

U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Bibliography for the

U.S. Geological Survey Global Change and Climate History Program

1990-1991

Editors

John Kelmelis

Harry Lins

Larry Pettinger

Richard Poore

Mitchell Snow

Open File Report 92-329

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards (or with the North American Stratigraphic Code). Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

1992

Reston, Virginia

PREFACE

This bibliography contains a listing of the 1990 and 1991 publications of the U.S. Geological Survey's (USGS) focused global change research. This research is conducted specifically to improve our understanding and predictive capabilities for global change. It is directly funded under the United States Global Change Research Program (USGCRP). The purpose of this bibliography is to document the publications funded under the global change research program, to identify current findings of the program, and to provide other researchers, academics, and managers with information about USGS global change publications that may be of value to them.

The USGS has been conducting global change research since long before the USGCRP was established in 1989. This work has consisted of the normal output of earth science data and information required to meet the needs of the Department of the Interior and the Federal government as a whole. This work has been conducted for purposes other than the global change, but still provides useful information to researchers working in the field. While these research efforts have certainly contributed to the USGCRP, including references to the vast amount of contributing information would duplicate much of the bibliography currently published as Publications of the United States Geological Survey.

Future bibliographies listing documents produced under the focused USGS Global Change Research program will be published periodically.

This bibliography is organized under three headings. The first, "Book and Journal Articles" is comprised of references to documents that are fully refereed and published external to the USGS. The second listing is "U.S. Geological Survey Reports" and is comprised of references to documents that are published by the USGS and have undergone internal review. The third listing, "Abstracts and non-Refereed Publication," is made up of references to abstracts and papers which, though not reviewed to the rigor of the other two categories, have still received some review.

John Kelmelis, Coordinator
USGS Global Change
Research Program

GLOBAL CHANGE AND CLIMATE HISTORY PROGRAM
Book and Journal Articles
BIBLIOGRAPHY (1990-1991)

- Adams, J.B., Barron, E.E., Bloom, A.A., Breed, C.S., Dohrenwend, J., Evans, D.L., Farr, T.T., Gillespie, A.R., Isacks, L.B., and Williams, R.S., Jr., contributors, 1991, Report of the panel on the land surface--Processes of change, in Solid earth science in the 1990's, sect. v of v. 2-panel reports: NASA technical memorandum 4256, v. 2, p. V-1-V-28.
- Alley, R.B., Saltzman, E.S., Cuffey, K.M., and Fitzpatrick, J.J., 1990, Summertime formation of depth hoar in Central Greenland: Geophysical Research Letters, v. 17, n. 12, p. 2393-2396.
- Anderson, R.Y., Linsley, B.K. and Gardner, J.V., 1990, Expression of seasonal and ENSO forcing in climatic variability at lower than ENSO frequencies--Evidence from Pleistocene marine varves off California: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 78, p. 287-300.
- Ayers, M.A., Wolock, D.M., McCabe, G.J, and Hay, L.E., 1990b, Simulated hydrologic effects of climatic change in the Delaware River basin: in Singh, U.P, and Helweg, O.J., (eds) Supplying Water and Saving the Environment for Six Billion People, American Society of Civil Engineers, New York, p. 31-38.
- Barron, J.A., Larsen, B., and Baldauf, J.G., 1991, Evidence for late Eocene to early Oligocene Antarctic glaciation and observations on late Neogene glacial history of Antarctica--Results from ODP Leg 119: Ocean Drilling Program, v. 119B, p. 869-891.
- Barron, J.A., Baldauf, J.G., Barrera, E., Caulet, J.P., Huber, B.T, Keating, B.H., Lazarus, D., Sakai, H, Thierstein, H.R., and Wei, W., 1991, Biogeochronologic and magnetostratigraphic synthesis of ODP Leg 119--Segments from the Kerguelen Plateau and Prydz Bay, Antarctica: Ocean Drilling Program, v. 119B, p. 813-847.
- Benson, L.V., 1991, Timing of the last high stand of Lake Lahontan: Journal of Paleolimnology, v. 5, p. 115-126.
- Benson, L.V., Currey, D.R., Dorn, R.I., Lajoie, K.R., Oviatt, C.G., Robinson, S.W., Smith, G.I., and Stine, S., 1990, Chronology of expansion and contraction of four Great Basin lake systems during the past 35,000 years, in Meyers, P.A. and Benson, L.V., eds., Paleolakes and Paleo-oceans: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 78, p. 241-286.
- Benson, L.V., Meyers, P.A., and Spencer, R.J., 1991, Change in the

- size of Walker Lake during the past 5000 years: *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 81, p. 189-214.
- Betancourt, J.L., Van Devender, T.R., and Martin, P.S., 1990, *Packrat Middens: The Last 40,000 Years of Biotic Change*: Tucson, University of Arizona Press, 467 p.
- Bianchi, R., Casacchia, R., Poscolieri, M., Lucchitta, B.K., and Picchiotti, A., 1991, Image processing techniques applied to Landsat MSS images of Victoria Land, Antarctica: *Mem. Soc. Geol. It.*, 1988, v. 43, p. 155-163.
- Bischoff, J.L., and Fitzpatrick, J.A., 1991, U-series dating of impure carbonates--An isochron technique using total-sample dissolution: *Geochimica et Cosmochimica Acta*, v. 55, p. 543-554.
- Bischoff, J.L., Herbst, D.B., and Rosenbauer, R.J., 1991, Gaylussite formation at Mono Lake, California: *Geochimica et Cosmochimica Acta*, v. 55, p. 1743-1747.
- Blain, C.A. and Milly, P.C.D., 1991, Development and application of a hillslope hydrologic model: *Advances in Water Resources*, v. 14, n. 4, p. 168-174.
- Bliss, N. B., 1990, A hierarchy of soil data bases for calibrating models of global climate change, *in* Bouwman, A.F., (ed.), 1990, *Soils and the greenhouse effect*: New York, Wiley and Sons, p. 530-533.
- Brouwers, E.M., Jorgensen, N.O., and Cronin, T.M., 1991, Climatic significance of the ostracode fauna from the Pliocene Kap Kobenhaven Formation, north Greenland: *Micropaleontology*, v. 37, n. 3, p. 245-267.
- Carter, L.D., 1990, Climatic change and permafrost--Record from surficial deposits: *Journal of Cold Regions Engineering*, v. 4, p. 43-53.
- Christophersen, N., Neal, C., Hooper, R.P., Vogt, R., and Andersen, S., 1990, Modeling streamwater chemistry as a mixture of soilwater end-members--a step towards second-generation acidification models: *Journal of Hydrology*, v. 116, p. 307-320.
- Cifuentes, L.A., Schemel, L.E., and Sharp, J.H., 1990, Qualitative and numerical analyses of the effects of river inflow variations on mixing diagrams in estuaries: *Estuarine, Coastal and Shelf Science*, v. 30, p. 411-427.
- Coffin, J.H., Trabant, D.C., Mayo, L.R., Benson, C.S., Harrison,

- W.D., and Rothlisberger, Hans, 1990, Mountain Glaciers--An overview with emphasis on Alaska: in Ryan, W.L., and Crissman, R.D., eds., Cold Regions Hydrology and Hydraulics: American Society of Civil Engineers, Technical Council on Cold Regions Engineering Monograph, p. 177-258.
- Collett, T.S., 1991, Well log characterization of ice-bearing permafrost: Alaska Geology, Newsletter of the Alaska Geological Society, April 1991, p. 1-5.
- Collett, T.S., Kvenvolden, K.A., and Magoon, L.B., 1990, Characterization of hydrocarbon gas within the stratigraphic interval of gas-hydrate stability on the North Slope of Alaska: Applied Geochemistry, v. 5, p. 279-287.
- Colvocoresses, A. P., 1991, Concept outline: development, processing, and utilization of civil satellite data for mapping and global change analysis: Photogrammetric Engineering and Remote Sensing, v. 57, no. 1, p. 49.
- Cronin, T.M., 1991a, Pliocene shallow water paleoceanography of the North Atlantic Ocean based on marine ostracodes: Quaternary Science Reviews, v. 10, n. 2/3, p. 175-188.
- Cronin, T.M., 1991b, Late Neogene marine Ostracoda from Tjornes, Iceland: Journal of Paleontology, v. 65, n. 5, p. 767-794 .
- Cronin, T.M., Bybell, L.M., Brouwers, E.M., Gibson, T.G., Margerum, R., and Poore, R.Z., 1991, Neogene biostratigraphy and paleoenvironments of Enewetak Atoll, central Pacific Ocean: Marine Micropaleontology, v. 18, p. 101-114.
- Cronin, T.M. and Dowsett, H.J., 1990, A quantitative micro-paleontologic method for shallow marine paleoclimatology--Application to Pliocene deposits of the western North Atlantic Ocean: Marine Micropaleontology, v. 16, p. 117-148.
- Cronin, T.M., and Dowsett, H.J., eds., 1991, Pliocene climates: Quaternary Science Reviews, v. 10, n. 2/3, p. 115-296.
- Cronin, T.M., and Ikeya, N., 1990, Tectonic events and climatic change--Opportunities for speciation in Cenozoic marine ostracodes, in Ross, R.M. and Allmon, W., eds., Causes of Evolution--A paleontological perspective: University of Chicago Press, p. 210-248.
- Cronin, T.M., and Schneider, C., 1990, Climatic and tectonic influences on speciation--Evidence from the paleontologic record: Trends in Ecology and Evolution, Special Issue on Biology and Paleobiology of Global Climate Change, v. 5, p. 275-279.

