutney, Windsor County, Vermont B 1887

— Epigenetic uranium mineralization in the middle Proterozoic Mount Holly Complex near Ludlow and Jamaica, Vermont B 1887

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-A

— Geochemical data and sample locality maps for stream-sediment and heavy-mineral-concentrate samples, and mineralogical data of nonmagnetic, heavy-mineral-concentrate samples, collected near five cinnabar-stibnite mineral occurrences in the Kuskokwim River region, southwestern Alaska OF 90-0299-B

— Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-A

— Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-B

— Geochemical results, sample localities, and descriptions of some rocks from the Proterozoic Kilbuck Terrane, Goodnews Quadrangle, southwestern Alaska OF 90-0681

— Geochemical stratigraphy of the Yellowjacket Formation (middle Proterozoic) in the area of the Idaho cobalt belt, Lemhi County, Idaho OF 90-0234-A

— Geochemical stratigraphy of the Yellowjacket Formation (middle Proterozoic) in the area of the Idaho cobalt belt, Lemhi County, Idaho OF 90-0234-B

— Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho; Part B, Geochemical data OF 91-0028-B

— Geochemistry and exploration criteria for epithermal cinnabar and stibnite vein deposits in the Kuskokwim River region, southwestern Alaska OP-377

— Geochemistry of stream sediments and heavy-mineral concentrates from the Orange County copper district, east-central Vermont B 1887

— Geology and geochemistry of mineralization in the Bethel Quadrangle, southwestern Alaska B 1950

— Gold anomalies and newly identified gold occurrences in the Lime Hills Quadrangle, Alaska, and their association with the Hartman Sequence plutons B 1950

— Gold associated with cinnabar- and stibnite-bearing deposits and mineral occurrences in the Kuskokwim River region, southwestern Alaska B 1950

— Gold contents of 469 outcrop and 1466 B-horizon soil samples from the northwestern part of the Duluth Complex, northeastern Minnesota OF 91-0293

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-A

— Gold, mercury, tellurium, and thallium data and sample locality map of stream-sediment samples from the Iditarod Quadrangle, Alaska OF 91-0283-B

— Gold, silver, and mercury rock chemistry for the Adelaide mining district, Sonoma Range, Humboldt County, Nevada OF 89-0689

— Neutron activation analytical results and sample locality map of drill-cuttings from wells in northwestern Minnesota OF 91-0044

— Reconnaissance geochemical survey of the Farah Garan-Kutam mineral belt, Kingdom of Saudi Arabia OF 91-0039

— Results of inductively coupled plasma-atomic emission spectroscopy analyses of minus 30-mesh stream-sediment samples from within and adjacent to the National Petroleum Reserve Alaska OF 90-0501

— Variation of trace elements and rare earth elements in fluorite; a possible tool for exploration OP-280

mineral assessment—geological methods

copper ores: An assessment of metal endowments in revett-type sediment hosted Cu deposits in the Kootenai National Forest, Montana and Idaho OF 90-0470

cores: Lithologic descriptions of bedrock core from the Roseau 1° × 2° Quadrangle, northern Minnesota OF 91-0035

gold ores: Geology and gold deposits of the Marysville mining district, Montana B 1857-I

— Gold deposits along the Río Madera, northern Bolivia OF 91-0260

mineral assessment—geophysical methods

electrical methods: Development and testing of the CHIM electrogeochemical exploration method C 1062

— Induced-polarization response of some titanium-bearing placer deposits in the Southeastern United States OP-1160

gravity methods: Regional study of mineral resources in Nevada; insights from three-dimensional analysis of gravity and magnetic anomalies OP-89

radar methods: Ground penetrating radar for shallow exploration; acquisition rate limitations of a modular GPR OF 90-0414

mineral assessment—geophysical surveys

acoustical surveys: Sidescan sonograph patterns offshore of the southern Delmarva Peninsula OF 90-0662

electromagnetic surveys: Airborne and ground electromagnetic studies of the eastern half of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

— Digital image processing of airborne geophysical data for uranium-mineralized breccia pipes exploration in northwestern Arizona OP-587

gravity surveys: Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2-degree Quadrangle, Nevada OF 90-0457-A

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-B

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-C

magnetic surveys: Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona OF 90-0685-A

— Aeromagnetic gridded data from two surveys flown over a buried porphyry copper deposit west of Casa Grande, Arizona OF 90-0685-B

remote sensing: Application of Landsat thematic mapper digital data to the exploration for uranium mineralized breccia pipes in northwestern Arizona OP-588

surveys: Dighem^{IV} survey for the U.S. Geological Survey along the Getchell Trend, Humboldt County, Nevada OF 90-0319

— Electromagnetic, magnetic, and gravimetric surveys at the Bi'r Jarbuah gold prospect, Kingdom of Saudi Arabia OF 90-0327

— Gravity and aeromagnetic anomaly maps of the Ajo and Lukeville 1° × 2° quadrangles, southwestern Arizona I-2139

mineral assessment—methods

interpretation: Co-registered TIMS, geology and topography data sets for evaluating lithologic discrimination, Carlin District, Nevada OP-1113

mineral assessment—objectives

current research: USGS research on mineral resources, 1991; program and abstracts C 1062

mineral assessment—ore guides

barite deposits: Descriptive model of epigenetic vein barite OF 91-0011-A

— Descriptive model of exhalative barite OF 91-0011-A

— Geologic settings of barite deposits as indicators of the potential for other types of mineral deposits C 1062

breccia: Exploration guides for precious-metal deposits in volcanic domes C 1062

breccia pipes: Breccia pipe and geologic map of the southwestern Hualapai Indian Reservation and vicinity, Arizona OF 86-0458-D

— Geology, geochemistry, and mineralogy of the Ridenour Mine breccia pipe, Arizona OF 90-0504

brines: Descriptive model of lithium-rich playa brine OF 91-0011-A

— Descriptive model of naturally occurring bromine brines OF 91-0011-A

— Descriptive model of naturally occurring iodine brines OF 91-0011-A

ceramic materials: Descriptive model of wollastonite skarn OF 91-0011-A

clays: Descriptive model of lithium in smectites of closed basins OF 91-0011-A

diamonds: Descriptive model of diamond-bearing kimberlite pipes OF 91-0011-A

diatomite: Descriptive model of lacustrine diatomite OF 91-0011-A

evaporite deposits: Visible and near-infrared (0.4-2.5 μm) reflectance spectra of playa evaporite minerals OP-212

gold ores: Gold-bearing skarns B 1930

— Porphyry gold; a supplement to U.S. Geological Survey Bulletin 1693 OF 91-0116

graphite deposits: Descriptive model of amorphous graphite OF 91-0011-A

— Descriptive model of disseminated flake graphite OF 91-0011-A

— Descriptive model of graphite veins OF 91-0011-A

gypsum deposits: Descriptive model of bedded gypsum; deposit subtype, marine evaporite gypsum OF 91-0011-A

heavy minerals: Mineralogical maps showing distribution of ore-related minerals in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1975

hydrothermal alteration: The stable isotope geochemistry of acid-sulfate alteration and vein forming alunite OF 91-0257

industrial minerals: Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of open hydrologic systems OF 91-0011-A

— Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of saline, alkaline-lake deposits OF 91-0011-A

— Some industrial mineral deposit models; descriptive deposit models OF 91-0011-A

lineaments: Lineament analysis of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

— Map showing the association of linear features with metallic mines and prospects in the Butte 1° × 2° Quadrangle, Montana I-2050-B

metal ores: The Piermont Allochthon, northern Connecticut Valley area, New England; preliminary description and resource implications B 1887

nitrate deposits: Descriptive model of iodine-bearing nitrate OF 91-0011-A

salt: Descriptive model of bedded salt; deposit subtype, marine evaporite salt OF 91-0011-A

— Descriptive model of potash-bearing bedded salt OF 91-0011-A

— Descriptive model of salt domes; deposit subtype, diapiric salt structures OF 91-0011-A

sodium carbonate: Descriptive model of sodium carbonate in bedded lacustrine evaporites; deposit subtype, Green River OF 91-0011-A

sulfur deposits: Descriptive model of fumarolic sulfur OF 91-0011-A

mineral assessment—programs

AMRAP: Tapping the potential mineral resources of Alaska YR

annual report: 1990 annual report on Alaska's mineral resources C 1056

CUSMAP: Geology and mineral-resource assessment of the Springfield 1° × 2° Quadrangle, Missouri, as appraised in September 1985 B 1942

— Summary results of the Glens Falls CUSMAP project, New York, Vermont, and New Hampshire B 1887

— The Conterminous United States Mineral Appraisal Program: background information to accompany folio of geologic, geochemical, geophysical, and mineral resources maps of the Tonopah 1° by 2° Quadrangle, Nevada C 1070

— The Conterminous United States Mineral-Resource Assessment Program; background information to accompany folio of geologic and mineral-resource maps of the Rolla 1° × 2° Quadrangle, Missouri C 1068

international cooperation: Cooperative mineral activities in Latin America YR

— The Soviet Far East and Alaska YR

models: The Midcontinent of the United States; permissive terrane for an olympic dam-type deposit? B 1932

placers: Cruise report, 1990 Oregon placer mineral research cruise (A1 90WO), September 21–October 3, 1990 OF 91-0279

roadless areas: Idaho National Forest roadless areas YR

United States Exclusive Economic Zone: Atlas of the U.S. Exclusive Economic Zone, Bering Sea I-2053

wilderness areas: Mineral resources of additions to the La Madre Mountains Wilderness Study Area, Clark County, Nevada OF 90-0679

— Mineral resources of an addition to the Black Rock Desert Wilderness Study Area, Humboldt County, Nevada OF 90-0618

— Mineral resources of the Blue Canyon and Owyhee Breaks Wilderness Study Areas, Malheur County, Oregon B 1741-G

— Mineral resources of the Cactus Plain and East Cactus Plain Wilderness Study Areas, La Paz County, Arizona B 1704-D

— Mineral resources of the Cougar Canyon/Tunnel Spring Wilderness Study Area, Washington County, Utah, and Lincoln County, Nevada OF 90-0331

— Mineral resources of the Diablo Mountain Wilderness Study Area, Lake County, Oregon B 1738-D

— Mineral resources of the Gibraltar Mountain and Planet Peak Wilderness Study Areas, La Paz County, Arizona B 1704-B

— Mineral resources of the Gold Creek and Sperry Creek Wilderness Study Areas, Malheur County, Oregon B 1741-E

— Mineral resources of the Grapevine Mountain Wilderness Study Area, Esmeralda County, Nevada OF 90-0620

— Mineral resources of the Kofa Unit 4 North Wilderness Study Area, Yuma County, Arizona B 1702-K

— Mineral resources of the Marble Canyon Wilderness Study Area, White Pine County, Nevada, and Millard County, Utah B 1728-G

— Mineral resources of the Mohave Wash Wilderness Study Area, Mohave County, Arizona B 1704-A

— Mineral resources of the Mormon Mountains Wilderness Study Area and Addition, Lincoln and Clark counties, Nevada OF 90-0249

— Mineral resources of the Mount Ellen-Blue Hills (Addition) Wilderness Study Area, Wayne County, Utah OF 90-0335

— Mineral resources of the Paria-Hackberry Wilderness Study Area, Kane County, Utah OF 90-0453

— Mineral resources of the Queer Mountain Wilderness Study Area, Esmeralda County, Nevada OF 90-0619

— Mineral resources of the Sleeping Giant Wilderness Study Area, Lewis and Clark County, Montana OF 90-0410

— Mineral resources of the Soda Mountain Wilderness Study Area, Jackson County, Oregon B 1744-C

— Mineral resources of the Swansea Wilderness Study Area, La Paz and Mohave counties, Arizona B 1704-C

— Mineral resources of the Swansea Wilderness Study Area, La Paz and Mohave counties, Arizona OF 90-0521

— Mineral resources of the Wabayuma Peak Wilderness Study Area, Mohave County, Arizona OF 90-0518

— Mineral summaries for Nevada: U.S. Bureau of Land Management wilderness study areas OF 90-0638

— Mineral summaries; U.S. Bureau of Land Management wilderness study areas in California outside the California desert OF 90-0096

mineral assessment—remote sensing

interpretation: Airborne imaging spectrometer data for the Ruby Mountains, Montana; mineral identification by remote sensing in a vegetated metamorphic terrain OP-213

phosphate deposits: Phosphorite exploration in the Thaniyat and Sanam districts, Kingdom of Saudi Arabia, using Landsat thematic mapper data OP-226

mineral assessment—techniques

heavy mineral deposits: A procedure for assessing heavy-mineral resources potential of continental shelf sediments OP-389

mineral deposits, genesis—barite deposits

models: Descriptive model of epigenetic vein barite OF 91-0011-A

— Descriptive model of exhalative barite OF 91-0011-A

mineral deposits, genesis—base metals

ore-forming fluids: The Lion Hill zinc-lead-copper deposit, Brandon, Vermont; source of lead and fluid systematics B 1887

processes: Stratabound zinc-lead-copper deposits in the Cambrian carbonate-siliciclastic shelf sequence at Lion Hill, west-central Vermont B 1887

structural controls: Paleotectonic setting and genesis of some sediment-hosted, stratabound base-metal sulfide deposits in Vermont and southeastern Quebec OP-181

mineral deposits, genesis—brines

models: Descriptive model of lithium-rich playa brine OF 91-0011-A

— Descriptive model of naturally occurring bromine brines OF 91-0011-A

— Descriptive model of naturally occurring iodine brines OF 91-0011-A

mineral deposits, genesis—ceramic materials

models: Descriptive model of wollastonite skarn OF 91-0011-A

mineral deposits, genesis—clays

models: Descriptive model of lithium in smectites of closed basins OF 91-0011-A

mineral deposits, genesis—controls

interpretation: Tectonic and stratigraphic control of regional subsurface geochemical patterns, Midcontinent, U.S.A. OP-283

structural controls: The Precambrian basement of the northern Midcontinent, U.S.A.; a major frontier for mineral exploration OP-972

— The tectonic controls and vertical and horizontal dimensions of mississippi valley-type deposits in the United States OP-456

mineral deposits, genesis—copper ores

interpretation: Geochemical variation in a copper-bearing redbed sequence of the Ravalli Group (Belt Supergroup), northwestern Montana and northern Idaho; Part A, Geological interpretation OF 91-0028-A

models: A model for genesis of red-bed–evaporite-associated stratabound copper deposits and potential in the Springfield 1° × 2° Quadrangle and surrounding areas B 1942

ore-forming fluids: Copper deposition by fluid mixing in deformed strata adjacent to a salt diapir, Dongchuan area, Yunnan Province, China OP-890

supergene processes: Geomorphologic environment and age of supergene enrichment of the Cuajone, Quellaveco, and Toquepala porphyry copper deposits, southeastern Peru OP-178

mineral deposits, genesis—diamonds

models: Descriptive model of diamond-bearing kimberlite pipes OF 91-0011-A

mineral deposits, genesis—diatomite

models: Descriptive model of lacustrine diatomite OF 91-0011-A

mineral deposits, genesis—evaporite deposits

controls: Brine evolution and mineral deposition in hydrologically open evaporite basins OP-909

environment: The origin of evaporite deposits; a model based on a hydrologically open system C 1062

hydrogeological controls: Ground-water control of evaporite deposition OP-1154

mineral deposits, genesis—fluorspar

epithermal processes: Variation of trace elements and rare earth elements in fluorite; a possible tool for exploration OP-280

mineral deposits, genesis—gems

environment: Geological setting of the emerald deposits OP-611

mineral deposits, genesis—gold ores

controls: Fluvial gold placers and basin-margin rotation OF 91-0306

epithermal processes: Epithermal gold deposits; Part II B 1857-I

— Geology and gold deposits of the Marysville mining district, Montana B 1857-I

— Geology and gold deposits of the Oatman District, northwestern Arizona B 1857-I

— Gold deposits of the Boulder County gold district, Colorado B 1857-I

geochemical controls: Genesis of sediment-hosted disseminated-gold deposits by fluid mixing and sulfidization; chemical-reaction-path modeling of ore-depositional processes documented in the Jerritt Canyon District, Nevada OP-478

— The geology and origin of carlin-type gold deposits OP-84

— The importance of iron-carbon-sulfur diagenesis to gold mineralization: evidence from the Moore gold deposit, Pueblo Viejo, Dominican Republic OP-1536

hydrothermal processes: Accretionary tectonics, fluid migration, and gold genesis in the Pacific Border Ranges and Coast Mountains, southern Alaska OP-356

— Carbonate-hosted gold mineralization of hydrothermal-replacement origin adjacent to a syenitic stock at Cuttingsville, Vermont, and the potential for other syenite-related gold deposits in New England B 1887

— Petrochemistry and fluid-inclusion study of skarns from the northern Battle Mountain mining district, Nevada OP-1052

— Stable isotope systematics and magmatic and hydrothermal processes in the Summitville, CO gold deposit OF 90-0626

interpretation: Gold-bearing skarns B 1930

models: Porphyry gold; a supplement to U.S. Geological Survey Bulletin 1693 OF 91-0116

ore transport: Rapid dewatering of the crust deduced from ages of mesothermal gold deposits OP-358

ore-forming fluids: Oxygen, hydrogen, and sulfur isotope studies in the Juneau gold belt, southeastern Alaska; constraints on the origin of hydrothermal fluids OP-357

mineral deposits, genesis—graphite deposits

models: Descriptive model of amorphous graphite OF 91-0011-A

— Descriptive model of disseminated flake graphite OF 91-0011-A

— Descriptive model of graphite veins OF 91-0011-A

mineral deposits, genesis—gypsum deposits

models: Descriptive model of bedded gypsum: deposit subtype, marine evaporite gypsum OF 91-0011-A

mineral deposits, genesis—industrial minerals

environment: Favorable locations and geologic environments for the occurrence of California's industrial minerals B 1958

models: Descriptive model of sedimentary zeolites: deposit subtype, zeolites in tuffs of open hydrologic systems OF 91-0011-A

— Descriptive model of sedimentary zeolites; deposit subtype, zeolites in tuffs of saline, alkaline-lake deposits OF 91-0011-A

— Some industrial mineral deposit models; descriptive deposit models OF 91-0011-A

mineral deposits, genesis—interpretation

ore-forming fluids: Fluid-inclusion evidence for the source of ore fluids for mississippi valley-type deposits in Missouri, Arkansas, Kansas, and Oklahoma B 1942

— Late Mississippian karst caves and Ba-Ag-Pb-Zn mineralization in central Colorado; Part

mineral deposits, genesis—sulfur deposits

models: Descriptive model of fumarolic sulfur OF 91-0011-A

mineral deposits, genesis—titanium ores

metamorphic processes: Geology of titanium-mineral deposits OP-315

mineral deposits, genesis—uranium ores

controls: Lithotectonic setting necessary for formation of a uranium rich, solution collapse breccia pipe province, Grand Canyon region, Arizona OP-1126

environment: Paleontological analysis of a lacustrine carbonaceous uranium deposit at the Anderson Mine, Date Creek basin, west-central Arizona (U.S.A.) OP-793

— Uranium and diagenesis in evaporitic lacustrine mudstone of the Oligocene White River Group, Dawes County, Nebraska B 1956

geochemical controls: Origin of coffinite in sedimentary rocks by a sequential adsorption-reduction mechanism OP-359

— The solubilities of some major and minor element minerals in ground waters associated with a sandstone-hosted uranium deposit OP-1105

mineral inclusions *see under* inclusions

mineral resources *see* metal ores

see under applications *under* structural geology

see under economic geology *under* Alaska; Antarctica; Arizona; Basin and Range Province; Bering Sea; Bolivia; California; Canada; Caribbean region; catalogs; Central America; Colorado; Costa Rica; data processing; Great Lakes region; Hawaii; Honduras; Idaho; Kansas; Michigan; Minnesota; Mississippi; Missouri; Montana; Nevada; New England; New Hampshire; New Mexico; New York; Ontario; Oregon; Pacific Ocean; Pacific region; Puerto Rico; South America; symposia; United States; Utah; Vanuatu; Venezuela; Vermont; Washington; Western U.S.; Wisconsin; Wyoming

see under geophysical surveys *under* Western U.S.

see under symposia *under* economic geology

mineral resources—mineral assessment

geochemical methods: Gases as geochemical indicators of concealed mineral deposits OP-695

programs: Mineral resources of the Mill Creek Canyon Wilderness Study Area, Grand County, Utah B 1754-E

mineralogy—data processing

computer programs: SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis OF 90-0616-A

— SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis OF 90-0616-B

— SAVEWARE I; a dozen programs designed to read DATASAVE files, perform various petrologic calculations, and produce printed and graphical data analysis OF 90-0616-C

minerals *see* crystal chemistry; crystal growth; crystal structure

minerals—aluminosilicates

phase equilibria: Precise determinations of the equilibria kyanite-sillimanite and kyanite-andalusite and a revised triple point for Al_2SiO_5 polymorphs OP-100

thermodynamic properties: Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram OP-452

minerals—borates

borax: Borax in the supraglacial moraine of the Lewis Cliff, Buckley Island Quadrangle; first Antarctic occurrence OP-306

minerals—carbonates

calcite: Activators of photoluminescence in calcite; evidence from high-resolution, laser-excited luminescence spectroscopy OP-813

— U and Sr isotopes in ground water and calcite, Yucca Mountain, Nevada; evidence against upwelling water OP-1028

gaylussite: Gaylussite formation at Mono Lake, California OP-88

minerals—chain silicates, clinoamphibole

occurrence: Hazards associated with fibrous minerals C 1033

minerals—chain silicates, clinopyroxene

hedenbergite: Experimental investigation of andradite and hedenbergite equilibria employing the hydrogen sensor technique, with revised estimates of $\Delta_f G^0_{m,298}$ for andradite and hedenbergite OP-729

minerals—chain silicates, orthoamphibole

anthophyllite: Thermodynamic properties of anthophyllite and talc; corrections and discussion of calorimetric data OP-449

minerals—chemical analysis

boron: Boron analysis by electron microprobe using MoB_4C layered synthetic crystals OP-704

minerals—chlorides

halite: Petroleum and evaporites OP-471

— Visible and near-infrared (0.4-2.5 μm) reflectance spectra of playa evaporite minerals OP-212

minerals—chromates

wattersite: Wattersite $Hg^{+1}{}_4Hg^{+2}Cr^{+6}O_6$, a new mineral from Clear Creek claim, San Benito County, California OP-878

minerals—crystal chemistry

aqueous solutions: Mineral-water interface geochemistry OP-472

— Mineral-water interface geochemistry; an overview OP-473

— Surface complexation modeling in aqueous geochemistry OP-225

minerals—framework silicates, alkali feldspar

sanidine: High-precision $^{40}Ar/^{39}Ar$ sanidine geochronology of ignimbrites in the Mogollon-Datil volcanic field, southwestern New Mexico OP-705

minerals—framework silicates, feldspar group

phase equilibria: Temperature, size, and depth of the magma reservoir for the Taylor Creek Rhyolite, New Mexico OP-248

minerals—framework silicates, silica minerals

quartz: Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram OP-452

— Quartz solubility in hydrothermal seawater; an experimental study and equation describing quartz solubility for up to 0.5 M NaCl solutions OP-1091

minerals—miscellaneous minerals

chemical composition: Mineral chemistry of the Pioneer Batholith, Beaverhead County, southwestern Montana; microprobe data tables for feldspar, amphibole, mica, pyroxene, and accessory minerals OF 90-0652

manganese minerals: Microbanded manganese formations; protoliths in the Franciscan Complex, California P 1502

occurrence: Mineralogical maps showing distribution of ore-related minerals in the nonmagnetic, heavy-mineral-concentrate fraction of stream sediment from the Anchorage 1° × 3° Quadrangle, southern Alaska I-1975

— Saline minerals in the Lewis Cliff ice tongue, Buckley Island Quadrangle, Antarctica OP-307

— Unusual, high-temperature, iron-rich mineral phases produced by natural burning of coal seams; analytical data OF 87-0022

minerals—nesosilicates

andalusite: Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram OP-452

— Precise determinations of the equilibria kyanite-sillimanite and kyanite-andalusite and a revised triple point for Al_2SiO_5 polymorphs OP-100

dumortierite: The thermodynamic properties of dumortierite $Si_3B[Al_{6.75}\square_{0.25}O_{17.25}(OH)_{0.75}]$ OP-450

kyanite: Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram OP-452

— Precise determinations of the equilibria kyanite-sillimanite and kyanite-andalusite and a revised triple point for Al_2SiO_5 polymorphs OP-100

sillimanite: Heat capacities and entropies of sillimanite, fibrolite, andalusite, kyanite, and quartz and the Al_2SiO_5 phase diagram OP-452

