UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Selected Geological and Geophysical Remote Sensing
Publications by U.S. Geological Survey Authors
1961-1984

by

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This report is preliminary and has not been reviewed for conformity with U.S.
Geological Survey editorial standards and stratigraphic nomenclature.

1 U.S. Geological Survey, Denver, Colorado
CONTENTS

Page

Introduction........................................................................................................1

Bibliography........................................................................................................2

Subject index........................................................................................................56

Geographic index.................................................................................................59
INTRODUCTION

The selected bibliography presented here encompasses the major and many minor publications in remote sensing geology and geophysics (and spectroscopy) published by the staff scientists of the Remote Sensing Section, Branch of Geophysics, Geologic Division, mostly between 1961 and 1985. Publications by members of predecessor organizational units in geophysics, the Branches of Theoretical Geophysics, Theoretical and Applied Geophysics, Regional Geophysics, and Petrophysics and Remote Sensing, have also been included. Geological Survey authors are shown in boldface type. Earlier publications in remote sensing by these authors prior to entry on duty with the Geological Survey are also included for the sake of continuity and completeness.

Abstracts, unpublished administrative reports, presentations, and posters presented at national or regional meetings are not included in this list. Some Geological Survey open-file reports and technical letters prepared for sponsoring agencies are included if their content is substantive. No attempt was made to list the many excellent publications of the Astrogeology Branch per se, nor the many excellent publications on remote sensing of the National Mapping and Water Resources Divisions.

References are listed alphabetically by the first author's last name. A chronological order from earliest to most recently published articles is established within the alphabetical order.


5. Allen, Carlton; Bryan, William; Sigurdsson, Haraldur; Greeley, Ronald; Thorarinsson, Sigurdur; Murray, John; Whitford-Stark, James; Williams, R. S., Jr.; and Wood, Charles, 1980, Myvatn volcanism: Volcano News, no. 3 (April), p. 1-8.


44. **Crowley, J. K., 1984, Near-infrared reflectance of zunyite: Implications for field mapping and remote-sensing detection of hydrothermally altered high-alumina rocks: Economic Geology, v. 79, p. 553-557.**


62a. -----1984, Ohio aerial radiometric color contour maps of regional surface concentrations of potassium (percent K), uranium (ppm eU), thorium (ppm eTh) and composite-color maps of K, U, Th and their ratios: U.S. Geological Survey Geophysical Investigations Map GP-968, scale 1:1,000,000.

62b. -----1984, Ohio aerial radiometric contour maps of surface concentrations of uranium (ppm eU), potassium (percent K), and thorium (ppm eTh): U.S. Geological Survey Geophysical Investigations Map GD-966, scale 1:500,000.
63. _____1984, Procedures for accurate production of color images from satellite or aircraft multispectral digital data: Journal of Imaging Technology, v. 10, no. 1, p. 16-22.


123. _____1970, The airborne infrared scanner as a geophysical research tool: Optical Spectra, v. 4, issue 6, p. 35-44.


180. ______1974, Experiments in the use of ERTS-1 data in geologic and land use analysis: Minnesota University Mining Symposium, Duluth, Minnesota, January 1974, Proceedings, no. 35, p. 147-150.


284. **_____1972, Mid-infrared emission spectrum of Apollo 14 soil: Significance for compositional remote sensing: Houston, Texas, Lunar Science Institute, Publication no. 88, p. 490-492.**


296. _____1984, Tectonic analysis of lineaments near a spreading axis, northeastern Iceland: Tectonophysics. [in press].


330. _____ 1970, Thermal features at volcanoes in the Cascade Range, as observed by aerial infrared surveys: Bulletin Volcanologique, v. 34, no. 1, p. 77-106.