- Dowsett, H.J., and Cronin, T.M., 1990, High eustatic sea level during the middle Pliocene--Evidence from the southeastern U.S. Atlantic Coastal Plain: *Geology*, v. 18, p. 435-438.
- Dowsett, H.J., and Poore, R.Z., 1990, A new planktic foraminifer transfer function for estimates of Pliocene through Holocene sea surface temperatures: *Marine Micropaleontology*, v. 16, n. 1/2, p. 1-23.
- Dowsett, H.J., and Poore, R.Z., 1991, Pliocene sea-surface temperatures of the North Atlantic Ocean at 3.0 Ma: *Quaternary Science Reviews*, v. 10, n. 2/3, p. 189-204.
- Edwards, L.E., Mudie, P.J., and de Vernal, A., 1991, Pliocene paleoclimatic reconstruction using dinoflagellate cysts--Comparison of methods: *Quaternary Science Reviews*, v. 10, n. 2/3, p. 259-274.
- Ehlers, M., Greenlee, D., Smith, T., and Star, J., 1991, Integration of remote sensing and GIS: data and data access: *Photogrammetric Engineering and Remote Sensing*, v. 57, no. 6, p. 669-675.
- Foreman, M.G.G. and Walters, R.A., 1990. A finite-element tidal model for the southwest coast of Vancouver Island: *Atmosphere-Ocean*, v. 28, p. 261-287.
- Forester, R.M., 1991, Pliocene-climate history of the Western U.S. derived from lacustrine ostracodes: *Quaternary Science Reviews*, v. 10, n. 2/3, p. 133-146.
- Fyles, J.G., Marincovich, L., Jr., Matthews, J.V., Jr, and Barendregt, R., 1991, Unique mollusc find in the Beaufort Formation (Pliocene) on Meighen Island, Arctic Canada: *Geological Survey of Canada, Current Research, Part B*, 91-1B, p. 105-112.
- Gerlach, T.M., 1991a, Etna's greenhouse pump: *Nature*, v. 351, p. 352-353.
- Gerlach, T.M., 1991b, Comment on "Mid-ocean ridge popping rocks--Implications for degassing at ridge crests" by Sarda and Graham: *Earth and Planetary Science Letters*, v. 105, p. 566-567.
- Gladenkov, Y.B., Barinov, K.B., and Cronin, T.M., 1991, Stratigraphy and paleoceanography of Pliocene deposits of Kariginsky Island, Eastern Kamchatka, USSR: *Quaternary Science Reviews*, v. 10, n. 2/3, p. 239-245.
- Gloersen, P. and Campbell, W.J., 1991, Recent variations in Arctic and Antarctic sea-ice covers: *Nature*, v. 352, July 4, 1991,

p. 33-42.

- Graf, J.B., Webb, R.H., and Hereford, R., 1991, Relation of sediment load and flood-plain formation to climatic variability, Paria River drainage basin, Utah and Arizona: Bulletin, Geological Society of America, v. 103, p. 1405-1415.
- Harden, J.W., 1990, Soil development on stable landforms and implications for landscape studies: Geomorphology, v. 3, p. 391-398.
- Harden, J.W., Taylor, E.M., Hill, C., Mark, R.K., McFadden, L.D., Reheis, M.C., and Wells, S.G., 1991, Rates of soil development from four soil chronosequences in the southern Great Basin: Quaternary Research 35, p. 383-385.
- Harden, J.W., Taylor, E.M., McFadden, L.D. and Reheis, M.C., 1991, Calcic gypsic and siliceous soil chronosequences in arid and semiarid environments: Soil Science Society of America Special Publication No. 26, p. 1-16.
- Hay, L. E., McCabe, Jr., G. J., Wolock, D. M., and Ayers, M. A., 1991, Simulation of precipitation by weather-type analysis: Water Resources Research, v. 27, p. 493-501.
- Hinkley, T.K., 1991, Distribution of metals between particle and gaseous forms in a volcanic plume: Bulletin of Volcanology, v. 53, p. 395-400.
- Hooper, R.P., Christophersen, N., and Peters, N.E., 1990, Modeling streamwater chemistry as a mixture of soilwater end-members--an application to the Panola Mountain catchment, Georgia, USA: Journal of Hydrology, v. 116, p. 321-343.
- Hostetler, S., 1991, Simulation of lake ice and its effect on the late-pleistocene evaporation rate of Lake Lahontan: Climate Dynamics, v. 6, p. 43-48.
- Hostetler, S. and Bartlein, P.J., 1990, Modeling climatically determined lake evaporation with application to simulating lake-level variations of Harney-Malheur Lake, Oregon: Water Resources Research, v. 26, p. 2603-2612.
- Hostetler, S. and Benson, L.V., 1990. Paleoclimatic implications of the high stand of Lake Lahontan derived from models of evaporation and lake level: Climate Dynamics, v. 4, p. 207-217.
- Jenson, S.K., 1991, Applications of hydrologic information automatically extracted from digital elevation models: Hydrological Processes, v. 5, n. 1, p. 31-44.

- Jewell, P.W., and Stallard, R.F., 1991. Geochemistry and paleoceanographic setting of central Nevada bedded barites: *Journal of Geology*, v. 99, p. 151-170.
- Jones, D.S., MacFadden, B.J., Webb, S.D., Mueller, P.A., Hodell, D.A., and Cronin, T.M., 1991, Integrated geochronology of a classic Pliocene shell pit, Florida--Linking marine and terrestrial biochronologies: *Journal of Geology*, v. 99, n. 5, p. 637-648.
- Keller, M., Mitre, M.E., and Stallard, R.F., 1990, Consumption of atmospheric methane in soils of central Panama. Effects of Agricultural development: *Global Biogeochemical Cycles*, v. 4, p. 21-27.
- Kienitz, G.P., Milly, P.C.D., van Genuchten, M. Th., Rosbjerg, D., and Shuttleworth, W.J. (eds.), 1991, Hydrological interactions between Atmosphere, Soil and Vegetation: International Association for Hydrologic Sciences Pub. 204, 494 p.
- Kvenvolden, K.A., 1990, Gas hydrates of outer continental margins: *American Association of Petroleum Geologists Bulletin*, v. 74, n. 5, p. 698.
- Lauer, D., Estes, J., Jenson, J., and Greenlee, D., 1991, Institutional issues affecting the integration and use of remotely sensed data and geographic information systems: *Photogrammetric Engineering and Remote Sensing*, v. 57, n. 6, p. 647-654.
- Leavesley, G.H. and Stannard, L.G., 1990, A modular watershed-modeling system for use in mountainous regions: *Schweizer Ingenieur und Architekt*, v. 18, p. 380-383.
- Lichty, R.W. and Karlinger, M.R., 1990, Climate factor for small-basin flood frequency: *Water Resources Bulletin*, v. 26, p. 577-586.
- Lins, H.F., Hare, F.K., and Singh, K.P., 1990, Influence of the atmosphere, in, Wolman, M.G. and Riggs, H.C., eds., *Surface Water Hydrology, The Geology of North America*, v. O-1: Boulder, Geological Society of America, p. 11-53.
- Lins, H.F., Shiklomanov, I.A., and Stakhiv, E.Z., 1990, Hydrology and water resources, in Tegtart, W.J.McG., Sheldon, G.W., and Griffiths, D.C., eds., *Climate Change: The IPCC Impacts Assessment*. Canberra, Australian Government Publishing Service Press, p. 4.1-4.42.
- Loveland, T. R., Merchant, J. W., Ohlen, D. O., and Brown, J. F., 1991, Development of a land-cover characteristics data base for the conterminous U.S.: *Photogrammetric Engineering and*

Remote Sensing, v. 57, no. 11, p. 1453-1463.

- Lucchitta, B.K., Bowell, Jo Ann, Tessensohn, Franz, and Behrendt, J.C., 1991, North Victoria Land, Antarctica: Hybrid geologic, aeromagnetic, and Landsat-physiographic maps, in Thomson, M.R.A., Crame, J.A., and Thomson, J.W., eds., Geological Evolution of Antarctica: Cambridge University Press, p. 167-169.
- Lucchitta, B.K., Ferguson, H.M., Ferrigno, J.G., Schafer, F.J., and Williams, R.S., Jr., 1990, Antarctic glacier velocities from Landsat images: Antarctic Journal of the U.S., v. 24, n. 5, p. 106-107.
- Lucchitta, B.K., Ferrigno, J.G., Williams, R.S., Jr., 1991, Velocity measurements, in Thomas, R.H., Polar research from satellites: Joint Oceanographic Institute, Inc., Washington, D.C., p. 36, figs. 21-22.
- Ludwig, K.R., Szabo, B.J., Moore, J.G., and Simmons, K.R., 1991, Crustal subsidence rate off Hawaii determined from $^{234}\text{U}/^{238}\text{U}$ ages of drowned coral reefs: Geology, v. 19, p. 171-174.
- MacDonald, T.R., Ferrigno, J.G., Williams, R.S., Jr., and Lucchitta, B.K., 1990, Velocities of Antarctic outlet glaciers determined from sequential Landsat images: Antarctic Journal of the U.S., v. 24, p. 105-106.
- MacKinnon, D.J., Elder, D.F., Helm, P.J., Tuesink, M.F., and Nist, C.A., 1990, A method of evaluating effects of antecedent precipitation on dust storms at Yuma, Arizona: Journal of Climatic Change, v. 17, p. 331-360.
- Madole, R.F., 1991, Colorado Piedmont, in Wayne, W.J., ed., Chapter 10, Quaternary extraglacial geology of the northern Great Plains, in Morrison, R.B., ed., Quaternary nonglacial geology--Conterminous United States: Geological Society of America, The Geology of North America, v. K-2, p. 456-462.
- Maest, A.S., Crerar, D.A., Stallard, R.F., and Ryan, J.N., 1990, Metal and nutrient behavior in the Raritan estuary, New Jersey, U.S.A. The effect of multiple freshwater and industrial waste inputs: Chemical Geology, v. 81, p. 133-149.
- Marincovich, Louie, Jr., Brouwers, E.M., Hopkins, D.M., and McKenna, M.C., 1990, Late Mesozoic and Cenozoic paleogeographic and paleoclimatic history of the Arctic Ocean Basin, based on shallow-water marine faunas and terrestrial vertebrates, in Grantz, A., Johnson, L., and Sweeney, J. F., eds., The Arctic Ocean region: Geological Society of America, The Geology of North America: v. L, p. 403-426.