— Precise determinations of the equilibria kyanite-sillimanite and kyanite-andalusite and a revised triple point for Al_2SiO_5 polymorphs OP-100

minerals—organic compounds

amber: First early Mesozoic amber in the Western Hemisphere OP-642

minerals—orthosilicates, garnet group

andradite: Experimental investigation of andradite and hedenbergite equilibria employing the hydrogen sensor technique, with revised estimates of $\Delta_f G^0_{m,298}$ for andradite and hedenbergite OP-729

phase equilibria: Garnet (almandine-pyrope) geobarometry OP-1553

pyrope: Melting and thermodynamic properties of pyrope ($Mg_3Al_2Si_3O_{12}$) OP-1045

minerals—oxides

boehmite: Revised values for the thermodynamic properties of boehmite, AlO(OH), and related species and phases in the system Al-H-O OP-451

brucite: Hartree-Fock band structure, equation of state, and pressure-induced hydrogen bonding in brucite, $Mg(OH)_2$ OP-957

bunsenite: Thermodynamic properties for bunsenite, NiO, magnetite, Fe_3O_4, and hematite, Fe_2O_3, with comments on selected oxygen buffer reactions OP-448

hematite: Thermodynamic properties for bunsenite, NiO, magnetite, Fe_3O_4, and hematite, Fe_2O_3, with comments on selected oxygen buffer reactions OP-448

ilmenite: Induced-polarization response of some titanium-bearing placer deposits in the Southeastern United States OP-1160

iron oxides: Heterogeneous electrochemical reactions associated with oxidation of ferrous oxide and silicate surfaces OP-1132

magnesiowustite: The high-pressure electronic structure of magnesiowustite (Mg,Fe)O; applications to the physics and chemistry of the lower mantle OP-955

magnetite: Thermodynamic properties for bunsenite, NiO, magnetite, Fe_3O_4, and hematite, Fe_2O_3, with comments on selected oxygen buffer reactions OP-448

occurrence: Chemical composition of ferromanganese crusts in the world ocean; a review and comprehensive database OF 89-0020

tungsten oxides: The assemblage WO_2+H_2O as a steady-state hydrogen source in moderately reduced hydrothermal experiments OP-218

minerals—properties

reflectance: The spectral reflectance of mineral mixtures in the mid-infrared (7-25 μm) OP-1403

minerals—ring silicates

emerald: Geological setting of the emerald deposits OP-611

— Geology of the world emerald deposits: a brief review OP-550

— Mineral chemistry of emeralds and some associated minerals from Pakistan and Afghanistan; an electron microprobe study OP-405

— Regional chemical differences among emeralds and host rocks of Pakistan and Afghanistan; implications for the origin of emerald OP-991

minerals—sheet silicates

talc: Thermodynamic properties of anthophyllite and talc; corrections and discussion of calorimetric data OP-449

minerals—sheet silicates, clay minerals

chemical analysis: A computer program for semiquantitative mineral analysis by X-ray powder diffraction OP-493

illite: The illite/smectite geothermometer-concepts, methodology, and application to basin history and hydrocarbon generation OP-841

smectite: The illite/smectite geothermometer-concepts, methodology, and application to basin history and hydrocarbon generation OP-841

minerals—sheet silicates, serpentine group

chrysotile: Hazards associated with fibrous minerals C 1033

minerals—silicates

oxidation: Heterogeneous electrochemical reactions associated with oxidation of ferrous oxide and silicate surfaces OP-1132

spectra: The use of spectroscopy in environmental geochemical studies C 1033

minerals—sulfates

alunite: The stable isotope geochemistry of acid-sulfate alteration and vein forming alunite OF 91-0257

thenardite: Visible and near-infrared (0.4-2.5 μm) reflectance spectra of playa evaporite minerals OP-212

minerals—sulfides

sphalerite: Commentary on the sphalerite geobarometer OP-1063

minerals—tungstates

wolframite: Anomalous low-density wolframite and fluid inclusion control of density, evidence from fluid inclusion content of water and carbon dioxide OF 89-0679

mines *see under* land use; underground installations
see under environment *under* reclamation
see under interpretation *under* faults
see under land use *under* impact statements

mining geology—data processing

data bases: Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OF 90-0424-A

— Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OF 90-0424-B

mining geology—effects

pollution: Hazardous wastes from large-scale metal extraction OP-743

mining geology—evaluation

coal: Coal resources of the Fruitland Formation in part of the Ute Mountain Ute Indian Reservation, San Juan County, New Mexico B 1938

— Economic effects of western Federal land-use restrictions on U.S. coal markets C 1042

metal ores: Geologic mapping and evaluation of the Pea Ridge iron ore mine (Washington County, Missouri) for rare-earth element and precious metal potential: a progress report B 1932

mining geology—general

coal: Slide set describing aspects of the origin of coal, coal mining, and peat formation OF 91-0390

mining geology—geologic hazards

slurry mining: Potential saltwater intrusion into freshwater aquifers during exploration for and mining of phosphorite off the Southeastern United States C 1033

mining geology—history

placers: Gold placers of the Circle District, Alaska: past, present, and future B 1943

— Maps showing mineral resource assessment for placer gold and silver, Dillon 1° × 2° Quadrangle, Idaho and Montana I-1803-F

mining geology—methods

radar methods: Applications of ground radar to coal mining OF 90-0414

— Detection of in seam anomalies with a synthetic pulse radar system OF 90-0414

— Some GPR results in salt and potash mines OF 90-0414

radio-wave methods: Detection of abandoned coal mine workings with radio waves OF 90-0414

mining geology—rock mechanics

shear zones: Characteristics of faults and shear zones in deep mines OP-1101

— Mineral assemblages of the Pea Ridge Fe-REE deposit: implications of an olympic dam-type variant in Southeast Missouri OP-1705

— Progress toward an occurrence model for Proterozoic iron oxide deposits; a comparison between the ore provinces of South Australia and Southeast Missouri B 1932

— Proterozoic ore-forming systems; examples of iron metallogenesis from the United States Midcontinent OP-1548

lead ores: The significance of Rb-Sr glauconite ages, Bonneterre Formation, Missouri; Late Devonian-Early Mississippian brine migration in the Midcontinent OP-1019

lead-zinc deposits: Fluid-inclusion evidence for the source of ore fluids for mississippi valley-type deposits in Missouri, Arkansas, Kansas, and Oklahoma B 1942

— Focused fluid flow and Ozark mississippi valley-type deposits: Comment OP-613

— Mines, prospects, and occurrences of metallic minerals and barite B 1942

— Strontium isotopic constraints on the origin of ore-forming fluids of the Viburnum Trend, Southeast Missouri OP-111

maps: Geology and mineral-resource assessment of the Springfield 1° × 2° Quadrangle, Missouri, as appraised in September 1985 B 1942

— Maps showing industrial mineral resources of the Joplin 1°×2° Quadrangle, Kansas and Missouri MF-2125-B

metal ores: General features of the St. Francois and Spavinaw granite-rhyolite terranes and the Precambrian metallogenic region of Southeast Missouri B 1932

— Geologic setting and ages of Proterozoic anorogenic rhyolite-granite terranes in the central United States B 1932

— Introduction B 1932

— Methodology for analysis of the Proterozoic metallogenic province of Southeast Missouri; a blueprint for state and Federal cooperation (a.k.a. the "Olympic Dam Project") B 1932

— Microstructures in the Cambrian Bonneterre Formation and Lamotte Sandstone of Southeast Missouri; sulfide occurrence in stylolites and extensional veinlets OF 90-0508

— Mines, prospects, and occurrences of metallic minerals and barite B 1942

— Origin of iron, rare-earth elements, copper, and gold in middle Proterozoic deposits of the Midcontinent region, U.S.A. C 1062

— Petrogenesis and tectonic setting of middle Proterozoic iron oxide-rich ore deposits: an ore deposit model for olympic dam-type mineralization B 1932

— The geophysical signature of Olympic Dam and Midcontinent (U.S.A.) analogs B 1932

— The Illinois Basin as a flow path for ore fluids OP-1414

— The Midcontinent of the United States; permissive terrane for an olympic dam-type deposit? B 1932

mineral resources: Examples of graphical data displays used in the resource study B 1942

— Geology and mineral-resource assessment of the Springfield 1° × 2° Quadrangle, Missouri, as appraised in September 1985 B 1942

— Precambrian geology and mineral-resource potential B 1942

— Summary geochemical maps of the Joplin 1° × 2° Quadrangle, Kansas and Missouri MF-2125-A

— The Conterminous United States Mineral-Resource Assessment Program; background information to accompany folio of geologic and mineral-resource maps of the Rolla 1° × 2° Quadrangle, Missouri C 1068

rare earth deposits: Geologic mapping and evaluation of the Pea Ridge iron ore mine (Washington County, Missouri) for rare-earth element and precious metal potential: a progress report B 1932

— Mineral assemblages of the Pea Ridge Fe-REE deposit; implications of an olympic dam-type variant in Southeast Missouri OP-1705

Missouri—environmental geology

geologic hazards: Missouri: floods and droughts W 2375

pollution: Collection and analysis of colloidal particles transported in the Mississippi River, U.S.A. OP-863

— Determination of chemical processes in coal mine spoil in west-central Missouri using sulfur and oxygen isotopes OP-92

— Geochemical data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri; 1989-90 OF 90-0351

— Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990 OF 90-0552

— Movement of nitrogen species and herbicides on claypan soils at the management systems evaluation area in Missouri OF 91-0088

Missouri—geochemistry

carbonate rocks: Geochemical studies of subsurface carbonate rocks B 1942

maps: Summary geochemical maps of the Joplin 1°×2° Quadrangle, Kansas and Missouri MF-2125-A

surveys: Geochemical studies: the Missouri experience C 1033

— Written communication on environmental geochemistry in Missouri C 1033

trace elements: Geochemistry of basal Cambrian sandstones in parts of Missouri, Arkansas, and Kansas B 1942

Missouri—geomorphology

landform description: Surficial geology B 1942

Missouri—geophysical surveys

remote sensing: Knowledge-based GIS techniques applied to geological engineering OP-1079

seismic surveys: Reconnaissance seismic-reflection surveys in the New Madrid seismic zone, Northeast Arkansas and Southeast Missouri MF-2135

surveys: Aeromagnetic and gravity studies of buried basement rocks B 1942

Missouri—hydrogeology

ground water: Areal extent, stratigraphic relation, and geohydrologic properties of regional geohydrologic units in southern Missouri HA-0711-I

— Geohydrology and water quality of Cenozoic and Mesozoic units in Southeast Missouri HA-0719

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-L

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-J

hydrology: Analysis of alternative modifications for reducing backwater flooding at the Honey Creek coal strip mine reclamation site in Henry County, Missouri WRI 90-4068

— Sediment in Lake Taneycomo, Missouri, 1913 to 1987 OP-85

— Simulation of flood hydrographs for small basins in Missouri WRI 90-4045

— Technique for estimating the magnitude and frequency of Missouri floods OF 91-0089

maps: Areal extent, stratigraphic relation, and geohydrologic properties of regional geohydrologic units in southern Missouri HA-0711-I

— Geohydrology and water quality of Cenozoic and Mesozoic units in Southeast Missouri HA-0719

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the Ozark Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-K

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the Springfield Plateau Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-L

— Water type and concentration of dissolved solids, chloride, and sulfate in water from the St. Francois Aquifer in Missouri, Arkansas, Kansas, and Oklahoma HA-0711-J

identification by remote sensing in a vegetated metamorphic terrain OP-213

water resources: A geographic information system data base for coal and water resources of the Powder River coal region, southeastern Montana OF 90-0568

— Quality assurance for water-quality activities of the U.S. Geological Survey in Montana OF 91-0216

— Quality-assurance plan for water-resources activities of the U.S. Geological Survey in Montana; 1991 OF 91-0194

— Reconnaissance of ground-water resources of the Fort Peck Indian Reservation, northeastern Montana WRI 91-4032

— Water-resources activities of the U.S. Geological Survey in Montana, October 1989 through September 1991 OF 91-0191

Montana—environmental geology

geologic hazards: Montana; floods and droughts W 2375

pollution: Benthic insects as indicators of large-scale trace metal contamination in the Clark Fork River, Montana OF 91-0088

— Large-scale distribution of metal contamination in the fine-grained sediments of the Clark Fork River, Montana, U.S.A. OP-34

Montana—geochemistry

isotopes: Carbon isotopes in Tertiary coals of the Powder River basin OP-483

maps: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Sleeping Giant Wilderness Study Area (MT-075-111), Lewis and Clark County, Montana OF 90-0469

oxygen: Oxygen isotope map of the giant metamorphic-hydrothermal system around the northern part of the Idaho Batholith, U.S.A. OP-204

trace elements: Low-K granophyres of the Stillwater Complex, Montana OP-219

— Petrology of chromite-bearing rocks from the lowermost cyclic units in the Stillwater Complex, Montana B 1674-E

Montana—geochronology

Cretaceous: U-Pb zircon ages of bentonitic beds from the Vaughn Member of the Mid-Cretaceous Blackleaf Formation, southwestern Montana OP-1971

Paleocene: $^{40}Ar/^{39}Ar$ age of Cretaceous-Tertiary boundary tektites from Haiti OP-518

Montana—geophysical surveys

electrical surveys: Electrical geophysical investigations in the Norris-Mammoth corridor, Yellowstone National Park, and the adjacent Corwin Springs Known Geothermal Resources Area WRI 91-4052

gravity surveys: Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-A

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-B

— Principal facts for 1040 gravity stations in the Gillette and Sheridan 1×2 degree quadrangles, and Crow Indian Reservation, Wyoming, Montana, and South Dakota OF 91-0287

heat flow: Soil mercury and streambed-temperature anomalies in the Norris-Mammoth-La Duke corridor WRI 91-4052

maps: Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-A

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-B

remote sensing: Airborne imaging spectrometer data for the Ruby Mountains, Montana; mineral identification by remote sensing in a vegetated metamorphic terrain OP-213

Montana—hydrogeology

ground water: Geochemical modeling of the Madison Aquifer in parts of Montana, Wyoming, and South Dakota OP-834

— Ground-water-flow systems in the Powder River structural basin, Wyoming and Montana WRI 85-4229

hydrology: Annual peak discharges from small drainage areas in Montana through September 1989 OF 90-0577

— Estimating firm yield and reliability of small reservoirs on ungaged streams in north-central Montana OP-486

— Methods for estimating monthly streamflow characteristics at ungaged sites in western Montana W 2365

— Trends in selected water-quality characteristics, Powder River and tributaries, Montana and Wyoming, water years 1968-88 and 1975-88 WRI 91-4029

maps: Water-surface profile and flood boundaries for the computed 100-year flood, Poplar River, Fort Peck Indian Reservation, Montana WRI 90-4169

springs: Effects of potential geothermal development in the Corwin Springs Known Geothermal Resources Area, Montana, on the thermal features of Yellowstone National Park WRI 91-4052

— Geochemical evolution of water in the Madison Aquifer in parts of Montana, South Dakota, and Wyoming P 1273-F

— Geochemical investigations of hydraulic connections between the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park WRI 91-4052

— Hydrologic investigations in the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park WRI 91-4052

— Introduction WRI 91-4052

— Reconnaissance of ground-water resources of the Fort Peck Indian Reservation, northeastern Montana WRI 91-4032

— Summary and conclusions WRI 91-4052

Montana—paleontology

Mollusca: Baculites thomi Reeside, 1927, an Upper Cretaceous ammonite in the Western Interior of the United States B 1934

Montana—petrology

intrusions: Mineral chemistry of the Pioneer Batholith, Beaverhead County, southwestern Montana; microprobe data tables for feldspar, amphibole, mica, pyroxene, and accessory minerals OF 90-0652

— Syncompressional emplacement of the Boulder and Tobacco Root batholiths (Montana, USA) by pull-apart along old fault zones OP-929

— Syncompressional emplacement of the Boulder Batholith (Montana) and nearby plutons by pull-apart along old fault zones: a working hypothesis OP-1823

Montana—sedimentary petrology

sedimentary rocks: Petrology of Tullock Member, Fort Union Formation, Wyoming and Montana: evidence for early Paleocene uplift of Bighorn Mountains OP-1249

Montana—stratigraphy

Cambrian: Measured stratigraphic sections of Elko Formation (Middle and Upper Cambrian), and Fairholme Group, Alexo Formation, and Palliser Formation (Upper Devonian), northwestern Montana and southeastern British Columbia OF 90-0455

Cretaceous: Biostratigraphic correlation of Santonian and Campanian formations in the northwestern part of Yellowstone National Park, and the Madison Range and Livingston area of southwestern Montana B 1962

— Contributions to Late Cretaceous stratigraphy and paleontology, western Montana B 1962

— Correlation of Lower and Upper Cretaceous Blackleaf Formation, Lima Peaks area to eastern Pioneer Mountains, southwestern Montana foreland basin OP-1362

— Cretaceous fluvio-lacustrine facies of upper Kootenai Formation and Flood Member of Blackleaf Formation, southwestern Montana OP-1390

— Cretaceous rocks of Cedar Creek Anticline area, eastern Montana and southwestern North Dakota OP-1783

— Cretaceous rocks of north-central Montana OP-1782

N

road log: Road log for field trip in Fish Lake valley, California-Nevada OF 91-0290

western Nevada: Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part I, Geology C 1062

Nevada—economic geology

barite deposits: Geochemistry and paleoceanographic setting of central Nevada bedded barites OP-532

— Stratigraphy of lower Paleozoic western facies rocks of northeastern Nevada, including stratabound lead and zinc sulfide deposits and barite OP-1535

bibliography: The Conterminous United States Mineral Appraisal Program; background information to accompany folio of geologic, geochemical, geophysical, and mineral resources maps of the Tonopah 1° by 2° Quadrangle, Nevada C 1070

copper ores: The mapping of mineral zones in hydrothermally altered volcanic rocks with an airborne imaging spectrometer, Cuprite, Nevada OP-1749

evaporite deposits: Spectral reflectance analysis of playa evaporite minerals; potential for use in playa geochemical studies and mineral resource exploration OP-1319

gold ores: Age and stratigraphy of the Preble Formation, host rock for gold deposits, Humboldt County, Nevada OP-1600

— Airborne electromagnetic applications; mapping structure and electrical boundaries beneath cover along the Getchell Trend, Nevada OP-1743

— An integrated airborne geophysical study along the Getchell trend of gold deposits, north-central Nevada OP-1486

— Assessing potential for future discoveries of sediment-hosted gold deposits in Nevada OP-1586

— Chronology of Tertiary igneous and hydrothermal events, Roberts Mountains, Eureka County, Nevada OP-1604

— Co-registered TIMS, geology and topography data sets for evaluating lithologic discrimination, Carlin District, Nevada OP-1113

— Comparison of stream-sediment, raw panned-concentrate, and nonmagnetic heavy-mineral-concentrate samples as reconnaissance sample media for gold exploration, based on studies in several southern Nevada and southern Arizona wilderness study areas OP-1702

— Constraints on the pressure of formation of the Getchell gold deposit, Humboldt County, Nevada, as interpreted from secondary-fluid-inclusion data OP-1198

— Element dispersion in alluvium covering gold deposits in the Kelly Creek valley, Getchell gold trend, Humboldt County, Nevada C 1062

— Genesis of sediment-hosted disseminated-gold deposits by fluid mixing and sulfidization; chemical-reaction-path modeling of ore-depositional processes documented in the Jerritt Canyon District, Nevada OP-478

— Geochemical investigation of ground water associated with disseminated gold deposits along the Getchell Trend, northern Nevada C 1062

— Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-A

— Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-B

— Geochemistry of the Ordovician high-calcium black shales hosting major gold deposits of the Getchell Trend in Nevada C 1058

— Geology and geochemistry of the Sleeper gold deposits, Humboldt County, Nevada: interim report OP-1684

— Lower Paleozoic host rocks in the Getchell gold belt: several distinct allochthons or a sequence of continuous sedimentation? OP-666

— Palynological assessment of organic tissues and metallic minerals in the Jerritt Canyon gold deposit, Nevada (U.S.A.) OP-875

— Petrochemistry and fluid-inclusion study of skarns from the northern Battle Mountain mining district, Nevada OP-1052

— Petrochemistry and fluid-inclusion study of skarns from the northern Battle Mountain mining district, Nevada OP-1909

— Preliminary results of aeromagnetic studies near the Getchell disseminated gold deposit trend, Osgood Mountains, north-central Nevada OP-1422

— Preliminary results of geochemical investigations of aerial gamma-ray anomalies in the Getchell gold trend, Humboldt County, Nevada C 1062

— Radioelement data of the Getchell Trend, Humboldt County, Nevada: geologic discussion and possible significance for gold exploration OP-1745

— Recognition of distinct terranes in lower Paleozoic host rocks in the Getchell gold trend, Humboldt County, Nevada C 1062

— Structural trends imply large gold resources in Nevada OP-1845

— Structurally controlled gold trends imply large gold resources in Nevada OF 90-0656

— Subsurface structure and lithology near the Getchell gold trend, Osgood Mountains, Nevada; geophysical insights C 1062

— The Getchell gold trend, northwestern Nevada; geologic structure delineated by further processing of electromagnetic data collected during a helicopter survey C 1062

industrial minerals: A case study of a public resource education program in Nevada B 1958

lead-zinc deposits: Stratigraphy of lower Paleozoic western facies rocks of northeastern Nevada, including stratabound lead and zinc sulfide deposits and barite OP-1535

manganese ores: K/Ar and fission-track ages of tuff beds at the Three Kids Mine, Clark County, Nevada; implications for manganese mineralization OP-578

maps: Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-A

— Map showing mines and prospects in the Reno 1° by 2° Quadrangle, Nevada and California MF-2154-B

— Mineral resources of the Mormon Mountains Wilderness Study Area and Addition, Lincoln and Clark counties, Nevada OF 90-0249

— Mineral summaries for Nevada: U.S. Bureau of Land Management wilderness study areas OF 90-0638

— Spatial analysis of geochemical and geologic information from the Tonopah 1°×2° Quadrangle, Nevada B 1878

metal ores: Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada OF 90-0461

— Concealed mineral deposits in Nevada: insights from three-dimensional analysis of gravity and magnetic anomalies OP-1228

— Eureka mining district, Nevada OP-776

— Geology, hydrothermal alteration, and mineralization at the Paradise Peak gold-silver-mercury deposit, Nye County, Nevada OP-1510

— Gold, silver, and mercury rock chemistry for the Adelaide mining district, Sonoma Range, Humboldt County, Nevada OF 89-0689

— Hydrothermal alteration at the Calico Hills, Nye County, Nevada OP-1856

— Magmatic and hydrothermal activity, caldera geology, and regional extension in the western part of the southwestern Nevada volcanic field OP-1697

— Miocene volcanism and precious-metal mineralization in northern Nevada OP-1942

— Structural setting of the Chief mining district, eastern Chief Range, Lincoln County, Nevada OF 90-0508

— The geochemical characterization of 460 feet of segmented alluvial core near the Rabbit Creek Deposit in the Getchell District OP-1908

— Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part III; Mineral deposits C 1062

mineral resources: Analytical data for stream and playa sediment samples from the Caliente 1° by 2° Quadrangle, Nevada OF 90-0433

— Analytical data for stream and playa sediment samples from the Kingman 1° by 2° Quadran-

gle, Arizona, California and Nevada OF 90-0444

— Analytical data for stream-sediment and playa-sediment samples from Lovelock 1° by 2° Quadrangle, Nevada OF 90-0437

— Analytical data for stream-sediment and soil samples from the Elko 1° by 2° Quadrangle, Nevada OF 90-0435

— Analytical data for stream-sediment and soil samples from the Goldfield 1° by 2° Quadrangle, Nevada OF 90-0441

— Analytical data for stream-sediment and soil samples from the McDermitt 1° by 2° Quadrangle, Nevada OF 90-0434

— Analytical data for stream-sediment and soil samples from the Reno 1° by 2° Quadrangle, Nevada OF 90-0430

— Analytical data for stream-sediment and soil samples from the Walker Lake 1° by 2° Quadrangle, California and Nevada OF 90-0431

— Analytical data for stream-sediment and soil samples from the Wells 1° by 2° Quadrangle, Nevada OF 90-0432

— Analytical data for stream-sediment and soil samples from the Winnemucca and Ely 1° by 2° quadrangles, Nevada OF 90-0443

— Analytical data for stream-sediment samples from the Death Valley 1° by 2° Quadrangle, California and Nevada OF 90-0438

— Analytical data for stream-sediment samples from the Las Vegas 1° by 2° Quadrangle, Arizona, California and Nevada OF 90-0442

— Analytical data for stream-sediment samples from the Lund 1° by 2° Quadrangle, Nevada OF 90-0436

— Analytical data for stream-sediment samples from the Mariposa 1° by 2° Quadrangle, California and Nevada OF 90-0440

— Analytical data for stream-sediment samples from the Millett 1° by 2° Quadrangle, Nevada OF 90-0439

— Analytical data for stream-sediment samples from the Tonopah 1° by 2° Quadrangle, Nevada OF 90-0445

— Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada OF 90-0461

— Basin evolution and petroleum studies in the U.S. eastern Great Basin; relevance to mineral investigations C 1062

— Dighem^{IV} survey for the U.S. Geological Survey along the Getchell Trend, Humboldt County, Nevada OF 90-0319

— Map showing mines and prospects in the Reno 1° by 2° Quadrangle, Nevada and California MF-2154-B

— Mineral resources of additions to the La Madre Mountains Wilderness Study Area, Clark County, Nevada OF 90-0679

— Mineral resources of an addition to the Black Rock Desert Wilderness Study Area, Humboldt County, Nevada OF 90-0618

— Mineral resources of the Cougar Canyon/Tunnel Spring Wilderness Study Area, Washington County, Utah, and Lincoln County, Nevada OF 90-0331

— Mineral resources of the Grapevine Mountain Wilderness Study Area, Esmeralda County, Nevada OF 90-0620

— Mineral resources of the Marble Canyon Wilderness Study Area, White Pine County, Nevada, and Millard County, Utah B 1728-G

— Mineral resources of the Mormon Mountains Wilderness Study Area and Addition, Lincoln and Clark counties, Nevada OF 90-0249

— Mineral resources of the Queer Mountain Wilderness Study Area, Esmeralda County, Nevada OF 90-0619

— Mineral summaries for Nevada; U.S. Bureau of Land Management wilderness study areas OF 90-0638

— Mineralization patterns in time and space in the Great Basin of Nevada OP-1316

— Minerals information sources in state agencies; Nevada C 1063

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-A

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-B

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-C

— Regional study of mineral resources in Nevada; insights from three-dimensional analysis of gravity and magnetic anomalies OP-89

— Spatial analysis of geochemical and geologic information from the Tonopah 1° × 2° Quadrangle, Nevada B 1878

— Tertiary tectonic framework, styles of faulting, and mineralization in the central Walker Lane, western Nevada OP-1451

— The Conterminous United States Mineral Appraisal Program; background information to accompany folio of geologic, geochemical, geophysical, and mineral resources maps of the Tonopah 1° by 2° Quadrangle, Nevada C 1070

