

PECORã

VII SYMPOSIUM

**Remote Sensing: An Input
to Geographic Information
Systems in the 1980's**

October, 18-21, 1981

**Ramada Inn
Sioux Falls, South Dakota**



Sponsored by the Association of American Geographers, the National Council for Geographic Education, and the American Society of Photogrammetry in cooperation with the U.S. Geological Survey and the National Aeronautics and Space Administration.

PECORA VII

Background

The Pecora Symposia were established in 1975 to foster the exchange of scientific and resource management findings resulting from the use of remotely sensed data. The symposium series honors the memory of William T. Pecora, of the U.S. Department of the Interior, who played a leading role in establishing the Earth Resources Observation Systems (EROS) program and the founding of the EROS Data Center at Sioux Falls, South Dakota.

Previous symposia have dealt with:

- I Application of Remote Sensing to Mineral and Fuel Exploration, 1975.
- II Mapping with Remote Sensing, 1976
- III Application of Satellite Data to Petroleum and Mineral Exploration, 1977
- IV Application of Remote Sensing Data to Wildlife Management, 1978
- V Satellite Hydrology, 1979
- VI Integration of Remote Sensing into the Exploration Process, 1980

Theme

The theme of Pecora VII is "Remote Sensing: An Input to Geographic Information Systems in the 1980's."

The format of the 1981 Pecora Symposium consists of a remote sensing workshop, plenary sessions, concurrent paper sessions, and poster paper sessions. The program is structured to provide information on remote sensing as an input tool to geographic information systems. It is especially designed for people with diverse backgrounds in remote sensing from academic institutions, private project organizations, and government agencies. The symposium presentations will draw on the experiences of those who have been selected to present papers, poster sessions, and the workshop. The objective of the symposium will be to provide information on the solution of geographic and related problems by use of remote sensing and geobased information system techniques.

Coordinating Committee

Pecora VII Coordinating Committee

Benjamin F. Richason, Jr., General Chairman
Department of Geography
Carroll College
Waukesha, WI

John L. Place
Office of Geographic Research, NMD
U.S. Geological Survey
Reston, VA

Gary E. Johnson
Technicolor Graphic Services, Inc.
EROS Data Center
Sioux Falls, SD

(Detailed Schedule begins p. 12)

SYMPOSIUM OUTLINE

Sunday, October 18

WORKSHOP, EROS Data Center
"Remote Sensing: An Input to Geographic Information Systems"
9:00 a.m. - 5:30 p.m.

A workshop addressing the theme of the symposium will be held at the EROS Data Center from 9:30 a.m. to 5:30 p.m. on Sunday, October 18. Topics to be covered include (1) basic concepts concerning the use of geographic information systems, (2) the integration of remotely sensed data into geographic information systems, (3) the applications of geographic information systems at EDC, and (4) the use of geographic information systems at the state level in a microcomputer environment and in a main-frame computer environment.

Workshop directors are:

Mr. Roy Welch
Department of Geography
University of Georgia

Mr. Richard Hill-Rowley
Department of Geography
Michigan State University

Workshop instructors are:

Mr. Joe Berry
Mr. Dewett Brough
Mr. Wayne Myers
Mr. Thomas Loveland
Mr. David Greenlee
Mr. Robert Smekoski
Mr. Nick Faust

Monday, October 19

REGISTRATION
Convention Center Lobby
Ramada Inn
8:30 a.m. - 3:30 p.m.

OPENING SESSION
Washington Room
9:30 a.m. - 12:00 noon

LUNCH
12:00 noon - 1:30 p.m.

FIRST PLENARY SESSION
"Land Use Classification and Mapping"
Washington Room
1:30 - 3:00 p.m.

BREAK
3:00 - 3:30 p.m.

CONCURRENT SESSION A
"Land Use Classification and Mapping"
Roosevelt Room
3:30 - 5:00 p.m.

CONCURRENT SESSION B
"Land Use Classification and Mapping"
Jefferson Room
3:30 - 5:00 p.m.

POSTER SESSION AND CASH BAR
Harvest Room
(Lower Level)
7:30 - 9:30 p.m.