- Marincovich, Louie, Jr., 1991, Origin of the modern Gulf of Alaska cold-water molluscan fauna: Western Society of Malacologists Annual Report 23, p. 8-9.
- Marincovich, Louie, Jr., and Powell, C.L., 1991, Pliocene and Pleistocene mollusks in marine transgressions of western and northern Alaska: Western Society of Malacologists Annual Report 23, p. 10-14.
- Markewich, H.W., and Pavich, M.J., 1991, Soil chronosequence studies in temperate to subtropical, low-latitude, low-relief terrain, with data from the eastern United States, in Pavich, M.J., ed., Weathering and Soils, Geoderma Special Volume, v. 51, p. 213-239.
- Mayo, L.R. and March, R.S., 1990, Air temperature and precipitation at Wolverine Glacier, Alaska, Glacier growth in a warmer, wetter climate: Annals of Glaciology, v. 14, p. 191-194.
- Mayo, L.R., 1991, overview of Alaskan program--Special considerations regarding cold glaciers--Alaskan mass balance studies relocating oversnowed stakes, Alaskan experience and freezing of water in glaciers, in Ostrem, Gunnar and Brugman, Melinda (eds.), Glacier mass-balance measurements: A manual for field and office work: Norwegian Water Resources and Energy Administration and Environment Canada National Hydrology Institute, Science Report No. 4, p. 175-183.
- McCabe, G.J., and Ayers, M.A., 1991, Reply to a discussion by D.L. Verbyla of "Hydrologic effects of climate change in the Delaware River basin (by McCabe and Ayers, 1989)": Water Resources Bulletin, v. 26, p. 833-834.
- McCabe, G.J., and Wolock, D. M., 1991a, Detectability of the effects of a hypothetical temperature increase on the Thornthwaite moisture index: Journal of Hydrology, v. 125, p. 25-35.
- McCabe, G.J., and Wolock, D.M., 1991b, Effects of climatic change in the Delaware River basin on the Thornthwaite moisture index: Climate Change, v. 20, p. 143-153.
- McCabe, G. J., Wolock, D. M., Hay, L. E., and Ayers, M. A., 1990. Effects of climatic change on the Thornthwaite moisture index: Water Resources Bulletin, v. 26, p. 633-643.
- Meyer, C.E., Sarna-Wojcicki, A.M., Hillhouse, J.W., Woodward, M.J., Slate, J.L., and Sorg, D.H., 1991, Fission-track age (400,000 yr) of the Rockland Tephra, based on inclusion of zircon grains lacking fossil fission tracks: Quaternary Research, v. 35, p. 367-381.

- Milly, P.C.D., 1990, A refinement of the combination equations for evaporation: *Surveys in Geophysics*, v. 12, p. 145-154.
- Molnia, B. F., and Jones, J. E., 1990, Malaspina Glacier research holds clues to possible global change scenarios: *Park Science*, v. 10, no. 4, p. 3-4.
- Moss, M.E., 1991, Hydrologic implications of climate uncertainty in the western United States: *Managing Water Resources in the West Under Conditions of Climate Uncertainty: A Proceedings*, Washington, D.C., National Academy Press, p. 148-157.
- Muhs, D.R., Bush, C.A., Stewart, K.C. and Rowland, T.R., 1990, Geochemical evidence of Saharan dust parent material for soils developed on Quaternary limestones of Caribbean and western Atlantic islands: *Quaternary Research*, v. 33, p. 157-177.
- Muhs, D.R., Kelsey, H.M., Miller, G.H., Kennedy, G.L., Whelan, J.F., and McInelly, G.W., 1990, Age estimates and uplift rates for late Pleistocene marine terraces--Southern Oregon portion of the Cascadia forearc: *Journal of Geophysical Research*, v. 95, p. 6685-6698.
- Musick, H .B., and Gillette, D.A., 1990, Field evaluation of relationships between a vegetation structural parameter and sheltering against wind erosion: *Land Degradation and Rehabilitation*, v. 2, p. 87-94.
- Oldale, R.N., Williams, R.S., Jr. and Colman, S.M., 1990, Evidence against a late Wisconsinan ice sheet in the Gulf of Maine: *Quaternary Science Reviews*, v. 9, n. 1, p. 1-13.
- Oremland, R.S., 1990, Nitrogen fixation dynamics of two diazotrophic communities in Mono Lake, California: *Applied and Environmental Microbiology*, v. 56, p. 614-622.
- Orheim, Olav, and Lucchitta, B.K., 1990, Investigating climate change by digital analysis of blue-ice extent on satellite images of Antarctica: *Annals of Glaciology*, v. 14, p. 211-215.
- Pavich, M.J., ed., 1991, *Weathering and Soils: Geoderma*, V. 51, 299 p.
- Scatena, F.N., and Larsen, M.C., 1991, Physical Aspects of Hurricane Hugo in Puerto Rico: *Biotropica*, v. 23, n. 4A, p. 317-323.
- Seevers, P.M., F.G. Sadowski, and D.T. Lauer, 1990, An investigation of spectral change as influenced by irrigation and evapotranspiration volume estimation in western Nebraska: *Climatic Change* v. 17, p. 265-285.

- Shackleton, N.J., van Andel, T.H., Boyle, E.A., Jansen, E., Labeyrie, L., Leinen, M., McKenzie, J., Mayer, L., and Sundquist, E.T., 1990, Contributions from the oceanic record to the study of global change on three time scales - Report of Working Group I, Interlaken Workshop for Past Global Changes: Palaeogeography, Palaeoclimatology, Palaeoecology, v. 82, p. 5-37.
- Sirkin, L., Szabo, B.J., Padilla, G.A., Pedrin, S.A., and Diaz, E.R., 1990, Uranium-series ages of marine terraces, La Paz Peninsula, Baja, California Sur, Mexico: Coral Reefs, v. 9, p. 25-30.
- Stallard, R.F., Koehnken, L., and Johnsson, M.J., 1990, Weathering processes and the composition of inorganic material transported through the Orinoco River system, Venezuela and Colombia, *in* Weibezahn, F.H., Alvarez, H., Lewis, W.M., eds., El Rio Orinoco como Ecosistema [The Orinoco River as an Ecosystem]: Caracas, Venezuela, Impresos Rubel, p. 81-119.
- Stallard, R.F., Koehnken, L., and Johnsson, M.J., 1990, Weathering processes and the composition of inorganic material transported through the Orinoco River system, Venezuela and Columbia: Geoderma, v. 51, p. 133-165.
- Stannard, D.I. and Rosenberry, D.O., 1991, A comparison of short-term measurements of lake evaporation using eddy-correlation and energy-budget methods: Journal of Hydrology, v. 122, p. 15-22.
- Stockton, P.H., and Gillette, D.A., 1990, Field measurement of the sheltering effect of vegetation on erodible land surfaces: Land Degradation and Rehabilitation, v. 2, p. 77-85.
- Striegl, R.G., 1990. Transport of 14-carbon dioxide in unsaturated glacial and aeolian sediments, *in* Bassett, R.L. and Melchoir, D.C., eds., Chemical Modeling in Aqueous Systems II: American Chemical Society Symposium Series, No. 416, Chapter 15, p. 202-210.
- Striegl, R.G. and Armstrong, D.E., 1990, Carbon dioxide retention and carbon exchange on unsaturated quaternary sediments: Geochimica et Cosmochimica Acta, v. 54, p. 2277-2283.
- Sundquist, E.T., 1990a, Long-term aspects of future atmospheric CO₂ and sea-level changes, *in* Revelle, R., ed., Sea Level Change: Washington, National Research Council, p. 193-207.
- Sundquist, E.T., 1990b, Influence of deep-sea benthic processes on atmospheric CO₂: Philosophical Transactions of the Royal Society, A, v. 331, p. 155-165.

- Swetnam, T.R. and Betancourt, J.L., 1990, Fire-Southern Oscillation relations in the southwestern United States: *Science*, v. 24, p. 1017-1020.
- Szabo, B.J., 1990, Ages of travertine deposits in eastern Grand Canyon National Park, Arizona: *Quaternary Research*, v. 34, p. 26-32.
- Tangborn, W.V., Fountain, A.G., and Sikonia, W.D., 1990, Effect of altitude-area distribution on glacier mass balance: A comparison of North and South Klawatti Glaciers, Washington State, U.S.A.: *Annals of Glaciology*, v. 14, p. 278-282.
- Terhune, C.L., and Harden, J.W., 1991, Seasonal variations of soil carbon dioxide concentrations in coarse-grained desert soils of southern Nevada, U.S.A.: *Soil Science*, v. 151, n. 6, p. 417-429.
- Thompson, R.S., 1991, Pliocene environments and climates in the Western U.S.: *Quaternary Science Reviews*, v. 10, n. 2/3, p. 115-132.
- Turner, R.M., 1990, Long-term vegetation change at a fully protected Sonoran Desert site: *Ecology*, v. 71, p. 464-467.
- Vecchia, A.V. and Ballerini, R., 1991. Testing for periodic autocorrelations in seasonal time series data: *Biometrika*, v. 78, p. 53-63.
- Vidic, N., Pavich, M.J., and Lobnik, F., 1991, Statistical analyses of soil properties in Quaternary terrace sequence in the upper Sava River Valley, Slovenia, Yugoslavia, in Pavich, M.J., ed., *Weathering and Soils*, *Geoderma Special Volume*, v. 51, p. 189-212.
- Wardlaw, B.R., and Quinn, T.M., 1991, The record of Pliocene sea-level change at Enewetak Atoll: *Quaternary Science Reviews*, v. 10, n. 2/3, p. 247-258.
- White, D., Richmond, M., and Yarnal, B., 1991, Climate regionalization and rotation of principal components: *International Journal of Climatology*, v. 11, p. 1-25.
- Wiegand, C.L., Gerbermann, A.H., Gallo, K.P., Blad, B., and Dusek, D., 1990, Multisite analyses of spectral-biophysical data for corn: *Remote Sensing of Environment*, v. 33, p. 1-16.
- Williams, R.S., Jr., 1990a, Cross-cutting example--Sea level change, in *Our Changing Planet--The FY 1991 Research Plan*. The U.S. Global Change Research Program: A report by the Committee on Earth and Environmental Sciences, Federal Coordinating Council for Science, Engineering, and Technology,

Office of Science and Technology Policy, Executive Office of the President, October, p. 121-123.

Williams, R.S., Jr., 1990b, Solid earth processes, in Our Changing Planet--The FY 1991 U.S. Global Change Research Program: A report by the Committee on Earth Sciences to accompany the U.S. President's Fiscal Year 1991 Budget, Federal Coordinating Council for Science, Engineering, and Technology, Office of Science and Technology Policy, Executive Office of the President, p. 36-38.