— Triassic-Jurassic magmatic arc of western Nevada and eastern California; Part IV, A model for the evaluation of Cenozoic basins for concealed mineral systems C 1062

petroleum: A new oil-generation model for Pine and Railroad valleys, Nevada OP-1733

— Extensional geometries in the northern Grant Range, east-central Nevada; implications for oil occurrences in Railroad Valley OF 90-0508

— Extensional geometries in the northern Grant Range, east-central Nevada; implications for oil occurrences in Railroad Valley OP-1596

— Petroleum source rock evaluation of the Cretaceous Newark Canyon Formation in north-central Nevada OP-1675

— Potential of remote visible and near-infrared spectral reflectance measurements of mapping thermal maturity variations OP-1800

— Rock-Eval pyrolysis data for petroleum-potential evaluation based on well cuttings and core samples from eastern Nevada collected during 1990 OF 90-0698

— Thermal maturity trends from Rock-Eval and vitrinite reflectance analysis on potential source rocks in eastern Nevada OP-1209

— Use of geochemical data to trace ground-water flow, which could affect oil migration, in carbonate-rock aquifers of the eastern Great Basin, Nevada and Utah OP-1911

silver ores: Geochemical results for samples of ore and host rocks, Sleeper gold-silver deposit, Humboldt County, Nevada OF 90-0702-A

— Geochemical results for samples of ore and host rocks, Sleeper gold silver deposit, Humboldt County, Nevada OF 90-0702-B

water resources: Bibliography of selected water-resources publications on Nevada by the U.S. Geological Survey, 1885 through 1990 OF 90-0595

Nevada—engineering geology

rock mechanics: Fracture studies in the welded Grouse Canyon Tuff; Laser Drift of the G-Tunnel underground facility, Rainier Mesa, Nevada Test Site, Nevada OF 90-0656

waste disposal: Comparison of pore-water extraction by triaxial compression and high-speed centrifugation methods OP-1162

— Drilling and geohydrologic data for test hole USW UZ-1, Yucca Mountain, Nye County, Nevada OF 90-0354

— Potential mechanisms for fracture flow in the unsaturated zone at Yucca Mountain; effects of air entrapment within matrix blocks OP-589

— The significance of climate in southern Nevada for the shallow burial of low-level radioactive waste OP-770

— Triaxial- and uniaxial-compression testing methods developed for extraction of pore water from unsaturated tuff, Yucca Mountain, Nevada OP-751

— U.S. Geological Survey Committee for the Advancement of Science in the Yucca Mountain Project, symposium on Fractures, hydrology, and Yucca Mountain; abstracts and summary OF 91-0125

— Water movement and trench stability at a simulated arid burial site for low-level radioactive waste near Beatty, Nevada OP-21

waterways: Review of water-management models and results of simulations for the Truckee-Carson rivers system, California and Nevada OF 90-0393

Nevada—environmental geology

geologic hazards: Nevada; floods and droughts W 2375

pollution: Trace metal concentrations of three streams to Lake Tahoe, California and Nevada OP-161

— Water quality; what we have learned YR

waste disposal: Selected meteorological data for an arid climate over bare soil near Beatty, Nye County, Nevada, November 1977 through May 1980 OF 90-0195

— The Yucca Mountain Project; another perspective OP-1146

— Unpublished letter from U.S. Geological Survey scientists to the editor of the New York Times Magazine regarding William J. Broads' November 18, 1990 article on Yucca Mountain OF 91-0058

Nevada—geochemistry

gases: Physical and chemical characteristics of topographically affected airflow in an open borehole at Yucca Mountain, Nevada OP-1058

isotopes: Assessing the natural performance of felsic tuffs using the Rb-Sr and Sm-Nd systems; a study of the altered zone in the Topopah Spring Member, Paintbrush Tuff, Yucca Mountain, Nevada OP-821

— New Sr, Nd, and Pb isotopic data from plutons in the northern Great Basin; implications for crustal structure and granite petrogenesis in the hinterland of the Sevier thrust belt OP-1156

— U and Sr isotopes in ground water and calcite, Yucca Mountain, Nevada; evidence against upwelling water OP-1028

maps: Analytical results and sample locality map of rock samples from the Lime Canyon Wilderness Study Area (NV-050-231), Clark County, Nevada OF 90-0461

— Gold, silver, and mercury rock chemistry for the Adelaide mining district, Sonoma Range, Humboldt County, Nevada OF 89-0689

trace elements: Geochemistry and paleoceanographic setting of central Nevada bedded barites OP-532

Nevada—geochronology

Cretaceous: The age of the Keystone Thrust; laser-fusion $^{40}Ar/^{39}Ar$ dating of foreland basin deposits, southern Spring Mountains, Nevada OP-309

Miocene: K/Ar and fission-track ages of tuff beds at the Three Kids Mine, Clark County, Nevada; implications for manganese mineralization OP-578

— New Ar-40/Ar-39 ages for the Spearhead and Civet Cat Canyon members of the Stonewall Flat Tuff, Nye County, Nevada; evidence for systematic errors in standard K-Ar age determinations on sanidine OP-430

Oligocene: Incremental $^{40}Ar/^{39}Ar$ thermochronology of mylonitic rocks from the northern Snake Range, Nevada OP-620

Pleistocene: $^{40}Ar/^{39}Ar$ age of the Lathrop Wells volcanic center, Yucca Mountain, Nevada OP-1075

Nevada—geomorphology

fluvial features: Rhyolite flow fields as barriers to paleohydrologic flow in eastern Nevada and western Utah between latitudes 37°30'N and 38°N OF 91-0125

volcanic features: Geomorphic assessment of late Quaternary volcanism in the Yucca Mountain area, southern Nevada; implications for the proposed high-level radioactive waste repository: Comment OP-1135

Nevada—geophysical surveys

gravity surveys: Maps of the thickness of Cenozoic deposits and the isostatic residual gravity over basement for Nevada OF 90-0404

— Principal facts for 133 gravity stations, with color maps of Bouguer and isostatic residual gravity anomalies on the Winnemucca 1° by 2° Quadrangle, Nevada OF 91-0256-A

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-A

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-B

— Principal facts for gravity data compiled for the Conterminous United States Mineral Appraisal Program, Tonopah 1- by 2- degree Quadrangle, Nevada OF 90-0457-C

— Principal facts for gravity stations on the Winnemucca 1° by 2° Quadrangle, Nevada OF 91-0256-B

— Regional patterns of basin and range structure determined from gravity data of Nevada OP-1423

magnetotelluric surveys: One and two-dimensional inversion of magnetotelluric data across the Basin-Range–Colorado Plateau, Virgin Mountains area, NW Arizona and SW Nevada OF 89-0573

— Triassic-Jurassic magmatic arc of western Nevada and eastern California: Part II, Audiomagnetotelluric survey near Reno and Carson City, Nevada C 1062

maps: Dighem^{IV} survey for the U.S. Geological Survey along the Getchell Trend, Humboldt County, Nevada OF 90-0319

— Maps of the thickness of Cenozoic deposits and the isostatic residual gravity over basement for Nevada OF 90-0404

— Principal facts for 133 gravity stations, with color maps of Bouguer and isostatic residual gravity anomalies on the Winnemucca 1° by 2° Quadrangle, Nevada OF 91-0256-A

remote sensing: Co-registered TIMS, geology and topography data sets for evaluating lithologic discrimination, Carlin District, Nevada OP-1113

— Potential of remote visible and near-infrared spectral reflectance measurements of mapping thermal maturity variations OP-1800

seismic surveys: Feasibility study of the seismic reflection method in Amargosa Desert, Nye County, Nevada OF 89-0133

— Origin of deep crustal reflections; implications of coincident seismic refraction and reflection data in Nevada OP-479

surveys: Basin and Range crustal and upper mantle structure, northwest to central Nevada OP-155

— Dighem^{IV} survey for the U.S. Geological Survey along the Getchell Trend, Humboldt County, Nevada OF 90-0319

— Gravity and magnetic anomalies in the Ely Quadrangle, Nevada, and anomalies related to granitic plutons OP-1755

— Hydrogeologic inferences from drillers' logs and from gravity and resistivity surveys in the Amargosa Desert, southern Nevada OP-783

— Status of data, major results, and plans for geophysical activities, Yucca Mountain Project OP-787

well-logging: Geophysical logs and core measurements for forty boreholes at Yucca Mountain, Nevada GP-1001

Nevada—hydrogeology

bibliography: Bibliography of selected water-resources publications on Nevada by the U.S. Geological Survey, 1885 through 1990 OF 90-0595

ground water: Absorption of water into porous blocks of various shapes and sizes OP-1174

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states P 1409-D

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states OF 90-0560

— Developing regional ground-water models for the high-level nuclear waste repository, Yucca Mountain OP-1550

— Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states OF 91-0479

— Documentation of model input and output values for the ground-water resources of Honey Lake valley, Lassen County, California, and Washoe County, Nevada OF 91-0068

— Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California P 1406-C

— Geohydrology of test well USW H-1, Yucca Mountain, Nye County, Nevada WRI 84-4032

— Hydrogeologic data from selected wells and test holes in and adjacent to the Nevada Test Site, Nye County, Nevada, through 1986 OF 87-0536

— Mathematical model analysis of the Eagle Valley ground-water basin, west-central Nevada OP-27

— Measurement of vertical flow in borehole UE-3e 4 using geophysical logs, Nevada Test Site, Nye County, Nevada WRI 90-4185

— Quality of shallow ground water in the vicinity of a small urban area in west-central Nevada OP-1571

— Refined concepts of the ground-water flow system in Steptoe Valley, east-central Nevada OP-1400

— Saturated-zone ground-water flow at Yucca Mountain, Nevada: can fracture flow be adequately characterized? OF 91-0125

— Shallow ground water in the Whitney area, southeastern Las Vegas Valley, Clark County, Nevada; Part I, Description of chemical quality, 1986-87 WRI 89-4117

— Tertiary-age extensional patterns as a geologic framework for interpreting regional ground-water flow in the eastern Great Basin, Nevada and Utah OP-1336

— Use of geochemical data to trace ground-water flow, which could affect oil migration, in carbonate-rock aquifers of the eastern Great Basin, Nevada and Utah OP-1911

hydrology: Isotope content and temperature of precipitation in southern Nevada, August 1983-August 1986 OF 87-0463

— National Water-Quality Assessment program; Nevada Basin and Range OF 91-0154

— Phosphorus in the Truckee River between Vista and Patrick, Storey and Washoe counties, Nevada, August 1984 WRI 89-4175

— Suspended-sediment factors, Lake Tahoe basin, California-Nevada OP-462

maps: Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California OF 90-0355

— Chemical and isotopic data for water from wells, springs, and streams in carbonate-rock terrane of southern and eastern Nevada and southeastern California, 1985-88 OF 89-0422

— Ground-water-quality assessment of the Carson River basin, Nevada and California; analysis of available water-quality data through 1987 OF 89-0382

— Surface-water hydrology of Honey Lake valley, Lassen County, California, and Washoe County, Nevada OF 90-0177

springs: Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California OF 90-0355

— Chemical and isotopic data for water from wells, springs, and streams in carbonate-rock terrane of southern and eastern Nevada and southeastern California, 1985-88 OF 89-0422

Nevada—mineralogy

miscellaneous minerals: Distribution of fracture-lining minerals at Yucca Mountain OF 91-0125

Nevada—petrology

intrusions: Gravity and magnetic anomalies in the Ely Quadrangle, Nevada, and anomalies related to granitic plutons OP-1755

maps: Compilation of modal analyses of volcanic rocks from the Nevada Test Site area, Nye County, Nevada OF 90-0087

Nevada—sedimentary petrology

diagenesis: Early diagenesis and metal-organic matter interactions in alkaline playa lakes of the Lahontan Basin, Nevada C 1033

Nevada—seismology

crust: Analysis of local seismic waveforms from underground nuclear explosions: forward modeling for effective source functions at Pahute Mesa OP-54

— Crustal structure of the northwestern Basin and Range Province from the 1986 Program for Array Seismic Studies of the Continental Lithosphere seismic experiment OP-82

— Regional-scale velocity anisotropy inferred from Nevada Test Site nuclear test P-arrivals OF 91-0125

earthquakes: Seismicity and detection/location threshold in the Southern Great Basin Seismic Network OP-364

— Seismicity and shear strain in the southern Great Basin of Nevada and California OP-363

— Western Nevada and eastern California earthquakes, 1985 B 1954

Nevada—soils

Desert soils: Rubber-balloon and drive-core sampling for deteriming bulk density of an alluvial Desert soil OP-1189

pedogenesis: Soil formation on the Trail Canyon alluvial fan, Fish Lake valley, Nevada OF 91-0291

surveys: Seasonal variations of carbon dioxide concentrations in stony, coarse-textured desert soils of southern Nevada, USA OP-1046

Nevada—stratigraphy

Cambrian: Cambrian stratigraphy of the Wendover area, Utah and Nevada B 1948

changes of level: Change in the size of Walker Lake during the past 5000 years OP-80

Devonian: Geochemistry and paleoceanographic setting of central Nevada bedded barites OP-532

— Late Frasnian mass extinction: associated sea-level changes reflected by conodont faunas and biofacies OP-1812

— Late Frasnian mass extinction: conodont event stratigraphy, global changes, and possible causes OP-905

Holocene: Change in the size of Walker Lake during the past 5000 years OP-80

— Pedogenic isotopic indicators of climate and carbon cycling in Fish Lake valley, Nevada OF 91-0296

Miocene: Changing patterns of extensional tectonics: overprinting of the basin of the middle and upper Miocene Esmeralda Formation in western Nevada by younger structural basins OP-1022

— Magnetic fabric, flow directions, and source area of the lower Miocene Peach Springs Tuff in Arizona, California, and Nevada OP-465

— Magnetism and magnetic mineralogy of ash flow tuffs from Yucca Mountain, Nevada OP-927

— Paleomagnetic constraints on the geometry and timing of deformation at Yucca Mountain, Nevada OP-883

— Paleomagnetic investigation of Tertiary structural rotations at Yucca Mountain, southern Nevada OP-882

Mississippian: Paleogeographic and structural significance of an Upper Mississippian facies boundary in southern Nevada and east-central California OP-1021

paleomagnetism: Paleomagnetism of the Kalamazoo Tuff: implications for middle Tertiary extension in east-central Nevada OP-1437

Paleozoic: Lower Paleozoic host rocks in the Getchell gold belt: several distinct allochthons or a sequence of continuous sedimentation? OP-666

Pleistocene: An early Pleistocene pluvial lake in Fish Lake valley, Nevada-California: ringside resort for the eruption of the Bishop Tuff OF 91-0290

Quaternary: Stable isotopes in precipitation and ground water in the Yucca Mountain region, southern Nevada; paleoclimatic implications OP-79

Tertiary: Paleomagnetic investigation of Tertiary rotations, Southwest Nevada: evaluation of the Yucca-Frenchman flexure OP-1494

— Paleomagnetic investigation of Tertiary rotations, Southwest Nevada; Yucca Mountain OP-1798

Nevada—structural geology

deformation: Neogene strain incongruity at the Hamblin Bay Fault, Lake Mead, Nevada OP-1188

— Stress field at Yucca Mountain and in surrounding regions OF 91-0125

faults: A seismic reflection study of Miocene listric faulting north of Lake Mead, Nevada OP-1432

— Fault kinematics and estimates of strain partitioning of a Neogene extensional fault system in southeastern Nevada OP-721

— Field description and measurement of mesoscopic faults with application to kinematic and paleostress analyses OF 91-0125

— Geology and structural setting of the western Caliente Caldera Complex, Lincoln County, Nevada OP-1801

— Geometry of block faulting patterns observed in the Getchell Trend airborne geophysical data compared to the Snowstorm Mountains, Humboldt and Elko counties, Nevada OP-1554

— Seismic images of Miocene listric faulting N. of Lake Mead, NV OP-1642

— Seismic imaging of extended crust with emphasis on the Western United States: Discussion OP-844

— Seismic imaging of extended crust with emphasis on the Western United States: Reply OP-697

— Significance of mild extension of a relatively stable area within highly extended terrane, southeastern Nevada OP-1838

fractures: Fracture counts from borehole logs OF 91-0125

— Fracture studies in the welded Grouse Canyon Tuff:Laser Drift of the G-tunnel underground facility, Rainier Mesa, Nevada Test Site, Nevada OF 91-0125

neotectonics: Changing patterns of extensional tectonics: overprinting of the basin of the middle and upper Miocene Esmeralda Formation in western Nevada by younger structural basins OP-1022

— Late Cenozoic history of slip on the Fish Lake valley fault zone, Nevada and California OF 91-0290

— Late Neogene volcanism and tectonism in the Goldfield Segment of the Walker Lane Belt OP-1627

— Paleomagnetic constraints on the geometry and timing of deformation at Yucca Mountain, Nevada OP-883

— Quaternary movement on north-trending faults at Yucca Mountain, Nevada; preliminary results OP-1851

orogeny: The Elko Orogeny; Late Jurassic orogenesis in the Cordilleran Miogeocline OP-1915

tectonics: Allochthonous terranes of western Nevada; current status OP-1853

— Coeval crustal extension and magmatic activity in the Bullfrog Hills during the latter phases of Timber Mountain volcanism OP-1951

— Effects of Tertiary extension on the Mesozoic Delamar thrust plate, southern Nevada OP-1721

— Extensional geometries in the northern Grant Range, east-central Nevada; implications for oil occurrences in Railroad Valley OP-1596

— Golconda and Roberts Mountains allochthons emplaced over Triassic strata at Mt. Ichabod, Elko County, Nevada OP-1534

— Incremental $^{40}Ar/^{39}Ar$ thermochronology of mylonitic rocks from the northern Snake Range, Nevada OP-620

— Late Mesozoic-Cenozoic tectonics in northeastern Nevada OP-1914

— Paleomagnetic evidence for the age and extent of middle Tertiary counterclockwise rotation, Dixie Valley region, west central Nevada OP-499

— Regional seismic reflection profile from Railroad Valley to Lake Valley, east-central Nevada, reveals a variety of structural styles beneath Neogene basins OP-1761

— Shallow crustal deformation in the Pahranagat area, southern Nevada OP-528

— Structural geology of Yucca Mountain OP-940

— Tectonic setting of Yucca Mountain, Southwest Nevada OP-941

— Tectonic significance of linear, north-trending anomalies in north-central Nevada OP-1625

— Tertiary-age extensional patterns as a geologic framework for interpreting regional ground-water flow in the eastern Great Basin, Nevada and Utah OP-1336

Nevada—tectonophysics

crust: Origin of deep crustal reflections: implications of coincident seismic refraction and reflection data in Nevada OP-479

— Origin of deep crustal reflections: implications of coincident seismic refraction and reflection data in Nevada: Reply OP-480

mantle: Basin and Range crustal and upper mantle structure, northwest to central Nevada OP-155

New Brunswick—areal geology

maps: Quaternary geologic map of the Boston 4° × 6° Quadrangle, United States and Canada I-1420 (NK-19)

New Brunswick—geochemistry

sediments: A method for the concentration of fine-grained rutile (TiO_2) from sediment and sedimentary rocks by chemical leaching OP-194

New Brunswick—geochronology

Paleozoic: Regional differences in Pb isotopic compositions of feldspars in plutonic rocks of the northern Appalachian Mountains, U.S.A., and Canada: a geochemical method of terrane correlation OP-35

New Brunswick—stratigraphy

Quaternary: Quaternary geologic map of the Boston 4° × 6° Quadrangle, United States and Canada I-1420 (NK-19)

New Brunswick—structural geology

tectonics: Regional differences in Pb isotopic compositions of feldspars in plutonic rocks of the northern Appalachian Mountains, U.S.A., and Canada: a geochemical method of terrane correlation OP-35

New England—areal geology

maps: Oliverian domes, related plutonic rocks, and mantling Ammonoosuc Volcanics of the Bronson Hill Anticlinorium, New England Appalachians P 1516

— Quaternary geologic map of the Boston 4° × 6° Quadrangle, United States and Canada I-1420 (NK-19)

New England—economic geology

gold ores: Carbonate-hosted gold mineralization of hydrothermal-replacement origin adjacent to a syenitic stock at Cuttingsville, Vermont, and the potential for other syenite-related gold deposits in New England B 1887

mineral resources: Summary results of the Glens Falls CUSMAP project, New York, Vermont, and New Hampshire B 1887

water resources: The Water Data Sources Directory of the National Water Data Exchange, northeastern region OF 91-0083

New England—geochronology

Paleozoic: Regional differences in Pb isotopic compositions of feldspars in plutonic rocks of the northern Appalachian Mountains, U.S.A., and Canada: a geochemical method of terrane correlation OP-35

New England—geophysical surveys

seismic surveys: The 1988 Ontario-New York-New England seismic refraction experiment, description and early results OP-1594

New England—hydrogeology

ground water: A plan for the study of the hydrogeology of bedrock of New England OF 90-0374

hydrology: National Water-Quality Assessment Program: the Connecticut River and Long Island Sound coastal rivers OF 91-0159

New England—oceanography

continental margin: Silt-fraction mineralogy of unconsolidated sediment samples from the con-

— Preliminary geologic map and sections of the Walker Canyon Quadrangle, Grant and Hidalgo counties, New Mexico OF 90-0423

— Preliminary geologic map of the Crookson Peak Quadrangle, Grant County, New Mexico OF 90-0252

— Preliminary geologic map of the Eagle Peak Quadrangle, Catron County, New Mexico OF 90-0546

— Preliminary geologic map of the Goat Camp Spring Quadrangle, Grant County, New Mexico, and Greenlee County, Arizona OF 90-0490

road log: First-day road log, Albuquerque to Mesita, Laguna, Acoma, McCartys and Grants OP-689

— Second-day road log, from Grants to El Malpais, Fence Lake, Zuni Pueblo and Gallup OP-160

— Third-day road log, from Gallup to Upper Nutria, Ramah, El Morro and Grants OP-17

San Juan Basin: Analysis of spatial geologic data using surface modeling and geographic information system software; applications to regional geologic mapping, San Juan structural basin, New Mexico, Colorado, Arizona, and Utah OP-1317

New Mexico—economic geology

coal: Coal resources of the Fruitland Formation in part of the Ute Mountain Ute Indian Reservation, San Juan County, New Mexico B 1938

— Coal resources of the San Juan Basin OP-288

— Coal-bed methane resources and Fruitland Formation coal-bed geology, San Juan Basin, New Mexico and Colorado OP-1373

— Thermal maturity of Upper Cretaceous coals, San Juan Basin, New Mexico and Colorado OP-1375

— Vitrinite reflectance values of coal from drill-hole cuttings, San Juan Basin, New Mexico OF 91-0302

energy sources: Applications of geographic information systems (GIS) to exploration studies in the San Juan Basin, New Mexico OP-1639

— Evolution of the San Juan Basin, Colorado, and New Mexico basin analysis case study OP-1788

— Geology of the La Vida Mission Quadrangle, San Juan and McKinley counties, New Mexico B 1940

evaporite deposits: Ground-water control of evaporite deposition OP-1154

metal ores: Can trace and rare-earth elements in fluorite be useful in geochemical exploration? Encouraging evidence from the Sierra Cuchillo area, New Mexico C 1062

— The Mogollon mining district, southwestern New Mexico; classic epithermal silver-gold vein deposits revisited C 1062

— Variation of trace elements and rare earth elements in fluorite; a possible tool for exploration OP-280

mica deposits: Pink and violet micas; composition, nomenclature, and genesis of muscovite and lepidolite micas from pegmatites and metamorphic rocks in northern New Mexico and central Colorado OP-1647

mineral resources: Minerals information sources in state agencies: New Mexico C 1063

natural gas: Geochemistry of coal-generated hydrocarbons and source rock potential of coal beds OP-1781

— Vitrinite reflectance data from Cretaceous and Tertiary rocks, San Juan Basin, New Mexico and Colorado OF 90-0659

— Vitrinite reflectance study of the Upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico OP-1727

petroleum: Oil-generating coals of the San Juan Basin, New Mexico and Colorado, U.S.A. OP-183

rare earth deposits: Rare-earth arsenates and other rare-earth minerals from the Black Range tin district, Sierra and Catron counties, New Mexico OP-1394

uranium ores: Helium soil-gas survey of the Crownpoint area, New Mexico; evaluation of the regional distribution OP-864

water resources: Short papers on water resources in New Mexico, 1937-57 OF 91-0081

New Mexico—engineering geology

petroleum engineering: Heterogeneity of eolian sandstones and enhanced oil recovery OP-1819

rock mechanics: Quantitative analysis of long-period events recorded during hydrofracture experiments at Fenton Hill, New Mexico OP-291

New Mexico—environmental geology

geologic hazards: New Mexico: floods and droughts W 2375

New Mexico—geochemistry

helium: Helium soil-gas survey of the Crownpoint area, New Mexico; evaluation of the regional distribution OP-864

maps: Petrochemistry of igneous rocks, Silver City 1° × 2° Quadrangle, New Mexico and Arizona I-1310-H

organic materials: Use of Rock-Eval pyrolysis and vitrinite reflectance data in characterizing type and maturity of organic matter in coal, Upper Cretaceous Fruitland Formation, San Juan Basin, New Mexico and Colorado OP-1569

trace elements: Ground-water conditions near Deming, New Mexico OF 91-0081

— Pre-eruptive abundances of H_2O, Cl, F, B, Sn, Mo, W, and other lithophile trace elements in Taylor Creek Rhyolite, New Mexico, U.S.A. OP-1949

— Volatiles and lithophile elements in Taylor Creek Rhyolite: constraints from glass inclusion analysis OP-1115

New Mexico—geochronology

Cenozoic: Geology of volcanic and subvolcanic rocks of the Raton-Springer area, Colfax and Union counties, New Mexico P 1507

Tertiary: High-precision $^{40}Ar/^{39}Ar$ sanidine geochronology of ignimbrites in the Mogollon-Datil volcanic field, southwestern New Mexico OP-705