422. _____ 1982, Regional analysis of Landsat data concerning unconformity-
vein uranium deposits, Pine Creek Geosyncline, Australia, in
Symposium on Uranium Exploration Methods, Paris, 1982, Proceedings:
Nuclear Energy Agency, Organisation for Economic Co-operation and

422a. _____ 1984, Applied visible and near-infrared spectroscopy, in Teleki,
P., and Weber, G., eds., Remote sensing for geological mapping,
Proceedings of seminar in Orleans, France, Feb. 2-4, 1984:
82, IUGS Publication 18, p. 191-198.

423. _____ 1984, Preliminary map showing limonitic areas in the Silver City
1° x 2° quadrangle, Arizona and New Mexico: U.S. Geological Survey
Miscellaneous Field Studies Map MF-1183-Q, scale 1:250,000.

hydrothermal alteration, in Richter, D. H., Allen, M. S., and
others, Metallic-mineral assessment of the Jabal Habashi sheet,
sheet 26-F, Kingdom of Saudi Arabia: Saudi Arabian Deputy Ministry
of Mineral Resources Technical Record, USGS-TR-04-08. [in press].

Siegal, B. S., and Gillespie, A. R., eds., Remote sensing in

of pseudo-gossan and massive-sulfide gossan, in International
Symposium on Remote Sensing of Environment, Thematic Conference on
Remote Sensing for Exploration Geology, 2d, Texas, 1982,
Proceedings: Ann Arbor, Michigan, Environmental Research Institute
of Michigan, v. 1, p. 25-27.

mineral discoveries in the Mojave Desert of California (summary),
in International Symposium on Remote Sensing of Environment,
Thematic Conference on Remote Sensing for Exploration Geology, 3d,
Colorado, 1984, Proceedings: Ann Arbor, Michigan, Environmental

transform to improve hydrothermal alteration mapping, in
International Geoscience and Remote Sensing Symposium Digest,
1983: Institute of Electrical and Electronics Engineers v. 2, sec.
FP-6, p. 1.1-1.3.

photography for rock discrimination, in Shahrokhi, F., ed., Remote
sensing of earth resources: Tullahoma, Tennessee, University of
Tennessee Space Institute, v. 3, p. 361-396.

428. _____ 1974, Spectral reflectance measurements: Photogrammetric

41, p. 189-198.


520. Thorarinsson, Sigurdur; Saemundsson, Kristjan; and Williams, R. S., Jr., 1974, ERTS-1 image of Vatnajokull: Analysis of glaciological, structural, and volcanic features: Jokull, v. 23 (1973), p. 7-17.


555. _____1975, Geologic applications of thermal infrared images: Institute of Electrical and Electronics Engineers Proceedings, v. 63, no. 1, p. 128-137.


584. **Williams, R. S., Jr.,** 1969, Degradation of infrared caused by condensation: *Photogrammetric Engineering,* v. 35, no. 1, p. 72-78.


593. _____1979, Iceland - satellite monitoring of changes of glaciers of Iceland, in Glaciological Data, World Data Center A for Glaciology (Snow and Ice): Boulder, Colorado, Institute of Arctic and Alpine Research, University of Colorado, Report GD-4, February, p. 72-77.


600. _____1983, Satellite glaciology of Iceland: Jokul1, v. 33, p. 3-12.


Williams, R. S., Jr.; Bodvarsson, Agust; Fridriksson, Sturla; Palmason, Gudmundur; Rist, Sigurjon; Sigtryggsson, Hlynur; Thorarinsson, Sigurdur; and Thorsteinsson, Ingvi, 1973, Satellite geological and geophysical remote sensing of Iceland - preliminary results from analysis of MSS imagery, in Symposium on Significant Results Obtained from Earth Resources Satellite-1, Proceedings: National Aeronautics and Space Administration, NASA SP-327, v. 1, sec. A, p. 317-327.


Williams, R. S., Jr., and Fernandopulle, Denis, 1972, Geological analysis of aerial thermography of the Canary Islands, Spain, in International Symposium on Remote Sensing of Environment, 8th, Proceedings: Ann Arbor, Michigan, Environmental Research Institute of Michigan, p. 1159-1194.