Williams, R.S., Jr., ed., 1990, Solid earth processes, in Our Changing Planet--The FY 1991 Research Plan. The U.S. Global Change Program: A report by the Committee on Earth and Environmental Sciences, Federal Coordinating Council for Science, Engineering, and Technology, Office of Science and Technology Policy, Executive Office of the President, October, p. 94-103.

Williams, R.S., Jr., 1991, Landsat: The key space-based component of the U.S. Global Change Research Program for the 1990's, in Molnia, B.F., ed., Geological Society of America Forum, The future of U.S. civilian satellite remote sensing: GSA Today, v. 1, no. 3, p. 56 and 67.

Williams, R.S., Jr., and Ferrigno, J.G., 1991, Cold beauty: Rivers of ice: Earth, v. 1, n. 1, p. 42-49.

Williams, R.S., Jr., Hall, D.K., and Benson, C.S., 1991, Analysis of glacier facies using satellite techniques: Journal of Glaciology, v. 37, n. 125, p. 120-128.

Wolock, D. M. and Hornberger, G. M., 1991. Hydrological Effects of Changes in Atmospheric Carbon Dioxide levels: Journal of Forecasting, v. 10, p. 105-116.

Yan, L., Stallard, R.F., Key, R.M., and Crerar, D.A., 1990. The chemical behavior of trace metals and ²²⁶Rn during estuarine mixing in the Mullica River estuary, New Jersey, U.S.A. A comparison between field observations and equilibrium calculation: Chemical Geology, 85, 369-381.

GLOBAL CHANGE AND CLIMATE HISTORY PROGRAM
U.S. Geological Survey Reports
BIBLIOGRAPHY (90-91)

- Adam, D.P., Bradbury, J.P., and Rieck, H.J., 1990, Pliocene environmental changes in Tulalake, Siskiyou County, California, from 3 to 2 Ma [abs.], in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 3-5.
- Adam, D.P., Bradbury, J.P., Rieck, H.J. and Sarna-Wojcicki, A.M., 1990, Environmental changes in the Tule Lake basin, Siskiyou and Modoc Counties, California, from 3 to 2 million years before present: U.S. Geological Survey Bulletin 1933, 13 p.
- Adam, D.P., Dieffenbach, J.L., and McCormick, M., 1990, A working bibliography for the Pliocene: U.S. Geological Survey Open-File Report 90-81, 153 p.
- Adam, D.P., and Vagenas, G.L., 1990, Pollen data from a 3-m.y. core record from Tulalake, Siskiyou County, California: U.S. Geological Survey Open-File Report 90-65, 307 p.
- Barron, J.A., 1990, Cenozoic paleoceanography of the Southern Ocean--A summary, International workshop on Antarctic offshore acoustic stratigraphy (ANTOSTRAT) overview and extended abstracts, June 7-10, 1990: U.S. Geological Survey Open-File Report 90-309, p. 48-51.
- Barron, J.A., 1991, Pliocene paleoceanographic events in the North Pacific ocean [abs.], in Abstracts, Joint US/USSR Workshop on Pliocene paleoclimates, Moscow, April 20-27, 1990: U.S. Geological Survey Open-File Report 91-477, p. 12-13.
- Brouwers, E.M., 1990, Climatic significance of the ostracode fauna from the late Pliocene Kap Kobenhavn Formation, North Greenland, in Pliocene climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 7-8.
- Bybell, L.M. and Poore, R.Z., 1991, Calcareous nannofossil and planktic foraminifers from Enewetak Atoll, Marshall Islands, western Pacific Ocean: U.S. Geological Survey Professional paper 1513C, 21 p.
- Cayan, D.R., McLain, D.R., Nichols, W.D., and DiLeo-Stevens, J.S., 1991, Monthly climatic time series data for the Pacific Ocean and western Americas: U.S. Geological Survey Open-File Report 91-92, 380 p.
- Cronin, T.M., 1990, Pliocene marine climates of the western North Atlantic Ocean [abs.], in Pliocene climates--Scenario for global Warming: U.S. Geological Survey Open-File Report 90-

- Cronin, T.M., 1991, Pliocene climates of the western North Atlantic [abs.], in Abstracts, Joint US/USSR Workshop on Pliocene paleoclimates, Moscow, April 10-17, 1990: U.S. Geological Survey Open-File Report 91-447, p. 7.
- Cronin, T.M., Briggs, W.M., Jr., Brouwers, E.M., Whatley, R.C., Wood, A., Cotton, M.A., 1991, Modern Arctic ostracode database: U.S. Geological Survey Open-File Report, 91-385, 51 p.
- Czarnecki, J.B., 1990. Geohydrology and evapotranspiration at Franklin Lake Playa, Inyo County, California: U.S. Geological Survey Open-File Report 90-356, 96 p.
- De Cola, Lee, 1991, Multifractals in image processing and process imaging: U.S. Geological Survey Open-File Report 91-301 23 p.
- Dowsett, H.J., 1990, McMAP version 2.0 basemap generation for the Apple Macintosh--Documentation, tutorial, application disks: U.S. Geological Survey Open-File Report 90-452A, 26 p.
- Dowsett, H.J. and Poore, R.Z., 1991, Pliocene paleoceanography of North Atlantic Deep Sea Drilling Project Site 552--Application of planktic foraminifer transfer function GSF18 [abs.], in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 11-13.
- Dowsett, H.J. and Poore, R.Z., 1991, 3.0 ma sea-surface temperature estimates from the North Atlantic Ocean [abs.], in Abstracts, Joint US/USSR Workshop on Pliocene paleoclimates, Moscow, April 20-27, 1990: U.S. Geological Survey Open-File Report 91-477, p. 3.
- Edwards, L.E., 1990, Using dinocysts to calculate winter sea-surface temperatures, North Atlantic Ocean, in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 15-16.
- Edwards, L.E. and Andriele, V.A.S., 1990, Dinoflagellate-Cyst census data from the seabed samples of Wall and Others (1977) and Turon (1984): U.S. Geological Survey Open-File Report 90-613, 43 p.
- Ferrigno, J.G., 1991, Glaciers of Iran (G-2), in Williams, R.S., Jr., and Ferrigno, J.G., eds., Glaciers of the Middle East and Africa--Satellite Image Atlas of Glaciers of the World: U.S. Geological Survey Professional paper 1386-G, p. G31-G47.
- Foley, K.M. and Poore, R.Z., 1991, Planktic foraminifer census data from Northwind Ridge Core 5, Arctic Ocean: U.S. Geological

Survey Open-File Report 91-346, 6 p.

Fouch, T.D., Brouwers, E.M., McNeil, D.H., Marincovich, L., Jr., Bird, K.J., and Rieck, H.J., 1990, New information on the Nuwuk 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 [abs.], in Carter, L.M.H., ed., USGS Research on Energy Resources--1990, 6th V.E. McKelvey Forum on Mineral and Energy Resources, Program and Abstracts: U.S. Geological Survey Circular 1060, p. 30-31.

Fountain, A.G., 1991, Automatic system for measuring fluorometry data from multiple sources: Selected papers in the Hydrological Sciences, U.S. Geological Survey Water-Supply Paper 2340, 127 p.

Gardner, J.V., Sarna-Wojcicki, A.M., Adam, D.P. Dean, W.E., Bradbury, J.P. and Rieck, H.J. 1991, Report of a workshop on the correlation of marine and terrestrial records of climate changes in the Wester U.S.: U.S. Geological Survey Open-File Report 91-140, 48 p.

Gosnell, L.B., and Poore, R.Z., eds, 1990, Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, 43 p.

Harden, J.W., Slate, J.L., Lamothe, P., Chadwick, O. Pendall, E., and Gillespie, A., 1991, Soil formation on the Trail Canyon alluvial fan, Fish Lake Valley, Nevada: U.S. Geological Survey Open-File Report 91-291, 29 p.

Hudson, H.J., Halley, R.B., Joseph, A.J., Lidz, B.H. and Schroeder, D., 1991, Long-term thermograph records from the Upper Florida Keys: U.S. Geological Survey Open-File Report 91-344, 110 p.

Jenner, C.B. and Lins, H.F., 1991, Climatic atlas of the Delaware River Basin: U.S. Geological Survey Professional Paper 1392, 127 p.

Jospeh, A.J., Hudson, J.H., and Halley, R.B. 1991, Listing of coral cores and slabs at the United States Geological Survey Coastal Center: U.S. Geological Survey Open-File Report 91-45, 8 p.

Kaufman, D.S., Miller, G.H., Farmer, L.F., Carter, L.D. and Brigham-Grette, Julie, 1990, Strontium-isotopic dating of upper Cenozoic marine deposits, northwestern Alaska, in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 17-21.

Kelmelis, J. A., 1990, A Unified Federal Approach to Global Change Research: U.S. Geological Survey Yearbook, Fiscal Year 1989,

p 1-5.

- Kelmelis, J.A., 1990, Role of the U.S. Geological Survey in Global Change Research: U.S. Geological Survey Yearbook, Fiscal Year 1989, p. 6-9.
- Kvenvolden, K.A. and Collett, T.S., 1990, The global methane hydrate reservoir--Impact on petroleum exploration, in Carter, L.M.H., ed., USGS Research on Energy Resources--1990, 6th V.E. McKelvey Forum on Mineral and Energy Resources, Program and Abstracts: U.S. Geological Survey Circular 1060, p. 44-46.
- Ludwig, K.R., 1991, ISOPLOT--A plotting and regression program for radiogenic isotope data: U.S. Geological Survey Open-File Report 91-445, 41 p.
- Marincovich, L., Jr., 1990, Summary of marine Pliocene sites in southern and western Alaska: U.S. Geological Survey Open-File Report 90-82, 21 p.
- Marincovich, L., Jr., 1991, Northeastern Pacific and Arctic Ocean Pliocene marine mollusca--Paleoclimates of the Pliocene [abs.], in Abstracts, Joint US/USSR Workshop on Pliocene paleoclimates, Moscow, April 20-27, 1990: U.S. Geological Survey Open-File Report 91-477, p 32-34.
- Mullen, M.W. and Grantz, A., 1991, Bathymetric map of southern Northwind Ridge and vicinity, Arctic ocean: U.S. Geological Survey Open-File Report 91-136, 1 sheet.
- McCabe, G.J., 1990, A conceptual weather-type classification for the Philadelphia, Pennsylvania, area: U.S. Geological Survey Water-Resources Investigations Report 89-4183, 23 p.
- Parker, R.S., 1991, Developing an index of hydrologic drought for the Gunnison River Basin, Colorado: proceedings of the united States-people's Republic of China Bilateral Symposium on Droughts and Arid-Region hydrology, September 16-20, 1991, Tucson, Arizona, U.S. Geological Survey open-file report 91-244, p. 175-182.
- Pendall, E., Harden, J.W., and Trumbore, S., 1991, Pedogenic isotopic indicators of climate and carbon cycling in Fish Lake Valley, Nevada: U.S. Geological Survey Open-File Report 91-296, 18 p.
- Phillips, R.L., Grantz, A., and Mullen, M.W., 1990, Preliminary stratigraphy of piston cores from southeastern Northwind Ridge, Arctic Ocean: U.S. Geological Survey Open-File Report 90-51, 1 sheet.
- Phillips, R.L., Grantz, A., and Mullen, M.W., 1990, Preliminary

lithostratigraphy of piston cores from the Beaufort Sea continental slope off northeastern Alaska: U.S. Geological Survey Open-File Report 91-34, 2 sheets.