New Mexico—geomorphology

volcanic features: Bandera Crater OP-688

New Mexico—geophysical surveys

well-logging: The "art" of in situ fluid sampling and the remarkable compositional variations in the wellbore fluid of VC-2B, Valles Caldera, New Mexico OP-353

New Mexico—hydrogeology

bibliography: Historic water-quality data, Puerco River basin, Arizona and New Mexico OF 91-0196

ground water: Aquifer-characteristic and water-chemistry data from wells on or near Navajo tribal lands in the Zuni River basin and Whitewater Arroyo drainage, west-central New Mexico OF 90-0147

— Construction, lithologic, and geophysical data from monitoring wells in Albuquerque, Bernalillo County, New Mexico OF 90-0578

— Geochemistry of ground water in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico, and California P 1406-C

— Geohydrology of the Morrison Formation in the western San Juan basin, New Mexico WRI 89-4069

— Ground-water availability and quality in eastern Bernalillo County and vicinity, central New Mexico WRI 89-4127

— Ground-water conditions in the vicinity of Orogrande, New Mexico OF 91-0081

— Ground-water conditions near Belen, New Mexico OF 91-0081

— Ground-water conditions near Cambray, Luna County, New Mexico OF 91-0081

— Ground-water conditions near Separ, New Mexico OF 91-0081

— Ground-water conditions near Wilna, New Mexico OF 91-0081

— Ground-water conditions near Wingate Ordnance Depot OF 91-0081

— Ground-water supplies in the vicinity of Clovis, New Mexico OF 91-0081

— Ground-water supplies near Carlsbad, New Mexico OF 91-0081

— Ground-water supplies near Cerillos, New Mexico OF 91-0081

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

— Memorandum No. 2 concerning magnesium brine wells of the Emro Corporation near Carlsbad, New Mexico OF 91-0081

— Memorandum No. 2 on ground-water supplies in the vicinity of Ft. Bayard, New Mexico OF 91-0081

— Memorandum No. 3 on the pumping test of the Army test well on Mracek land near Silver City, New Mexico OF 91-0081

— Memorandum on ground-water supplies near Valmont, New Mexico OF 91-0081

— Memorandum on the water supply of Alamogordo, New Mexico OF 91-0081

— Memorandum on water supply for the proposed airbase near Hobbs, New Mexico OF 91-0081

— Note on use of producing well as a monitoring well, with special reference to a proposed well at Sandia Corporation, Albuquerque, New Mexico OF 91-0081

— Outline of ground-water conditions at Albuquerque, New Mexico OF 91-0081

— Preliminary report on ground-water conditions southwest of Portales OF 91-0081

— Simulation of the effects of ground-water withdrawal from a well field adjacent to the Rio Grande, Santa Fe County, New Mexico WRI 89-4184

— Tentative computation of recharge of Pecos Valley shallow-water basin and of effect of pumping by present holders of water rights OF 91-0081

— The availability of irrigation water at the Alamogordo Air Base OF 91-0081

— Water-level changes in the High Plains Aquifer underlying parts of South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, and Texas; predevelopment through nonirrigation season 1988-89 WRI 90-4153

— Well drilling, water-quality sampling and aquifer testing on Acoma Pueblo lands, November 1, 1988 to March 8, 1989 OP-584

hydrology: Application of the DR3M watershed model on a small urban basin OP-1054

— Base-flow investigation on the Sacramento River, September 25, 1985, near Sunspot, Otero County, New Mexico OF 89-0239

— Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming OF 87-0547

— Hydrologic data for the Jemez Mountains, New Mexico OF 90-0176

— Infiltration and evapotranspiration within the Albuquerque, New Mexico, area with a section on historical water-resource trends during the 1954-80's period of urban growth WRI 90-4055

maps: Geohydrology and simulation of ground-water flow in the Mesilla Basin, Dona Ana County, New Mexico, and El Paso County, Texas OF 88-0305

— Historic water-quality data, Puerco River basin, Arizona and New Mexico OF 91-0196

— Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah HA-0720-B

— Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-F

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

New Mexico—paleontology

Mollusca: Baculites thomi Reeside, 1927, an Upper Cretaceous ammonite in the Western Interior of the United States B 1934

— Sciponoceras gracile (Shumard); common Upper Cretaceous guide fossil in New Mexico OP-188

New Mexico—petrology

inclusions: Mafic inclusions in the Tschicoma Formation, Jemez volcanic field, New Mexico OP-1859

magmas: Temperature, size, and depth of the magma reservoir for the Taylor Creek Rhyolite, New Mexico OP-248

New Mexico—sedimentary petrology

diagenesis: Early diagenesis in eolian dune and interdune sands at White Sands, New Mexico OP-1817

sedimentary rocks: Lithofacies in Twowells Tongue of Dakota Sandstone, southern San Juan Basin, New Mexico OP-1341

— Paleontology and sedimentology of upper clastic member of Wanakah Formation, Chama Basin, New Mexico; lacustrine paleoenvironmental implications OP-1415

— Sedimentology and depositional environments of Lower Permian Yeso Formation in northwestern New Mexico OP-1873

— Tectonic and eustatic controls of facies architecture of Upper Cretaceous Dakota Sandstone, San Juan Basin, New Mexico OP-1194

New Mexico—seismology

earthquakes: Seismicity of New Mexico, 1985 B 1954

— Socorro, New Mexico, area earthquakes, 1985 B 1954

New Mexico—stratigraphy

Cretaceous: Coal resources of the Fruitland Formation in part of the Ute Mountain Ute Indian Reservation, San Juan County, New Mexico B 1938

— Coal-bearing Ramah Member of the Crevasse Canyon Formation; a new stratigraphic unit in the Zuni Basin, west-central New Mexico OP-1187

— Cretaceous stratigraphy of the San Juan Basin, New Mexico and Colorado OP-1374

— Foraminifers suggest environmental differences between Whitewater Arroyo Shale Tongue and basal main-body Mancos Shale, San Juan Basin, New Mexico OP-1265

— Heterogeneity of Upper Cretaceous Gallup Sandstone regressive facies, Gallup Sag, New Mexico OP-314

— Mid-Cretaceous molluscan record from west-central New Mexico OP-189

— Stratigraphic cross sections of Upper Cretaceous rocks across San Juan Basin, northwestern New Mexico and southwestern Colorado OP-1649

— Stratigraphy and provenance of Upper Cretaceous rocks in south-central New Mexico OF 90-0656

— Stratigraphy and provenance of Upper Cretaceous rocks in south-central New Mexico OP-1652

— Stratigraphy of Upper Cretaceous rocks in the Zuni Basin, west-central New Mexico OF 90-0656

— Stratigraphy of Upper Cretaceous rocks in the Zuni Basin, west-central New Mexico OP-1651

— The Cretaceous/Tertiary boundary interval, Raton Basin, Colorado and New Mexico, and its content of shock-metamorphosed minerals: evidence relevant to the K/T boundary impact-extinction theory OP-517

Jurassic: Jurassic Lake T'oo'dichi': a large alkaline, saline lake, Morrison Formation, eastern Colorado Plateau OP-1072

— Late Jurassic weather forecast, Four Corners area; dry, hot, and partly sunny OP-1928

— Modifications to Middle and Upper Jurassic nomenclature in the southeastern San Juan Basin, New Mexico OP-195

Mesozoic: Sedimentology and revised nomenclature for the upper part of the Upper Triassic Chinle Formation and the Lower Jurassic Wingate Sandstone, northwestern New Mexico and northeastern Arizona OP-247

Mississippian: Stratigraphy, facies and paleotectonic history of Mississippian rocks in the San Juan Basin of northwestern New Mexico and adjacent areas OP-25

paleomagnetism: Paleomagnetism of latest Cambrian-Early Ordovician and latest Cretaceous-early Tertiary rocks of the Florida Mountains, Southwest New Mexico OP-339

Pleistocene: Occurrence of the Lava Creek B tephra layer in the northwestern Espanola Basin, New Mexico OP-230

Tertiary: The Cretaceous/Tertiary boundary interval, Raton Basin, Colorado and New Mex-

ico, and its content of shock-metamorphosed minerals; evidence relevant to the K/T boundary impact-extinction theory OP-517

Triassic: Fluvial sandstone beds in Petrified Forest Member of Upper Triassic Chinle Formation, Northwest New Mexico and Northeast Arizona OP-1791

— Paleoclimatic cycles and tectonic controls on fluvial lacustrine, and eolian strata in Upper Triassic Chinle Formation, San Juan Basin OP-1352

New Mexico—structural geology

faults: San Juan Basin faulting; more than meets eye OP-1497

isostasy: The decompensative gravity anomaly and deep structure of the region of the Rio Grande Rift OP-200

tectonics: Description and development of the Cordilleran orogenic belt in the Southwestern United States and northern Mexico P 1512

— Evolution of the San Juan Basin, Colorado, and New Mexico basin analysis case study OP-1788

— Some relationships among folds, faults and mid-Tertiary igneous rocks near Gallup, northwestern New Mexico OP-728

— Stratigraphy, facies and paleotectonic history of Mississippian rocks in the San Juan Basin of northwestern New Mexico and adjacent areas OP-25

New Mexico—tectonophysics

crust: Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting OP-45

— The decompensative gravity anomaly and deep structure of the region of the Rio Grande Rift OP-200

New South Wales—geophysical surveys

electromagnetic surveys: Inspection of concrete embankments and measurement of lake bottom sediment thickness; case histories in GPR OF 90-0414

New York—areal geology

Adirondack Mountains: Geology of the Adirondack portion of the Glens Falls 1° × 2° Quadrangle B 1887

Glens Falls Quadrangle: An introduction to the geology and Paleozoic history of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

maps: Bedrock geologic map of the Poughquag Quadrangle, New York GQ-1662

— Preliminary geologic map and cross section of the Ellenville and Kerhonkson quadrangles (in part) and the Napanoch Quadrangle, Ulster and Orange counties, New York OF 90-0467

New York—economic geology

metal ores: Metallic mineral deposits in the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

— Preliminary assessment of metallic mineral resources in the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

— Regional exploration geochemistry of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

— Summary results of the Glens Falls CUSMAP project, New York, Vermont, and New Hampshire B 1887

mineral resources: Tabulated analytical results, floppy disc, and sample locality maps for nonmagnetic and selected paramagnetic heavy-mineral concentrates from stream sediment, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire OF 90-0675

New York—engineering geology

foundations: Hydraulic analysis of the Schoharie Creek Bridge OP-330

maps: Landslide inventory map of New York OP-292

waterways: Report of the River Master of the Delaware River for the period December 1, 1988 to November 30, 1989 OF 90-0551

New York—environmental geology

ecology: Episodic acidification and response of fish in headwater streams of the Catskill Mountains, New York OP-1678

geologic hazards: New York: floods and droughts W 2375

pollution: Geology of the Reading Prong, New York, and its application to predicting areas that have high radon potential C 1033

— Particle tracking analysis of recharge areas on Long Island, New York OP-139

— Summary of data from onsite and laboratory analysis of precipitation runoff from carbonate-stone surfaces, National Acid Precipitation Assessment Program, June 1984 to November 1987 OF 89-0246

New York—geochemistry

maps: Tabulated analytical results, floppy disc, and sample locality maps for nonmagnetic and selected paramagnetic heavy-mineral concentrates from stream sediment, Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire OF 90-0675

New York—geochronology

Precambrian: Metamorphic history of the Grenville Terrane of southern Ontario and New York OP-1634

Proterozoic: U-Pb garnet, sphene, monazite, and rutile ages; implications for the duration of high-grade metamorphism and cooling histories, Adirondack Mts., New York OP-718

New York—geomorphology

maps: Glacial history and geohydrology of the Irondequoit Creek valley, Monroe County, New York WRI 88-4145

New York—geophysical surveys

remote sensing: Lineament analysis of the Glens Falls 1° × 2° Quadrangle, New York, Vermont, and New Hampshire B 1887

seismic surveys: Crustal structure of the western New England Appalachians and the Adirondack Mountains OP-500

— Data report for O-NYNEX; the 1988 Grenville-Appalachian seismic refraction experiment in Ontario, New York and New England OF 90-0426

— Spatial variation of Poisson's ratio in the crust of the Northeastern U.S. OP-1593

— The 1988 Ontario-New York-New England seismic refraction experiment, description and early results OP-1594

surveys: Preliminary delineation of contaminated water-bearing fractures intersected by open-hole bedrock wells OP-1138

New York—hydrogeology

ground water: A probability model to predict the quality of shallow ground water from land-use data OP-1872

— Cross-sectional analysis of ground-water flow patterns on Long Island, New York OP-1646

— Glacial history and geohydrology of the Irondequoit Creek valley, Monroe County, New York WRI 88-4145

— Hydrogeology of the Niagara Falls area; a project overview OP-1904

— Particle tracking analysis of recharge areas on Long Island, New York OP-1753

— Preliminary analysis of water-quality data from the shallow, intermediate, and deep zones of five land-use areas on Long Island, New York OF 91-0088

— Preliminary delineation of contaminated water-bearing fractures intersected by open-hole bedrock wells OP-1138

— Relation between land use and quality of shallow ground water in central and eastern Long Island, New York OP-1273

— Statistical methods for a regional ground-water quality appraisal in different land-use areas, Long Island, New York OP-266

hydrology: Assessment of stream acidification in the Catskill Mountains of New York OP-755

— Measurement of scour at selected bridges in New York OP-137

maps: Climatic atlas of the Delaware River basin P 1392

— Isopleth maps showing regional variations in pH of stream water and ground water in relation to geologic setting and known mineral deposits,

restrial flora of western North America OP-1963

Jurassic: The use of massive mudstones in paleoclimatic interpretations of the early Mesozoic Newark Supergroup of eastern North America OP-1867

Mesozoic: Sedimentary facies and depositional environments of early Mesozoic Newark Supergroup basins, eastern North America OP-989

Oligocene: Climatic change near the Eocene-Oligocene boundary and the effects on the terrestrial flora of western North America OP-1963

Paleogene: Geologic and biostratigraphic framework of the non-marine Cretaceous-Tertiary boundary interval in western North America OP-766

Pennsylvanian: The occurrence of freshwater limestones in the Upper Pennsylvanian and Lower Permian of the northern Appalachian Basin OP-1364

Permian: The occurrence of freshwater limestones in the Upper Pennsylvanian and Lower Permian of the northern Appalachian Basin OP-1364

Pliocene: Of mice and ice in the late Pliocene of North America OP-865

Tertiary: Recovery of terrestrial flora following K-T extinction; the palynological record from western North America OP-1693

Triassic: The use of massive mudstones in paleoclimatic interpretations of the early Mesozoic Newark Supergroup of eastern North America OP-1867

North America—structural geology

tectonics: Geologic and tectonic insights from analysis of new gravity and magnetic maps of North America OP-1809

— Regional in-situ stress patterns in North America OP-1978

— Unusually large subsidence and sea-level events during middle Paleozoic time; new evidence supporting mantle convection models for supercontinent assembly: Comment OP-664

North America—tectonophysics

crust: Evolving geographic patterns of Cenozoic magmatism in the North American Cordillera; the temporal and spatial association of magmatism and metamorphic core complexes OP-26

plate tectonics: The North American Midcontinent Rift beneath Lake Superior from GLIMPCE seismic reflection profiling OP-144

North Carolina—areal geology

maps: Provisional geologic map of the Snow Camp-Saxapahaw area, North Carolina OF 90-0417

North Carolina—economic geology

gold ores: Regional structural setting of gold deposits in the Carolina slate belt of North Carolina C 1062

water resources: U.S. Geological Survey: North Carolina's water resources; a partnership with state, Federal, and local agencies OF 91-0077

North Carolina—engineering geology

waterways: Effects of channel modifications on the hydrology of Chicod Creek basin, North Carolina, 1975-87 WRI 90-4031

North Carolina—environmental geology

geologic hazards: North Carolina; floods and droughts W 2375

land use: Effects of land-management practices on sediment yields in northeastern Guilford County, North Carolina WRI 90-4127

— Water-quality trends and basin activities and characteristics for the Albemarle-Pamlico estuarine system, North Carolina and Virginia OF 90-0398

pollution: Land drainage and estuarine salinity response OP-46

— Summary of data from onsite and laboratory analysis of precipitation runoff from carbonate-stone surfaces, National Acid Precipitation Assessment Program, June 1984 to November 1987 OF 89-0246

North Carolina—geochemistry

trace elements: Cooperative studies by the U.S. Geological Survey and the U.S. National Park Service in environmental biogeochemistry C 1033

North Carolina—geophysical surveys

maps: Magnetic, gravity, and radiometric maps of the Chattanooga 1°×2° Quadrangle, Tennessee and North Carolina MF-2139

surveys: Magnetic, gravity, and radiometric maps of the Chattanooga 1° × 2° Quadrangle, Tennessee and North Carolina MF-2139

North Carolina—hydrogeology

ground water: Ground-water study of the central coastal plain, North Carolina OF 90-0192

— Simulation of ground-water flow in the coastal plain aquifer system of North Carolina OF 90-0372

— Transferring model-operating responsibility from a federal to a state agency OP-877

hydrology: Effects of channel modifications on the hydrology of Chicod Creek basin, North Carolina, 1975-87 WRI 90-4031

— National Water-Quality Assessment Program; the Albemarle-Pamlico drainage OF 91-0156

— Water-quality characteristics of inflow to and outflow from B. Everett Jordan Lake, North Carolina, 1982-86 WRI 90-4096

— Water-quality characteristics of inflow to and outflow from Falls Lake, North Carolina, 1982-87 WRI 90-4097

maps: Hydrogeologic unit map of the Piedmont and Blue Ridge provinces of North Carolina WRI 90-4035

North Carolina—oceanography

estuaries: Land drainage and estuarine salinity response OP-46

sedimentation: Modes of cross-shore sediment transport on the shoreface of the Middle Atlantic Bight OP-1157

North Carolina—stratigraphy

Cretaceous: Campanian and Maastrichtian depositional systems of the Black Creek Group of the Carolinas OP-795

guidebook: Campanian and Maastrichtian depositional systems of the Black Creek Group of the Carolinas OP-795

North Carolina—structural geology

deformation: Style and age of deformation in the Carolina slate belt of central North Carolina OP-1712

structural analysis: Structural framework of the Carolina slate belt in North Carolina OP-1711

North Dakota—economic geology

petroleum: Formation resistivity as an indicator of oil generation; Bakken Formation of North Dakota and Woodford Shale of Oklahoma OP-1826

water resources: Estimated use of water in North Dakota in 1985 and trends during 1960-85 WRI 89-4003

— Water-resources activities, North Dakota District, fiscal year 1990 OF 91-0188

North Dakota—environmental geology

geologic hazards: North Dakota; floods and droughts W 2375

North Dakota—geochemistry

trace elements: Cooperative studies by the U.S. Geological Survey and the U.S. National Park Service in environmental biogeochemistry C 1033

North Dakota—hydrogeology

hydrology: Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota OF 90-0593

— Gaged and estimated monthly streamflow during 1931-84 for selected sites in the Red River of the North basin in North Dakota and Minnesota WRI 90-4167

maps: Application of digital elevation models to delineate drainage areas and compute hydrologic characteristics of sites in the James River basin, North Dakota OF 90-0593

— Meteorologic and hydrologic data collected for computing evaporation from Devils Lake, North Dakota, 1986-88 OP-950

P

— Explanatory notes OP-599

— Geological setting of chemosynthetic communities in the Monterey Fan Valley system OP-276

— Geothermal state of Hole 504B, ODP Leg 111 overview OP-335

— Multichannel data acquisition and processing OP-982

— Ocean Dilling Program Leg 134; Vanuatu (New Hebrides) OP-382

— Physical-properties characterization of sediments in the area around DSDP/ODP Hole 504B OP-651

— Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990 OP-600

— Site 800 OP-596

— Site 801 OP-597

— Site 802 OP-598

meteorology: Monthly climatic time series data for the Pacific Ocean and western Americas OF 91-0092

nodules: A Cu-Ni-Mn-Zn mineral resource deposit model for the northern Pacific oceanic basin OF 90-0402

— Ferromanganese nodule occurrence in relation to local variations of seafloor topography at the western margin of the Clarion-Clipperton fracture zones, North Pacific OP-1509

— Textural characteristics of hydrogenetic and hydrothermal Fe-Mn crusts OP-1520

ocean circulation: Observations of diurnal tides over Fieberling Seamount, eastern North Pacific OP-1698

ocean floors: Cruise report, Hawaiian GLORIA Cruise F12-89-HW OF 91-0127

— Cruise report; GLORIA survey of part of the Hawaiian Exclusive Economic Zone, F1-90-HW OF 90-0345

— Cu-Au-rich sediment-hosted massive sulfide deposits from the Escanaba Trough, southern Gorda Ridge OP-1976

— Fine-scale segmentation of the sedimented southern Gorda Ridge, offshore Northern California OP-1669

— Geological, geochemical, geophysical, and oceanographic data and interpretations of seamounts and Co-rich ferromanganese crusts from the Marshall Islands KORDI-USGS R.V. Farnella Cruise F10-89-CP OF 90-0407

— Jasper Seamount; seven million years of volcanism OP-849

— Mahukona: the missing Hawaiian volcano: Comment OP-176

— Maps of chemical constituents in Pacific ferromanganese crusts OP-1607

— Marine ferromanganese deposits near the Marshall Islands C 1062

— Mass wasting on Pacific convergent margins OP-1940

— Maturation of large scale mass wasting along the Hawaiian Ridge OP-1921

— Preliminary results of the 1986 Sea Cliff dive program, Escanaba Trough OF 91-0137

— Quantitative controls on submarine slope failure morphology in the Pacific Ocean OP-1575

— Rapid formation of Ontong Java Plateau by Aptian mantle plume volcanism OP-1043

— Recent Sea Beam mapping of Ascension-Monterey submarine canyon system OP-1426

— Significance of major landslides on the Hawaiian Ridge OP-1665

— Steady-state analysis of a carbonate-sediment slope failure on Horizon Guyot OP-1833

— Submarine canyon processes: potential hazards, Monterey Canyon, California OP-1427

— Submarine landslides associated with shallow seafloor gas and gas hydrates off Northern California OP-1378

— Submarine topography of the Vanuatu and southeastern Solomon Islands region OP-164

— The Marinduque intra-arc basin, Philippines: basin genesis and in situ ophiolite development in a strike-slip setting OP-912

ocean waves: Deep ocean tsunami and seismic wave observations: three recent Gulf of Alaska events OF 90-0098

reefs: Crustal subsidence rate off Hawaii determined from $^{234}U/^{238}U$ ages of drowned coral reefs OP-655

— Introduction: Enewetak Atoll and the PEACE program P 1513-A

— Listing of coral cores and slabs at the United States Geological Survey Coastal Center, 600 4th St. South, St. Petersburg FL 33701, (813)893-3684 OF 91-0045

sedimentation: Active geologic processes in Monterey Seavalley OP-1365

— Application of recent turbidity current models to Monterey canyon and fan OP-1408

— Climatic influence on basin sedimentation: Peru-Chile Trench as an analogue for the Ouachita Basin OP-1276

— GLORIA imagery links sedimentation in Aleutian Trench to Yakutat margin via Surveyor Channel OP-1266

— Sediment transport and fan deposition in the Gulf of Alaska; effects of transform motion on deep sea sedimentation OP-1882

— Sedimentary depositional environments in the Gulf of Alaska from GLORIA imagery OP-1267

— Sedimentation in the central segment of the Aleutian Trench; sources, transport, and depositional style OP-1883

Pacific Ocean—paleontology

Mollusca: Origin of the modern Gulf of Alaska cold-water molluscan fauna OP-1608

Pacific Ocean—petrology

igneous rocks: Hole 504B reclaimed for future drilling; Leg 137 Scientific Drilling Party OP-73

— Subalkaline andesite from Valu Fa Ridge, a back-arc spreading center in southern Lau Basin: petrogenesis, comparative chemistry, and tectonic implications OP-1080

inclusions: Xenoliths from Late Cretaceous seamounts in the Central Pacific: cumulates of fractionating alkalic basalt magma chambers OP-1328

lava: Degassing history of water, sulfur, and carbon in submarine lavas from Kilauea Volcano, Hawaii OP-236

— Underwater observations of active lava flows from Kilauea Volcano, Hawaii OP-1065

— Volcanism in the Sumisu Rift: I, Major element, volatile, and stable isotope geochemistry OP-474

Pacific Ocean—seismology

earthquakes: Variations in the mode of great earthquake rupture along the central Peru subduction zone OP-72

Pacific Ocean—stratigraphy

changes of level: Eustatic, volcanic, and tectonic controls on redeposition of shallow-water carbonate: a reanalysis of Pacific DSDP examples OP-1348

Cretaceous: Cretaceous/Tertiary boundary of DSDP Site 596, South Pacific OP-1172

— Oceanwide anoxia in the early Aptian OP-1241

Neogene: Miocene-early Pliocene diatomaceous sedimentation patterns in the Pacific: a response to paleoceanographic and paleoclimatic change OP-1215

Paleocene: Cretaceous/Tertiary boundary of DSDP Site 596, South Pacific OP-1172

Phanerozoic: Explanatory notes OP-599

— Proceedings of the Ocean Drilling Program, old Pacific crust; covering Leg 129 of the cruises of the drilling vessel JOIDES Resolution, Apra Harbor, Guam, to Apra Harbor, Guam, sites 800-802, 20 November 1989-18 January 1990 OP-600

— Sedimentary sequences of the Pacific-Indian Ocean sector of the Antarctic continental margin OP-1312

Quaternary: Report of a workshop on the Correlation of marine and terrestrial records of climate changes in the Western U.S. OF 91-0140