Tuesday, October 20

SECOND PLENARY SESSION
"Monitoring Environmental Change"
Washington Room
8:30 - 10:00 a.m.

BREAK
10:00 - 10:30 a.m.

CONCURRENT SESSION C
"Monitoring Environmental Change"
Roosevelt Room
10:30 a.m. - 12:00 noon

CONCURRENT SESSION D
"Monitoring Environmental Change"
Jefferson Room
10:30 a.m. - 12:00 noon

LUNCH
12:00 noon - 1:30 p.m.

THIRD PLENARY SESSION
"Remote Sensing Inputs to Geographic Information Systems"
Washington Room
1:30 - 3:00 p.m.

BREAK
3:00 - 3:30 p.m.

CONCURRENT SESSION E
"Remote Sensing Inputs to Geographic Information Systems"
Roosevelt Room
3:30 - 5:00 p.m.

CONCURRENT SESSION F
"Remote Sensing Inputs to Geographic Information Systems"
Jefferson Room
3:30 - 5:00 p.m.

COCKTAIL HOUR
Washington Room
6:00 - 7:00 p.m.

PECORA 7 AWARDS BANQUET
Washington Room
7:00 p.m.

Wednesday, October 21

FOURTH PLENARY SESSION
"The Role of Remote Sensing in Modeling"
Washington Room
8:30 - 10:00 a.m.

BREAK
10:00 - 10:30 a.m.

CONCURRENT SESSION G
"The Role of Remote Sensing in Modeling"
Roosevelt Room
10:30 a.m. - 12:00 noon

CONCURRENT SESSION H
"The Role of Remote Sensing in Modeling"
Jefferson Room
10:30 a.m. - 12:00 noon

PECORA VII

EXHIBITS

Registration Registration will be held in the Convention Center Lobby from 8:30 to 3:30 on Monday, October 19.

Proceedings A bound volume of a Proceedings of all presentations will be distributed to registrants in early 1982. Additional copies of the proceedings may be purchased from the American Society of Photogrammetry, 105 N. Virginia Ave., Falls Church, Virginia 22046

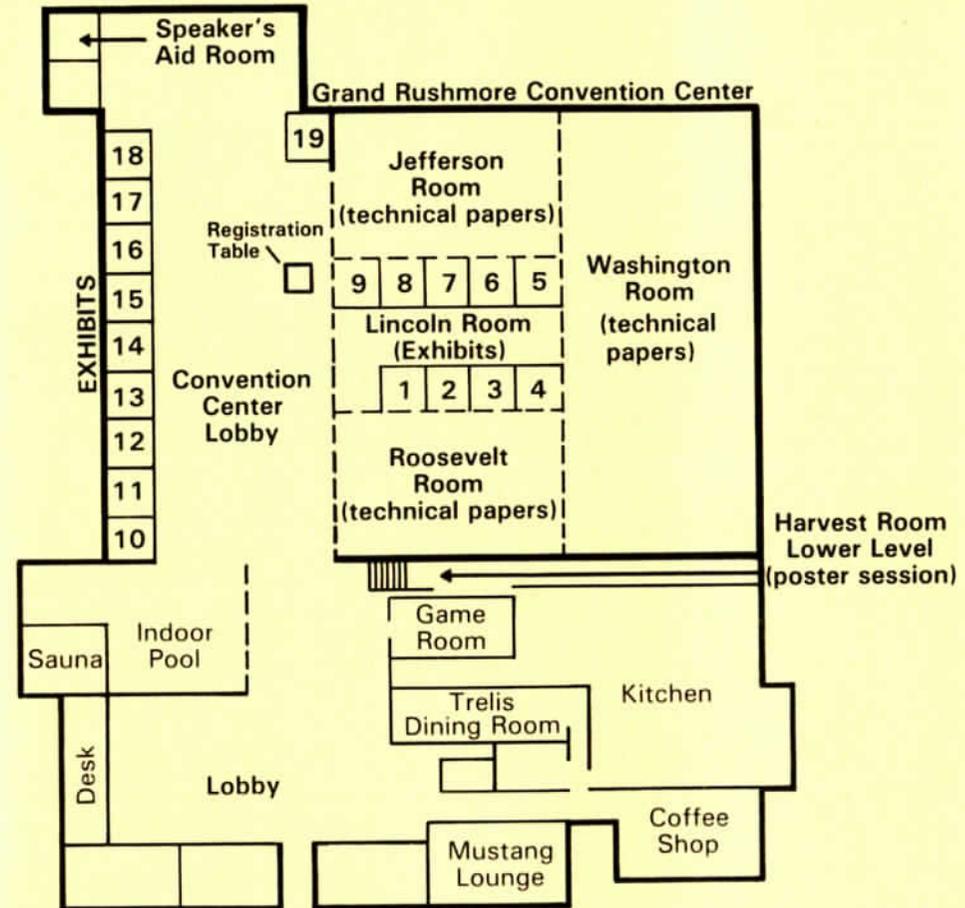
EROS Data Center Tour Tours of the EROS Data Center will be featured on Wednesday, October 21. The tours through this modern complex include user services operation, the high-volume photographic laboratories and equipment, the central computer room, and the applications assistance and training facilities. Demonstrations of interactive digital image analysis equipment will be conducted to illustrate techniques applied to a forest-fuel mapping project. Applications scientists will be available to discuss techniques employed in cooperative demonstration projects conducted at the EROS Data Center.