Poore, R.Z., and Dowsett, H.J., 1990, Potential of $^{87}\text{Sr}/^{86}\text{Sr}$ for dating Pliocene carbonates [abs.], in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 35-36.

Poore, R.Z., 1991, Pliocene planktic foraminifer census data from Deep Sea Drilling Project Hole 603C: U.S. Geological Survey Open-File Report 91-309, 7 p.

Pupacko, A., 1991, Preliminary investigation for characterization of drought and streamflow in the western Great Basin--distinguishing climate change from natural variability: in Kirby, W.H., and Tan, W.Y., compilers, Proceedings of the United States - People's Republic of China Bilateral Symposium on Droughts and Arid-Region Hydrology, September 16-20, 1991, Tucson, Arizona, U.S. Geological Survey Open File Report 91-244, p. 73-78.

Reheis, M.C., Sarna-Wojcicki, A.M., Burbank, D.M., and Meyer, C.E., 1991, The late Cenozoic section at Willow Wash, west-central California--A tephrochronologic Rosetta Stone, in Reheis, M.C. and others, 1991, Late Cenozoic stratigraphic and tectonics of Fish Lake Valley, Nevada and California: U.S. Geological Survey Open-File Report 91-290, p. 46-66.

Reheis, M.C., Slate, J.L., Sarna-Wojcicki, A.M. and Meyer, C.E., 1991, An early Pleistocene pluvial lake in Fish Lake Valley, California-Nevada--ringside resort for the eruption of the Bishop Tuff, in Reheis, M.C. and others, 1991, Late Cenozoic stratigraphic and tectonics of Fish Lake Valley, Nevada and California: U.S. Geological Survey Open-File Report 91-290, p. 67-93.

Sundquist, E.T., 1990, Pliocene atmospheric CO_2 : Some preliminary observations, in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 37-38.

Thompson, R.S., 1991, Pliocene environment of North America [abs.], in Abstracts, Joint US/USSR Workshop on Pliocene Paleoclimates, Moscow, April 20-27, 1990: U.S. Geological Survey Open-File Report 91-477, 45 p.

Thompson, R.S. Borisova, O.K. and Svetlitskaya, T., eds, 1991, Pliocene climates of the Northern Hemisphere -- Abstracts, Joint US/USSR Workshop on Pliocene paleoclimates, Moscow, April 20-27, 1990: U.S. Geological Survey Open-File Report

91-477, 45 p.

- Trabant, D.C., Krimmel, R.M. and Post, A., 1991, A preliminary forecast of the advance of Hubbard Glacier and its influence on Russell Fiord, Alaska: U.S. Geological Survey Water Resources investigations Report 90-4172, 34 p.
- U.S. Geological Survey, 1990b, Conterminous U.S. AVHRR Biweekly Composites, 5 CD-ROMS.
- U.S. Geological Survey, 1991a, Conterminous U.S. AVHRR Biweekly Composites, 6 CD-ROMS.
- U.S. Geological Survey, 1991b, Satellite image map of Antarctica; prepared by the U.S. Geological Survey in cooperation with the National Oceanic and Atmospheric Administration and the National Remote Sensing Center, England, with support from the National Science Foundation: Miscellaneous investigations Series Map I-2284, scale 1:5,000,000.
- Varnes, D.J. and Van Horn, Richard, 1991, Surficial geologic map and geologic sections of the Oak City area, Millard County, Utah: U.S. Geological Survey Open-File Report 91-433, 4 sheets.
- Watts, R. D., 1990, Geographic information contributes to studies of global change: United States Geological Survey Yearbook, Fiscal Year 1989, p. 63-64.
- Webb, R.H. and Betancourt, J.L, 1990, Climatic variability and flood frequency of the Santa Cruz River, Pima County, Arizona: U.S. Geological Survey Open-File Report 90-553, 69 p.
- Wiggs, L.B. and Poore, R.Z., 1991, Pliocene planktic foraminifer census data from Deep Sea Drilling Project Holes 502A, B, C: U.S. Geological Survey Open-File Report 91-325, 15 p.
- Williams, R.S., Jr. and Ferrigno, J.G. 1991, Satellite Image Atlas of Glaciers of the World, Chapter G: U.S. Geological Survey Professional paper 1386-G, 70 p.
- Wolfe, J.A., 1990, Estimate of Pliocene precipitation and temperature based on multivariate analysis of leaf physiognomy, in Pliocene Climates--Scenario for Global Warming: U.S. Geological Survey Open-File Report 90-64, p. 39-42.

GLOBAL CHANGE AND CLIMATE HISTORY PROGRAM
Abstracts and Non-Refereed Publications
BIBLIOGRAPHY (90-91)

- Adam, D.P., 1991, The palynological record of late Cenozoic climate change [abs.]: American Association of Stratigraphic Palynologists, 25th Annual Meeting, Program and Abstracts.
- Aleinikoff, J.N., Muhs, D.R. and Walter, Marianne, 1991, Lead isotopic evidence for the origin of eolian sands on the central Great Plains--Preliminary results [abs.]: Geological Society of America Abstracts with Programs, V. 23, n. 5, p. A108.
- Ayers, M.A., Wolock, D.M., McCabe, G.J, and Hay, L.E., 1990a, Simulated hydrologic effects of climatic change in the Delaware River basin: Proceedings, Symposium on International and Transboundary Water Resources Issues, American Water Resources Association, p. 587-594.
- Ayers, M.A., Wolock, D.M., McCabe, G.J, and Hay, L.E., 1990b, Simulated hydrologic effects of climatic change in the Delaware River basin: Aspects of Groundwater in New Jersey, Proceedings of the Seventh Annual meeting of the Geological Association of New Jersey, p. 01-08.
- Barron, J.A., 1991, Paleooceanographic and tectonic control on the Pliocene diatom record of the northeastern Pacific [abs.]: Abstract Volume, International Congress on Pacific Neogene Stratigraphy and IGCP Project 246, Shizuoka, Japan, October 6-10, 1991, p. 8.
- Barron, J.A., Larsen, B., and Baldauf, J.G., 1990, Extensive late Eocene and early Oligocene Antarctic glaciation and climatic fluctuations during the late Neogene--A synthesis of ODP Leg 119 [abs.]: Geological Society of America Abstracts with Programs, v. 22, no. 7, p. A171.
- Bliss, N. B., 1991, GIS technology benefits global change: GIS World, v. 4., no. 9, p. 55-58.
- Blum, A.E., Hochella, M.F., White, A.F., and Harden, J.W., 1991, A comparison between models of mineral dissolution and growth kinetics and morphologic field evidence of weathering [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A259.
- Branson, M.D., Hay, L.E., Leavesly, G.H., and Grant, L.O., 1991, Modification of the RHEA-CSU orographic precipitation model for use in the Gunnison River basin [abs.]: EOS, Transactions, American Geophysical Union,

v. 72, n. 44, p. 180.

- Breed, C.S., and McCauley, J.F., 1991, Climatic environment and modern aeolian processes in Arizona (USA) deserts [abs.]: Geological Society (London) Conference on Dynamics and Environmental Context of Aeolian Sedimentary Systems Abstracts, p. 1.
- Carter, L.D., 1990, Eolian sediments in arctic Alaska as sources of paleoenvironmental data [abs.]: Abstracts, International Conference on the Role of Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 176.
- Carter, L.D., and Whelan, J.F., 1991, Isotopic evidence for restricted Arctic sea ice during a late Pleistocene warm period--implications for sea ice during future climatic warming at high latitudes [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A237.
- Callender, E., and Shanks, W.C., III, 1991, Origin of hydrothermal vent fluids in Lake Baikal, southeastern Siberia [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 174.
- Clow, G.D., 1990, Temporal resolution of surface-temperature histories inferred from borehole temperature measurements in ice sheets [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 43, p. 1603.
- Clow, G.D. and Lachenbruch, A.H., 1990, Inversion of borehole temperature data for recent climatic changes with examples from the Alaskan Arctic [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 8.
- Coates, A.G., Jackson, J.B.C., Collins, L.C., Cronin, T.M., Dowsett, H.J., Bybell, L. M. Jung, P., and Obando, J.A., 1990, Closure of the Isthmus, Panama--The near shore record in Costa Rica and Panama [abs.]: Geological Society of America Abstracts with Programs, v. 22, n. 7, p. A365.
- Collett, T.S., 1990, Permafrost-associated gas hydrates on northern Alaska--Possible source of atmospheric methane [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 25.