Tertiary: Larger foraminifer biostratigraphy of PEACE boreholes, Enewetak Atoll, western Pacific Ocean P 1513-D

carbonate-stone surfaces, National Acid Precipitation Assessment Program, June 1984 to November 1987 OF 89-0246

pollution—field studies

lagoonal environment: Pollution studies of Drakes Estero, and Abbotts Lagoon; Point Reyes National Seashore, California, USA OF 91-0145

marine environment: New Bedford Harbor and Buzzards Bay; transport of pollutants on fine-grained marine sediments C 1033

pollution—ground water

analysis: Application of geophysical techniques for assessing ground-water contamination near a landfill at Stuart, Florida OP-893

colloidal materials: Use of colloid filtration theory in modeling movement of bacteria through a contaminated sandy aquifer OP-422

data acquisition: A literature survey of information on well installation and sample collection procedure used in investigations of ground-water contamination by organic compounds OF 90-0378

detection: A preliminary investigation of the hydrogeology and contamination in the area of an abandoned manufactured gas plant in Albany, Georgia WRI 90-4141

— Application of geophysical methods to the study of pollution associated with abandoned and injection wells C 1033

— Delineation of ground-water contamination using soil-gas analyses near Jackson, Tennessee WRI 90-4137

— Extent and source of organic solvents in ground water in the Argonne Road area near Spokane, Washington WRI 89-4121

— Geohydrology and the occurrence of volatile organic compounds in ground water, Culpeper Basin of Prince William County, Virginia WRI 90-4032

— Reconnaissance of the occurrence of agricultural chemicals in ground water in Haywood, Lake, Obion, and Shelby counties, Tennessee WRI 90-4064

distribution: Very low frequency electromagnetics mapping of a freshwater lens at Key West, Florida OP-591

experimental studies: Stability and transport of inorganic colloids through contaminated aquifer material OF 91-0088

hazardous waste: Application of marine seismic profiling to a ground water contamination study, Aberdeen Proving Ground, Maryland OP-501

monitoring: A scientifically based nationwide assessment of groundwater quality in the United States OP-13

— Ground-water quality and preliminary assessment of the potential for contamination beneath agricultural lands in central Lonoke County, Arkansas WRI 90-4099

— Ground-water quality in the Nemaha Natural Resources District, southeastern Nebraska, 1989 WRI 90-4184

— Hydrogeologic reconnaissance of the Swope Oil Superfund Site and vicinity, Camden and Burlington counties, New Jersey OF 89-0402

oil storage: Assessment of ground-water contamination from a leaking underground storage tank at a defense supply center near Richmond, Virginia WRI 90-4091

pollutants: Groundwater contamination in the United States OP-733

— Organic contamination of ground water at Gas Works Park, Seattle, Washington OP-1074

— Organic substance structures that facilitate contaminant transport and transformations in aquatic sediments OP-623

prediction: Hydrogeology and preliminary assessment of the potential for contamination of the Memphis Aquifer in the Memphis area, Tennessee WRI 90-4092

radioactive waste: Hydrologic conditions and distribution of selected chemical constituents in water, Snake River Plain Aquifer, Idaho National Engineering Laboratory, Idaho, 1986 to 1988 WRI 91-4047

— Note on use of producing well as a monitoring well, with special reference to a proposed well at Sandia Corporation, Albuquerque, New Mexico OF 91-0081

sampling: Nutrients, pesticides, surfactants, and trace metals in ground water from the Howe and Mud Lake areas upgradient from the Idaho National Engineering Laboratory, Idaho OF 90-0565

selenium: Texture and depositional history of late Pleistocene-Holocene alluvium in the central part of the western San Joaquin Valley, California OP-609

storms: Effects of storm-water runoff on local ground-water quality, Clarksville, Tennessee WRI 90-4044

toxic materials: A methodology for relating regions of corrosive ground water to hydrogeologic variables in the New Jersey coastal plain OP-58

transport: A pilot study for delineation of areas contributing water to wellfields at Jackson, Tennessee WRI 89-4201

— A steady-state unsaturated-zone model to simulate pesticide transport WRI 90-4164

— Characterization of ground-water flow and chemical transport beneath two irrigated fields in south-central Kansas, 1988 WRI 90-4065

— Colloidal-facilitated transport of inorganic contaminants in ground water: Part I, Sampling considerations OP-851

— Governing equations and model approximation errors associated with the effects of fluid-storage transients on solute transport in aquifers WRI 90-4156

— Ground-water contamination and movement at the Defense General Supply Center, Richmond, Virginia WRI 90-4113

— Particle tracking analysis of recharge areas on Long Island, New York OP-139

— The importance of humic substance-mineral particle complexes in the modeling of contaminant transport in sediment-water systems OP-1130

waste disposal: Geophysical and chemical investigations of ground water at five industrial or waste-disposal sites in Logan Township, Gloucester County, New Jersey, 1983-87 WRI 90-4004

— Preliminary evaluation of the effects of an abandoned oil refinery on chemical quality of water in the Arkansas River valley, Arkansas City, Kansas, 1985-86 WRI 89-4190

water quality: Simulation of ground-water in coastal southern New Jersey OP-1005

pollution—human ecology

bibliography: Bibliography of selected geochemical studies of the environment by the U.S. Geological Survey C 1033

environment: Proceedings of a U.S. Geological Survey workshop on Environmental geochemistry C 1033

toxic materials: Copper-molybdenum imbalances and the incidence of nutritional diseases in livestock and humans C 1033

pollution—oil spills

controls: Alaska disasters: natural and manmade YR

detection: Geochemical investigation of an oil spill in San Francisco Bay, California OF 91-0130

gas chromatography: Gas-chromatographic methods for determining the composition of the vapor phase in gasoline-contaminated soils OF 91-0088

transport: Non-Fickian vapor transport in sand columns contaminated with volatile organic compounds OF 91-0088

pollution—pollutants

analysis: Interfacial contact angle measurements of water, mercury, and 20 organic liquids on quartz, calcite, biotite, and Ca-montmorillonite substrates OF 90-0409

asbestos: Hazards associated with fibrous minerals C 1033

atrazine: A bibliography of atrazine and its simple degradation products in the environment OF 89-0613

chlorinated hydrocarbons: Chlorination of humic materials: byproduct formation and chemical interpretations OP-860

— Purgeable organic chloride; a surrogate measurement for screening and monitoring volatile chlorinated hydrocarbons in ground water OF 91-0088

— Temperature dependence of the aqueous solubilities of highly chlorinated dibenzo-p-dioxins OP-172

colloidal materials: A thermodynamic partition model for binding of nonpolar organic compounds by organic colloids and implications for their sorption to soils and sediment OP-170

— Organic and inorganic components in estuarine colloids; implications for sorption and transport of pollutants OP-962

detergents: Persistence of linear alkylbenzenesulfonates and their metabolites in sewage-contaminated ground water OF 91-0088

geochemistry: Partition and adsorption on soil and mobility of organic pollutants and pesticides OP-171

heavy metals: Heavy-metal accumulations in sediments of Boston Harbor, Massachusetts C 1033

herbicides: Liquid chromatographic determination of atrazine and its degradation products in water WRI 89-4193

— Literature review of vapor pressure data for some chlorinated triazine and acetamide herbicides OF 91-0088

— Occurrence, distribution, and transport of herbicides and their degradation products in the lower Mississippi River and its tributaries OP-818

— Work plan for regional reconnaissance for selected herbicides and nitrate in ground water of the Mid-continental United States, 1991 OF 91-0059

metals: Hazardous wastes from large-scale metal extraction OP-743

— Large-scale distribution of metal contamination in the fine-grained sediments of the Clark Fork River, Montana, U.S.A. OP-34

organic materials: Effects of surfactants on the mobility of nonpolar organic contaminants in porous media OP-984

— Enzyme-linked immunosorbent assay compared with gas chromatography/mass spectrometry for the determination of triazine herbicides in water OP-1059

particulate materials: Particulate and colloidal organic material in Pueblo Reservoir, Colorado; influence of autochthonous source on chemical composition OP-855

PCBs: Data on polychlorinated biphenyls, dieldrin, lead, and cadmium in Wisconsin and upper Michigan tributaries to Green Bay, July 1987 through April 1988 OF 89-0052

pesticides: Enhanced preconcentration techniques used to study the geochemical fate of pesticides in surface waters OP-1395

— Water solubility enhancements of DDT and trichlorobenzene by some surfactants below and above the critical micelle concentration OP-564

radon: Geology of the Reading Prong, New York, and its application to predicting areas that have high radon potential C 1033

— Potential for indoor radon hazards; a first geologic estimate C 1033

— Radon potential defined by exploratory data analysis and geographic information systems B 1908

— Soil gas radon compared to aerial and ground gamma-ray measurements at study sites near Greeley and Fort Collins, Colorado OF 90-0648

— Some basic facts about radioactive radon C 1033

— The role of National Uranium Resource Evaluation aerial gamma-ray data in assessment of radon hazard potential C 1033

selenium: A potential source area for selenium and mercury in agricultural drainage water at Kesterson Reservoir, San Joaquin Valley, California C 1033

— AB-DTPA extractable soil selenium as a predictor of seleniferous vegetation C 1064

— Aquatic cycling of selenium; implications for fish and wildlife C 1064

— Environmental concerns related to selenium in the Western United States C 1033

— Geobotany of selenium C 1064

— Geologic sources, mobilization, and transport of selenium from the California Coast Ranges to the western San Joaquin Valley; a reconnaissance study WRI 90-4070

— Influence of redox potential on selenium distribution in ground water, Mendota, western San Joaquin Valley, California OF 90-0138

— Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California C 1033

— Preliminary results of the Department of the Interior's irrigation drainage studies C 1064

— Proceedings of the 1990 Billings land reclamation symposium on Selenium in arid and semiarid environments, Western United States C 1064

— Relation of selenium at Kesterson National Wildlife Refuge to potential soil-forming source rocks C 1033

— Selenium in soils and plants from native and irrigated lands at the Kendrick Reclamation Project area, Wyoming C 1064

— Selenium in waters in and adjacent to the Kendrick Project, Natrona County, Wyoming W 2023

— Selenium issues in drastically disturbed land reclamation planning in arid and semiarid environments C 1064

— Selenium poisoning in livestock C 1064

— Selenium sources in the Diablo Range, western Fresno County, California C 1064

— Solubility, sorption, and redox relationships for selenium in reclaimed environments: a review C 1064

— Total and water extractable selenium in soils and stream sediments, and total selenium in alfalfa from the Marty II study area, South Dakota OF 90-0330

— Uptake and physiological antagonism of selenium and sulfur in alfalfa and wheat under field conditions, San Joaquin Valley, California OF 91-0016

toxic materials: Properties and hazards of 108 selected substances; 1990 edition OF 90-0408

— Toxic substances in water resources YR

— U.S. Geological Survey Toxic Substances Hydrology Program; abstracts of the technical meeting, Monterey, California, March 11-15, 1991 OF 91-0088

trace metals: Analytical results for sedge samples collected on the wetland receiving acid mine drainage waters from St. Kevin Gulch, Leadville, Colorado OF 91-0126

— Concentrations of metals in bed material in the area of Congaree Swamp National Monument and in water in Cedar Creek, Richland County, South Carolina OF 90-0370

— Geochemical relations and distribution of selected trace elements in ground water of the northern part of the western San Joaquin Valley, California OF 90-0108

— The Georges Bank monitoring program; trace metals in bottom sediments C 1033

— Trace metal concentrations of three streams to Lake Tahoe, California and Nevada OP-161

— Use of elutriate tests and bottom-material analyses in simulating dredging effects on water quality of selected rivers and estuaries in Oregon and Washington, 1980-1983 WRI 89-4051

pollution—soils

decontamination: Use of a mathematical programming coupled with a transport model to optimize the design of vapor-extraction systems OF 91-0088

radon: Uranium-series disequilibrium in Quaternary soils; significance for ^{222}Rn hazard assessment C 1033

pollution—surface water

acid rain: Summary of data for onsite and laboratory analyses of precipitation runoff from carbonate-rock surfaces, National Acid Precipitation Assessment Program, June 1984 to September 1986 OF 87-0461

detection: Detection of poly(ethylene glycol) residues from nonionic surfactants in surface water by ^{1}H and ^{13}C nuclear magnetic resonance spectrometry OP-625

herbicides: Atrazine in streams of the Midwestern United States YR

irrigation: Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the American Falls Reservoir area, Idaho, 1988-89 WRI 90-4120

monitoring: Water-quality trends in New Jersey streams WRI 90-4046

runoff: Quantity and quality of stormwater runoff from western Daytona Beach, Florida, and adjacent areas WRI 90-4002

simulation: Transport and fate of acetone in an outdoor model stream, Stennis Space Center near Bay St. Louis, Mississippi WRI 89-4141

transport: Chemical, tissue, and physical data from water and bottom material in the lower Calcasieu River, Louisiana OF 89-0420

— Factors affecting wetland retention of nutrients, metals, and organic materials OP-268

— Transport and transformation of dissolved rice pesticides in the Sacramento River delta, California OF 91-0227

urbanization: Relation between urbanization and water quality of streams in the Austin area, Texas WRI 90-4107

water quality: Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Klamath Basin, California and Oregon, 1988-89 WRI 90-4203

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Riverton Reclamation Project, Wyoming, 1988-89 WRI 90-4187

pollution—waste disposal

radioactive waste: Tritium in ground water at the Idaho National Engineering Laboratory, Idaho WRI 90-4090

water treatment: Availability and suitability of municipal wastewater information for use in a National Water-Quality Assessment; a case study of the upper Illinois River basin in Illinois, Indiana, and Wisconsin OF 90-0375

pollution—water

abandoned mines: Quality of water in an inactive uranium mine and its effects on the quality of water in Blue Creek, Stevens County, Washington, 1984-85 WRI 89-4110

acid rain: Chemical, geologic, and hydrologic data from the study of acidic contamination in the Miami Wash-Pinal Creek area, Arizona, water years 1988-89 OF 90-0395

— External quality-assurance results for the National Atmospheric Deposition Program/National Trends Network during 1988 WRI 90-4030

— Programs and analytical methods for the U.S. Geological Survey acid rain quality-assurance project WRI 90-4029

analysis: Determination of trace levels of herbicides and their degradation products in surface and ground waters by gas chromatography/ion-trap mass spectrometry OP-819

brines: Effects of oil production on water resources in the Kentucky River basin, Kentucky WRI 90-4191

estuaries: Description of salinity, temperature, chlorophyll, suspended-sediment, and velocity data, South San Francisco Bay, California, February-April 1987 OF 89-0619

monitoring: Water-quality data, San Joaquin Valley, California, April 1987 to September 1988 OF 91-0074

possibilities: Water availability and vulnerability of ground water to contamination in northwestern Hardin County, Kentucky WRI 90-4133

radioactive waste: Geochemical data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri; 1989-90 OF 90-0351

— Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990 OF 90-0552

solutes: Solute transport with multisegment, equilibrium-controlled reactions: a feed forward simulation method OP-891

toxic materials: Toxic substances hydrology; surface- and ground-water contamination C 1033

volatiles: Volatization rates of organic chemicals of public health concern OP-859

water quality: Water quality: what we have learned YR

polymetallic ores *see* gold ores
see under mineral deposits, genesis; paragenesis; silver ores
see under economic geology *under* Greece; Pacific Ocean; Peru; Saudi Arabia

porosity *see under* properties *under* soils

Portugal *see* Azores

Portugal—stratigraphy

Jurassic: Low intensity of the geomagnetic field in Early Jurassic time OP-820

potash—resources

models: Descriptive model of potash-bearing bedded salt OF 91-0011-A

potassium—isotopes

K-40: Modern aerial gamma-ray spectrometry and regional potassium map of the conterminous United States OP-256

Precambrian *see* Archean; Proterozoic
see under geochronology *under* Egypt; New York
see under stratigraphy *under* Great Lakes region; Great Plains; Missouri

Precambrian—tectonophysics

crust: Archean and Proterozoic crustal evolution; evidence from crustal seismology OP-252

precious stones *see* gems

Proterozoic *see* Precambrian
see under geochronology *under* Alaska; Appalachians; China; Michigan; New York; Ontario; Saudi Arabia; United States; Vermont
see under stratigraphy *under* Arizona; China; Colorado; Idaho; Massachusetts; Saudi Arabia; Utah; Vermont; Western U.S.

Proterozoic—economic geology

metal ores: Petrogenesis and tectonic setting of middle Proterozoic iron oxide-rich ore deposits: an ore deposit model for olympic dam-type mineralization B 1932

Proterozoic—tectonophysics

crust: Archean and Proterozoic crustal evolution: evidence from crustal seismology OP-252

Protista—biostratigraphy

Cenozoic: Site 798 OP-510

— Site 799 OP-511

Protozoa *see* Protista

pteridophytes *see* ferns

Puerto Rico—economic geology

mineral resources: Mineral-resource assessment of Puerto Rico C 1062

water resources: Water resources investigations in Puerto Rico and the U.S. Virgin Islands, 1986-88 OF 90-0122

Puerto Rico—engineering geology

earthquakes: Probabilistic earthquake acceleration and velocity maps for the United States and Puerto Rico MF-2120

geologic hazards: Impact of Hurricane Hugo on coastal resources of Puerto Rico OP-1793

maps: Probabilistic earthquake acceleration and velocity maps for the United States and Puerto Rico MF-2120

waterways: Sedimentation rates and capacity restoration options, Lago Loiza, Puerto Rico OP-190

Puerto Rico—environmental geology

geologic hazards: Hurricane Hugo and Puerto Rico YR

— Puerto Rico: floods and droughts W 2375

— Rainfall-soil moisture relations in landslide-prone areas of tropical rain forest, Puerto Rico OP-606

— Storm-surge flooding by Hurricane Hugo on the U.S. Virgin Islands, Puerto Rico, and South Carolina, September 1989 W 2375

Puerto Rico—geomorphology

mass movements: The role of soil processes in determining mechanisms of slope failure and

Q

R

S

Sandstone, northwestern New Mexico and northeastern Arizona OP-247

Mississippian: Mississippian rocks in Kentucky P 1503

Oligocene: Oligocene age of strata on Unga Island, Shumagin Islands, southwestern Alaska B 1946

Ordovician: Discovery of Early Ordovician fossils in Bucks County, Pennsylvania B 1934

— Lithostratigraphy and conodont biostratigraphy across the Lower-Middle Ordovician disconformity (early to middle Whiterockian) at Pratt Ferry, central Alabama B 1895

Paleocene: Cross section showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the central Powder River basin from Decker to Bear Skull Mountain, Montana I-1959-E

— Cross sections showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the northern and central Powder River basin, Montana and Wyoming I-1959-A

— The Sohnari Formation in southern Pakistan B 1935

Paleogene: Measured sections of Ramsey Ranch Member of Wasatch Formation, greater Green River basin, Southwest Wyoming MF-2185

— Northwest-southeast surface and subsurface correlations of the intertongued Wasatch and Green River formations, Sand Wash Basin, Northwest Colorado MF-2166

— Paleogeographic implications of an erosional remnant of Paleogene rocks southwest of the Sur-Nacimiento fault zone, southern Coast Ranges, California OP-1084

Paleozoic: Late Paleozoic depositional trends in the central Appalachian Basin B 1839-E,F

— Structural and stratigraphic framework of the Giles County area, a part of the Appalachian Basin of Virginia and West Virginia B 1839-E,F

Phanerozoic: Explanatory notes OP-599

— Site 800 OP-596

— Site 801 OP-597

— Site 802 OP-598

— Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line A-A′, Uinta and Piceance Basin area; Eagle Basin, Colorado, to eastern Basin and Range area, Utah I-2184-A

— Stratigraphic and time-stratigraphic cross sections of Phanerozoic rocks along line C-C′, Uinta and Piceance basin area, southern Uinta Mountains to northern Henry Mountains, Utah I-2184-C

Triassic: Bedrock geology of the Bristol Quadrangle, Hartford, Litchfield, and New Haven counties, Connecticut B 1573

— Stratigraphy of the Lower and Middle(?) Triassic Union Wash Formation, east-central California B 1928

— Upper Triassic Barranca Group; nonmarine and shallow-marine rift-basin deposits of northwestern Mexico OP-1023

sedimentary rocks—organic residues

anthracite: Hydrothermal alteration in anthracite from eastern Pennsylvania; implications for mechanisms of anthracite formation: Comment OP-659

— Hydrothermal alteration in anthracite from eastern Pennsylvania; implications for mechanisms of anthracite formation: Reply OP-222

bituminous coal: Analytical data for bituminous coals and associated rocks from Arkansas, Iowa, Kansas, Missouri, Nebraska, and Oklahoma OF 90-0669

— Coal quality and compositional characteristics of the upper Freeport coal bed, Pennsylvania, source of the Argonne Premium sample OF 90-0697

— Coal resources of the Fruitland Formation in part of the Ute Mountain Ute Indian Reservation, San Juan County, New Mexico B 1938

— Coal resources of Upper Cretaceous Fruitland Formation in the Southern Ute Indian Reservation, southwestern Colorado P 1505-D

coal: Coal geology and preliminary coal zone correlations in the Fruitland Formation, western part of the Southern Ute Indian Reservation, La Plata County, Colorado C-0138

— Combustion and leaching behavior of elements in the Argonne Premium coal samples OP-295

— Cross sections showing coal stratigraphy of the southwestern Powder River basin, Wyoming I-1959-C

— Geologic map and coal deposits of the Horse Mountain Quadrangle, Kane County, Utah C-0137

— Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming I-2094-A

— Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the south half of the Powder River basin, northeastern Wyoming I-2094-B

— Geologic map showing total thickness of coal in the south half of the Powder River basin, northeastern Wyoming I-2131-B

— Laser microprobe (LAMMA 1000) chemical analysis of clay minerals; potential application to in situ analysis of clay minerals in coal OP-1598

— Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah C-0134

— Map and cross sections of coal zones in the Upper Cretaceous Neslen Formation, north-central part of the Westwater 30′ × 60′ Quadrangle, Grand and Uintah counties, Utah C-0133

— Peat and coal; origin, facies, and coalification OP-660

— Petrography of Permian "Gondwana" coals from boreholes in northwestern Bangladesh, based on semiautomated reflectance scanning OP-103

— Rehydration of desiccated Argonne premium coal samples OF 90-0482

— Slide set describing aspects of the origin of coal, coal mining, and peat formation OF 91-0390

— Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Piney Canyon NE and Piney Canyon NW quadrangles, Campbell and Weston counties, southeastern Powder River basin, Wyoming I-2011

— Stratigraphy and chemical analyses of coal beds in the Upper Cretaceous and Tertiary Sagavanirktok Formation, east-central North Slope, Alaska C-0139-B

— Subsurface cross section showing coal beds in the Sagavanirktok Formation, vicinity of Prudhoe Bay, east-central North Slope, Alaska C-0139-A

— The role of coal characterization in the control of acid precipitation C 1033

— The search for structure: setting the scene OP-435

— Volcanic ash dispersed in the Wyodak-Anderson coal bed, Powder River basin, Wyoming OP-1067

lignite: Bibliography of Gulf Coast lignite geology OF 90-0549

oil shale: Correlation and depositional analysis of oil shale and associated rocks in the Eocene Green River Formation, greater Green River basin, Southwest Wyoming I-2226

vitrinite: Vitrinite reflectance data from Cretaceous and Tertiary rocks, San Juan Basin, New Mexico and Colorado OF 90-0659

— Vitrinite reflectance values of coal from drillhole cuttings, San Juan Basin, New Mexico OF 91-0302

sedimentary rocks—properties

density: Density data for drill cores from wells in the National Petroleum Reserve in Alaska OF 90-0342

physical properties: Density and magnetic susceptibility measurements of rocks in the Wichita Uplift and Slick Hills, southwestern Oklahoma OF 91-0269

— Modeling sediment transport in an ephemeral river OP-503

— Numerical modeling of unsteady sediment-laden flow OP-594

— One hundred years of sedimentation study by the US Geological Survey OP-352

— Relation of sediment load and flood-plain formation to climatic variability, Paria River drainage basin, Utah and Arizona OP-375

— Sediment transport in the Lower Mississippi River, 1983-1985 OP-227

— Suspended-sediment budget for the Orinoco River OP-715

— Transport of radionuclides in fresh water; dispersal of bed sediments OP-922

— Uncertainty in estimates of suspended sediment load OP-346

— Variations in suspended sediment and associated trace element concentrations in selected riverine cross sections OP-492

— Water-quality and sediment-transport characteristics in Kenney Reservoir, White River basin, northwestern Colorado WRI 90-4071

— Weathering processes and the composition of inorganic material transported through the Orinoco River system, Venezuela and Colombia OP-1009

wind transport: Dispersal of ash by volcanic eruption columns C 1065

— Modeling volcanic ash transport, dispersion and deposition C 1065

— Morphodynamic signature on the 1985 hurricane impacts on the northern Gulf of Mexico OP-817

sediments *see* sedimentary rocks; sedimentary structures; sedimentation

sediments—carbonate sediments

distribution: High-energy carbonate-sand accumulation, the Quicksands, Southwest Florida Keys OP-336

geochemistry: Anaerobic diagenesis within Recent, Pleistocene, and Eocene marine carbonate frameworks OP-910

— Petroleum and evaporites OP-471

sediments—clastic sediments

alluvium: Texture and depositional history of late Pleistocene-Holocene alluvium in the central part of the western San Joaquin Valley, California OP-609

geochemistry: Mineralogy and exchange capacity of modern fluvial sediments OP-556

lithofacies: Controls on the composition of fluvial sands from a tropical weathering environment; sands of the Orinoco River drainage basin, Venezuela and Colombia OP-540

— Sedimentation and tectonics of the Sylhet Trough, Bangladesh OP-539

sand: Controls on the location of the sand/mud contact beneath a barrier island; central Isles Dernieres, Louisiana OP-235

turbidite: Modern sand-rich and mud-rich siliciclastic aprons; alternative base-of-slope turbidite systems to submarine fans OP-1687

sediments—composition

mineral composition: Mineralogical correlation of surficial sediment from area drainages with selected sedimentary interbeds at the Idaho National Engineering Laboratory, Idaho WRI 90-4147