Bus Schedule

Wednesday, October 21, 1981

Tour Number	Leave Convention Center	Arrive EROS Data Center	Leave EROS Data Center	Arrive Convention Center
1	8:30am	9:00am	10:30am	11:00am
2	9:50am	10:20am	11:50am	12:20pm
3	12:40pm	1:10pm	2:40pm	3:10pm
4	2:00pm	2:30pm	4:00pm	4:30pm

NOTE: PLEASE SIGN UP FOR TOUR OF YOUR CHOICE AT THE EROS DATA CENTER TABLE IN THE REGISTRATION AREA.



Exhibitors

1. Bausch and Lomb
2. Aero Service
3. Eastman Kodak
4. Technicolor Audiovisual
- 5-6. Electronic Devices, Inc.
7. Hope Industries
- 8-9. Optronics International
10. Technology Applications Center
- 11-16. USGS
17. Association of American Geographers
18. National Council for Geographic Education
19. American Society of Photogrammetry

Pecora VII Exhibits Hours:

Monday, October 19
10:00 a.m. - 5:00 p.m.
Tuesday, October 20
10:00 a.m. - 5:00 p.m.
Wednesday, October 21
10:00 a.m. - Noon

PECORA AWARD

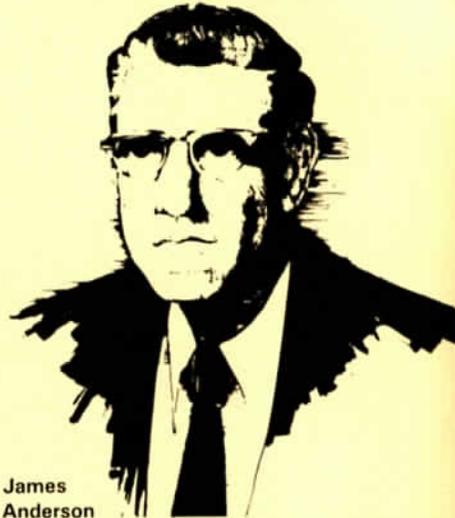
Development work by the late Dr. James R. Anderson resulted in the first practical application of remote sensing technology to a national land use classification system. His contribution can best be summarized by a quotation from a Meritorious Service Citation awarded to Dr. Anderson by the Secretary of the Interior in 1977:

"His most significant achievement has been the establishment and administration of the nationwide land use and land cover mapping and data compilation program. This program has had a significant effect on the Survey's response to new users of earth-science data and has greatly increased the Department of the Interior's

capabilities in government. The broad acceptance of the land use information developed by the Geography Program under Dr. Anderson's guidance has strengthened the Geological Survey's role as the Nation's primary systematic collector and synthesizer of earth-science information. His principal authorship of Professional Paper 964 and its predecessor Circular 671, both dealing with standardization of land use classification, has had a monumental impact on the community of land use information users. The international acceptance of this classification system has further emphasized the Survey's position as a leader in delivering earth-science related information to the public."