- Collet, T.S., 1991, Gas hydrate potential in the Prudhoe Bay area [abs.]: Proceedings of the American Institute of Chemical Engineers, April 7-11, Houston, p. T-18.
- Colman, S.M., and Jones, G.A., 1991, AMS radiocarbon dating of paleoclimatic records from large lakes--Lake Michigan, USA and Lake Baikal, USSR [abs.]: Geological Society of America Abstracts with Programs, v. 23. n. 5., p. 350.
- Colman, S.M. Karabanov, E.D., and Bardardinov, A., 1991, Preliminary results of high-resolution seismic-reflection surveys of Lake Baikal, Siberia: EOS, Transactions, American Geophysical union, v. 72, n. 17, p. 306.
- Coplen, T.B, Winograd, I.J., Ludwig, K.R., Szabo, B.J., Landwehr, J.M., Kolesar, P.T., and Hoffman, R.J., 1990, Continuous 500,000-year climatic record from Great Basin vein calcite: 2--The $\delta^{13}\text{C}$ time series [abs.]: Geological Society of America Abstracts with Programs, v. 22, n. 7, p. A209.
- Cotton, M.A., and Dowsett, H.J., 1990, Neogene planktonic foraminiferal stratigraphy from the Pacific and Caribbean sides of the lower central American Isthmus: Geological Society of America Abstracts with Programs, v.22, n. 7, p. A200.
- Cotton, M.A. and Dowsett, H.J., 1991, Quantitative environmental estimates from the Pliocene of the western Caribbean based on analyses of planktic foraminifers from Panama [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. 336.
- Cronin, T.M., 1990, Quantitative reconstruction of North Atlantic Pliocene Paleooceanography using marine ostracoda: EOS, Transactions, American Geophysical Union, v. 71, n. 43, p. 539.
- Cronin, T.M., and Brouwers, E.M., 1990, Late Neogene arctic climate history based on marine ostracoda: EOS, Transactions, American Geophysical Union, v.1, n. 43, p. 1381-1382.
- Cronin, T.M., Brouwers, E.M., Whatley, R.C., Briggs, W.M. Jr., and Wood, A., 1991, Pliocene paleoceanography of the Arctic ocean based on marine ostracodes [abs.]: International Symposium on Ostracoda, Warrnambool, Australia, July 1991.
- Cronin, T.M. and Einarsson, Th., 1990, Plio-Pleistocene marine ostracoda from Tjornes, Iceland--Paleoclimatic and Paleobiogeographical Implications [abs.]: Geological Society of America Abstracts with Programs, v. 22, n. 7, p. 175.

- Cronin, T.M., and Ikeya, N., 1991a, Pliocene paleoceanography of the North Pacific Ocean using Ostracodes--Application of the modern analog method [abs.]: Fifth International Congress on Pacific Neogene Stratigraphy and IGCP project 246, Shizuoka, Japan, Oct. 1991, p. 16.
- Cronin, T.M. and Ikeya, N. 1991b, Application of ostracodes to Neogene paleoclimates of the North Pacific [abs.]: Paleontological Society of Japan, Chiba, Japan, June 1991, p. 63.
- De Cola, L., 1991, Fractal analysis of environmental data, with applications to mapping regional and global change [abs.]: AGU/MSA Spring meeting, Program and Abstracts, Supplement, v. 72, no. 17, p. 59.
- De Cola, L., and Watts, R. D., 1990, Global vegetation change in complex topography: A Colorado prototype study [abs.], Proceedings, GIS/LIS '90, American Society for Photogrammetry and Remote Sensing, 1990, v. 2, p. 772.
- Denner, J.C., and Shanley, J.B., 1991, Aeration Systems and Winter Streamflow Measurements at Sleepers River, Danville Vermont: proceedings of the Eastern Snow Conference, 48th Annual Meeting, Guelph, Ontario, June 7-8, 1991, p. 233-243.
- Dettinger, M.D., 1991, A 40-winter chronology of 700-millibar atmospheric circulation patterns associated with warm-wet and cool-wet weather in the Sierra Nevada, California [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 156.
- Dowsett, H.J., 1990, 3.0 Ma sea-surface temperature estimates from the north Atlantic Ocean--Implications for Pliocene paleoclimatology [abs.]: EOS, Transactions, American Geophysical Union, v. 71, n. 43, p. 1382.
- Dowsett H.J., and Loubere, P., 1990, High-resolution Late Pliocene sea surface temperature record from Northeastern Atlantic DSDP Site 548 [abs.]: EOS, Transactions, American Geophysical Union, v. 71, n. 43, p. 1382.
- Dowsett, H.J., Poore, R.Z. Cronin, T.M., and Thompson, R.S., 1991, Pliocene surface temperature estimates from the Northern Hemisphere [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 268.
- Eidenshink, J. C., Burgan, R. E., and Haas, R. H., 1991, Monitoring fire fuels condition by using time-series composites of Advanced Very High Resolution Radiometer data [abs.]: Proceedings, Resource Technology 90, Second International Symposium on Advanced Technology in Natural Resource

Management, American Society for Photogrammetry and Remote Sensing, p. 68-82.

Ferrigno, J.G., Williams, R.S., Jr., Lucchitta, B.K. and Molnia, B.F., 1990, Recent changes in the coastal regions of Antarctica documented by Landsat imagery [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 24.

Ferrigno, J.G., Molnia, B.F., Lucchitta, B.K. and Williams, R.S., Jr., 1991 satellite determination of ice front changes in Antarctica [abs.]: Abstracts, Sixth International Symposium on Antarctic Earth Sciences, Sept. 9-13, National Institute of Polar Research, Tokyo, p. 143.

Foos, A.M., and Muhs, D.R., 1991, Uranium-series age of an oolitic-peloidal eolianite, San Salvador Island, Bahamas--New Evidence for a high stand of sea at 200-225 ka [abs.]: Geological Society of America Abstracts with Programs, v. 23., n. 1, p. 31.

Gerlach, T.M., 1991a, Present-day carbon dioxide emissions from volcanoes [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 249, 254-255.

Gerlach, T.M., 1991b, O₂ fugacity of erupting Kilauea basalt [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 558.

Gerlach, T.M., Hinkley, T.K., Briggs, P., and Stokes, J.B., 1991 Fumarole gases of Halemaumau pit crater and summit magma chamber degassing models for Kilauea volcano [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 562.

Grantz, A., 1990, Preliminary Results and logistic implications of a geologic and geophysical icebreaker cruise to the Northwind Ridge, Arctic Ocean Basin [abs.]: Arctic Research--Advances and prospects: Proceedings of conference of Arctic and Nordic countries on coordination of research in the Arctic, Leningrad, December 12-15, 1988, Moscow, "Nauka," p. 343-345.

Gray, S.C., and Hein, J.R. 1991, Holocene reef growth and sea-level history from the Cook Islands [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A459.

Gray, S.C. Williams, R.W., Hein, J.R., and Gill, J.B., 1991, ²³¹Pa and ²³⁰Th ages of corals from the Cook Islands by mass spectrometry--The search for concordance [abs.]: EOS,

- Transactions, American Geophysical Union, v. 72, n. 17, p. 151.
- Halley, R.B., Muhs, D.R., Shinn, E.A., Dill, R.F., and Kindinger, J.L., 1991, A +1.5m reef terrace in the southern Exuma Islands, Bahamas [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 1, p. 40.
- Hamilton, T.D., 1991, The last interglaciation and the Old Crow tephra--Data from 10 Alaskan sites [abs.]: 21st Arctic Workshop, program and Abstracts, University of Alaska Quaternary Center, Fairbanks, p. 68-69.
- Hamilton, T.D., Westgate, J.A., and Beget, J.E., 1991, The Old Crow tephra--A stratigraphic marker for the last interglaciation in Alaska and the Yukon Territory? [abs.]: Geological Society of America Abstracts with Programs, v.23, n. 5, p. A 318.
- Harden, J.W., Blum, A.E., Bullen, T., Peterson, M., White, A., 1991, Empirically derived rates of mineral transformations from field studies of soils [abs.]: Geological Society of America Abstracts with Programs, v. 23, m. 5, p. A318.
- Harden, J.W., Mark, R., Showalter, P., Sundquist, E., and Stallard, R., 1991, Soil carbon dynamics in response to global deglaciation [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 172.
- Hay, L.E., Branson, M.D., and Leavesley, G.H., 1991, The effects of scale on precipitation estimates from an orographic precipitation model [abs.], EOS, Transaction, American Geophysical Union, v. 72, n. 44, p. 186.
- Hearn, P.P., Jr., Colman, S.M., Karabanov, E.B., and Williams, D.F., 1991, Lake Baikal, southeastern Siberia--Prospects for paleoclimatic research [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 306.
- Hearn, P.P. Jr., Karabanov, E.B., Colman, S.M., Williams, D.F., Khakhaev, B.N., and King, J.W., 1991, Joint US-USSR paleoclimatic research on Lake Baikal, southeastern Siberia [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A238.
- Heinrichs, T.A., Mayo, L.R., Echelmeyer, K.E., and Harrison, W.D., 1991, Black Rapids Glacier, Alaska--Unexpected behavior during the quiescent phase of a surge-type glacier [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44 (Supplement), p. 158.
- Hinkley, T.K., 1991, Fractionation of metals between melt and vapor at Kilauea, Mearpi, and Etna--Time variation and possible

relation to magma evolution [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 558.

Hinkley, T.K., Fitzpatrick, J.J., Landis, G.P., Rye, R.O., and Holdsworth, G., 1991, High-resolution paleoclimate reconstruction from Alaskan ice-core records [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A352.

Hooper, R.P. and Christopersen, N., 1990, the mathematical relation between end member mixing analysis and principal component analysis [abs.]: EOS, Transactions, American Geophysical Union, v. 71, p. 1317.

Hooper, R.P., Christopersen, N., and Peters, N.E., 1990, A critical analysis of the end-member mixing concept as applied to streamwater chemistry [abs.]: International Conference on Acidic Deposition, its Nature and Impacts Conference Abstracts, Glasgow, p. 247.

Huntington, T.G., Johnson, A.H., Miller, E.K., 1990, Soil solution chemistry and condition of red spruce in a montaine Spodosol: Agronomy Abstracts, Appendix 2, p. 7.

Izett, G.A., and Obradovich, J.D., 1991, Dating of the Matuyama-Brunhes boundary based on ^{40}Ar - ^{39}Ar ages of the Bishop Tuff and Cerro San Luis Rhyolite [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5. p. A106.

Jancaitis, J. R., Watts, R. D., and Van Driel, Nick, 1990, The USGS global change land characterization program [abs.]: Proceedings, American Congress on Surveying and Mapping and American Society for Photogrammetry and Remote Sensing Fall Convention, 1990, p. A-16.

Jenson, S.K., 1991a, Hydrologic information derived from a new North American digital elevation dataset [abs.]: Proceedings, American Geophysical Union Fall Meeting, San Francisco, California, December 9-13, 1991, p. 161.

Jenson, S. K., 1991b, Scale generalization of digital topographic data for process model parameterization [abs.]: Proceedings, First International Conference/Workshop on Integrating Geographic Information Systems and Environmental Modeling, Santa Barbara, National Center for Geographic Information and Analysis.

Jones, J. E., and Molnia, B. F., 1991, Radar mapping of Malaspina Glacier, Alaska, with applications for global change investigations [abs.]: in Abstracts, International Conference on the Role of the Polar Regions in Global Change;

Geophysical institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, v. II, p. 524.

Katul, G.G., Parlange, M.B., and Milly, P.C.D., 1991, Field investigation of water and energy exchange by use of a coupled land-atmosphere model: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 149.

Kaufman, D.S., Miller, G.H., Farmer, L.F., Carter, L.D. and Brigham-Grette, Julie, 1990, Strontium-isotopic dating of upper Cenozoic marine deposits, northwestern Alaska [abs.]: American Association of Petroleum Geologists Bulletin, v. 74, n. 5, p. 692.

Kelly, G. and Hood, J., 1991, AVHRR conterminous United States reference data set: Proceedings, American Congress on Surveying and mapping and American Society for Photogrammetry and Remote Sensing, Annual Convention, Baltimore, 1991, v. 3, p. 232-239.

Kelmelis, J.A., 1990, The U.S. Geological Survey Global Change Research Program: in Image Processing and Remote Sensing, Technical papers of the 1990 American Congress on Surveying and mapping and American Society of photogrammetry and Remote Sensing, v. 4, p. 218-227.

Kelmelis, J.A. and Watts, R., 1991, Terrestrial Process Modeling, A Challenge for Cartographers: Proceedings, American Congress on Surveying and Mapping and American Society for Photogrammetry and Remote Sensing, v. 2, p. 141-149.

Koteff, C. and Goldsmith, R., 1991, Abrupt late glacial sea-level changes in coastal southeastern New England [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A106-A107.

Kotra, R.K., 1991, Molecular geochemistry of Lake Baikal sediment cores--Potential for deriving paleoclimatic and paleolimnologic information [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 307.

Kvenvolden, K.A., 1990a, Arctic gas hydrates as a source of methane in global change [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 211.

Kvenvolden, K.A., 1990b, Estimate of current methane release from gas hydrates [abs.]: Geological Society of America Abstracts with Programs, v. 22, n. 7, p. A195.

- Kvenvolden, K.A. and Collett, T.S., 1991, Permafrost and gas hydrates as sources of methane at high latitudes [abs.]: 10th International Symposium on Environmental Biogeochemistry, San Francisco, August 1991, p. 22.
- Kvenvolden, K.A., Collett, T.S. and Williams, R.S., Jr., 1991, Methane in permafrost ice near Fairbanks, Alaska [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 67.
- Kvenvolden, K.A. and Kayen, R.E., 1991, Gas Hydrates as a geologic hazard in submarine environments [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 2, p. 43.
- Kvenvolden, K.A., Lorenson, T.D. and Collett, T.C., 1991, Arctic shelf gas hydrate as a possible source of methane [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A238.
- Lachenbruch, A.H., 1990, Contemporary climate change and temperatures in the solid earth [abs.]: EOS, Transactions, American Geophysical Union, v. 71, n. 43, p. 1596.
- Landwehr, J.M. and Slack, J.R., 1990, HCDN (Hydro-Climatic Data Network): A U.S. Geological survey Discharge Data Set for Climatological Impact Analysis, Preprints of Symposium on Global Change Systems, Special Sessions on Climate Variations and Hydrology, Anaheim, California, February 5-9, 1990, American meteorological Society, Boston, Mass., 192 p.
- Landwehr, J.M., Szabo, B.J., Ludwig, K.R., Coplen, T.B., and Winograd, I.J., 1990, Continuous 500,000-year climatic record from Great Basin vein calcite: 3--Stochastic analysis of $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ time series [abs.]: Geological Society of America Abstracts with Programs, v. 22, n. 7, p. A209.
- Larsen, M.C., 1991, Mass movement disturbance and denudation in a humid-tropical montaine forest, Puerto Rico: Geological Society of America, Annual Meeting, Abstracts with Programs, v. 23, n. 5 p. A254.
- Leavesley, G.H., Branson, M.D., and Hay, L.E., 1991, Coup[led orographic-precipitation and disturbed-parameter hydrologic models for investigating the precipitation and distributed-parameter hydrologic models for investigating the effects of climate change in mountainous regions [abs.]: EOS, Transactions, American Geophysical Union, v. 42, n. 44, p. 180.
- Leventhal, J.S., 1991, Global climate change--negative feedback between methane production from estuarine wetlands and sea level rise [abs.]: EOS, Transactions, American Geophysical

Union, v. 72, n. 44, p. 109.

- Leventhal, J.S., Jackson, L.L., Smith, K.S., Balistrieri, L.S. and Walton-Day, K., 1991, Biogeochemistry of carbon and related elements in coastal wetlands as indicators of global change [abs.]: Coastal Wetland Ecology and Management Symposium, December 4-7, 1991, New Orleans.
- Lilly, M. and Fitzpatrick, J., 1991, Direct observation of grain-boundary impurities in ice by cryogenic scanning electron microscopy and energy-dispersive x-ray analysis [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 163.
- Lucchitta, B.K., Ferrigno, J.G., McDonald, T.R., and Williams, R.S., Jr., 1990, The velocity of Antarctic outlet glaciers [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 153.
- Lucchitta, B.K., Ferrigno, J.G., and Williams, R.S., Jr., 1990, Monitoring the dynamics of the Antarctic coastline with Landsat images [abs.]: International Symposium on Glaciers-Ocean Atmosphere Interactions, Sept. 24-29, Leningrad, p. 123-124.
- Ludwig, K.R., Muhs, D.R., Simmons, K.R., Szabo, B.J., and Moore, J.G., 1990, Sr-isotopic variation during the Quaternary--The record from glacial and interglacial marine terraces [abs.]: American Association of Petroleum Geologists, Annual Meeting, p. 128.
- Ludwig, K.R., Simmons, K.R., Szabo, B.J., Riggs, A.C., and Hoffman, R.J., 1990a, High-precision mass-spectrometric ^{230}Th - ^{234}U - ^{238}U dating across a calcite vein with continuous growth from 570 ka to 60 ka, Devil's Hole, Nevada, U.S.A. [abs.]: Geological Society of Australia Abstracts N. 27, 7th International Conference on Geochronology, Cosmochronology, and Isotope Geology, p. 61.
- Ludwig, K.R., Simmons, K.R., Szabo, B.J., Riggs, A.C., and Hoffman, R.J., 1990b, Mass-Spectrometric ^{230}Th - ^{234}U - ^{238}U dating of the Devil's Hole calcite vein--A precise record of continuous growth from 566 ka to 60 ka [abs.]: Geological Society of America Abstracts with Programs, v. 22, n. 7, p. A310.
- Marincovich, Louie, Jr., 1991a, Late Cenozoic evolution and development of the North Pacific molluscan fauna [abs.]: American Malacological Union and Western Society of Malacologists, June 30-July 5, 1991, Berkeley, California, p

- Marincovich, Louie, Jr., 1991b, Molluscan even horizons and their use in regional correlation, Neogene, North Pacific [abs.]: IGCP Project 246 meeting, Shizuoka, Japan, October 6-10, 1991, p. 75.
- McCabe, G.J., 1990, Book Review of Physical Geography, by Ralph C. Scott: The Pennsylvania Geographer, v. 28, n. 1, p. 51-52.
- McCabe, G.J., Hay, L.E., Wolock, D.M., and Ayers, M.A., 1990, A weather-type model of temperature and precipitation under doubled-CO2 conditions [abs.]: 1990 Annual Meeting Abstracts, Association of American Geographers, Toronto, Canada, p. 158.
- McCabe, G.J., Hay, L.E., Wolock, D.M., and Ayers, M.A., 1991, Use of weather-type analysis to desegregate general circulation model predictions [abs.]: 1991 Annual Meeting Abstracts, Association of American Geographers, Miami, Florida, p. 128.
- McCabe, G.J., Wolock, D.M., Tasker, G.D., and Ayers, M.A., 1991, Uncertainty in climatic change and drought: proceedings, American Society of Civil Engineers, Hydraulics Engineering 1991, p. 1-6.
- Millard, H.T., Jr., Muhs, D.R., and Maat, P.B., 1991, Variations in the concentrations of uranium, thorium, and potassium in eolian and fluvial sand along the valley of the South Platte River, Colorado [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A285.
- Milly, P.C.D., 1990, Evaporation and runoff from large land areas: EOS, Transactions, American Geophysical Union, v. 72, n. 3.
- Milly, P.C.D., 1991a, Some current Themes in physical hydrology of the land-Atmosphere interface, in Kientz, G., Milly, P.C.D., Van Genuchten, M. Th., Rosbjerg, D. and Shuttleworth, W.J., eds, Hydrological interactions Between Atmosphere, Soil and Vegetation: Proceedings of the Vienna Symposium, August 1991, International Association Hydrological Science Publication N. 204, p. 3-10.
- Milly, P.C.D., 1991b, Sensitivity of climate to continental evaporation: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 148.
- Milly, P.C.D., 1991c, The North American water balance of a climate model: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 148,
- Molnia, B.F. and Ferrigno, J.G., 1991, Satellite imagery available for the study of glacial and geological processes in

- Antarctica [abs.]: Abstracts, Sixth International Symposium on Antarctic Earth Sciences, Sept. 9-13, 1991, National Institute of Polar Research, Tokyo, p. 416.
- Moore, I.D., Turner, A.K., Wilson, J.P., Jenson, S.K., and Band, L.E., 1991, GIS and land surface-subsurface process modeling: First International Conference/Workshop on Integrating Geographic Information Systems and Environmental Modeling, Boulder, Colorado, September 15-19, 1991, 51 p.
- Muhs, D.R., 1991, The potential response of Great Plains eolian sands to greenhouse warming and precipitation reduction [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A285.
- Muhs, D.R. and Szabo, B.J., 1991, new uranium-series ages of the Waimanalo limestone, Oahu, Hawaii, and paleoclimatic implications for the last interglacial period [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A239.
- Oleson, L. R., Doescher, S. W., and Holm, T. M., 1991, Image browse in the Global Land Information System: Proceedings, American Congress on Surveying and Mapping and American Society for Photogrammetry and Remote Sensing, Annual Convention, Baltimore, 1991, v. 3, p. 294-301.
- Orem, W.H., and Lerch, H.E., 1991, Lignin oxidation products in sediments of Lake Baikal--Indicators of climate-induced changes in allochthonous organic matter [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 306.
- Pendall, E., Harden, J.W., Trumbore, S., Gillespie, A., and Slate, J., 1991, Pedogenic isotopic indicators of climate and carbon cycling in Fish Lake Valley, Nevada [abs.]: American Geophysical Union Chapman Conference on Continental Isotopic Indicators of Climate, Program with Abstracts, June 10-14, Jackson Hole, Wyoming.
- Phillips, R.L., Grantz, A., Mullen, M.W., Chase, T. and Young, J., 1990, Preliminary stratigraphy and sediment processes on southeastern Northwind Ridge, Arctic Ocean [abs.]: 13th International Sedimentological Congress, Nottingham, England, p. 176.
- Poore, R.Z. and Gosnell, L.B., 1990, Quantitative planktic foraminifer record from Caribbean DSDP Site 502--3 to 2 Ma [abs.]: EOS, Transactions, American Geophysical Union, v. 71, n. 43, p. 1383.
- Poore, R.Z., Dowsett, H.J., Cronin, T.M. and Thompson, R.S., 1991,

Pliocene climate reconstructions--Earth system response to past global warming [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. 336.