Paleosols: Mineralogical and geochemical analyses of three Paleosols from the Merced Formation, near San Francisco, California OF 91-0104

phosphate composition: Organic matter in modern marine phosphatic sediments from the Peruvian continental margin OP-906

sediments—diagenesis

geochemistry: Bacterially mediated diagenesis of deeply buried sediments in the Atlantic Coastal Plain; Part 1, Distribution of bacterial processes OP-1281

— Bacterially mediated diagenesis of deeply buried sediments in the Atlantic Coastal Plain: Part 2, Production and migration of carboxylic acids OP-1630

— Bacterially-mediated diagenesis of deeply buried sediments in the Atlantic Coastal Plain: Part 3, Petrographic evidence for porosity enhancement OP-1434

— Depletion of ^{13}C in sedimentary organic matter by selective preservation OP-1869

sediments—distribution

lake sediments: Coastal ice and sediment samples; shoreface and ice profiles (southern Lake Michigan, February, December 1989, and February, April 1990) OF 90-0537

sediments—environmental analysis

deltaic environment: Inner shelf deposits of the Louisiana-Mississippi-Alabama region, Gulf of Mexico OP-566

fluvial environment: Assessing the ability of ground penetrating radar to delineate different fluvial sediments OF 90-0414

lacustrine environment: An early Pleistocene pluvial lake in Fish Lake valley, Nevada-California; ringside resort for the eruption of the Bishop Tuff OF 91-0290

— Lithology, mineralogy, and paleontology of Quaternary lake deposits in Long Valley Caldera, California OF 89-0413

marine environment: Report of a workshop on the Correlation of marine and terrestrial records of climate changes in the Western U.S. OF 91-0140

sediments—geochemistry

diagenesis: Early diagenesis and metal-organic matter interactions in alkaline playa lakes of the Lahontan Basin, Nevada C 1033

hydrocarbons: Geochemical investigation of an oil spill in San Francisco Bay, California OF 91-0130

isotopes: Transport of radionuclides in fresh water; dispersal of bed sediments OP-922

metals: Factors affecting wetland retention of nutrients, metals, and organic materials OP-268

— Heavy-metal accumulations in sediments of Boston Harbor, Massachusetts C 1033

— Large-scale distribution of metal contamination in the fine-grained sediments of the Clark Fork River, Montana, U.S.A. OP-34

— Trace-metal and organochlorine residues in sediments of the upper Rockaway River, New Jersey OP-983

organic materials: Microbial production of organic acids in aquitard sediments and its role in aquifer geochemistry OP-710

— Production and carbon isotopic composition of bacterial CO_2 in deep coastal plain sediments of South Carolina OP-712

radioactive isotopes: Radium and radon in Charlotte Harbor Estuary, Florida OP-727

trace elements: A primer on sediment-trace element chemistry OF 91-0076

— A primer on sediment-trace element chemistry OP-491

— Surface-water-quality assessment of the lower Kansas River basin, Kansas and Nebraska; concentrations of major metals and trace elements in streambed sediments, 1987 OF 90-0581

— Trace metal geochemistry of Walker, Mono and Great Salt lakes OP-238

— Variations in suspended sediment and associated trace element concentrations in selected riverine cross sections OP-492

sediments—lithofacies

diagenesis: Shoreline deposits and diagenesis resulting from two late Pleistocene highstand near +5 and +6 metres, Durban, South Africa OP-199

sediments—lithostratigraphy

Neogene: Studies related to the Charleston, South Carolina, earthquake of 1886; Neogene and Quaternary lithostratigraphy and biostratigraphy P 1367

Quaternary: A. Quaternary stratigraphy in the vicinity of Charleston, South Carolina, and its relationship to local seismicity and regional tectonism P 1367

— Stratigraphy, descriptions, and physical properties of sediments cored in Lake Michigan OF 90-0478

sediments—marine sediments

composition: Hydrocarbon gases in surface sediments of the South Aoba Basin, Vanuatu OP-355

— Crustal structure, from gravity data, of a collision zone in the central New Hebrides island arc OP-191

seismology—data processing

computer programs: A C language implementation of the SRO (Murdock) detector/analyzer OF 87-0158

— Computer programs and data bases useful for prediction of ground motion resulting from earthquakes in California and the conterminous United States OF 91-0338

data acquisition: A networked computer configuration for seismic monitoring of volcanic eruptions OF 90-0422

— Planning for an International Seismological Observing Period OP-1369

data handling: Replace the HYPO71 format OP-622

microearthquakes: A real-time processing system of Tohoku University seismic network and recent microearthquake activity OF 90-0098

seismology—earthquakes

aftershocks: Applications of the USGS aftershock sequence model and guidelines for drafting aftershock forecasts OF 90-0341

— Digital recordings of aftershocks of the October 17, 1989, Loma Prieta, California, earthquake; Santa Cruz, Los Gatos, and surrounding areas OF 90-0683

— Estimates of velocity structure and source depth using multiple P waves from aftershocks of the 1987 Elmore Ranch and Superstition Hills, California, earthquakes OP-747

— Prediction of large aftershocks on the basis of quiescence OF 90-0098

— Properties of aftershock sequences in Southern California OP-574

— Relation of aftershock distribution in time and space to the pre-mainshock seismicity pattern OF 90-0098

— Seismic site effects and the spatial interpolation of earthquake seismograms; results using aftershocks of the 1986 North Palm Springs, California, earthquake OP-1006

— Spatial variations in stress within the 1987 Whittier Narrows, California, aftershock sequence: new techniques and results OP-719

— The Laramie Mountains, Wyoming, earthquake of 18 October 1984; a report on its aftershocks and seismotectonic setting OF 91-0258

— The southeastern Illinois earthquake of 10 June 1987; the later aftershocks OP-605

— Waveform data from aftershocks of the 1990 Upland, California earthquake recorded on a small-aperture seismic array OF 91-0047

effects: Near-fault measurement of postseismic slip associated with the 1989 Loma Prieta, California earthquake OP-900

epicenters: Map of earthquake epicenters in the San Francisco Bay area, California; 1972-1989 OF 91-0299

— The 1954 and 1980 Algerian earthquakes; implications for the characteristic-displacement model of fault behavior OP-231

focal mechanism: Deterministic frequency-wavenumber methods and direct measurements of rupture propagation during earthquakes using a dense array; theory and methods OP-362

— Fault orientations in extensional and conjugate strike-slip environments and their implications OP-1048

— Loci and maximum size of thrust earthquakes and the mechanics of the shallow region of subduction zones OF 90-0098

— Loma Prieta earthquake; putting the pieces together OP-273

— Mantle phase changes and deep-earthquake faulting in subducting lithosphere OP-571

— Multicycle slip distribution along a laboratory fault OP-567

— Surface displacements in the 1906 San Francisco and 1989 Loma Prieta earthquakes OP-946

— The 1988 and 1990 Upland earthquakes; left-lateral faulting adjacent to the central Transverse Ranges OP-429

— Variations in the mode of great earthquake rupture along the central Peru subduction zone OP-72

focus: Relocation of teleseismically recorded earthquakes near Tennant Creek, Australia; implications for midplate seismogenesis OP-105

— The effect of S-wave arrival times on the accuracy of hypocenter estimation OP-365

foreshocks: Prediction probabilities from foreshocks OP-5

— The application of foreshocks to real-time earthquake hazard assessment in Southern California OF 90-0098

genesis: Earthquakes in aseismic zones OP-207

ground motion: Source parameters and effects of bandwidth and local geology on high-frequency ground motions observed for aftershocks of the northeastern Ohio earthquake of 31 January 1986 OP-348

— Strong ground motion data from the 1983 Borah Peak, Idaho earthquake recorded at the Idaho National Engineering Laboratory OP-519

induced earthquakes: Earthquake hazard associated with deep well injection; a report to the U.S. Environmental Protection Agency B 1951

magnitude: Radiocarbon test of earthquake magnitude at the Cascadia subduction zone OP-29

— Stochastic summation of empirical Green's functions OP-1125

maps: Earthquakes in Utah, 1884-1989 OF 91-0128

— Probabilistic earthquake acceleration and velocity maps for the United States and Puerto Rico MF-2120

monitoring: Data collection network system of university group and some recent results of crustal movements OF 90-0098

observations: Earthquake fault slip estimation from geologic, geodetic and seismological observations; implications for earthquake mechanics and prediction research OF 90-0098

periodicity: Repeating earthquakes; characteristics and implications OF 90-0098

popular geology: Earthquakes and Volcanoes, v. 22, no. 2 EV

precursors: Classification of earthquake precursors and regularity of precursor appearance OF 90-0098

— Earthquake prediction; the seismic cycle pursued OP-633

— Near-field high resolution strain measurements prior to the October 18, 1989, Loma Prieta M_s 7.1 earthquake OP-541

— Recent progress of electromagnetic studies for the earthquake prediction in Japan OF 90-0098

— Removal of barometric pressure response from water level data OP-853

— Temporal variations of seismic activity and some precursors before recent intraplate earthquakes in Southwest Japan OF 90-0098

— Time-to-failure analysis of seismicity preceding the 1989 Loma Prieta earthquake OF 90-0666

— To capture an earthquake OP-274

prediction: A model for real time advisories of large earthquakes ($M \geq 7$) OF 90-0098

— Conclusions from social science research on earthquake prediction research in the United States for the period of 1974 through 1988 OF 90-0098

— Coseismic changes in groundwater radon OF 90-0098

— Earthquake explanations OP-604

— Earthquake phenomena observation system (EPOS): new JMA system for earthquake prediction and tsunami warning services OF 90-0098

— Historic creep rate and potential for seismic slip along the Hayward Fault, California OP-632

— National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXIX OF 90-0054

— National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXX OF 90-0334

— National Earthquake Hazards Reduction Program, summaries of technical reports; Volume XXXI OF 90-0680

— New directions in the U.S. earthquake prediction program OF 90-0098

— Proceedings of Conference XLVI: the 7th U.S.–Japan seminar on Earthquake prediction OF 90-0098

— Real-time earthquake warning OF 90-0098

— Seismic quiescence at Parkfield due to detachment faulting OP-1026

— Strain measurements and the potential for a great subduction earthquake off the coast of Washington OP-917

— Summary; seventh U.S.–Japan earthquake prediction research seminar; use of real-time earthquake information for hazard warning OF 90-0098

— Tests to explore the utility of gravity anomalies and topographic data as possible predictors of locations of seismicity for two areas in California OF 90-0642

— The outline of the sixth earthquake prediction plan of Japan OF 90-0098

seismic intensity: Estimated maximum regional seismic intensities associated with an ensemble of great earthquakes that might occur along the New Madrid seismic zone, east-central United States MF-1712

seismic moment: Moment-tensor solutions estimated using optimal filter theory; global seismicity, 1988-1989 OP-974

seismic sources: Rapid determination of source parameters OF 90-0098

seismicity: Loma Prieta earthquake OP-945

— Paleoseismicity; extending the record of earthquakes into prehistoric time OP-1163

— Regional variation in the seismicity before large shallow earthquakes OF 90-0098

— Seismic activity in the Tokai area, central Japan OF 90-0098

— Seismicity and strong motion data OP-628

— Slip rate, earthquake recurrence, and seismogenic potential of the Rogers Creek fault zone, Northern California; initial results OP-133

seismograms: Single-station decomposition of seismograms for subevent time histories OP-233

seismotectonics: Time dependent peninsula tectonics and earthquake prediction in Japan OF 90-0098

strong motion: Application of an iterative least-squares waveform inversion of strong motion and teleseismic records to the 1978 Tabas, Iran, earthquake OP-421

— Strong-motion records from earthquakes of June 13, 1988, November 10, 1988, and April 3, 1989, on the Calaveras Fault, Central California OF 90-0481

— Strong-motion seismograph data B 1954

synthetic seismograms: Synthetic seismogram analysis of locally-recorded mine tremors OP-702

seismology—elastic waves

body waves: Coherence of seismic body waves from local events as measured by a small-aperture array OP-1087

coda waves: Spatial and temporal correlation between coda Q^{-1} and seismicity OF 90-0098

Lg-waves: Lg and Rg waves on the California regional networks from the December 23, 1985, Nahanni earthquake OP-1098

propagation: Calculation of zero-offset vertical seismic profiles generated by a horizontal point force acting on the surface of an anelastic half-space OP-644

— Wave propagation in subducted lithospheric slabs OP-278

S-waves: A compilation of the geology and measured and estimated shear-wave velocity profiles at strong-motion stations that recorded the Loma Prieta, California, earthquake OF 91-0311

— Mechanisms of seismic attenuation in the crust; scattering and anelasticity in New York State, South Africa, and Southern California OP-324

— Observations constraining near-source ground motion estimated from locally recorded seismograms OP-701

— Quantitative measurements of shear wave polarizations at the Anza seismic network, Southern California; implications for shear wave splitting and earthquake prediction OP-201

— Response to comments by Aster et al. about shear-wave splitting observed by Crampin et al. and Peacock et al OP-1318

— There is nothing better than good S OF 90-0656

spectral analysis: Comparison of ground motion from tremors and explosions in deep gold mines OP-703

waveforms: Analysis of local seismic waveforms from underground nuclear explosions: forward modeling for effective source functions at Pahute Mesa OP-54

— Estimating trajectories of supersonic objects using arrival times of sonic booms OF 91-0048

seismology—instruments

seismographs: Pasadena very broad-band system and its use for real-time seismology OF 90-0098

seismology—interior

Mohorovicic discontinuity: Caribbean crustal provinces; seismic and gravity evidence OP-153

tomography: Tomographic imaging of subducted lithosphere below Northwest Pacific island arcs OP-1081

velocity structure: Relations among fault behavior, subsurface geology, and three-dimensional velocity models OP-720

seismology—microearthquakes

observations: Microearthquake spectra from the Anza, California seismic network; site response and source scaling OP-9

seismology—observatories

arrays: Hawaii earthquakes, 1985 B 1954

— Jordan seismic system; final project OF 90-0667

— Mississippi Valley earthquakes, 1985 B 1954

— New England seismicity, 1985 B 1954

— Northern and Central California earthquakes, 1985 B 1954

— Oklahoma earthquakes, 1985 B 1954

— Seismicity of New Mexico, 1985 B 1954

— Socorro, New Mexico, area earthquakes, 1985 B 1954

— Southeastern United States earthquakes, 1985 B 1954

— Southern California Seismographic Network; report to the U.S. Geological Survey, August 21, 1990 OF 91-0038

— Utah earthquakes, 1985 B 1954

— Washington earthquakes, 1985 B 1954

— Western Nevada and eastern California earthquakes, 1985 B 1954

current research: The Southern California Network Bulletin, January-December, 1988 OF 90-0499

— The Southern California Network Bulletin, January-December, 1989 OF 90-0483

seismology—practice

manuals: Instructions for use of U.S. Geological Survey standard field note summary form for visit to remote seismograph station OF 90-0625

popular geology: Earthquakes and Volcanoes, v. 22, no. 3 EV

seismology—seismic sources

shock waves: Seismic excitation by the space shuttle Columbia OP-548

seismology—seismicity

maps: Seismicity map of the State of Georgia MF-1060

— Seismicity map of the State of Idaho MF-1857

— Seismicity map of the State of Iowa MF-1324

— Seismicity map of the State of Maine MF-1284

— Seismicity map of the State of Nebraska MF-1350

— Seismicity map of the State of West Virginia MF-1226

soil mechanics—liquefaction

failures: Ground failure associated with the Puget Sound region earthquakes of April 13, 1949, and April 29, 1965 OF 90-0687

field studies: Estimation of seismic loading levels for the 1886 Charleston earthquake from soil liquefaction phenomena and field testing OP-1612

liquefaction potential: Liquefaction susceptibility in the San Bernardino Valley and vicinity, Southern California; a regional evaluation B 1898

— Maps showing geology and liquefaction potential of northern Monterey and southern Santa Cruz counties, California MF-1199

paleoseismicity: Earthquake-induced liquefaction features in the coastal setting of South Carolina and in the fluvial setting of the New Madrid seismic zone P 1504

— Evidence of strong earthquake shaking in the lower Wabash Valley from prehistoric liquefaction features OP-784

spits: Offshore and onshore liquefaction at Moss Landing spit, Central California; results of the October 17, 1989, Loma Prieta earthquake OP-383

underground installations: Liquefaction and foundation failure of Chevron oil and gasoline tanks at Moss Landing, California OP-1076

soil mechanics—seismic response

sediments: Site response across downtown Santa Cruz, California OP-202

soils—analysis

chemical analysis: Application of solid-state ^{13}C NMR spectroscopy to geochemical studies of humic substances OP-669

sample preparation: Physical preparation of soil samples OF 90-0668

soils—classification

Solonchak soils: Depositional environments of non-marine evaporites OP-990

soils—field studies

techniques: A field method for measurement of infiltration W 1544-F

soils—geochemistry

oxidation: Microbial oxidation of natural and anthropogenic aromatic compounds coupled to Fe(III) reduction OP-649

processes: Weathering process research; pedology and soil geochemistry in drainage basins C 1033

selenium: Selenium issues in drastically disturbed land reclamation planning in arid and semiarid environments C 1064

— Selenium mobility in soils and its absorption, translocation, and metabolism in plants C 1064

— Selenium poisoning in livestock C 1064

trace elements: Characteristics of coal-mine wastes for rehabilitation work C 1033

volatiles: Factors affecting concentrations of helium and carbon dioxide in soil gases OP-468

soils—organic materials

distribution: A thermodynamic partition model for binding of nonpolar organic compounds by organic colloids and implications for their sorption to soils and sediment OP-170

humates: Humic substances; II, In search of structure OP-433

— Organic substances and sediments in water: Volume 1, Humics and soils OP-43

— Structures of humic substances; the emergence of "forms" OP-434

soils—pollution

detection: Improving solute sampling protocol in sandy soils by using ground penetrating radar OF 90-0414

metals: Hazardous wastes from large-scale metal extraction OP-743

organic materials: Effects of surfactants on the mobility of nonpolar organic contaminants in porous media OP-984

pesticides: Partition and adsorption on soil and mobility of organic pollutants and pesticides OP-171

radon: Uranium-series disequilibrium in Quaternary soils; significance for ^{222}Rn hazard assessment C 1033

toxic materials: Copper-molybdenum imbalances and the incidence of nutritional diseases in livestock and humans C 1033

transport: A steady-state unsaturated-zone model to simulate pesticide transport WRI 90-4164

soils—properties

porosity: A new method for determining soil macroporosity OF 91-0088

soils—surveys

Alaska: Biogeochemical studies of gold in a placer deposit, Livengood, Alaska OF 91-0142

— Geochemical studies of plants and soils in the Beluga coal field, Alaska C 1033

California: A potential source area for selenium and mercury in agricultural drainage water at Kesterson Reservoir, San Joaquin Valley, California C 1033

— Analytical data for stream-sediment and soil samples from the Walker Lake 1° by 2° Quadrangle, California and Nevada OF 90-0431

— Hydrologic, meteorological, and unsaturated-zone moisture-content data, Franklin Lake playa, Inyo County, California OF 89-0595

— Overview of the salt and agricultural drainage problem in the western San Joaquin Valley, California C 1033

— Quaternary geology and pollution problems: an example from the San Francisco Bay area, California C 1033

— Relation of selenium at Kesterson National Wildlife Refuge to potential soil-forming source rocks C 1033

— Seasonal and spatial biogeochemical trends for chaparral vegetation and soil geochemistry in the Santa Monica Mountains National Recreation Area, CA OF 91-0005

— Selenium sources in the Diablo Range, western Fresno County, California C 1064

— Soil development on stable landforms and implications for landscape studies OP-418

— Soil water and vegetation responses to precipitation and changes in depth to ground water in Owens Valley, California W 2370-G

— Uptake and physiological antagonism of selenium and sulfur in alfalfa and wheat under field conditions, San Joaquin Valley, California OF 91-0016

Colorado: Soil gas radon compared to aerial and ground gamma-ray measurements at study sites near Greeley and Fort Collins, Colorado OF 90-0648

— Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected daily for 11 months from 0.3-, 0.6-, 1.2-, and 2.0-m depths OF 90-0686

Eastern U.S.: Contrasting soils and landscapes of the Piedmont and coastal plain, Eastern United States OP-677

Germany: Element levels in selected soils and plants, Wattenmeer National Park, North and East Frisian Islands, Federal Republic of Germany OF 90-0493

Great Basin: Rates of soil development from four soil chronosequences in the southern Great Basin OP-419

Great Plains: Soil studies in the Northern Great Plains C 1033

— The mode of occurrence of extractable elements in soils from the Northern Great Plains C 1033

Hawaii: Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected regularly for 13 months at a site on the summit of Kilauea Volcano OF 90-0661

Idaho: Analytical results and locality map of heavy-mineral-concentrate, stream-sediment, soil and big-sagebrush samples from the Lava Creek mining district, within the Idaho Falls 1° × 2° Quadrangle, Butte County, Idaho OF 90-0545

— Hydrological, meteorological, and geohydrological data for an unsaturated zone study near the Radioactive Waste Management Complex, Idaho National Engineering Laboratory, Idaho: 1987 OF 90-0114

Illinois: Gases in the unsaturated zone W 2367

Kansas: Characterization of ground-water flow and chemical transport beneath two irrigated

mapping and mineral exploration in semiarid terrains OP-1199

— Geologic setting and reconnaissance trace-element geochemistry of the Detroit mining district and Drum gold mine, Drum Mountains, west-central Utah OP-1706

— Geology and high-precision $^{40}Ar/^{39}Ar$ geochronology of Keg Mountain, west-central Utah; implication for volcanic history and mineral deposits OF 90-0508

— Sevier-age structures and their control of Tertiary mineralization at the Drum Mine, west-central Utah OF 90-0508

maps: Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah C-0134

— Map and cross sections of coal zones in the Upper Cretaceous Neslen Formation, north-central part of the Westwater 30′ × 60′ Quadrangle, Grand and Uintah counties, Utah C-0133

— Mineral resources of the Paria-Hackberry Wilderness Study Area, Kane County, Utah OF 90-0453

metal ores: Analyses of rock samples from the Central mining and intrusive area, Marysvale, Utah OF 90-0529

— Field relations between Tertiary magmatism and Tintic ore deposits, East Tintic Mountains, Utah OP-1448

mineral resources: Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples in and adjacent to the Scorpion Wilderness Study Area, Garfield and Kane counties, Utah OF 90-0624

— Analytical results and sample locality maps of stream-sediment, heavy-mineral-concentrate, and rock samples from the Negro Bill Canyon (UT-060-138) and the Mill Creek Canyon (UT-060-139A) Wilderness Study Areas, Grand County, Utah OF 90-0464

— Basin evolution and petroleum studies in the U.S. eastern Great Basin; relevance to mineral investigations C 1062

— Chemical analyses including gold for 373 rock and stream-sediment samples from the Richfield 1° × 2° Quadrangle, Utah OF 91-0318

— Mineral resources of the Cougar Canyon/Tunnel Spring Wilderness Study Area, Washington County, Utah, and Lincoln County, Nevada OF 90-0331

— Mineral resources of the Mill Creek Canyon Wilderness Study Area, Grand County, Utah B 1754-E

— Mineral resources of the Mount Ellen-Blue Hills (Addition) Wilderness Study Area, Wayne County, Utah OF 90-0335

— Mineral resources of the Paria-Hackberry Wilderness Study Area, Kane County, Utah OF 90-0453

— Minerals information sources in state agencies; Utah C 1063

— Preliminary assessment of the mineral resources of the Cedar City 1° × 2° Quadrangle, Utah C 1062

natural gas: Thermal maturity, porosity, and facies relationships applied to gas generation and production in Tertiary and Cretaceous low-permeability sandstones, Uinta Basin, Utah OP-1704

oil and gas fields: Aneth oil field carbonate mound reservoir; organic-rich mudbank origin? OP-1736

— Diagenetic reactions in sandstones of the Red Wash oil field, Uinta Basin, Utah OP-1943

petroleum: Geology and petroleum resources, Paradox Basin Province OF 88-0450-U

— Potential for Precambrian source rock in Utah OP-1286

— Use of geochemical data to trace groundwater flow, which could affect oil migration, in carbonate-rock aquifers of the eastern Great Basin, Nevada and Utah OP-1911

uranium ores: Genesis of the tabular-type vanadium-uranium deposits of the Henry Basin, Utah OP-361

— Genesis of the tabular-type vanadium-uranium deposits of the Henry Basin, Utah OP-1004

vanadium ores: Genesis of the tabular-type vanadium-uranium deposits of the Henry Basin, Utah OP-361

— Genesis of the tabular-type vanadium-uranium deposits of the Henry Basin, Utah OP-1004

water resources: Water resources activities in Utah by the U.S. Geological Survey, October 1, 1988 to September 30, 1989 OF 90-0589

Utah—engineering geology

slope stability: Deformation of landslide surfaces as indicators of movement processes OF 91-0108

— Use of longitudinal strain in identifying driving and resisting elements of landslides OP-66

Utah—environmental geology

geologic hazards: Utah; floods and droughts W 2375

pollution: Sources, sinks, and effects of selenium at Stewart Lake Waterfowl Management Area, Jensen, Utah OF 91-0088

Utah—geochemistry

helium: Factors affecting concentrations of helium and carbon dioxide in soil gases OP-468

isotopes: New Sr, Nd, and Pb isotopic data from plutons in the northern Great Basin; implications for crustal structure and granite petrogenesis in the hinterland of the Sevier thrust belt OP-1156

maps: Analytical results and sample locality map of stream-sediment, heavy-mineral-concentrate, and rock samples in and adjacent to the Scorpion Wilderness Study Area, Garfield and Kane counties, Utah OF 90-0624