<table>
<thead>
<tr>
<th>Subject Index</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airborne scanner studies</td>
<td>1, 41, 45, 51, 123, 314, 315, 318, 319, 340, 371, 372, 400, 402, 468</td>
</tr>
<tr>
<td>Atmospheric properties</td>
<td>199, 300, 556, 563</td>
</tr>
<tr>
<td>Bibliographies and references</td>
<td>195, 294, 503, 510, 544</td>
</tr>
<tr>
<td>Biogeochemistry</td>
<td>41, 119, 319, 319a, 321</td>
</tr>
<tr>
<td>Coal fires</td>
<td>171, 315</td>
</tr>
<tr>
<td>Computer science and statistical applications</td>
<td>22, 25, 55, 62, 309, 386, 387, 388, 393, 394, 398, 403, 493, 497, 522, 549</td>
</tr>
<tr>
<td>Ecology</td>
<td></td>
</tr>
<tr>
<td>Acid rain investigations</td>
<td>243a</td>
</tr>
<tr>
<td>Fluorescence</td>
<td>306, 514, 515, 516, 517</td>
</tr>
<tr>
<td>Geochemistry (see also spectroscopy)</td>
<td>2, 6, 24, 46, 75, 120, 196, 240, 246, 325, 403, 535</td>
</tr>
<tr>
<td>Geomorphology</td>
<td>10, 125, 126, 137, 140, 142, 151, 304, 356, 408, 504, 539, 540, 543, 544, 590, 595, 602, 617, 618, 626, 627</td>
</tr>
<tr>
<td>Geothermal investigations and heat flow</td>
<td>91, 118, 133, 134, 135, 136, 139, 144, 146, 150, 153, 154, 155, 156, 243, 251, 276, 328, 329, 334, 371, 531, 547, 554, 557, 558, 612</td>
</tr>
<tr>
<td>Glaciology and polar research</td>
<td>13, 95, 96, 97, 98, 118, 131, 136, 156, 520, 528, 529, 591, 593, 599, 600, 603, 608, 609, 609a, 615, 620, 625</td>
</tr>
<tr>
<td>Hydrology</td>
<td>109, 271, 509a</td>
</tr>
<tr>
<td>Image processing and production techniques</td>
<td>58, 59, 60, 62, 63, 128, 149, 568</td>
</tr>
<tr>
<td>Infrared investigations</td>
<td></td>
</tr>
<tr>
<td>Laboratory</td>
<td>8, 48, 49, 50, 183, 228, 236, 534, 535, 562, 584, 606</td>
</tr>
<tr>
<td>Satellite</td>
<td>259a</td>
</tr>
<tr>
<td>Telescopic</td>
<td>237, 238, 239</td>
</tr>
<tr>
<td>Theoretical</td>
<td>199, 313, 549, 550, 552, 553, 554, 555, 556, 557, 558, 559, 560, 563, 566, 571</td>
</tr>
<tr>
<td>Infrared photography (near-infrared)</td>
<td>99, 531</td>
</tr>
<tr>
<td>Land use studies</td>
<td>180, 369, 601</td>
</tr>
<tr>
<td>Luminescence</td>
<td>8, 47, 176, 177, 178, 182, 184, 187, 188, 190, 191, 191a, 192, 194, 195, 196, 288, 437, 519, 574</td>
</tr>
</tbody>
</table>
Fraunhofer line discriminator 189, 193, 288, 437, 513, 517, 572, 573, 575, 576, 577, 579, 580
Marine geology 357, 516, 587, 601
Microwave radiation 85, 86, 88, 89, 90, 91, 241, 363
Mineralogy 31, 44, 212, 214, 219, 220, 229, 230, 231, 232, 280, 486
Petrography and petrology (see also spectroscopy) 45, 120, 146, 211, 214, 221, 222, 224, 225, 226, 233, 234, 235, 240, 246, 350, 368, 405, 433, 439, 447, 450, 489, 535, 536
Photogeology 51, 173, 292, 324, 404, 445, 531, 548, 588
Planetary studies 38a
Infrared image interpretation 481, 482, 485
Lunar 2, 4, 6, 17, 53, 54, 84, 91, 143, 175, 186, 216, 217, 218, 236, 237, 238, 239, 282b, 282c, 283, 284, 285, 286, 302, 311, 341, 342, 351, 409, 410, 413, 414, 415, 416, 438, 441, 442, 458, 474, 475, 476, 477, 478, 479, 481, 482, 491, 492, 492a, 523, 532, 541, 542, 547, 581, 582, 583
Solar system (non lunar), specific and general 16, 21, 23, 24, 26, 32, 33, 34, 35, 36, 37, 38, 38a, 39, 46, 46a, 92, 93, 215, 282a, 301, 303, 305, 483, 484, 489, 502, 505, 527, 533, 617
Radar applications in geology 12, 100, 170a, 252, 253, 254a, 412d, 413b, 413c
Radioelectric, (radioelement)
Radioactive waste-isolation studies 127, 128, 147, 148, 198
Remote sensing studies—general 7, 18, 19, 20, 101, 103, 104, 106, 107, 143, 161, 163, 167, 206, 243a, 244, 249, 272, 307, 311, 413b, 419, 422a, 444, 447a, 462, 518, 551, 570, 578, 585, 628
Satellite telemetry systems 102, 103, 107, 334
Data Collection Platforms 134, 135, 139, 145, 146, 418
Satellite systems 310, 495, 561
Apollo 3, 158, 159, 283, 284, 285, 287a, 324, 403, 413, 417, 490, 582, 583
Gemini 185
Heat Capacity Mapping Mission (HCMM) 316, 506, 564, 565, 567, 568
Nimbus 151, 154, 155, 406, 411, 569, 610
Radar 10, 13, 262, 264, 265, 266, 367, 413b, 413c, 445, 509, 527
Shuttle Multispectral Infrared Radiometer (SMIRR) 168, 169, 170, 452, 453, 454
Skylab 83, 137, 140, 141, 281, 364
Thematic Mapper (Landsat 4) 263, 389, 396, 397
Soils (includes permafrost studies) 93, 142, 283, 284, 285, 323, 475, 478

Spectroscopy
Biogeochemistry 317, 318, 319, 322
General 200, 206, 209, 213
Mid-infrared (transmission and emission) 23, 48, 49, 50, 199a, 205a, 208, 214c, 221, 222, 223, 224, 228, 239, 239a, 283, 284, 285, 286, 287, 287a, 535
Solar system 16, 21, 23, 24, 26, 29, 32, 35, 36, 37, 38, 39, 46, 46a, 92, 93, 175, 205a, 215, 216, 217, 218, 282a, 282b, 282c, 283, 284, 285, 301, 302, 303, 305, 484, 490, 492a, 502, 505, 533
Theory and laboratory instrumentation 40, 199b, 199c, 207, 214a, 214b, 236, 239b, 534, 571a
X ray 332, 337, 339
Thermal-inertia studies 132, 313, 406, 412, 549, 559, 560, 561, 563, 564, 566, 567, 569, 571
Thermophysical properties of rocks and minerals 213, 368, 562
Trace-element investigations 52, 62a, 62b, 75, 319
Volcanology, general 54, 114, 118, 124, 126, 129, 601, 603, 607
Effusive eruption investigations 5, 124, 138, 610, 611, 616

Energy-partition estimates 133, 134, 135, 136, 144, 150, 156, 611
Explosive eruption investigations 124, 137, 140, 141, 162, 327, 333, 616
Tephrochronology 142
Thermal radiation studies 130, 133, 134, 135, 136, 138, 145, 151, 152, 153, 154, 155, 156, 243, 312, 327, 330, 331, 333, 335, 340, 552, 556, 559, 611
Volcanic eruption clouds 137, 140, 141
Volcanic landforms and structures 125, 137, 140, 144, 371, 520, 611, 617, 618, 626, 627
Ultraviolet radiation 43, 47, 174, 175, 176, 178, 184, 186, 187, 194
GEOGRAPHIC INDEX

Africa 332
Alaska 113, 256, 270, 504
Allegheny Plateau 412a, 412b, 412c
Amery Ice Shelf 13
Antarctica 97, 98, 608a, 609, 609a, 615, 620
Appalachian Mountains 413b
Atlantic Continental Slope 357
Australia 422
Brazil 346
Canada 349
Cascade Range 118, 129, 133, 134, 135, 136, 138, 139, 144, 150, 247, 330
China 386, 540, 543, 546
Colorado 147, 148, 149, 245, 248, 352, 383, 384, 450, 495
Colorado Front Range 343, 344
Colorado Plateau 246
Costa Rica 162
Earth 102, 103, 107, 194, 310
Egypt 304, 453, 454
England 350
Great Plains 292
Great Basin 323
Great Britain 350, 588
Greenland 173
Guatemala 445
Hawaii 109, 114, 300, 314
Iceland 5, 97, 124, 125, 142, 145, 146, 152, 153, 154, 155, 156, 172, 296, 371, 520, 528, 529, 537, 590, 591, 593, 597, 600, 601, 602, 603, 611, 616, 617, 618, 625, 626, 627
Idaho 378, 466
Illinois 116, 117
Indiana 116, 117
Iran 407
Italy 51
Japan 141
Kenya 19
Maryland 265
Massachusetts 97, 356, 530, 587, 589, 597, 605, 621
Mexico 421, 445, 452, 526, 531
Michigan 380
Minnesota 538
Mississippi embayment 362, 363, 365, 366
Missouri 353
Montana 72, 297, 298, 430, 440, 466
Nevada 1, 126, 205, 259a, 260, 276, 364, 396, 405, 418a, 456, 463, 464, 465, 467, 469, 471, 472, 473
New England 170b
New Mexico 245, 268, 423, 435, 436
New York 119, 259, 395, 408
Nigeria 369
North Carolina 262, 319, 319a, 370, 524
Norway 348
Ohio 62a, 62b
Oklahoma 449, 460, 461, 468
Oman 406, 412
Oregon 133, 150, 312, 340
Pennsylvania 170a, 171, 259, 261, 395, 408, 412a, 412b, 412c, 412d
Philippines 327, 333
Saudi Arabia 9, 115, 424, 434a
Solar System
Aitken 541
Callisto 24
Europa 24
Galilean Satellites 36, 502
Ganymede 24
Gemini 185
Io 92
Jupiter 20, 35
Mare Humorum 492
Mars 38, 93, 199a, 205a, 215, 282a, 303, 305, 483, 484, 505, 533, 539, 617
Mercury 301
Miranda 16
Moon 2, 4, 17, 53, 54, 84, 91, 143, 175, 186, 216, 217, 218, 237, 238, 239, 282b, 282c, 302, 341, 342, 351, 409, 410, 413, 414, 415, 416, 438, 441, 442, 458, 474, 475, 476, 477, 478, 479, 481, 482, 491, 492a, 523, 532, 542, 581, 583
Pluto 46a
Rhea 39
Saturn 24, 32, 35, 37
Taurus-Littrow area 6
Triton 46, 46a
Venus 20
South Carolina 524
Spain 607
Sweden 348, 597
Taiwan 275
Texas 14, 15, 52, 65, 71, 73, 77, 78, 79, 80, 81, 159, 290, 336, 375, 498, 500, 525
Turkey 277
United States 104, 110
Utah 94, 127, 128, 147, 148, 149, 198, 242, 245, 317, 318, 320, 398, 399, 400, 401, 402, 448, 455
Venezuela 11, 12
Virginia 264, 265, 266, 524
Washington 118, 129, 130, 134, 136, 138, 144, 243, 334, 335, 368, 378
West Virginia 413a, 413c
Wisconsin 380