During his career, Dr. Anderson distinguished himself in three fields. He performed landmark research while working for the Department of Agriculture; he was a highly regarded university teacher and administrator; and as Chief Geographer of the U.S. Geological Survey he also served as a scientific adviser to the Director.

Dr. Anderson served on technical committees of the National Academy of Sciences and the National Science Foundation, was Vice Chairman of the U.S. National Committee for the International Geographical Union, Chairman of the U.S. Board on Geographic Names, and Vice President of the Association of American Geographers. Before his untimely death in December of 1980, he was a key figure in the planning for this symposium which honors his memory.



James
Anderson

PECORA AWARD



Leonard
Jaffe

From 1969 through 1971, Mr. Leonard Jaffe held the NASA position of Deputy Associate Administrator for Space Science and Applications. It was under his direction that the Landsat Program was established. Cooperatively, Bill Pecora established the Earth Resources Observation Systems (EROS) Program within the Department of Interior to use the data NASA would acquire with Landsat. In the formative Landsat years, Mr. Jaffe was instrumental in establishing the "open to the public" data policy that has characterized the U.S. program. Hundreds of principal investigators were chosen from foreign countries, as well as the United States, to receive data from Landsat and to study its utility.

Mr. Jaffe also encouraged the establishment of cooperative ground stations abroad. Today, Canada, Brazil, Sweden, Italy, Japan, India, Australia, Argentina, and South Africa have their own Landsat ground receiving stations. Mr. Jaffe chaired an International Working Group of these participants to coordinate the use of U.S. satellites and the operations of the ground stations.

For many years, Mr. Jaffe was a Co-Chairman of the Committee on the Applications of Space of the International Astronautical Federation (IAF) where he promoted the exchange of information and progress in Remote Sensing on an international basis. As president of the International Astronautical Federation from 1974 to 1976, he supported the United Nations Peaceful Uses of Outer Space Committee by having the IAF provide needed expert information and by co-sponsoring with the U.N. an International Workshop on Remote Sensing for developing nations (1976). Mr. Jaffe was also the Co-Chairman of a bilateral US/USSR Working Group on Remote Sensing of the Natural Environment which was established in 1971 to promote cooperation in the development of the use of space remote sensing.

During over 30 years with NASA and its predecessor, the National Advisory Committee for Aeronautics, Mr. Jaffe held several key positions, including Deputy Associate Administrator for Space and Terrestrial Applications. In addition to his remote sensing contributions, he is well known for his work in establishing operational communications satellites. He is currently Vice President, Program Management and Product Assurance, Systems Group, Computer Sciences Corporation, Falls Church, Virginia.

PROGRAM SCHEDULE

Monday, October 19

OPENING SESSION - WASHINGTON ROOM

- 9:30-10:00 **Welcome and Overview of the Symposium**, Benjamin F. Richason, Jr., Carroll College, Wisconsin
Welcoming remarks:
Rick W. Knobe, Mayor
City of Sioux Falls
Allen H. Watkins, Chief
EROS Data Center
- 10:00-10:45 **Remote Sensing and Geographic Information Systems Coming of Age in the 1980's**, John E. Estes, University of California-Santa Barbara
- 11:00-11:45 **Some Thoughts on Cartographic and Geographic Information Systems for the 1980's**, Lowell E. Starr, U.S. Geological Survey, Reston, Virginia

FIRST PLENARY SESSION - WASHINGTON ROOM

- 1:30-3:00 **First Plenary Session**
Land Use Classification and Mapping, Chair: Gary E. Johnson, Technicolor Graphic Services, Inc., EROS Data Center
- 1:30-2:15 **Classification Systems for Natural Resource Management**, Richard Kleckner, U.S. Geological Survey, Reston, Virginia
- 2:15-3:00 **Employing Landsat MSS Data in Land Use Mapping: Observations and Considerations**, James W. Merchant, Kansas Applied Remote Sensing Program, University of Kansas Space Technology Center.

CONCURRENT SESSION A - ROOSEVELT ROOM

- 3:30-5:00 **Concurrent Session A**
Land Use Classification and Mapping
Chair: Gary E. Johnson, Technicolor Graphic Services, Inc., EROS Data Center
Digital Elevation Data as an Aid to Land Use and Land Cover Classification, Alden P. Colvocoresses, U.S. Geological Survey, Reston, Virginia

PROGRAM SCHEDULE

Integration of Landsat RBV and MSS Imagery to Produce Land Use Maps of Soviet Cities, Daniel R. Snyder, Institute of Applied Geography, Detroit, Michigan

Inventory and Evaluation of Rangeland in the Cimarron National Grassland, Kansas, James W. Merchant and Emily A. Roth, Kansas Applied Remote Sensing Program, University of Kansas Space Technology Center

Sub-Regional Information System Formation Using Multi-Resolution Remote Sensing Products, Charles E. Henderson, Space Sciences Laboratory, University of California, Berkeley

CONCURRENT SESSION B - JEFFERSON ROOM

- Concurrent Session B** 3:30-5:00
Land Use Classification and Mapping
Chair: Robert K. Holz, University of Texas
- Urban Land Use Classification Synthetic Aperture Radar**, M. Leonard Bryan, Jet Propulsion Laboratory, California Institute of Technology
- The Application of Landsat, Geochemical and Phytogeographical Methods in Mineral Prospecting of Vegetated Regions**, Howard W. Mielke, Macalester College
- Classification and Mapping Habitats within the Mississippi River Deltaic Plain Region**, Klaus Meyer-Arendt and K.M. Wicker, Coastal Environments, Inc., Baton Rouge, Louisiana
- The Spatial Transferability of Resources Interpretations**, Darrell Napton and Julie Luther, Geography Department, University of Minnesota

POSTER SESSION

POSTER SESSION

Monday, October 19

7:30-9:30 Pecora VII Poster Session

HARVEST ROOM (LOWER LEVEL)
(CASH BAR CONCURRENT)

Organizers

Robert D. Rudd, Poster Session Chairman
Department of Geography
University of Denver
Denver, Colorado

Eugene Maxwell
Solar Energy Research Institute
Boulder, Colorado

Roger McCoy
Department of Geography
University of Utah
Salt Lake City, Utah

Anthony J. Lewis
ERSAL
Oregon State University
Corvallis, Oregon

Poster Presentation

Geomorphological Interpretation of the Glaciated Terrain in Southeastern Wisconsin: A Study Utilizing Diazo Enhancement of Landsat Multispectral Imagery, Denis Schinderle, Indiana State University, Terre Haute, Indiana

A Comparative Study of Linear and Non-linear Edge Finding Techniques for Landsat Multispectral Data, Robert Shaw, Lynda Sowers, and Ellen Sanchez, U.S.G.S., Flagstaff, Arizona

Generalized Balance Ternary: An Approach to Handling Spatial Data, Dean Lucas and Laurie Gibson, Computer Graphics, Interactive Systems Corp., Littleton, Colorado

Examples of Sequential Radar Images from Washington, Arizona, and Alaska, J.P. Ford and P. Rebillard, Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California

A Geographic Information System for New Mexico, Thomas K. Budge, Technology Application Center, University of New Mexico

GIS Applications for Missouri, C.J. Johannsen, W.D. McFarland, T.W. Barney, and Staff, University of Missouri-Columbia

Oregon's Statewide Land Use Inventory: Remote Sensing Input to Geographic Information Systems, Madeline J. Hall, ERSAL, Oregon State University

Some Values and Approaches of Resource Information Systems, A.K. McQuillan, Canada Centre for Remote Sensing, Donald J. Clough, University of Waterloo

Use of Landsat Digital Data within a Hydrologic Model for the High Plains Aquifer, Gail Thelin, U.S.G.S. Geographic Investigations Office, Richard R. Luckey, U.S.G.S. Water Resources Division, Walter E. Donovan, Informatics, Inc., Leonard Gaydos, U.S.G.S. Geographic Investigations Office

The Use of High Altitude Aerial Photography (1:120,000) for Range Condition/Trend Determination, Lee E. Hughes, Bureau of Land Management

Experiments in Land Cover Mapping, Denis White, Laboratory for Computer Graphics and Spatial Analysis, Harvard University

A Simple and Inexpensive Retrieval System, Y. Jim Lee, Canadian Forestry Service

Terrain Cover Discrimination from Landsat Data of the Great Smoky Mountains National Park, Vincent G. Ambrosia, Technicolor Graphic Services, Inc., NASA/Ames

Cross-Polarized Radar Image Anomalies as Sensitive Measures of L-Band Vegetation Penetration Capability, Rev. Ronald J. Wasowski, University of California-Los Angeles

A Land Resources Information System for Lake Erie, John R. Adams, United States Army Engineers, Barry N. Haack, Ball State University, Frederick J. Thomson, Environmental Research Institute of Michigan

A Resources Management Information System for Indian Reservation Lands in Kansas, James W. Merchant, James W. Rosacker, Christopher Gunn, and Gray Tappan, University of Kansas, Space Technology Center

POSTER SESSION

Digital Landsat and Terrain Data Applied to an Arid Land Resource Inventory, Wayne A. Miller, Technicolor Graphic Services, Inc., Sioux Falls, South Dakota, William J. Bonner and Lorin P. Schwartz, Bureau of Land Management, Denver Federal Center, Wayne G. Rohde, U.S.G.S.

Digital Enhancement of Landsat Images as an Aid in Mapping Alaskan Glaciers, Robert D. Rudd, University of Denver and U.S.G.S., Gary L. Raines, U.S.G.S.

Data Base Registration: Geologic Enhancement Prerequisite, Lindsey V. Maness, Jr., Barringer Resources, Inc.

Automated Cluster Labeling Using Digital Ground Truth, Larry Tinney, Geographic Remote Sensing Unit, University of California, Santa Barbara; Wayne Hallada, Computer Science Corporation

Use of Landsat Data to Develop a Fuels Data Base for a Wildlife Simulation Model, Michael J. Cosentino and John E. Estes, Geographic Remote Sensing Unit, University of California, Santa Barbara

Application of Thermography to Wildlife Physical States, Benjamin F. Richason, Jr., Carroll College

Mosaicking Techniques Applied at Flagstaff Image Processing Facility, Ellen M. Sanchez, Lynda B. Sowers, Pat S. Chavez, Jr., Kathleen Edwards, Eric M. Eliason, Patricia T. Eliason, U.S.G.S., Flagstaff, Arizona

Saudi Arabia Landsat Film Mosaic, Lynda B. Sowers, Ellen B. Sanchez, Pat S. Chavez, Jr., Joseph O. Morgan, U.S.G.S., Flagstaff and U.S.G.S., Reston

A Video Digitizer Based Map Encoding System, Douglas E. Meisner, Remote Sensing Laboratory, University of Minnesota

PROGRAM SCHEDULE

Tuesday, October 20

SECOND PLENARY SESSION - WASHINGTON ROOM

Second Plenary Session 8:30-10:00

Monitoring Environmental Change

Chair: John R. Jensen, University of Georgia

The Role of Change Data in a Land Use and Land Cover Map Updating Program 8:30-9:15

Valerie A. Milazzo, National Mapping Division, U.S. Geological Survey, Reston, Virginia

Agricultural Land Use Change Detection 9:15-10:00

Larry Tinney and John E. Estes, University of California-Santa Barbara

CONCURRENT SESSION C - ROOSEVELT ROOM

Concurrent Session C 10:30-12:00

Monitoring Environmental Changes

Chair: John R. Jensen, University of Georgia

Considerations and Potential Applications of Remote Sensing to Fire Service Planning, Floyd M. Henderson and Daniel T. Vindigni, State University of New York at Albany.

Monitoring Agricultural Growth in Pronghorn Antelope Habitat, Edward A. Martinko, Kansas Applied Remote Sensing Program, University of Kansas

Utilization of Remote Sensing in Wetland Management, K.M. Wicker and K. Meyer-Arendt, Coastal Environments, Inc., Baton Rouge, Louisiana

Use of Geo-Based Satellite Data for Updating Crop Inventories, Eugene Derenyi and Rostam Yazdai, University of New Brunswick, Canada

Urban Change Detection Procedures Using Landsat Digital Data, John R. Jensen, University of South Carolina, Dave Toll, NASA Goddard Space Flight Center

Evaluation of Change Detection Techniques, Greg Burns and Armon Joyce, National Space Technology Laboratory

PROGRAM SCHEDULE

CONCURRENT SESSION D - JEFFERSON ROOM

- 10:30-12:00 **Concurrent Session D
Monitoring Environmental Changes**
Chair: Benjamin F. Richason, Jr., Carroll College, Wisconsin
- The Effects of Seasonal Differences in Climatic Conditions on Landsat Spectral Signatures and Associated Land Cover Classification**, John A. Harrington, Jr., Geography Department, University of Oklahoma
- A Synoptic World Vegetation Atlas from Satellite Imagery for the Biological and Geographical Sciences**, Donald F. Baer, Rockwell International, Downey, California
- A Biogenic Hydrocarbon Emissions Inventory of the San Francisco Bay Area**, Roberta Moreland, Association of Bay Area Government, and Eugene Fosnight, Technicolor Graphic Services, Inc., Moffett Field, California
- Hierarchical Modeling for Image Classification**, William Likens, NASA/Ames, and Keith Maw, Technicolor Graphic Services, Inc., Moffett Field, California

THIRD PLENARY SESSION - WASHINGTON ROOM

- 1:30-3:00 **Third Plenary Session
Remote Sensing Inputs to Geographic Information Systems**, Chair: Floyd M. Henderson, State University of New York at Albany
- 1:30-2:15 **Remote Sensing Data for Geographic Information Systems**, Charles L. Wilson and Fred Thomson, Environmental Research Institute of Michigan
- 2:15-3:00 **An Overview of Remote Sensing Input to Geographic Information Systems**, William G. Brooner, Earth Satellite Corporation, Washington, D.C.

CONCURRENT SESSION E - ROOSEVELT ROOM

- 3:30-5:00 **Concurrent Session E
Remote Sensing Inputs to Geographic Information Systems**, Chair: Floyd M. Henderson, State University of New York at Albany

PROGRAM SCHEDULE

Forest Management Applications of Landsat Data In a Geographic Information System, James Brass, NASA/Ames, and Keith D. Maw, Technicolor Graphic Services, Inc., Moffett Field, California

Trends in the Utilization of Remote Sensing and Geographic Information Systems in State/Local Governments, Sally Bay Cornwell, Longmont, Colorado

Compressing Interpreted Satellite Imagery for Geographic Information Systems Applications Over Extensive Regions, Steven W. Miller, U.S. Geological Survey, Rolla, Missouri

Ecological Test Site to Geographic Information System: Lessons for the 1980's, Robert H. Alexander, U.S. Geological Survey, University of Colorado, Boulder

GIS Information Layers Derived from Landsat Classification, Wayne L. Meyers, Pennsylvania State University

CONCURRENT SESSION F - JEFFERSON ROOM

**Concurrent Session F
Remote Sensing Inputs to Geographic Information Systems**, Chair: Roy A. Welch, University of Georgia 3:30-5:00

The Wetlands Inventory of the Northern Great Plains: An Example of Operational Remote Sensing and Data Management, Dennis E. Bussom, Scott A. Samson, and Donald C. Rundquist, University of Nebraska at Omaha

County-Level Land Use Information and Geographic Information Systems, James A. Sturdevant, Technicolor Graphic Services, Inc., EROS Data Center, Sioux Falls, South Dakota

Illinois Streams Inventory Project: Integration of Digital Image Processing and Geographic Information Systems, Thomas D. Frank, University of Illinois, Urbana

A "User Friendly" Geographic Information System in a Color Interactive Digital Image Processing System Environment, William J. Campbell and Michael Goldberg, NASA/Goddard Space Flight Center

PROGRAM SCHEDULE

Cartographic Modeling: Procedures for Extending the Utility of Remotely Sensed Data, Joseph K. Berry, Yale University

AWARDS BANQUET - WASHINGTON ROOM

6:00-7:00 Cocktails
7:00 Awards Banquet
Remote Sensing for Resource Observations in the 1980's, Pitt G. Thome, Director, Resource Observation Division, NASA Headquarters, Washington, D.C.

Wednesday, October 21

FOURTH PLENARY SESSION - WASHINGTON ROOM

8:30-10:00 **Fourth Plenary Session**
The Role of Remote Sensing In Modeling
Chair: John L. Place, Office of Geographic Research, National Mapping Division, U.S. Geological Survey, Reston, Virginia

8:30-9:15 **An Approach to Vegetation Mapping in Arid Lands**
Roger M. McCoy, University of Utah

9:15-10:00 **The Role of Remotely Sensed and Other Spatial Data in Predictive Modeling: The Umatilla, Oregon Example**, Thomas R. Loveland and Gary E. Johnson, Technicolor Graphic Services, Inc., EROS Data Center, Sioux Falls, South Dakota

CONCURRENT SESSION G - ROOSEVELT ROOM

10:30-12:00 **Concurrent Session G**
The Role of Remote Sensing in Modeling
Chair: John L. Place, U.S. Geological Survey

Combining Land Use Data Acquired from Landsat with Soil Map Data Using an Information System, Frederick C. Westin, T.M. Brandner, and M.E. Wehde, Remote Sensing Institute, South Dakota State University

Integrated Resource Management Information: A Role for Landsat, D. Van R. Classen and G.A. Ross, University of Calgary, Canada

PROGRAM SCHEDULE

Some Technical Considerations on the Evolution of the IBIS System, Nevin Bryant and Albert L. Zobrist, Jet Propulsion Laboratory, California Institute of Technology

A Framework for Analysis of Temporal and Spatial Patterns of Land Use Changes in Michigan's Coastal Zone, William C. Gartner, and Gene Brothers, Michigan State University

CONCURRENT SESSION H - JEFFERSON ROOM

Concurrent Session H 10:30-12:00
The Role of Remote Sensing in Modeling
Chair: John B. Rehder, University of Tennessee

Use of Remote Sensing Inputs in Geographic Information Systems for Watershed Management, J.C. Eidschink and M. Wehde, South Dakota State University

Spatial Variation and Socio-Economic Correlates of Residential Heat Loss in Jackson, Mississippi, Marvel Lang, Jackson State University

Using Remote Sensing in a Predictive Archaeological Model: The Jackson Purchase Region, Kentucky, Kenneth C. Carstens, Carson R. Dayley, Thomas C. Kind, and Neil V. Weber, Murray State University, Kentucky

Conversion of Raster Coded Images to Polygonal Data Structures, David A. Nichols, Jet Propulsion Laboratory, California Institute of Technology

THE WILLIAM T. PECORA AWARD, presented annually in recognition of outstanding contributions of individuals or groups toward the understanding of the earth by means of remote sensing, is sponsored jointly by the National Aeronautics and Space Administration and the Department of the Interior. The award was established in 1974 to honor the memory of Dr. William T. Pecora, former Director of the U.S. Geological Survey, and later, Under Secretary, Department of the Interior. Dr. Pecora was the motivating force behind the establishment of Earth resource sensing from space. He was a Government leader with broad vision and deep appreciation for the use of satellite system programs in continually inventorying and managing our national resources.

Previous Recipients

- 1974—William A. Fischer, U.S. Geological Survey, Department of the Interior
- 1975—William Nordberg, National Aeronautics and Space Administration
Carlos Brockmann, Director of the LANDSAT-Bolivia Project
- 1976—Awarded jointly: Environmental Research Institute of Michigan
and Laboratory for Application of Remote Sensing of Purdue University
- 1977—Robert N. Colwell, School of Forestry, University of California, Berkeley
Michel T. Halbouty, Consulting Geologist and Petroleum Engineer, The Halbouty Center
- 1978—David S. Johnson, National Environmental Satellite Service, Department of Commerce
- 1979—John M. DeNoyer, U.S. Geological Survey, Department of the Interior
Virginia T. Norwood, Senior Scientist, Hughes Aircraft Company
- 1980—Verner E. Suomi, Professor of Meteorology, University of Wisconsin