— Analytical results and sample locality maps of stream-sediment, heavy-mineral-concentrate, and rock samples from the Negro Bill Canyon (UT-060-138) and the Mill Creek Canyon (UT-060-139A) Wilderness Study Areas, Grand County, Utah OF 90-0464

methane: Methane distribution and fluxes in the water column and sediments near Fremont Island, Great Salt Lake OP-1611

Utah—geochronology

Holocene: Thermoluminescence dating of fault-scarp-derived colluvium: deciphering the timing of paleoearthquakes on the Weber Segment of the Wasatch fault zone, north central Utah OP-317

Utah—geomorphology

fluvial features: Channel evolution and hydrologic variations in the Colorado River basin: factors influencing sediment and salt loads OP-341

— Relation of sediment load and flood-plain formation to climatic variability, Paria River drainage basin, Utah and Arizona OP-375

— Rhyolite flow fields as barriers to paleohydrologic flow in eastern Nevada and western Utah between latitudes 37°30′N and 38°N OF 91-0125

maps: Surficial geologic map of the Brigham City Segment and adjacent parts of the Weber and Collinston segments, Wasatch fault zone, Box Elder and Weber counties, Utah I-1979

Utah—geophysical surveys

electrical surveys: Schlumberger soundings in Tule Valley, Utah OF 90-0670

maps: Aeromagnetic anomaly map and related geophysical maps of the Delta 1° × 2° Quadrangle, Utah MF-2081-B

remote sensing: Examination of selected satellite and airborne remote sensing systems for geologic mapping and mineral exploration in semi-arid terrains OP-1200

seismic surveys: Late Paleozoic tectonic evolution of the southern Uinta Basin: evidence from reflection data OP-1762

— Seismic reflection data reveal buried late Paleozoic structures beneath the southern Uinta Basin OF 90-0508

surveys: Aeromagnetic anomaly map and related geophysical maps of the Delta 1° × 2° Quadrangle, Utah MF-2081-B

— Geophysical applications in mineral-resource assessment, Cedar City 1° × 2° Quadrangle, southwestern Utah C 1062

Utah—hydrogeology

ground water: Base of moderately saline ground water in San Juan County, Utah OP-497

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states P 1409-D

— Conceptual evaluation of regional ground-water flow in the carbonate-rock province of the Great Basin, Nevada, Utah, and adjacent states OF 90-0560

— Documentation of model input and output values for simulation of regional ground-water flow, carbonate-rock province, Nevada, Utah, and adjacent states OF 91-0479

— Ground-water hydrology of Pahvant Valley and adjacent areas, Utah OP-485

— Ground-water resources and simulated effects of withdrawals in the East Shore area of Great Salt Lake, Utah OP-179

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

— Hydrology of Heber and Round valleys, Wasatch County, Utah, with emphasis on simulation of ground-water flow in Heber Valley OP-872

— Tertiary-age extensional patterns as a geologic framework for interpreting regional ground-water flow in the eastern Great Basin, Nevada and Utah OP-1336

— The role of a geographic information system in modeling of groundwater flow in the San Juan Basin regional aquifer system, New Mexico, Colorado, Arizona, and Utah OP-559

— Use of geochemical data to trace ground-water flow, which could affect oil migration, in carbonate-rock aquifers of the eastern Great Basin, Nevada and Utah OP-1911

hydrology: Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming OF 87-0547

maps: Base of moderately saline ground water in San Juan County, Utah OP-497

— Ground-water conditions in the Grand County area, Utah, with emphasis on the Mill Creek-Spanish Valley area OP-90

— Hydrogeology of Ojo Alamo Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona and Utah HA-0720-B

— Hydrogeology of the Menefee Formation in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-F

— Hydrogeology of the Pictured Cliffs Sandstone in the San Juan structural basin, New Mexico, Colorado, Arizona, and Utah HA-0720-D

Utah—paleontology

Mammalia: New information on high-altitude mammoths, and on a prongbuck with supernumerary horns OP-1579

Mollusca: Baculites thomi Reeside, 1927, an Upper Cretaceous ammonite in the Western Interior of the United States B 1934

Utah—petrology

intrusions: Evolution of hydrothermal fluids in the Alta Stock, central Wasatch Mountains, Utah B 1977

Utah—sedimentary petrology

diagenesis: Ground-water chemistry and diagenetic reactions in Tertiary sandstones of the Green River and Wasatch formations, Uinta Basin, Utah B 1787-X

sedimentary rocks: Eolian sabkha sandstones in the Nugget Sandstone (Jurassic), Vernal area, Utah OP-1821

Utah—seismology

earthquakes: Earthquakes in Utah, 1884-1989 OF 91-0128

— Paleoseismicity: extending the record of earthquakes into prehistoric time OP-1163

— Utah earthquakes, 1985 B 1954

maps: Earthquakes in Utah, 1884-1989 OF 91-0128

seismicity: Paleoseismology of Utah; Volume I, Fault behavior and earthquake recurrence on the Provo segment of the Wasatch fault zone at Mapleton, Utah County, Utah OP-656

Utah—soils

geochemistry: Seasonal and geothermal production variations in concentrations of He and CO_2 in soil gases, Roosevelt Hot Springs Known Geothermal Resource Area, Utah, U.S.A. OP-467

Utah—stratigraphy

Cambrian: Cambrian stratigraphy of the Wendover area, Utah and Nevada B 1948

Cretaceous: Clastic facies architecture associated with a major marine transgression: the Mid-Cretaceous of the Kaiparowits Plateau, Utah OP-1474

— Coal accumulation and alluvial architecture in the Dakota Formation, southwestern Utah OP-1544

— Cretaceous-sedimentary rocks, Uinta Basin, Utah OP-1396

— Late Cretaceous and Tertiary paleogeographic reconstructions; Uinta and Piceance basins, northeastern Utah and northwestern Colorado OP-1398

— Latest Cretaceous-Paleogene basin development and resultant sedimentation patterns in the thrust belt and broken foreland of central Utah OP-1572

— Map and cross sections of coal zones in the Upper Cretaceous Neslen and Mount Garfield formations, northeastern part of the Westwater 30′ × 60′ Quadrangle and adjacent area, Garfield County, Colorado, and Grand and Uintah counties, Utah C-0134

— Map and cross sections of coal zones in the Upper Cretaceous Neslen Formation, north-central part of the Westwater 30′ × 60′ Quadrangle, Grand and Uintah counties, Utah C-0133

— Middle Cretaceous stratigraphy on the south and east sides of the Uinta Basin, northeastern Utah and northwestern Colorado B 1787-P

— Molluscan paleoecology and sedimentation patterns of the Cenomanian-Turonian extinction interval in the southern Colorado Plateau region OP-271

— Predicting facies architecture through sequence stratigraphy: an example from the Kaiparowits Plateau, Utah OP-951

— Sedimentology, mineralogy, palynology, and depositional history of some uppermost Cretaceous and lowermost Tertiary rocks along the Utah Book and Roan cliffs east of the Green River B 1787-N

— Stratigraphy and correlation of Middle Cretaceous rocks around Uinta Basin, northeastern Utah and northwestern Colorado OP-1648

— Stratigraphy of the Mesaverde Group in the central and eastern greater Green River basin, Wyoming, Colorado, and Utah P 1508

— Subsidence and infilling patterns during deposition of Upper Cretaceous Mancos Shale, Northwest Colorado and Northeast Utah OP-1513

— Tidal influence in fluvial strata; a key element in high-resolution sequence stratigraphic correlation OP-1842

Devonian: Late Frasnian mass extinction: associated sea-level changes reflected by conodont faunas and biofacies OP-1812

— Late Frasnian mass extinction: conodont event stratigraphy, global changes, and possible causes OP-905

Eocene: Revised stratigraphic nomenclature for the Wasatch and Green River formations of Eocene age, Wyoming, Utah, and Colorado P 1506-B

Jurassic: Correlation of Middle Jurassic San Rafael Group and related rocks from Kane Springs, Utah to Uravan, Colorado OC-0134

— Jurassic Lake T'oo'dichi'; a large alkaline, saline lake, Morrison Formation, eastern Colorado Plateau OP-1072

— Late Jurassic weather forecast, Four Corners area: dry, hot, and partly sunny OP-1928

maps: Stratigraphy of the Mesaverde Group in the central and eastern greater Green River basin, Wyoming, Colorado, and Utah P 1508

Mississippian: Carbonate and siliciclastic shelf environments of rocks associated with the Mississippian (Osagean) Delle phosphatic event, Northwest Utah OP-1694

pollution: Ground-water contamination and movement at the Defense General Supply Center, Richmond, Virginia WRI 90-4113

— Preliminary investigation of soil and ground-water contamination at a U.S. Army Petroleum Training Facility, Fort Lee, Virginia, September-October 1989 OF 90-0387

— Radon potential defined by exploratory data analysis and geographic information systems B 1908

Virginia—geochemistry

manganese: Manganese contents of some sedimentary rocks of Paleozoic age in Virginia B 1916

trace elements: Manganese contents of some rocks of Silurian and Devonian ages in Northwest Virginia B 1916

Virginia—geomorphology

landform description: Scenic landforms of northern Virginia OP-1708

maps: Reconnaissance surficial geologic map of the mountainous parts of Loudoun County, Virginia OF 90-0205

road log: Potomac and Blue Ridge toponymic tour OP-791

Virginia—geophysical surveys

electromagnetic surveys: Burial detection using ground-penetrating radar OF 90-0414

— Map showing surficial and generalized bedrock geology and accompanying side-looking airborne radar image of the Radford 30′ × 60′ Quadrangle, Virginia and West Virginia I-2170-A

gravity surveys: Structure of the Bane Dome, Giles County, Virginia; a gravity test OP-1672

remote sensing: Multifractals in image processing and process imaging OF 91-0301

Virginia—hydrogeology

ground water: Assessment of ground-water contamination from a leaking underground storage tank at a defense supply center near Richmond, Virginia WRI 90-4091

— Effects of land use and ground-water flow on shallow ground-water quality, Delmarva Peninsula, Delaware, Maryland, and Virginia OP-1441

— Geohydrology and the occurrence of volatile organic compounds in ground water, Culpeper Basin of Prince William County, Virginia WRI 90-4032

— Hydrogeologic factors affecting flow in the ground-water systems of the coalfields of southwestern Virginia OP-1158

hydrology: Annual maximum stages and discharges of selected streams in Virginia through 1988 OF 90-0587

— Data on the distribution and abundance of submersed aquatic vegetation in the tidal Potomac River and transition zone of the Potomac Estuary, Maryland, Virginia, and the District of Columbia, 1988 OF 90-0123

— Implementation of a hydrodynamic model for the upper Potomac Estuary OP-924

— National Water-Quality Assessment Program: the Albemarle-Pamlico drainage OF 91-0156

— National Water-Quality Assessment Program; the Potomac River basin OF 91-0157

maps: Floods in West Virginia, Virginia, Pennsylvania, and Maryland, November 1985 WRI 88-4213

— Low-flow characteristics of streams in Virginia W 2374

springs: Ground-water hydrology and quality in the Valley and Ridge and Blue Ridge physiographic provinces of Clarke County, Virginia WRI 90-4134

Virginia—oceanography

continental shelf: Sidescan sonograph patterns offshore of the southern Delmarva Peninsula OF 90-0662

sedimentation: Modes of cross-shore sediment transport on the shoreface of the Middle Atlantic Bight OP-1157

Virginia—petrology

metamorphic rocks: Road guide to representative lithologies in the metamorphic complex of western Hanover County, Virginia OP-1118

Virginia—sedimentary petrology

sedimentation: Evidence for the James River headwaters lying west of the Blue Ridge by late Miocene time OP-1950

Virginia—stratigraphy

bibliography: Structural and stratigraphic framework of the Giles County area, a part of the Appalachian Basin of Virginia and West Virginia B 1839-E,F

changes of level: The effect of sea level rise on coastal plain estuaries, with examples from Chesapeake Bay OP-1308

Cretaceous: Cross section of Cretaceous and Cenozoic strata, Norfolk Arch to Salisbury Basin, outer coastal plain of Virginia OP-1763

Paleozoic: Late Paleozoic depositional trends in the central Appalachian Basin B 1839-E,F

Virginia—structural geology

structural analysis: Structure of the Bane Dome, Giles County, Virginia; a gravity test OP-1671

volcanic features *see under* geomorphology

volcanic rocks *see under* igneous rocks

volcanism *see under* volcanology
see under petrology *under* Arizona; Colorado; Idaho; North America; Red Sea region; symposia; Washington; Wyoming
see under volcanology *under* Venus

volcanoes *see under* geologic hazards; volcanology
see under catalogs *under* volcanology
see under volcanology *under* catalogs; data processing

volcanology—catalogs

volcanoes: Global summary of volcano-deformation monitoring OF 90-0651

volcanology—data processing

data acquisition: A networked computer configuration for seismic monitoring of volcanic eruptions OF 90-0422

instruments: The Hawaiian Volcano Observatory polling telemetry system for low frequency data acquisition OF 90-0525

volcanology—education

models: Make your own paper model of a volcano OF 91-0115-A

— Make your own paper model of a volcano OF 91-0115-B

volcanology—instruments

detection: A multiple-species volcanic gas sensor; testing and applications OP-1891

volcanology—practice

popular geology: Earthquakes and Volcanoes, v. 22, no. 3 EV

volcanology—volcanism

ash flows: Magnetic fabric, flow directions, and source area of the lower Miocene Peach Springs Tuff in Arizona, California, and Nevada OP-465

calderas: How calderas resurge OF 90-0656

— Introduction to calderas special issue OP-638

— Structural, eruptive, and intrusive evolution of the Grizzly Peak Caldera, Sawatch Range, Colorado OP-326

Cenozoic: Age and progression of volcanism, Wrangell volcanic field, Alaska OP-869

— Vanuatu; a review of the onshore geology OP-662

climate effects: Earthquakes and Volcanoes, v. 22, no. 2 EV

Cretaceous: Rhyolitic calderas of the Yukon-Tanana Terrane, east central Alaska; volcanic remnants of a Mid-Cretaceous magmatic arc OP-39

eruptions: An analysis of dome building eruptions as creep-rupture phenomena OP-1334

— First international symposium on Volcanic ash and aviation safety C 1065

— Hazardous hydrological consequences of volcanic eruptions and goals for mitigative action; an overview OP-829

— How volcanoes work; selections from the Journal of Geophysical Research OP-1062

evolution: On plate tectonics and the geologic evolution of southwestern North America OP-1108

explosive eruptions: Ash clouds; conditions in the eruption column C 1065

— Ash-fall deposits from large-scale phreatomagmatic volcanism; limitations of available eruption column models C 1065

extension: Isotopic composition of Oligocene mafic volcanic rocks in the northern Rio Grande Rift; evidence for contributions of ancient intraplate and subduction magmatism to evolution of the lithosphere OP-533

— Oligocene basaltic volcanism of the northern Rio Grande Rift; San Luis Hills, Colorado OP-1056

migration: Magnetostratigraphy of the San Francisco volcanic field, Arizona B 1929

— The track of the Yellowstone hotspot; volcanism, faulting, and uplift OF 90-0415

monitoring: Global data collection and the surveillance of active volcanoes OP-1107

Neogene: New fission-track ages of Mio-Pliocene tuffs in the Sierras Pampeanas and Precordillera of Argentina OP-1038

periodicity: Geomorphic assessment of late Quaternary volcanism in the Yucca Mountain area, southern Nevada; implications for the proposed high-level radioactive waste repository: Comment OP-1135

Pleistocene: $^{40}Ar/^{39}Ar$ age of the Lathrop Wells volcanic center, Yucca Mountain, Nevada OP-1075

plumes: Rapid formation of Ontong Java Plateau by Aptian mantle plume volcanism OP-1043

pyroclastic flows: A previously unrecognized type of proximal pyroclastic deposit at snow- and ice-covered volcanoes OP-1744

rift zones: Middle to late Cenozoic magmatism of the southeastern Colorado Plateau and central Rio Grande Rift (New Mexico and Arizona, U.S.A.); a model for continental rifting OP-45

— Volcanism in the Sumisu Rift; I, Major element, volatile, and stable isotope geochemistry OP-474

subaerial environment: Low sulfur content in submarine lavas; an unreliable indicator of subaerial eruption OP-224

submarine volcanoes: Jasper Seamount; seven million years of volcanism OP-849

Tertiary: High-precision $^{40}Ar/^{39}Ar$ sanidine geochronology of ignimbrites in the Mogollon-Datil volcanic field, southwestern New Mexico OP-705

— Introduction to Middle Tertiary Cordilleran volcanism; magma sources and relations to regional tectonics OP-636

volcanic fields: Age and petrology of the Tertiary As Sarat volcanic field, southwestern Saudi Arabia OP-246

— Lithologic map of the western part of the Springerville volcanic field, east-central Arizona I-1993

— Three-dimensional perspective diagrams of the Morococala volcanic field, west-central Bolivia MF-2145

volcanology—volcanoes

Amboy Crater: Contamination of basaltic magma by mafic crust at Amboy and Pisgah craters, Mojave Desert, California OP-349

Azores: Volcanic geology and eruption frequency, Sao Miguel, Azores OP-744

Fernandina: The September 1988 intracaldera avalanche and eruption at Fernandina Volcano, Galapagos Islands OP-158

Galapagos Islands: The pattern of circumferential and radial eruptive fissures on the volcanoes of Fernandina and Isabela islands, Galapagos OP-159

Hawaii: Fractal hierarchies of magma transport in Hawaii and critical self-organization of tremor OP-953

Hualalai: Geologic map of Hualalai Volcano, Hawaii I-2213

Iceland: Degassing and differentiation in subglacial volcanoes, Iceland OP-742

— The physical nature of the Icelandic magma transport system OP-896

Kilauea: Characteristics of seismic waves composing Hawaiian volcanic tremor and gas-piston events observed by a near-source array OP-290

— Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii OF 91-0133-A

— Composition of waters from the research drill hole at summit of Kilauea Volcano and of selected thermal and non-thermal groundwaters, Hawaii OF 91-0133-B

— Degassing history of water, sulfur, and carbon in submarine lavas from Kilauea Volcano, Hawaii OP-236

— Distribution of metals between particulate and gaseous forms in a volcanic plume OP-469

— Fractal properties of tremor and gas piston events observed at Kilauea Volcano, Hawaii OP-174

— Geologic map of the lower east rift zone of Kilauea Volcano, Hawaii I-2225

— Geometry of the September 1971 eruptive fissure at Kilauea Volcano, Hawaii OP-258

— Horizontal ground deformation patterns and magma storage during the Puu Oo eruption of Kilauea Volcano, Hawaii, episodes 22-42 OP-477

— Picritic glasses from Hawaii OP-177

— Tabulation of CO_2, SO_2, and He concentrations in summit fumarole gases and wind and rainfall data at Kilauea Volcano, Hawaii for the period June 1987–February 1989 OF 90-0507

— Tabulation of N_2, O_2, CO_2, and He concentrations in soil gases collected regularly for 13 months at a site on the summit of Kilauea Volcano OF 90-0661

— Underwater observations of active lava flows from Kilauea Volcano, Hawaii OP-1065

Long Valley Caldera: Development of alert criteria for future volcanic unrest in Long Valley Caldera, California OF 90-0658

— Evidence for 600 year-old basalt and magma mixing at Inyo Craters volcanic chain, Long Valley Caldera, California OP-1083

— Response plans for volcanic hazards in the Long Valley Caldera and Mono Craters area, California OF 91-0270

Mahukona: Geology and petrology of Mahukona Volcano, Hawaii OP-175

— Mahukona: the missing Hawaiian volcano: Comment OP-176

Mauna Loa: The Ninole Basalt; implications for the structural evolution of Mauna Loa Volcano, Hawaii OP-637

Medicine Lake: Crustal subsidence, seismicity, and structure near Medicine Lake Volcano, California OP-261

Mount Bachelor: Temporal relations between eruptions of the Mount Bachelor volcanic chain and fluctuations of late Quaternary glaciers OP-942

Mount Etna: Volcanology: Etna's greenhouse pump OP-343

Mount Saint Helens: A decade of dome growth at Mount St. Helens, 1980-90 OP-1034

— A model for dome eruptions at Mount St. Helens, Washington based on subcritical crack growth OP-229

— A new tree ring date for the "floating island" lava flow, Mount St. Helens, Washington OP-1161

— Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington OF 90-0690-A

— Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington OF 90-0690-B

— Chemical data from thermal and nonthermal springs in Mount St. Helens National Monument, Washington OF 90-0690-C

— Geophysical and observational constraints for ascent rates of dacitic magma at Mount Saint Helens OP-277

— Lava domes modeled as brittle shells that enclose pressurized magma, with application to Mount St. Helens OP-515

— Overview of the effects and influence of the activity of Mount St. Helens in the 1980s OP-822

— Record of prehistoric debris avalanches on the north flank of Mount St. Helens Volcano, Washington OP-431

— Regularities in growth of the Mount St. Helens dacite dome 1980-1986 OP-1035

— Special symposium commemorating the 10th anniversary of the eruption of Mount St. Helens, May 18, 1980 OP-457

— The in-situ thermal transport properties and the thermal structure of Mount St. Helens eruptive units OP-898

Novarupta: Geochemistry and mineralogy of fumarolic deposits, Valley of Ten Thousand Smokes, Alaska; bulk chemical and mineralogical evolution of dacite-rich protolith OP-803

Pacific Coast: Patterns of volcanism in the Cascade Arc during the past 15,000 years OP-943

— Results of seismological monitoring in the Cascade Range, 1962-1989; earthquakes, eruptions, avalanches, and other curiosities OP-1114

— The Cascade volcanoes; monitoring history and current land management OF 91-0031

Pavlof: Geological and seismological evidence of increased explosivity during the 1986 eruptions of Pavlof Volcano, Alaska OP-713

Phlegraean Fields: Recent ground movement and seismic activity in Campi Flegrei, southern Italy; episodic growth of a resurgent dome OP-259

Redoubt: Alaska disasters; natural and manmade YR

— Redoubt Volcano, Alaska YR

Rwanda: Natural hazards associated with Lake Kivu and adjoining areas of the Birunga volcanic field, Rwanda and Zaire, Central Africa; final report OF 90-0691

Tangkuban Parahu: Recent uplift and hydrothermal activity at Tangkuban Parahu Volcano, West Java, Indonesia OP-260

Tecuamburro: Geologic map of Tecuamburro Volcano and surrounding area, Guatemala I-2197

Valley of Ten Thousand Smokes: Fossil and active fumaroles in the 1912 eruptive deposits, Valley of Ten Thousand Smokes, Alaska OP-551

Western U.S.: Differences in magma storage in different volcanic environments as revealed by seismic tomography; silicic volcanic centers and subduction-related volcanoes OP-516

W

Washington—areal geology

maps: Geologic map of the Tower Rock Quadrangle, southern Cascade Range, Washington OF 91-0314

— Geologic map of Vashon and Maury islands, King County, Washington MF-2161

— Ground-water resources of Snohomish County, Washington W 1135

— Preliminary geologic map of the Cougar Quadrangle, Cowlitz and Clark counties, Washington OF 90-0631

— Preliminary geologic map of the Goat Mountain Quadrangle, Cowlitz County, Washington OF 90-0632

— Preliminary geologic map of the Lakeview Peak Quadrangle, Cowlitz County, Washington OF 91-0289

Washington—economic geology

geothermal energy: Geologic map and geothermal assessment of the Mount Adams volcanic field, Cacade Range of southern Washington OP-460

metal ores: Chemistry of natural waters in the St. Helens mining district, Washington; a test of hydrogeochemical prospecting methods in the Cascade Range C 1062

mineral resources: Minerals information sources in state agencies: Washington C 1063

petroleum: Are hydrocarbon source rocks buried beneath volcanic flows in the southern Washington Cascades? OF 91-0119

— Are hydrocarbon source rocks hidden beneath volcanic flows in the southern Washington Cascades? OP-1875

— Geologic basis for petroleum resource assessment of onshore western Oregon and Washington (Province 72) OF 88-0450-X

water resources: Surface-water resources of the Columbia Plateau in parts of Washington, Oregon, and Idaho WRI 88-4105

Washington—engineering geology

earthquakes: Ground failure associated with the Puget Sound region earthquakes of April 13, 1949, and April 29, 1965 OF 90-0687

— Strain measurements and the potential for a great subduction earthquake off the coast of Washington OP-917

geologic hazards: Ground failure associated with the Puget Sound region earthquakes of April 13, 1949, and April 29, 1965 OF 90-0687

maps: Ground failure associated with the Puget Sound region earthquakes of April 13, 1949, and April 29, 1965 OF 90-0687

Washington—environmental geology

ecology: Available habitat for salmon and steelhead trout in the lower Puyallup, White, and Carbon rivers in western Washington WRI 89-4125

geologic hazards: Cleanup of Grant County Airport after May 18, 1980, eruption of Mount Saint Helens C 1065

— Overview of the effects and influence of the activity of Mount St. Helens in the 1980s OP-822

— Results of seismological monitoring in the Cascade Range, 1962-1989; earthquakes, eruptions, avalanches, and other curiosities OP-1114

— Seattle Air Route Traffic Control Center (ARTCC) response to eruptions of Mount Saint Helens C 1065

— Seismic identification of gas-and-ash explosions at Mount Saint Helens: capabilities, limitations, and regional application C 1065

— Volcanic-event notification at Mount St. Helens C 1065

— Washington: floods and droughts W 2375

pollution: Organic contamination of ground water at Gas Works Park, Seattle, Washington OP-1074

— Quality of water in an inactive uranium mine and its effects on the quality of water in Blue Creek, Stevens County, Washington, 1984-85 WRI 89-4110

— Use of elutriate tests and bottom-material analyses in simulating dredging effects on water quality of selected rivers and estuaries in Oregon and Washington, 1980-1983 WRI 89-4051

— Water quality: what we have learned YR

Washington—geochemistry

trace elements: Geology, geochemistry, and isotopic character of the Colville igneous complex, northeastern Washington OP-147