Quirk, B. K., and Thompson, R. J., 1991, Early-EOS activities at the Land Processes Distributed Active Archive Center: Proceedings, American Congress on Surveying and Mapping and American Society for Photogrammetry and Remote Sensing, Annual Convention, Baltimore, 1991, v. 3, p. 339-351.

Ross, R.M., Cronin, T.M. Gibson, T.G., Bybell, L.M. and Poore, R.Z., 1990, The Pliocene sea level record from Enewetak Atoll, Marshall Islands [abs.]: EOS, Transactions, American Geophysical Union, v. 71, n. 17, p. 539.

Sadowski, F. G., and Watkins, A. W., 1991, Development of land data sets for studies of global climate change: Proceedings, American Congress on Surveying and Mapping and American Society for Photogrammetry and Remote Sensing, Annual Convention, Baltimore, 1991, v. 3, p. 381-388.

Sarna-Wojcicki, A.M., 1991, Dispersal and preservation of tephra layers on land and in the oceans--Implications for correlation and paleoclimatic studies [abs.]: International Union for Quaternary Research, XIII International Congress, Beijing, p. 315.

Seevers, P.M., 1990, Evapotranspiration volume estimates with the use of a normalized difference vegetation index transformation of satellite data [abs.]: Proceedings, U.S. Army Corps of Engineers Seventh Remote Sensing Symposium, Portland, Oregon, May 7-9, 1990, p. 116-137.

Seevers, P.M. and Flexner, N.M., 1991, A comparison of methods for estimating evapotranspiration using standard water-budget model and remotely sensed data computations [abs.]: Proceedings, Fourth Tennessee Water Resources Symposium, Knoxville, Tennessee, September 24-26, 1991, p.114.

Shanks, W.C., III, Seal, R.R., II, and Hears, P.P., Jr., 1991, Stable isotope studies of pore waters and diatoms--Paleolimnology of Lake Baikal [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 306.

Shanley, J.B., Sundquist, E.T., and Denner, J.C., 1991, Water Energy, and Biogeochemical budgets at Sleepers River, Danville, Vermont: A Research Plan: proceedings of the Eastern Snow Conference, 48th Annual Meeting, Guelph, ontario, june 7-8, 1991, p. 81-90.

Shasby, M.B., Binnian, E.F., 1991, Baseline studies for monitoring global climate change in the arctic environment: A remote

- sensing-spatial data base approach [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change; Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p.
- Spiker, E.C. and Bates, A.L., 1991, Sulfur isotope geochemistry of sediments from Lake Baikal, southeastern Siberia [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 307.
- Steyaert, L. T., 1990, Application of integrated spatial and multitemporal data analysis techniques for global change research [abs.]: Proceedings, American Congress on Surveying and Mapping and American Society for Photogrammetry and Remote Sensing, Annual Convention, Denver, 1990, v. 4, p. 378.
- Steyaert, L. T., 1991, Global change opportunities for GIS: a panel discussion: Proceedings, GIS/LIS 91, American Society for Photogrammetry and Remote Sensing, Atlanta, Georgia, 1991, v. 1, p. 128-129.
- Steyaert, L. T., 1991, Overview of environmental systems process modeling: Proceedings, First International Conference/Workshop on Integrating Geographic Information Systems and Environmental Modeling Boulder, Colorado, 1991.
- Stokes, S.A., Breed, C.S., and Elder, D.F., 1991, Holocene maintenance of Pleistocene sand dunes in northeastern Arizona-climatic implications of quartz optial dating [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A354.
- Strigel, R.G., and Witherbee, L.J., 1990, Seasonal variation in the consumption of atmospheric methane by unsaturated soils in the Southern Rocky Mountains: EOS, Transactions, American Geophysical Union, v. 71, n. 43, p. 1246.
- Sturdevant, J.A., Eidenshink, J.C., and Loveland, T.R., 1991, Organizations challenged by global database development: GIS World, v. 4, n. 9, p. 73-79.
- Sutton, A.J., McGee, K.A., Gerlach, T.M., Stokes, J.B. and Cozzens, R.F., 1991, A prototype system of continuous on-site monitoring of fumarole gas and condensate, with field testing at Kilauea, Hawaii [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 565.
- Szabo, B.J., Haynes, C.V., Jr., Maxwell, T.A., and Bush, C.A., 1991, Uranium-series and radiocarbon dates for lacustrine deposits of the eastern Sahara [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A239.

- Thompson, R. J., 1991, A Distributed Active Archive Center for Earth Observing System land processes data: Proceedings, 29th Aerospace Sciences Meeting, Reno, 1991, Paper No. AIAA 91-0153.
- Thompson, R.S., 1990a, Late Pleistocene environmental and climatic changes in the great Basin and Southwestern Deserts [abs.]: Geological Society of America Abstracts with Programs, Rocky Mt. Section, Annual Meeting, Jackson Hole, Wyoming, May 1990, p. 48.
- Thompson, R.S., 1990b, Elevational gradients and climatic changes, southwestern United States [abs.]: Paleoecology Section, Ecological Society of America, Ecology, V. 71, p. 34.
- Thompson, R.S., 1991, Late Quaternary paleoclimatic variations in the deserts of western North America [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A283.
- Thompson, R.S., and Bartlein, P.J., 1991, The reconstruction of arid climates from biotic evidence in the Western United States [abs.]: Ecological Society of America, Ecology, V. 72 (supplement), p. 267.
- Tyler, S.C, Keller, M. Brailsford, G., Crill, P., Stallard, R.F., and Dlugokency, E., 1990, 13C/12C Fractionation effect of microbial uptake of methane on temperate forested and tropical seasonal soils: EOS, Transactions, American Geophysical Union, v. 71, p. 1260.
- Westrich, H.R. and Gerlach, T.M., 1991, Concentrations of sulfur in mount Pinatubo glass inclusions [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 62.
- Wharton, R.A., Clow, G.D., McKay, C.P., Anderson, D. and Simmons, G.M., 1990, Changes in ice-cover thickness and lake level of Lake Hoare, Antarctica [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 146.
- Wharton, R.A., McKay, C.P., Clow, G.D., and Andersen, D.T., 1991, Changes in ice-cover thickness and lake level change of Lake Hoare, Antarctica--Implications for climatic change [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 109.
- White, A.F., Bullen, T.D., Blum, A.E., and Harden, J.W., 1991, A three million year weathering record associated with a soil chronosequence developed on alluvium, Central Valley,

- California [abs.]: Geological Society of America Abstracts with Programs, v. 23, n. 5, p. A318.
- Williams, D.F., Jenkins, P., Karabanov, E.D., Shimaraeva, M.C., Colman, S.M., and Hearn, P.P., Jr., 1991, Paleolimnological response of Lake Baikal during the late Quaternary to orbital forcing on Milankovitch time scales [abs.]: EOS, Transactions, American Geophysical Union, v. 72, n. 17, p. 306.
- Williams, R.S. Jr., 1990, Interrelation of global change in the cryosphere (glaciers) and hydrosphere (oceans)--Symposium on global change in the geosphere, Scientific perspective and public perceptions [abs.]: Williams, R.S., Jr., and Dyring, Annagreta, conveners, Games, M.D., (comp.): American Association for the Advancement of Science, Feb. 15-20, 1990, New Orleans, Louisiana, p. 60.
- Williams, R.S., Jr. and Ferrigno, J.G., 1990, Satellite monitoring of areas changes in the glacier component of the Earth's cryosphere [abs.]: Abstracts, International Conference on the Role of the Polar Regions in Global Change, Geophysical Institute and Center for Global Change and Arctic System Research, University of Alaska, Fairbanks, June 11-15, 1990, p. 13.
- Williams, R.S., Jr., Ferrigno, J.G., and Lucchitta, B.K., 1990, Satellite mapping of coastal changes in Antarctica [abs.]: Program and abstracts of INSMAP 90, International Symposium of Marine Positioning Rosenstiel School of Marine and Atmospheric Science, University of Florida, Miami, October 15-19, p. 32.
- Winograd, I.J., Coplen, T.B., Ludwig, K.R., Szabo, B.J., Riggs, A.C. and Revesz, K.M., 1990, Continuous 500,000-year climatic record from Great Basin calcite: 1--the $\delta^{18}\text{O}$ time series [abs.]: Geological Society of America, Abstracts with Programs, v. 22, n. 7, p. A209.
- Wolock, D.M., McCabe, G.J., and Tasker, G.D., 1991, Sources of uncertainty in predicting the effects of climatic change on drought frequency in the Delaware River basin [abs.]: EOS, Transactions, American Geophysical Union, v. 72, p. 123.
- Zhang, W.H., and Milly, P.C.D., 1991, Storm-runoff and water-balance model of a large drainage basin: EOS, Transactions, American Geophysical Union, v. 72, n. 44, p. 148.