Washington—geochronology

Holocene: A new tree ring date for the "floating island" lava flow, Mount St. Helens, Washington OP-1161

— Precise ^{14}C ages for sudden Holocene submergence in Washington OP-1193

— Radiocarbon test of earthquake magnitude at the Cascadia subduction zone OP-29

— Sudden, probably coseismic submergence of Holocene trees and grass in coastal Washington State OP-30

Washington—geomorphology

glacial geology: Effect of area distribution with altitude on glacier mass balance: a comparison of North and South Klawatti glaciers, Washington State, U.S.A. OP-1041

lacustrine features: Lakes divided: the origin of Lake Crescent and Lake Sutherland, Clallam County, Washington OP-648

maps: Surficial geologic map of the Skykomish and Snoqualmie rivers area, Snohomish and King counties, Washington I-1745

mass movements: Prehistoric avalanche record of the north flank of Mount St. Helens, Washington OP-1461

Washington—geophysical surveys

gravity surveys: Gravity anomaly and terrain maps of Washington GP-0988

maps: Gravity anomaly and terrain maps of Washington GP-0988

seismic surveys: Deep seismic surveys of a dormant subduction zone in the Pacific Northwest, United States OP-1435

ground water: Extent and source of organic solvents in ground water in the Argonne Road area near Spokane, Washington WRI 89-4121

— Geophysical and chemical investigations of ground water at five industrial or waste-disposal sites in Logan Township, Gloucester County, New Jersey, 1983-87 WRI 90-4004

— Hydrogeologic reconnaissance of the Swope Oil Superfund Site and vicinity, Camden and Burlington counties, New Jersey OF 89-0402

— Preliminary evaluation of the effects of an abandoned oil refinery on chemical quality of water in the Arkansas River valley, Arkansas City, Kansas, 1985-86 WRI 89-4190

hazardous waste: Properties and hazards of 108 selected substances; 1990 edition OF 90-0408

testing: Determination of hydraulic properties in the vicinity of a landfill near Antioch, Illinois WRI 89-4124

toxic materials: Toxic substances hydrology; surface- and ground-water contamination C 1033

waste disposal—radioactive waste

experimental studies: Comparison of pore-water extraction by triaxial compression and high-speed centrifugation methods OP-1162

geologic hazards: $^{40}Ar/^{39}Ar$ age of the Lathrop Wells volcanic center, Yucca Mountain, Nevada OP-1075

— Runoff and land modification W 2367

— Seismicity and shear strain in the southern Great Basin of Nevada and California OP-363

— Unpublished letter from U.S. Geological Survey scientists to the editor of the New York Times Magazine regarding William J. Broads' November 18, 1990 article on Yucca Mountain OF 91-0058

low-level waste: Ground-water levels and tritium concentrations at the Maxey Flats low-level radioactive waste disposal site near Morehead, Kentucky, June 1984 to April 1989 WRI 90-4189

pollution: Geochemical data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri; 1989-90 OF 90-0351

— Hydrologic conditions and distribution of selected chemical constituents in water, Snake River Plain Aquifer, Idaho National Engineering Laboratory, Idaho, 1986 to 1988 WRI 91-4047

— Hydrologic data for the Weldon Spring Chemical Plant site and vicinity property, St. Charles County, Missouri, 1986-1990 OF 90-0552

— Hydrological, meteorological, and geohydrological data for an unsaturated zone study near the Radioactive Waste Management Complex, Idaho National Engineering Laboratory, Idaho; 1987 OF 90-0114

— Microbial reduction of uranium OP-653

— Note on use of producing well as a monitoring well, with special reference to a proposed well at Sandia Corporation, Albuquerque, New Mexico OF 91-0081

— Tritium in ground water at the Idaho National Engineering Laboratory, Idaho WRI 90-4090

site exploration: Chemical analyses of water from selected wells and springs in the Yucca Mountain area, Nevada and southeastern California OF 90-0355

— Drilling and geohydrologic data for test hole USW UZ-1, Yucca Mountain, Nye County, Nevada OF 90-0354

— Gases in the unsaturated zone W 2367

— Geohydrology of test well USW H-1, Yucca Mountain, Nye County, Nevada WRI 84-4032

— Geophysical logs and core measurements for forty boreholes at Yucca Mountain, Nevada GP-1001

— Hydrogeologic data from selected wells and test holes in and adjacent to the Nevada Test Site, Nye County, Nevada, through 1986 OF 87-0536

— Hydrogeologic inferences from drillers' logs and from gravity and resistivity surveys in the Amargosa Desert, southern Nevada OP-783

— Isotope content and temperature of precipitation in southern Nevada, August 1983-August 1986 OF 87-0463

— Microclimate, evapotranspiration, and tritium release by plants W 2367

— Paleomagnetic constraints on the geometry and timing of deformation at Yucca Mountain, Nevada OP-883

— Results of hydrologic research at a low-level radioactive-waste disposal site near Sheffield, Illinois W 2367

— Stratigraphy of the unsaturated zone and uppermost part of the Snake River Plain Aquifer at the Idaho Chemical Processing Plant and Test Reactors area, Idaho National Engineering Laboratory, Idaho WRI 91-4010

— U and Sr isotopes in ground water and calcite, Yucca Mountain, Nevada; evidence against upwelling water OP-1028

— U.S. Geological Survey Committee for the Advancement of Science in the Yucca Mountain Project, symposium on Fractures, hydrology, and Yucca Mountain: abstracts and summary OF 91-0125

storage: Organic matter and containment of uranium and fissiogenic isotopes at the Oklo natural reactors OP-759

underground storage: Yucca Mountain as a nuclear-waste repository; neither myth nor millennium OF 91-0170

waste disposal—site exploration

landfills: Methods for selection and hydrologic description of potential landfill sites in southeastern San Diego County, California WRI 90-4021

marine environment: Geotechnical engineering for ocean waste disposal; an introduction OP-617

waste disposal—solid waste

pollution: Hazardous wastes from large-scale metal extraction OP-743

waste water *see under* liquid waste *under* waste disposal

water *see* ground water; hydrogeology; hydrology
see under isotopes; meteorology; pollution; water resources
see under composition *under* fluid inclusions
see under geochemistry *under* deuterium; magnesium; metals; oxygen; selenium; tritium

water management *see under* water resources
see under aquifers *under* ground water
see under data processing *under* hydrogeology
see under ground water *under* water resources
see under hydrologic cycle *under* hydrology
see under levels *under* ground water
see under recharge *under* ground water
see under resources *under* ground water
see under rivers and streams *under* hydrology; waterways
see under water quality *under* ground water

water quality *see under* ground water; hydrology; water resources
see under aquifers *under* ground water
see under atmospheric precipitation *under* hydrology
see under effects *under* land use; waste disposal
see under field studies *under* reservoirs
see under geochemistry *under* ground water
see under ground water *under* pollution
see under limnology *under* hydrology
see under pollution *under* ground water; hydrology
see under rivers and streams *under* hydrology
see under surface water *under* pollution
see under water *under* pollution

water resources *see under* bibliography *under* hydrogeology
see under economic geology *under* Alabama; Alaska; Arizona; Arkansas; California; Canada; Colorado; Columbia Plateau; data processing; Delaware; Eastern U.S.; Florida; Hawaii; Hungary; Idaho; Illinois; Iowa; Louisiana; Maryland; Michigan; Minnesota; Mississippi; Montana; Nevada; New England; New Mexico; North Carolina; North Dakota; Ohio; Oregon; Pennsylvania; Puerto Rico; Rhode Island; South Carolina; South Dakota; Southeastern U.S.; Tennessee; United States; Utah; Washington; West Virginia; Western U.S.; Wisconsin
see under natural resources *under* land use

water resources—ground water

manuals: Basic ground-water hydrology W 2220

Wisconsin—environmental geology

geologic hazards: Wisconsin; floods and droughts W 2375

pollution: Fox River polychlorinated biphenyl (PCB) bottom sediment data OP-1726

— The artificial alkalization of an acidic lake by ground-water addition OP-1405

— Variation in reported values for selected water-quality constituents and properties caused by sample collection and processing OP-1387

waste disposal: Availability and suitability of municipal wastewater information for use in a National Water-Quality Assessment; a case study of the upper Illinois River basin in Illinois, Indiana, and Wisconsin OF 90-0375

Wisconsin—geophysical surveys

magnetic surveys: Precambrian terrane of north-central Wisconsin; an aeromagnetic perspective OP-568

Wisconsin—hydrogeology

ground water: Estimating groundwater exchange with lakes; 1, The stable isotope mass balance method OP-581

— Estimating groundwater exchange with lakes; 2, Calibration of a three-dimensional, solute transport model to a stable isotope plume OP-580

— Ground-water levels and quality at Crex Meadows Wildlife Area, Burnett County, Wisconsin WRI 89-4129

— Simulation of ground-water flow in the Cambrian-Ordovician aquifer system in the Chicago-Milwaukee area of the northern Midwest OP-1165

hydrology: Data on polychlorinated biphenyls, dieldrin, lead, and cadmium in Wisconsin and upper Michigan tributaries to Green Bay, July 1987 through April 1988 OF 89-0052

— Ground-water and surface-water interactions in Minnesota and Wisconsin wetlands OP-126

— Monthly mean discharge at and between selected streamflow-gaging stations along the Mississippi, Minnesota, and St. Croix rivers, 1932-87 OF 90-0186

Wisconsin—petrology

metamorphism: Neodymium isotopic evidence for early Proterozoic units in the Watersmeet gneiss dome, northern Michigan. Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin B 1904-G,H

— Temperature-pressure estimates of dynamically recrystallized rocks in the early Proterozoic Mountain shear zone, northeastern Wisconsin B 1904-G,H

Wisconsin—stratigraphy

Devonian: Upper Devonian biostratigraphy of Michigan Basin OP-394

Quaternary: Quaternary geologic map of the Des Moines 4° × 6° Quadrangle, United States I-1420 (NK-15)

Wyoming—areal geology

maps: Geologic map of the Salt Lake City 30′ × 60′ Quadrangle, north-central Utah, and Uinta County, Wyoming I-1944

— Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming I-2094-A

— Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the south half of the Powder River basin, northeastern Wyoming I-2094-B

— Geologic map showing total thickness of coal in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming I-2131-A

— Geologic map showing total thickness of coal in the south half of the Powder River basin, northeastern Wyoming I-2131-B

Yellowstone National Park: Geologic setting of the Corwin Springs Known Geothermal Resources Area-Mammoth Hot Springs area in and adjacent to Yellowstone National Park WRI 91-4052

Wyoming—economic geology

coal: Cross sections showing coal stratigraphy of the southwestern Powder River basin, Wyoming I-1959-C

— Cross sections showing the reconstructed stratigraphic framework of Paleocene rocks and coal beds in the northern and central Powder River basin, Montana and Wyoming I-1959-A

— Geologic map showing the thickness and structure of the Anderson-Wyodak coal bed in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming I-2094-A

— Geologic map showing total thickness of coal in the north half of the Powder River basin, southeastern Montana and northeastern Wyoming I-2131-A

— Geologic map showing total thickness of coal in the south half of the Powder River basin, northeastern Wyoming I-2131-B

— Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Coal Bank Draw and Dugout Creek North quadrangles, Converse County, southeastern Powder River basin, Wyoming I-2013

— Stratigraphic cross section showing upper Paleocene coal-bearing rocks of the Tongue River Member of the Fort Union Formation in the Piney Canyon NE and Piney Canyon NW quadrangles, Campbell and Weston counties, southeastern Powder River basin, Wyoming I-2011

geothermal energy: Geothermal systems within the Mammoth corridor in Yellowstone National Park and the adjacent Corwin Springs KGRA OP-999

— Origins of water and solutes in and north of the Norris-Mammoth corridor, Yellowstone National Park OP-562

metal ores: Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OF 90-0424-A

— Database for metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OF 90-0424-B

— Metallic mineral districts and mines of the northern Black Hills, South Dakota and Wyoming OP-232

mineral resources: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Oregon Buttes Wilderness Study Area (WY-040-324), Sweetwater County, Wyoming OF 91-0012

— Minerals information sources in state agencies: Wyoming C 1063

natural gas: Coal-bed methane potential of Tertiary coal beds and adjacent sandstone deposits, Powder River basin, Wyoming and Montana OP-1785

— Coal-bed methane show within the Wind River Indian Reservation enhances gas prospects in deeper portions of the Wind River basin, Wyoming OP-1208

— Nature of natural gas in anomalously thick coal beds, Powder River basin, Wyoming OP-1784

oil and gas fields: Heterogeneity of sandstone reservoirs in the Fort Union Formation, Fuller Reservoir Field, Wind River basin, Wyoming OP-1531

— Patrick Draw Field, Wyo.; 2 (Conclusion). Seismic detection of subtle stratigraphic trap OP-899

oil shale: Chart showing identification of oil shale and trona beds and their geophysical log responses in the Union Pacific Railroad Company El Paso corehole No. 44-3, Eocene Green River Formation, Southwest Wyoming MF-2188

— Correlation and depositional analysis of oil shale and associated rocks in the Eocene Green River Formation, greater Green River basin, Southwest Wyoming I-2226

— Correlation and oil-shale assays of measured sections of the LaClede Bed of the Laney Member of the Green River Formation in outcrops along the western margins of Washakie Basin, Wyoming, and Sand Wash Basin, Colorado I-2211

— Identification of oil shale and trona beds and their geophysical log responses in the Energy Research and Development Administration Blacks Fork No. 1 corehole, Eocene Green River Formation, Southwest Wyoming MF-2158

peat: Tertiary raised and low-lying peat accumulation in the Powder River basin OP-1666

petroleum: Animated geographic information system of petroleum exploration through time in the Denver Basin of Colorado, Nebraska, and Wyoming OP-1896

— Basin-wide architecture of sandstone reservoirs in the Fort Union Formation, Wind River basin, Wyoming OP-1392

— Determination of source-rock thermal maturity by direct measurements and predictive modeling: application to Upper Cretaceous Cody Shale, Powder River basin, Wyoming OP-778

— Determining source rock maturity using direct measurement vs. predictive modeling; comparison and application of five methods to hydrocarbon generation OP-1703

— Diagenesis of the Upper Cretaceous Sussex Sandstone in the House Creek and Porcupine fields, Powder River basin, Wyoming OP-1476

— Petroleum geology of the Powder River basin, Wyoming and Montana OF 88-0450-P

— Petrology, diagenesis, and sedimentology of oil reservoirs in Upper Cretaceous Shannon Sandstone Beds, Powder River basin, Wyoming B 1917-C

— Reservoir-sandstone paradigms, Paleocene Fort Union Formation, Wind River basin, Wyoming OP-1391

— Thermal maturation and oil generation history of Pennsylvanian (Desmoinesian) black shales of Powder River and northern Denver basins OP-1295

sodium carbonate: Chart showing identification of oil shale and trona beds and their geophysical log responses in the Union Pacific Railroad Company El Paso corehole No. 44-3, Eocene Green River Formation, Southwest Wyoming MF-2188

— Identification of oil shale and trona beds and their geophysical log responses in the Energy Research and Development Administration Blacks Fork No. 1 corehole, Eocene Green River Formation, Southwest Wyoming MF-2158

Wyoming—engineering geology

petroleum engineering: Heterogeneity of eolian sandstones and enhanced oil recovery OP-1819

— Prediction of fracture networks at depth in low-permeability reservoir rocks, Piceance and Washakie basins, Western United States OP-1431

— Stratigraphic and areal distribution of overpressuring, northern Green River basin, Wyoming OP-1766

Wyoming—environmental geology

geologic hazards: Wyoming; floods and droughts W 2375

impact statements: Effects of potential geothermal development WRI 91-4052

— Effects of potential geothermal development in the Corwin Springs Known Geothermal Resources Area, Montana, on the thermal features of Yellowstone National Park WRI 91-4052

Wyoming—geochemistry

iron: The influence of iron speciation on the sorption of dissolved organic material by iron and aluminum oxides in a mountain stream system OP-1628

isotopes: Carbon isotopes in Tertiary coals of the Powder River basin OP-483

maps: Analytical results and sample locality map of stream-sediment and heavy-mineral-concentrate samples from the Oregon Buttes Wilderness Study Area (WY-040-324), Sweetwater County, Wyoming OF 91-0012

organic materials: Composition of gas seeps in northwestern Wyoming OF 91-0121

trace elements: AB-DTPA extractable soil selenium as a predictor of seleniferous vegetation C 1064

— Isotopic and chemical evidence concerning the genesis and contamination of basaltic and rhyolitic magma beneath the Yellowstone Plateau volcanic field OP-461

— Reconnaissance investigation of water quality, bottom sediment, and biota associated with irrigation drainage in the Riverton Reclamation Project, Wyoming, 1988-89 WRI 90-4187

— Selenium in soils and plants from native and irrigated lands at the Kendrick Reclamation Project area, Wyoming C 1064

— Selenium in waters in and adjacent to the Kendrick Project, Natrona County, Wyoming W 2023

Wyoming—geochronology

Eocene: Early Eocene biotic and climatic change in interior western North America OP-1145

Wyoming—geomorphology

fluvial features: Morphology of Red Creek, Wyoming, an arid-region anastomosing channel system OP-934

Wyoming—geophysical surveys

electrical surveys: Electrical geophysical investigations in the Norris-Mammoth corridor, Yellowstone National Park, and the adjacent Corwin Springs Known Geothermal Resources Area WRI 91-4052

gravity surveys: Complete Bouguer anomaly gravity map of the Buffalo 30′ × 60′ Quadrangle, Johnson and Campbell counties, Wyoming I-1923-B

— Gravity studies in southwestern Wyoming: evidence for a buried east-west-trending uplift north of Rock Springs OP-1204

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-A

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-B

— Principal facts for 1040 gravity stations in the Gillette and Sheridan 1×2 degree quadrangles, and Crow Indian Reservation, Wyoming, Montana, and South Dakota OF 91-0287

heat flow: Soil mercury and streambed-temperature anomalies in the Norris-Mammoth-La Duke corridor WRI 91-4052

maps: Complete Bouguer anomaly gravity map of the Buffalo 30′ × 60′ Quadrangle, Johnson and Campbell counties, Wyoming I-1923-B

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-A

— Isostatic gravity map and principal facts for 694 gravity stations in Yellowstone National Park and vicinity, Wyoming, Montana, and Idaho OF 90-0649-B

seismic surveys: Patrick Draw Field, Wyo.; 2 (Conclusion), Seismic detection of subtle stratigraphic trap OP-899

surveys: Gravity and aeromagnetic interpretation in northwestern Wyoming basins OP-1557

well-logging: A comparison of stationary and continuous gamma-ray spectral data with cores in granites OF 91-0101

Wyoming—hydrogeology

ground water: A concept of the shallow ground-water system along the North Platte River, south-central Wyoming WRI 89-4078

— Examination of head data in a fractured and layered system, Rock Springs, Wyoming OF 91-0088

— Geochemical modeling of the Madison Aquifer in parts of Montana, Wyoming, and South Dakota OP-834

— Ground-water-flow systems in the Powder River structural basin, Wyoming and Montana WRI 85-4229

— Hydrologic and water-quality data for selected sites, Grand Teton National Park, Wyoming, September 1988 through September 1990 OF 91-0056

— Use of azaarene tracers to evaluate fracture flow from an in-situ oil-shale retort, Rock Springs, Wyoming OF 91-0088

— Water-level changes in the High Plains Aquifer underlying parts of South Dakota, Wyoming, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, and Texas: predevelopment through nonirrigation season 1988-89 WRI 90-4153

hydrology: Data that describe at-a-point temporal variations in the transport rate and particle-size distribution of bedload; East Fork River, Wyoming, and Fall River, Colorado OF 90-0193

— Estimates of dissolved solids and major dissolved constituents for 70 streamflow-gaging stations in the upper Colorado River basin, Arizona, Colorado, New Mexico, Utah, and Wyoming OF 87-0547

— National Water-Quality Assessment Program; the upper Snake River basin OF 91-0165

— Stream-aquifer system in the upper Bear River valley, Wyoming WRI 89-4173

— Trends in selected water-quality characteristics, Powder River and tributaries, Montana and Wyoming, water years 1968-88 and 1975-88 WRI 91-4029

— Use of paleoflood investigations to improve flood-frequency analyses of plains streams in Wyoming WRI 88-4209

maps: A concept of the shallow ground-water system along the North Platte River, south-central Wyoming WRI 89-4078

— Selenium in waters in and adjacent to the Kendrick Project, Natrona County, Wyoming W 2023

springs: Conditions leading to a recent small hydrothermal explosion at Yellowstone National Park OP-322

— Geochemical evolution of water in the Madison Aquifer in parts of Montana, South Dakota, and Wyoming P 1273-F

thermal waters: Conditions leading to a recent small hydrothermal explosion at Yellowstone National Park OP-322

— Coupled variations in helium isotopes and fluid chemistry; Shoshone Geyser Basin, Yellowstone National Park OP-438

— Effects of potential geothermal development WRI 91-4052

— Effects of potential geothermal development in the Corwin Springs Known Geothermal Resources Area, Montana, on the thermal features of Yellowstone National Park WRI 91-4052

— Geochemical investigations of hydraulic connections between the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park WRI 91-4052

— Hydrologic investigations in the Corwin Springs Known Geothermal Resources Area and adjacent parts of Yellowstone National Park WRI 91-4052

— Introduction WRI 91-4052

— Summary and conclusions WRI 91-4052

Wyoming—paleontology

Mammalia: New evidence on the early diversification of omomyid primates from the Wasatchian Willwood Formation, Wyoming OP-1797

— Two species of the early Eocene and adapid primate Cantius from the Lysite subage of the Willwood Formation in the Bighorn Basin, Wyoming OP-1454

Mollusca: Baculites thomi Reeside, 1927, an Upper Cretaceous ammonite in the Western Interior of the United States B 1934

— Evolution and biogeography of the Cenomanian (Upper Cretaceous) ammonite *Metoicoceras* Hyatt, 1903, with a revision of *Metoicoceras praecox* Haas, 1949 B 1934

Wyoming—petrology

fluid inclusions: Moving particules (bacteria?) in fluid inclusions from Yellowstone National Park, Wyoming OF 90-0489

intrusions: Mafic intrusives in Precambrian rocks of the Wyoming Province and Belt Basin OP-1868

metamorphism: Unusual, high-temperature, iron-rich mineral phases produced by natural burning of coal seams; analytical data OF 87-0022

volcanism: The track of the Yellowstone hotspot: volcanism, faulting, and uplift OF 90-0415

Wyoming—sedimentary petrology

clay mineralogy: Whole-rock and clay mineralogies of deeply-buried rocks, Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming OF 90-0673

diagenesis: Diagenesis of the Upper Cretaceous Sussex Sandstone in the House Creek and Porcupine fields, Powder River basin, Wyoming OP-1476

— Evolution of porosity in "deep" sandstones of the Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming OF 90-0078

— Origin and diagenesis of clay minerals in relation to sandstone paragenesis; an example in eolian dune reservoirs and associated rocks, Permian upper part of the Minnelusa Formation, Powder River basin, Wyoming OP-1752

sedimentary rocks: Basin-wide architecture of sandstone reservoirs in the Fort Union Formation, Wind River basin, Wyoming OP-1392

— Heterogeneity of sandstone reservoirs in the Fort Union Formation, Fuller Reservoir Field, Wind River basin, Wyoming OP-1531

— Petrology of Tullock Member, Fort Union Formation, Wyoming and Montana; evidence for early Paleocene uplift of Bighorn Mountains OP-1249

— Volcanic ash dispersed in the Wyodak-Anderson coal bed, Powder River basin, Wyoming OP-1067

sedimentation: Variations in fluvial deposition on an alluvial plain; an example from the Tongue River Member of the Fort Union Formation (Paleocene), southeastern Powder River basin, Wyoming, U.S.A. OP-535

Wyoming—seismology

earthquakes: The Laramie Mountains, Wyoming, earthquake of 18 October 1984; a report on its aftershocks and seismotectonic setting OF 91-0258

Wyoming—soils

geochemistry: Soil mercury and streambed-temperature anomalies in the Norris-Mammoth-La Duke corridor WRI 91-4052

Wyoming—stratigraphy

Cretaceous: A petrologic study of the Fox Hills Sandstone, Rock Springs Uplift, Wyoming B 1919

— Ammonites and some characteristic bivalves from the Upper Cretaceous Frontier Formation, Natrona County, Wyoming B 1917-B

— Biostratigraphic correlation of Santonian and Campanian formations in the northwestern part of Yellowstone National Park, and the Madison Range and Livingston area of southwestern Montana B 1962

— Chart showing correlations of some Upper Cretaceous and lower Tertiary rocks, from the east flank of the Washakie Basin to the east flank of the Rock Springs Uplift, Wyoming I-2152

— Chart showing correlations of Upper Cretaceous Fox Hills Sandstone and Lance Formation, and lower Tertiary Fort Union, Wasatch, and Green River formations, from the eastern flank of the Washakie Basin to the southeastern part of the Great Divide Basin, Wyoming I-2151

— Cretaceous formations in the southwestern part of the Powder River basin, northeastern Wyoming OP-1631

— Cretaceous formations of the Hanna Basin, south-central Wyoming OP-1632

— Cretaceous rocks in the Wind River basin, central Wyoming OP-1529

— Cretaceous rocks of Jackson Hole, northwestern Wyoming OP-1587

— Cretaceous-Tertiary boundary in the Powder River basin, Wyoming and Montana OP-1692

— Determination of source-rock thermal maturity by direct measurements and predictive modeling: application to Upper Cretaceous Cody Shale, Powder River basin, Wyoming OP-778

— Map showing contours on top of the Upper Cretaceous Mowry Shale, Powder River basin, Wyoming and Montana MF-2140-D

— Palaeobotanical evidence for a June "impact winter" at the Cretaceous/Tertiary boundary OP-1150

X

AUTHORS

A

B

C

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Y

Z

The Secretary of the Interior has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget.