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Produced by the NASA Center for Aerospace Information (CASI)
STATE REMOTE SENSING PROGRAMS CATALOG

Report Series from the Earth Resources Data Project

HALL OF THE STATES • 444 North Capitol Street • Washington, D.C. 20001
STATE REMOTE SENSING (LANDSAT) PROGRAMS CATALOG

Prepared by
The Council of State Governments

for the
Earth Resources Data Project
Council of State Planning Agencies

March 1981
FOREWORD

Natural resource issues have been in the forefront in recent years as citizens and public officials have become more aware of the need to better manage the Nation's limited natural resource base. Along with new management directions has come new emphasis on reducing government size and expenditures at all levels. It is incumbent on the natural resource managers in states today to find innovative and cost-effective ways to manage the resources for which they are responsible.

In recent years, some states have shown initiative in applying new information and remote sensing technologies as a way to creatively do more with less. It is hoped that this catalog will encourage dialogue and information exchange among state users of Landsat data and those who might wish to initiate or expand their use of remote sensing.

Although the focus of this report is on the status of program development in states using Landsat data, many respondents indicated other capabilities as well—including software to analyze geographic data, and the use of traditional remote sensing (aerial photographs). State-level programs are found in universities, individual state agencies, and as part of statewide natural resources information systems. An important aspect of these programs is that they tend to share resources and serve a variety of program needs—and in fact, could be considered interagency and sometimes intergovernmental in nature.

Contents of this document were compiled from surveys conducted by Bill Schneider, Research Associate for the Council of State Governments, at the request of the Council of State Planning Agencies. Suggestions on design, information elements and other guidance were provided by the Earth Resources Data Council, an advisory group of state officials established by the Council of State Planning Agencies in consultation with the National Governors' Association.

This document is a directory of those state programs using remote sensing data that responded to the survey. Consequently, this catalog represents a "snapshot" of state programs as they existed in late 1980, and may not be complete for every state. Continual update of this catalog will be necessary to keep abreast of changes that are occurring rapidly in technical capabilities, personnel, and program structure. Please send comments and corrections to the:

Earth Resources Data Project
Council of State Planning Agencies
400 North Capitol Street, NW
Washington, D.C. 20001
(202) 624-5386
CONTENTS OF THE CATALOG

This catalog contains one-page summary descriptions of each state's remote sensing program.

Information is provided about the following aspects of each state's program:

CONTACT: The name, address and telephone number of the person or persons having responsibility for and/or knowledge of the state's remote sensing program. In most instances, the individual who supplied the information contained in the summary descriptions.

INSTITUTIONAL FRAMEWORK: The state agency, interagency group, university research center or other entity having lead responsibility for the state's remote sensing program.

PARTICIPATING AGENCIES AND ORGANIZATIONS: Major users of and contributors to the remote sensing applications developed; participants in demonstration projects or agencies/organizations which contracted for remote sensing products.

APPLICATIONS: The major uses of remote sensing, described in products or programs.

STATUS: Whether the utilization of remote sensing is considered to be operational, under development, in the planning stages, or experimental; demonstration projects are identified.

EQUIPMENT: The hardware components acquired for use in remote sensing programs, whether dedicated or shared.

SOFTWARE: Identification of software used in digital processing of remote sensing data, including sources.

FUNDING: Major sources of operating or demonstration funds for remote sensing activities.

OTHER INFORMATION: Additional notes describing the program and its status.
## REMOTE SENSING PROGRAM SUMMARY
### ALABAMA

**Contact:** Walter Stevenson, Jr.  
Office of State Planning and Federal Programs  
3734 Atlanta Highway  
Montgomery, Alabama 36130  
(205) 832-6400

**Institutional Framework:** State Planning Office  
Auburn University

**Participating Agencies and Organizations:**  
Water resource and pollution  
Alabama Surface Mining and Reclamation Commission  
River Basin planning commission

**Applications:**  
Land use/land cover  
Water resource planning  
Agricultural resource assessment

**Status:** Under development

**Equipment:**  
State—HP 300 Series 33 minicomputer  
COMTAL Image Display System  
INTEL Processor interface for HP and COMTAL  
Auburn—IBM 370/3031

**Software:**  
ELAS Software on HP  
ARIS AUTOMAP ON HP (Interactive)  
ARIS (Alabama Resource Information System) software on IBM 370/3031

**Funding:** Appalachian Regional Commission, NASA  
State general fund, HUD, EDA and WRC funds

**Other Information:** Operational by late spring 1981
REMOTE SENSING PROGRAM SUMMARY
ALASKA

Contact: James Anderson
Dept. of Natural Resources
700 W. Northern Lights Blvd.
Anchorage, Alaska 99500
(907) 263-2299

Institutional Framework: Department of Natural Resources

Participating Agencies and Organizations:
Governor’s Policy Development & Planning Office
Department of Environmental Conservation
Fish and Game Department
Anchorage Municipality
USGS, BLM, DOI, U.S. Corps of Engineers, USDA

Applications:
1. Land cover/land use—South Central Alaska, Matanuska/Susitna and Anchorage areas.
2. Land use/land cover—Yukon Flats Basin
3. Wetlands research project
4. Urban classification system for Anchorage

Status: Operational facility is available via USGS (see below) State capability is under development

Equipment: USGS Facility—IDIMS processor
HP 3300 minicomputer and peripherals
Alaska—DATA GENERAL ECLIPSE minicomputer

Software: IDIMS system software

Funding: USGS, NASA, State General Fund, Local Government, BLM.
OTHER INFORMATION: Alaska currently uses the USGS EROS facility in Anchorage to process LANDSAT data. It plans to use NASA VICAR/IBIS software on its IBM computers in the near future. NASA is also developing a software package to enable LANDSAT data to be processed on the Alaska Dept. of Natural Resources DATA GENERAL ECLIPSE minicomputer and the GIS (Geographic Information System) for Alaska that is currently being developed.
REMOTE SENSING PROGRAM SUMMARY
ARIZONA

Contact: Acting Director
Information Resources Division
Arizona State Land Department
1624 West Adams, Room 300
Phoenix, Arizona 85007
(602) 255-4061

Institutional Framework: Arizona Resources Information System (ARIS) State Land Department

Participating Agencies and Organizations:
State Land Department
Department of Revenue
Department of Transportation
State Water Commission

Applications:
State Trust Lands Mapping
Land Status Mapping

Status:
Manual interpretation of Landsat imagery operational; digital capability under development.

Equipment:
Data General Eclipse S130 CPU
Dasher CRT
Talos digitizer
Zeta pen plotter
Tektronix 4010 Graphics CRT

Software:
ESCATEC (Data General Package)
Various packages from NASA/JPL, ASA/Ames, and Georgia Tech (none implemented)

Funding:
State funds

Other Information:
ARIS is currently under evaluation by state legislature; location and status will likely change.
# REMOTE SENSING PROGRAM SUMMARY

## ARKANSAS

| Contact: | William V. Bush  
Arkansas Geological Commission  
3815 West Roosevelt Road  
Little Rock, Arkansas 72204  
(501) 371-1646 |
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<td>Institutional Framework:</td>
<td>Arkansas Geological Commission (state agency)</td>
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| Participating Agencies and Organizations: | Governor's Office  
Department of Energy  
Forestry Commission  
Department of Computer Services  
Highway Department  
Department of Pollution Control & Ecology  
Soil and Water Conservation Commission  
Department of Economic Development  
Ozarks Regional Commission  
U.S. Conservation Services, U.S. Geological Survey  
University of Arkansas, Arkansas Technology University |
| Applications: | Land use change monitoring in southern portion of state. |
| Status: | Arkansas is participating in a Landsat demonstration project with NASA's Earth Resources Laboratory. |
| Equipment: | N/A |
| Software: | N/A |
| Funding: | N/A |
| Other Information: | N/A |
REMOTE SENSING PROGRAM SUMMARY
CALIFORNIA

Contact: Timothy R. Hays
         Environmental Data Center
         Office of Planning & Research
         1400 Tenth Street
         Sacramento, California 95010
         (916) 322-3784

Institutional Framework: Governor's Office (state agency)

Participating Agencies and Organizations:
Resources Agency and component agencies
Department of Transportation
Department of Health Services

Applications:
Land cover/use monitoring
Hazardous waste site monitoring
Snow melt monitoring
Vegetation and timber classification
Agricultural land use monitoring

Status:
Aircraft component operational
Snow melt program with Landsat operational
Other under development in pre-operational stage

Equipment: N/A
Software: N/A

Funding:
State general fund, some special projects funded by NASA on Demonstration Projects

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
COLORADO

Contact: Leonard Slosky
Assistant to the Governor for Science & Technology
Office of the Governor
State Capitol Building
Denver, Colorado 80203
(303) 839-2471

Institutional Framework: Division of Planning, Department of Local Affairs

Participating Agencies and Organizations:
Department of Natural Resources
Department of Highways
Department of Agriculture
State Forest Service

Applications:
Urban Change detection
Census mapping
Energy impact analyses
Agricultural land mapping
Snow runoff prediction
Drought monitoring
Wildlife habitat identification
Detection of mountain pine beetle infestation
Timber typing

Status: Under development

Equipment: PRIME Computer

Software: N/A

Funding: Legislative appropriation, DOE grant, Governor's special studies, agencies operating funds

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
CONNECTICUT

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<td>Other Information:</td>
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REMOTE SENSING PROGRAM SUMMARY
DELAWARE

Contact: David L. Hardin
Dept. of Natural Resources and Environmental Control
Wetlands Section
Box 1401
Dover, Delaware 19901
(302) 736-4691

Institutional Framework:
Department of Natural Resources and Environmental Control (lead agency)
University of Delaware, College of Marine Studies

Participating Agencies and Organizations:
Department of Natural Resources and Environmental Control
Office of Management, Budget and Planning
Bureau of Archaeology and Historic Preservation
University of Delaware, College of Marine Studies

Applications:
Mapping Land Cover Change
Forest Inventory
Loss of prime agricultural land to development
Identification of Archaeological Sites
Inclusion of Landsat data into existing databases

Status:
Planned Landsat demonstration project with NASA's Regional Remote Sensing Applications Center

Equipment: N/A
Software: N/A
Funding: N/A

Other Information:
University contact: Ian Wells, University of Delaware, College of Marine Studies, Newark, Delaware 19711 (302) 738-2842
REMOTE SENSING PROGRAM SUMMARY
FLORIDA

Contact: W. C. DeLoach, P.E.  
State Topographic Engineer  
or  
William H. Kuyper  
Remote Sensing Engineer  
Department of Transportation  
State Topographic Office  
Tallahassee, Florida 32301  
(904) 488-2168

Institutional Framework: State Topographic Office, Dept. of Transportation (lead agency)

Participating Agencies and Organizations: Various State, County, and Regional government agencies

Applications: Land Use-Vegetation Cover  
Soil Drainage  
Geology

Status: Operational

Equipment: Dietzgen Mirror Stereoscopes with X-Y Traveling Bars  
M & S Interactive Computer Graphics System  
Spatial Data T.V. Densitometer  
I S Multispectral Viewers  
B & L Zoom Transfer Scope  
Richards (B & L Zoom Stereoscope) motorized, four film drive system.

Software: M & S Computer Inc.

Funding: Gastons Revenue (Trust Fund)

Other Information: Recommendations for a two year program to develop Landsat capability have been forwarded to the Governor's Office for approval. A state agency committee proposed that the system be purchased and installed in the State Topographic Office.
# REMOTE SENSING PROGRAM SUMMARY
## GEORGIA

**Contact:**
Bruce Q. Rado  
Environmental Prot. Div.  
Geological Survey  
19 M. L. King Jr. Dr., S.W.  
Atlanta, Georgia 30334  
(404) 656-3214

**Institutional Framework:**
Activities housed in the Department of Natural Resources, Environmental Protection Division. Historically, Landsat activities have occurred on a contractual basis between the agency and the Georgia Institute of Technology.

**Participating Agencies and Organization:**
Department of Natural Resources (Environmental Protection and Game and Fish), Georgia Forestry Commission, Soil Conservation Service, Corps of Engineers, Area Planning and Development Commissions, Georgia Department of Community Affairs.

**Applications:**
Potential wildlife habitat areas, watershed acreage statistics, wetland delineation, county acreage statistics, delineation of bare soil areas.

**Status—Operational:**
Activities performed on a project by project basis

**Equipment:**
Mini-computer, tape drives, disk drives, color inter-active monitor, dot-matrix printer and etc.

**Software:**
Complete landsat and data base programs

**Funding:**
Various agency sources

**Other Information:**
N/A
# REMOTE SENSING PROGRAM SUMMARY
## HAWAII

**Contact:** Sahji Kato  
Planning Division  
Dept. of Planning & Economic Development  
P.O. Box 2359  
Honolulu, Hawaii 96804  
(808) 548-3016

**Institutional Framework:** State of Hawaii Ad Hock Committee on Remote Sensing

**Participating Agencies and Organizations:**  
State of Hawaii Department of Land and Natural Resources  
State of Hawaii Department of Agriculture  
State of Hawaii Department of Planning and Economic Development  
Governor’s Office of Environmental Quality Control  
County of Hawaii

**Applications:**  
Land and Water Use Classification  
Monitoring Land Use Change

**Status:** Experimental: A demonstration program has been conducted with NASA’s Western Regional Applications Program.

**Equipment:** N/A

**Software:** N/A

**Funding:** Coastal Zone Management Program

**Other Information:** Follow-up to the demonstration program is planned. Potential applications have been identified by state agencies.
REMOTE SENSING PROGRAM SUMMARY
IDAHO

Contact: Kim Johnson
Department of Water Resources
450 W. State Street
Boise, Idaho 83720
(208) 334-4457

Institutional Framework:
Department of Water Resources (responsible for developing Idaho Image Analysis Facility)
Division of Economic & Community Affairs (representative to PNW Regional Commission)

Participating Agencies and Organizations:
- Idaho Department of Water Resources
  - "Department of Fish and Game
  - "Bureau of Mines & Geology
- University of Idaho, College of Forestry, Wildlife & Range Sciences
- Idaho Division of Economic & Community Affairs

Applications:
- Inventory of irrigated cropland
- Development of image analysis facility including software and hardware
- Wildlife habitat study
- Geologic hazards mapping
- Training

Status:
Idaho Image Analysis Facility at IDWR is under development and nearing operational status.

Equipment:
- Zoom Transfer Scope—Bausch & Lomb
- Digitizer—GTCO
- Light Tables
- Mirror Stereoscope
- PDP 11-34
- I^S Model 70 (on order)
- Also utilize IBM 370-168
REMOTE SENSING PROGRAM SUMMARY
IDAHO—Continued

Software:
VICAR–IBIS (from NASA/JPL)
I²S 511 (on order)

Funding:
Pacific Northwest Regional Commission,
NASA, individual State agencies

Other Information:
N/A
REMOTE SENSING PROGRAM SUMMARY
ILLINOIS

Contact: John Bishop
Institute of Natural Resources
325 W. Adams Street
Springfield, Illinois 62706
(217) 785-2800

Institutional Framework: No single entity has lead agency role.

Participating Agencies and Organizations:
Department of Conservation
Regional Planning Agencies and Universities
Department of Local Government Affairs
Illinois Environmental Protection Agency

Applications:
Land-use/land cover classification in southwestern Illinois
Water quality mapping
EPA 208 program (planned)
Illinois Dept. of Conservation—forest inventory along the Mississippi River (planned)

Status: Landsat use in the state has been a series of one-time application projects

Equipment: N/A
Software: N/A
Funding: N/A
Other Information: N/A
## REMOTE SENSING PROGRAM SUMMARY

### INDIANA

**Contact:**
David C. Zumeta, Senior Planner  
State Planning Services Agency  
143 W. Market St., Suite 300  
Indianapolis, Indiana 46204  
(317) 232-1500

**Institutional Framework:**
No single entity has lead agency role

**Participating Agencies and Organizations:**
Indiana State Highway Commission  
Indiana State Planning Services Agency  

**Applications:**
- Delineation of potential highway route locations  
- Analysis of land use patterns  
- Monitoring of strip mine reclamation, mapping of areal extent of surface water bodies, forest resource inventory in coastal zone, mapping of natural grasslands in northern Indiana, wetlands inventory, location of potential gravel deposits, coal deposits, and other geological features.

**Status:**
Landsat use in the state has been done through contracts with universities and consultants.

**Equipment:**
N/A

**Software:**
N/A

**Funding:**
Project by project basis.

**Other Information:**
N/A
REMOTE SENSING PROGRAM SUMMARY
IOWA

Contact: Bernard Hoyer
Iowa Geological Survey
123 North Capitol
Iowa City, Iowa 52242
(319) 338-1173 or 1174

Institutional Framework: Iowa Geological Survey
Remote Sensing Laboratory

Participating Agencies and Organizations:
1. Iowa Department of Soil Conservation
2. Iowa Conservation Commission
3. Iowa Department of Environmental Quality
4. Iowa Natural Resources Council
5. U.S. Soil Conservation Service
6. Corps of Engineers
7. U.S. Geological Survey, Water Resources Division

Applications: Land use change
Erosion
Flood mapping
Environmental site studies

Status: Landsat processing under development
Other remote sensing methodology is operational

Equipment: Perkin Elmer/3220 mini-computer
Comtal/Vision One/20 color image display
Bausch & Lomb/Zoom transfer scope
Bausch & Lomb/240 stereo zoom microscope & light table
I2S/Multiband camera
I2S/Multiband viewer
Tektronix/Digitizer 4964
Versatec/electrostatic plotter
Other aerial sensing equipment
REMOTE SENSING PROGRAM SUMMARY
IOWA—Continued

Software: ELAS (NASA-ERL)
           In house

Funding: State Appropriation

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
KANSAS

Contact: Dr. Edward A. Martinko
Kansas Applied Remote Sensing (KARS) Program
University of Kansas
Space Technology Center
2291 Irving Hill Rd.
Lawrence, Kansas 66045
(913) 863-4775

Institutional Framework: University of Kansas Applied Remote Sensing Program (KARS)

Participating Agencies and Organizations: Fourteen (14) state agencies have participated in projects; numerous other federal, regional and local government agencies have also been involved.

Applications: Land use/land cover inventory
irrigated lands inventories
wildlife habitat evaluation
strip mined land assessment
crop and rangeland evaluation

Status: KARS Program is funded through NASA's university grant program; it is operational but not state supported.

Equipment:
Image interpretation: Stereoscopes, zoom transfer scopes, light tables
Data processing: Intertic intelligent terminal (interfaced to Honeywell Level 66 shared system)
IDS 440 Dot Matrix Printer
Digitizer
Tekhonix Desk-top computers

Software: LSDP (NASA)
ELAS (NASA/ERL)
Internally developed software
REMOTE SENSING PROGRAM SUMMARY
KANSAS—Continued

Funding: NASA, contract funds from federal and state agencies

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
KENTUCKY

Contact: Dr. Wally Dryden
Department of Natural Resources & Environmental Protection
Capital Plaza Tower, 4th Floor
Frankfort, Kentucky 40601
(502) 564-5174

Institutional Framework: State Department of Natural Resources & Environmental Protection
Murray State University, Murray, Kentucky
(Mid-America Remote Sensing Center)

Participating Agencies and Organizations:
Divisions within the state Department of Natural Resources & Environmental Protection
State Department of Transportation
Kentucky Legislative Research Commission
State Department of Agriculture

Applications:
Facility siting
Forestry applications
Determination of prime agriculture land
Soil erosion studies
Waste management
River basin management

Status:
State—System under development (50% operational). Fully operational by January, 1981.
University—fully operational.

Equipment:
Prime 750, 2 tape drives, 3 2 meg disk drives, 300 Lpm printer
DEANZA image processor with attached Dunn Polaroid camera
DEC PDP-11 minicomputer
ZEROX Versatec printer plotter (black & white)
Houston Instruments 310 plotter
TALOS digitizer with free flowing cursor
Princeton Intelligent graphics terminal
REMOTE SENSING PROGRAM SUMMARY
KENTUCKY—Continued

Software:
Interactive software from KNRIS (Kentucky Natural Resource Information System)
Modified ELAS (NASA ERL) software to interface with KNRIS developed by Environmental Systems Research Institute
Related software from Environmental Systems Research Institute (Redlands, California)

Funding:
State appropriations for state agency
NASA grant at Murray State University

Other Information:
The program at Murray State University provides training in NASA software and systems. Kentucky’s state agency personnel are contemplating taking advantage of this resource. Both institutions operate wholly separate programs and the data on this sheet only describes state agency resources.
# Remote Sensing Program Summary

**Location:** Louisiana

**Contact:** Dr. Charles Harlow  
Director, Remote Sensing and Image Processing Lab  
Division of Engineering Research  
3418 CEBA  
Louisiana State University  
Baton Rouge, Louisiana 70803  
(504) 388-8417

**Institutional Framework:** Remote sensing and image processing laboratory  
Division of Engineering Research, Louisiana State University

**Participating Agencies and Organizations:**  
Coastal Zone Management Section, Louisiana Department of Transportation  
Louisiana Geological Survey  
LSU Coastal Studies Institute  
U.S. Corps of Engineers  
National Aeronautics and Space Administration

**Applications:**  
Coastal zone management  
Hazardous waste disposal  
Crop irrigation practices  
Water quality  
Climate/Oceanography  
Wildlife/Forest habitat delineation  
Lignite mining  
Teaching/Training/Workshops  
Texture analysis

**Status:** N/A

**Equipment:**  
Interdata 8/32 computer  
Comtal 8000-SE image display device  
Talos digitizer  
Varian statos electrostatic plotter  
Printonix printer
| Equipment:                          | Hamamatsu camera/scanning system  |
|                                   | Bausch and Lomb zoom transfer scope |
|                                   | Daedalus multispectral scanner     |
| Software:                         | Internally developed plus software from |
|                                   | NASA/ERL, U.S. Fish and Wildlife Service, |
|                                   | and U.S. Corps of Engineers        |
| Funding:                          | National Science Foundation,       |
|                                   | Environmental Protection Agency,   |
|                                   | Corps of Engineers, U.S. Air Force, |
|                                   | National Aeronautics and Space Administration, Coastal Zone Management. |
| Other Information:                | N/A                                |
| **REMOTE SENSING PROGRAM SUMMARY** |
| **MAINE** |
| **Contact:** | James F. Conners  
Land Use Regulatory Commission  
State House Sta 22  
Augusta, Maine 04333  
(207) 289-2631 |
| **Institutional Framework:** | No single entity serves as lead agency; there is an ad hoc remote sensing interest group. |
| **Participating Agencies and Organizations:** | Dept. of Conservation  
State Planning Office  
University of Maine  
Dept. of Environmental Protection |
| **Applications:** | Forest Inventory: fire control, insect problems, environmental hazards, wildlife habitat, groundwater resources |
| **Status:** | A Landsat demonstration program is being conducted with NASA's Eastern Regional Remote Sensing Applications Center. |
| **Equipment:** | IBM 360 (University facility)  
Digitizer  
Calcomp plotter |
| **Software:** | ORSER/OCCULT (Penn State) |
| **Funding:** | State Funds |
| **Other Information:** | N/A |
REMOTE SENSING PROGRAM SUMMARY
MARYLAND

Contact: Susan Alderman
Maryland Department of State Planning
301 West Preston Street
Baltimore, Maryland 21201
(301) 383-3067

Institutional Framework: Department of State Planning

Participating Agencies and Organizations:
University of Maryland—Department of Geography
Department of Natural Resources

Applications:
Water holding pond location
Forest cover classification
Land cover classification
Land cover/use change detection

Status:
Applications developed in demonstration project with NASA’s Eastern Regional Remote Sensing Applications Program

Equipment:
Digital Equipment Corp—2 LA 36 Decwriter II Terminals

Software:
Algorithm Simulation Test and Evaluation Program (ASTEP II)

Funding: N/A

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
MASSACHUSETTS

Contact: Dr. Robert L. Huguenin, Director
Remote Sensing Program
The Environmental Institute
Blaisell House
University of Massachusetts
Amherst, Massachusetts 01003
(413) 545-0648

Institutional Framework:
The Remote Sensing Center
The Environmental Institute
University of Massachusetts/Amherst

Participating Agencies and Organizations:
University of Massachusetts Departments
State Agencies

Applications:
Land Use/Land Cover Analysis
Resource Exploration
Coastal Mapping
Wildlife Modeling

Status:
Portions operational/portions under development/portions planned

Equipment:
Hewlett Packard 9845C Color Graphics
Mini-computer with 4 color plotter & digitizer
Perkin Elmer UV/VIS/NIR & Perkin Elmer IR Spectrophotometers
CDC Cyber 175 Mainframe
Ramtek High Resolution Color Graphics Terminals
Tectronics Graphics Terminals

Software:
CDC Intersys
CDC Explorer
University of Minnesota Package
NASA Packages
UMASS Graphics Packages
REMOTE SENSING PROGRAM SUMMARY
MASSACHUSETTS—Continued

Funding:
University of Massachusetts Funds
NASA Grants
NSF Grants
Private Industry Grants
USDA Experiment Station Funds

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
MICHIGAN

Contact: Larry Folks
Michigan Dept. of Natural Resources
Div. of Land Resource Programs
Box 30028
Lansing, Michigan 48909
(517) 373-3328

Institutional Framework: No single entity has lead agency role

Participating Agencies and Organizations: Michigan Dept. of Natural Resources
—Division of Land Resource Program
—Forest Management Division
Michigan State University
—Center for Remote Sensing

Applications: Land Use/Cover Classification
Forest Inventory/Change
Water Quality—Identified need
Coastal Zone Monitoring—Identified need
Crop Irrigation—Identified need

Status: The Landsat imagery for two pilot studies were processed through the Environmental Research Institute of Michigan's facilities in Ann Arbor.

Equipment: N/A

Software: N/A

Funding: U.S. Dept. of Housing and Urban Development—701 Comprehensive Planning Grant
NASA Demonstration Grant

Other Information: The Department of Transportation is currently considering the feasibility of purchasing software to process Landsat data.
REMOTE SENSING PROGRAM SUMMARY
MINNESOTA

Contact: Earl Nordstrand
LMIC
State Planning Agency
LL 45 Metro Square Bldg.
7th & Roberts Streets
St. Paul, Minnesota 55101
(612) 296-1202

Institutional Framework: Land Management Information Center (LMIC)
State Planning Agency

Participating Agencies
and Organizations:
Pollution Control Agency
University of Minnesota, Remote Sensing Lab.
Department of Natural Resources
State Planning Agency, Environmental Planning

Application:
Water Quality Inventory
Irrigation Monitoring
Land Use Change Detection
Land Cover Mapping

Status: Operational by January 1, 1981

Equipment:
PRIME 550
DeAnza Image Processor
Versatec and Trilog plotters

Software:
Environmental Planning and Programming Language (internally developed)
ELAS (software from NASA ERL)
PLOS (Environmental Systems Research Institute)

Funding:
State appropriation, service bureau account
Legislative Commission on Minnesota Resources grant
REMOTE SENSING PROGRAM SUMMARY
MINNESOTA—Continued

Other Information: LMIC acts as a coordinator and service bureau to provide this capability to state users.
REMOTE SENSING PROGRAM SUMMARY
MISSISSIPPI

Contact: Eddy Downing
P.O. Drawer 2470
Jackson, Mississippi 39205
(601) 982-6339

Institutional Framework: Mississippi Research & Development Center

Participating Agencies
and Organizations: State and local agencies, U.S. Soil Conservation Service

Applications: N/A

Status: Landsat capability is being planned

Equipment: N/A

Software: IMGRID version 3.5—Harvard/TVA

Funding: State government

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
MISSOURI

Contact: Dr. Chris J. Johannsen
214 Waters Hall, UMC
Columbia, Missouri 65211
(314) 882-2001

Alternate: Dr. William McFarland
303 EE Building, UMC
Columbia, Missouri 65211
(314) 882-3078

Institutional Framework: Geographic Resources Center (GRC),
University of Missouri, Columbia

Participating Agencies and Organizations:
University of Missouri—Columbia
Soil Conservation Service
Missouri Department of Conservation
" Natural Resources
U.S. Forest Service
Missouri Farmers Association

Applications:
Watershed analysis
Forest cover mapping
Soil survey interpretations
Forest data base
Erosion potential
MFA application pilot test program
Strip mine reclamation
Land cover type mapping

Status:
The GRC has just been initiated during
1980. Plans for equipment purchase are
being developed.

Equipment:
PDP-11/50 with 2 Ramtek Image Displays,
Spatial Data Image Digitizer
Graf-Pen 2-D digitizer; Perkin-Elmer 7/32 w
H-P graphic plotter
UM Computer Network Amdahl 470/V7
REMOTE SENSING PROGRAM SUMMARY
MISSOURI—Continued

Software: Application software is primarily developed in-house
GEOREF and SEARCH (NASA/ERL)

Funding: Soil Conservation Service,
Missouri Dept. of Natural Resources
Department of Energy
U.S. Geological Survey

Other Information: The GRC has a remote sensing expertise,
initiated by a NASA grant, that provides
digital analysis capabilities of Landsat and
other multispectral data sources, digital
analysis of aerial photography, data base
development, photo interpretation and
photogrammetry analysis. The GRC cooperates with the Remote Sensing
Laboratory, University of Missouri-Rolla
which specializes in geologic and mining
applications of remote sensing. UMR
Contact: Dr. David Barr, 129 Mining Bldg.,
UM, Rolla, MO 65401. (314) 341-4759.
REMOTE SENSING PROGRAM SUMMARY
MONTANA

Contact: R. Thomas Dundas, Administrator
Research & Information System Div.
Dept. of Community Affairs
Capital Station
Helena, Montana 59601
(406) 449-2896

Institutional Framework: Department of Community Affairs

Participating Agencies and Organizations:
Department of Natural Resources
Department of Revenue
Cascade County
Department of Community Affairs

Applications: Land Use
Irrigated Land Inventory
Inventory of all water bodies

Status: Under development

Equipment: IBM 370-158 computer (shared state system)

Software: Vicar/IBIS (NASA)

Funding: N/A

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
NEBRASKA

Contact:
Dr. Don Rundquist
or
Scott Samson
Remote Sensing Applications Lab.
University of Nebraska/Omaha
Omaha, Nebraska 68182
(402) 554-2725

or
Don Buckwalter
Conservation & Survey Division
Institute of Agriculture & Natural Resources
University of Nebraska
Lincoln, Nebraska 68588
(402) 472-3471

Institutional Framework:
University of Nebraska—Lincoln
University of Nebraska—Omaha

Participating Agencies
and Organizations:
Nebraska Natural Resources Commission
State Department of Water Resources
State Department of Environmental Control
Games and Parks Commission
State Department of Roads
U.S. Army Corps of Engineers
Private sector
Agricultural interest organizations

Applications:
Lincoln—Geological lineament studies
Center pivot irrigation system inventory
Land use mapping
Omaha—Wetlands inventory (Great Plains)
Identification of irrigated lands under various climatic conditions

Status:
Lincoln—Operational
Omaha—Operational
**REMOTE SENSING PROGRAM SUMMARY**  
**NEBRASKA—Continued**

| Equipment | Lincoln—IBM 370/165 processor  
| Alpha AM100 minicomputer  
| TEKTRONIKS 4014 graphics Terminal  
| TEKTRONIKS 4663 flatbed plotter  
| Houston Instruments 36” drum plotter  
| Bausch & Lomb—300m transfer scope  
| Photolab (b & W color)  
| Omaha—IBM 370/158 processor  
| Raytheon CRT  
| DECWRITER LA 36  
| Compucolor II microcomputer  
| NUMONICS 1224 Digitizer attached to microcomputer |

| Software | Lincoln—Pattern Recognition software  
| internally developed for use with Landsat imagery  
| Omaha—UNORSAL system for mapping (internally developed)  
| LARSIS & ERIS software for digital image processing & statistical manipulation |

| Funding | Lincoln—50% NASA Office of University Affairs (Grant)  
| 50% state appropriation  
| Omaha—contracts with private sector and government agencies |

| Other Information | The Omaha program hopes to develop production mode capability for processing data for large geographic areas. The Lincoln program coordinator has recently resigned & there is some apprehension about the future of the program. |
REMOTE SENSING PROGRAM SUMMARY
NEVADA

Contact: Mike Nolan
State Planning Coordinator's Office
Capitol Bldg., Capitol Complex
Carson City, Nevada 89710
(702) 885-4805

Institutional Framework: State Planning Coordinator's Office

Participating Agencies and Organizations:
Nevada Division of Forestry
University of Nevada Reno—Department of Renewable Natural Resources

Applications: Vegetative Cover

Status: A demonstration project has been completed with NASA's Western Regional Applications Program

Equipment: N/A
Software: N/A
Funding: N/A

Other Information: Future program is under discussion
REMOTE SENSING PROGRAM SUMMARY
NEW HAMPSHIRE

Contact: James F. McLaughlin
Assistant State Planning Director
Office of State Planning
2 1/2 Beacon Street
Concord, New Hampshire 03301
(603) 271-2155

Institutional Framework: No single entity has lead agency role.

Participating Agencies and Organizations:
Dartmouth College—Geography Department—Project in Remote Sensing;
Earth Sciences Dept.
University of New Hampshire—Institute of Natural & Environmental Resources;
Cooperative Extension Service
Office of State Planning

Applications:
Forestry—clear cut identification (current)
Urban land use detection (change)
Agricultural use change

Status:
A demonstration program with NASA’s Eastern Regional Remote Sensing Applications Program is planned.

Equipment: N/A
Software: N/A
Funding: N/A
Other Information: N/A
### REMOTE SENSING PROGRAM SUMMARY
#### NEW JERSEY

| Contact: | Bob Mills, Chief  
Bureau of Management Information Data Systems  
Dept. of Environmental Protection  
88 East State Street  
Trenton, New Jersey 08625  
(609) 292-2678 |
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| Participating Agencies and Organizations: | DEP—Coastal Resources, Water Resources, Greenacres, Parks and Forestry, Department of Community Affairs, Division of State Planning  
USDA, Soil Conservation Service |
| Applications: | Land cover mapping  
208 water quality management planning  
Monitoring timber resource  
Soil erosion  
HUD 701 planning |
| Status: | Operational, but continually being redeveloped and institutionalized |
| Equipment: | IBM 370/145  
IDT—100 color graphics terminal standalone  
Stand alone color graphics display system |
| Software: | Internally developed (ARGOS)  
Image correction (Computer Science Corporation) |
| Funding: | NOAA CZM  
HUD 701  
EPA 208 |
| Other Information: | Many separate efforts are just beginning to be coordinated. |
REMOTE SENSING PROGRAM SUMMARY
NEW MEXICO

Contact:    Kate Wickes, Administrative Asst.
            Natural Resources Department
            Villagra Building
            Santa Fe, New Mexico 87503
            (505) 827-5231

Institutional Framework:    The Technology Applications Center,
                             University of New Mexico, houses the
                             equipment which state agencies support

Participating Agencies
and Organizations:    Natural Resources Department
                      Energy and Minerals Department

Applications:    Coal development monitoring.

Status:    Operational

Equipment:    Digital Equipment Corporation PDP 11/34
              2 Digital Equipment Corporation VT100
              terminals
              1 ADM3A CRT terminal
              Grinnell 11 Image Display and CRT
              Summagraphics Digitizer

Software:    RSX 11 M (operating language)
             ELAS (NASA/Earth Resources Laboratory)
             Stansort II (Stanford University)

Funding:    Four Corners Regional Commission, Office
            of Surface Mining, Heritage Conservation
            and Recreation Service

Other Information:    N/A
REMOTE SENSING PROGRAM SUMMARY
NEW YORK

Contact: John C. Harmon
NYS Dept. of Environmental Conservation
50 Wolf Road, Rm. 404a
Albany, New York 12233
(518) 457-7480

Institutional Framework: Department of Environmental Conservation

Participating Agencies and Organizations:
Department of Environmental Conservation
Divisions of Lands and Forests
Division of Fish and Wildlife

Applications:
Wildlife habitat studies
Forest insect damage detection
Forest inventory assessment

Status: Demonstration project presently being conducted with NASA's Eastern Regional Remote Sensing Applications Center.

Equipment: Line Printer

Software: ORSER system at Penn State, through telephone links

Funding: Department of Environmental Conservation

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
NORTH CAROLINA

Contact: Jim Muller  
Division of Land Resources, DNRC  
P.O. Box 27687  
Raleigh, North Carolina 27611  
(919) 733-3833

Institutional Framework: North Carolina Dept. of Natural Resources and Community Development (DNRC)

Participating Agencies and Organizations: 
- Land Resources Information Services, Division of Land Resources, DNRC
- Land Quality Section, Division of Land Resources, DNRC
- Division of Environmental Management, DNRC
- Division of Forest Resources, DNRC
- North Carolina State University

Applications: 
- Water quality monitoring
- Land cover/land use mapping
- Forest cover type mapping and special forestry related projects
- Dam inventory
- Habitat mapping

Status: Landsat applications are under development or planned.

Equipment: 
- Data General Eclipse S-230 minicomputer with 448 KB memory
- 96 million byte Data General Disk Drive
- 800 BPI Data General tape drive
- Talos digitizing tables
- Tektronix Cathode Ray Tubes

Software: COMARC Design Systems interactive analysis and graphics display software coupled with Data General Advanced Operating System Software.
REMOTE SENSING PROGRAM SUMMARY
NORTH CAROLINA—Continued

Funding: Federal "208" grants, state appropriated funds.

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
NORTH DAKOTA

Contact: Dr. Roland D. Mower, Director
University of North Dakota
Institute of Remote Sensing
Grand Forks, North Dakota 58202
(701) 777-4246

Institutional Framework: University of North Dakota

Participating Agencies and Organizations: State Agencies

Applications: Land use/land cover
Water quality planning

Status: Operational

Equipment:
IBM 370/156
IMPAC Interactive System
Light tables
Stereoscopes
Map-O-Graph
Zoom-transfer-Scope
Densitometers
Polar Planimeter
Digitizer

Software: ORSER (Penn State)

Funding: Various contracts for products

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
OKLAHOMA

Contact: Keith Vaughan
State Capitol, Rm. 20
Oklahoma City, Oklahoma 73105
(405) 521-2384

Institutional Framework: Oklahoma Conservation Commission

Participating Agencies and Organizations:
Oklahoma Conservation Commission
Soil Conservation Service
Oklahoma Department of Agriculture
Ozarks Regional Commission

Applications:
Water Quality Program
-inventory of eroded areas
-inventory of surface impoundments
Resource Conservation
-land cover update
-riparian vegetation inventory

Status: Operational

Equipment: Comtal-interactive display system mini-computers

Software: Internally developed.

Funding: U.S. Environmental Protection Agency
Soil Conservation Service
Ozarks Regional Commission

Other Information: All tasks have been completed by Oklahoma Conservation Commission through contracts with Oklahoma Foundation for Research and Development Utilization, Inc.
REMOTE SENSING PROGRAM SUMMARY
OHIO

Contact: Mr. Gary Schaal
or
Jim Given
Remote Sensing Unit
Dept. of Natural Resources
Fountain Square
Columbus, Ohio 43224
(614) 466-6294

Institutional Framework: Ohio Department of Natural Resources

Participating Agencies and Organizations: Ohio Department of Natural Resources' Wildlife, Reclamation and Water Divisions

Applications: Wildlife habitat
Land reclamation
Strip mining

Status: Experimental (pilot studies)

Equipment: Bell 43 teleprinter connected to COMNET time sharing system (private for Profit network). NASA ERSAC at Goddard Space Flight Center prepares and formats data on request from Ohio. Data is sent to and maintained by COMNET. Ohio accesses data via Bell 43 teleprinter.


Funding: NASA General fund appropriation

Other Information: A prior LANDSAT demonstration project took place in Ohio in 1977. Since then there has been no satellite data activity until Ohio embarked on the above projects. This system is not integrated with the state GIS (OCAP—Ohio Capability Analysis Program) system.
REMOTE SENSING PROGRAM SUMMARY
OREGON

Contact: Environmental Remote Sensing Applications Laboratory
        Oregon State University
        Corvallis, Oregon 97331
        (503) 754-3056

Institutional Framework: Environmental Remote Sensing Applications
Laboratory (ERSA),
Oregon State University

Participating Agencies
and Organizations: Department of Water Resources
                 Department of Fish and Wildlife
                 Deschutes County Planning Department

Applications: Irrigated and other agricultural lands
              Wildlife habitat mapping and assessment
              Resource inventories

Status: Operational

Equipment: N/A

Software: N/A

Funding: Contracts with state and local agencies,
         Pacific Northwest Regional Commission.

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
PENNSYLVANIA

Contact: Gary Peterson
Office of Remote Sensing of Earth Resources
220 Electrical Engineering West
Penn State University
University Park, Pennsylvania 16802
(814) 865-9753

Institutional Framework: Office of Remote Sensing of Earth Resources (ORSER), Penn State University

Participating Agencies and Organizations: Federal agencies, regional planning commissions, private corporations

Applications: Land cover mapping
Forest inventory
Forest insects
Soil mapping
Strip mine mapping

Status: Operational facility for research and development

Equipment: Systems/370 IBM 3033 Processor
Ramtek color display
Tektroniks 4010 graphic terminal

Software: ORSER (Penn State developed)

Funding: NASA, Penn State University

Other Information: The only use by state agencies, has been a study of defoliation caused by the gypsy moth.
REMOTE SENSING PROGRAM SUMMARY
RHODE ISLAND

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### REMOTE SENSING PROGRAM SUMMARY
#### SOUTH CAROLINA

| Contact: | Gerald R. Minick  
USC Computer Graphics  
2712 Middleburg Drive  
Suite 104  
Columbia, South Carolina 29204  
(803) 777-7236 |
| --- | --- |
| Institutional Framework: | University of South Carolina, Computer Services Division  
South Carolina Budget and Control Board, Division of Research and Statistics |
| Participating Agencies and Organizations: | Land Resources Committee  
Water Resources Committee  
Wildlife and Marine Resources  
Clemson University, Department of Forestry  
Division of Research and Statistics |
| Applications: | Land Cover Inventory  
Integration of Data With State Database |
| Status: | Operational/Development |
| Equipment: | Comtal Vision 1/2φ  
Data General Eclipse S/23φ  
Amdal V6 |
| Software: | ELAS (NASA)  
USC Computer Graphics—1GP  
ESRI  
NASA RR/SIDACS |
| Funding: | State Government  
NASA  
Production  
Contracts |
| Other Information: | N/A |
REMOTE SENSING PROGRAM SUMMARY
SOUTH DAKOTA

Contact: Bill Ripple
Planning Information Section
South Dakota State Planning Bureau
Pierre, South Dakota 57501
(605) 773-3661

Institutional Framework: South Dakota State Planning Bureau

Participating Agencies and Organizations:
Department of Water and Natural Resources
Planning Districts
Department of Transportation
Department of Agriculture
U.S. Fish and Wildlife Service
U.S. Soil Conservation Service
Local Governments

Applications:
Computerized Resource Information System
Land Use Mapping
Land Capability Analysis
Water Resources Planning—Surface Water Mapping
208 Water Quality Planning, Soil Erosion Modeling
Crop Inventories, Transportation Planning
Transmission Corridor Mapping

Status: Operational

Equipment:
IBM 3031 Mainframe Computer (University Owned)
3—IBM 3278 Display Terminals
Tektronix 4051 Micro-computer
Summagraphics Digitizer

Software:
Landsat Imagery Analysis Package (LIMAP)—South Dakota Planning Bureau
(Polygrid) Polygon to Grid Cell package—South Dakota Planning Bureau

Funding: State Funds

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
TENNESSEE

Contact: Sam Pearsall
Tennessee Heritage Program
Dept. of Conservation
2611 W. End Ave.
Nashville, Tennessee 37203
(615) 741-1061
or
Dr. Ralph Fullerton
Dept. of Geography & Geology
Middle Tennessee State Univ.
Murfreesboro, Tennessee
(615) 898-2726

Institutional Framework: Middle Tennessee State University, Murfreesboro, Tennessee with supervision of state agency committee

Participating Agencies and Organizations:

Applications:
- Determination of lands unsuitable for mining in Upper Emory River Watershed (East Tennessee)
- Determination of floodplain & flood areas in Rutherford County, Tennessee.

Status:
Demonstration projects are being completed. A full scale program with the acquisition of Landsat processing capability is under development and is expected to be operational by mid-1981 pending the release of state funds.
REMOTE SENSING PROGRAM SUMMARY
TENNESSEE—Continued

Equipment: Currently most of the work on the demonstration projects is being done at the National Space Technology Laboratory in Mississippi (NASA). Plans are to acquire a minicomputer at the Middle Tennessee State University to permit processing of satellite imagery.

Software: ELAS (NASA ERL) software is being used at the Mississippi lab for the demonstration projects. Plans are to use software & data from GIST (Geographic Information System for Tennessee) and superimpose data from this system on satellite imagery for a variety of applications.

Funding: State Appropriations

Other Information: The program has received legislative committee approval and pending the outcome of the legislative session should be operational by mid-1981.
REMO~r SENSING PROGRAM SUMMARY
TEXAS

Contact: David L. Ferguson
Texas Natural Resource Information System
P.O. Box 13087
Austin, Texas 78711
(512) 475-3571

Institutional Framework: Texas Natural Resource Information System (TRNIS), a "consortium" of 13 state agencies, housed within the Department of Water Resources.

Participating Agencies and Organizations:
Dept. of Water Resources
General Land Office
Air Control Board
Forest Service
Industrial Commission
Dept. of Health
Bureau of Economic Geology
Railroad Commission
Dept. of Agriculture
Dept. of Highways and Public Transportation
Universities, Private Consultants
Parks and Wildlife Dept.
Soil and Water Conservation Board
Coastal and Marine Council

Applications:
Land Use/Land Cover Mapping
Playa Lakes Mapping
Forestland Inventory
Wildlife Habitat
Dam Safety

Status: Operational with new programs under development.
REMOTE SENSING PROGRAM SUMMARY
TEXAS—Continued

Equipment:
- Ramtek color display
- UNIVAC 1100-41 Processor
- Interdata 7/32
- Calcomp 748 Plotter
- Tektronix 4014
- Light table
- Stereoscope
- Zoom Transfer Scope

Software:
Various packages from NASA/JPL, NASA/ERL, LARS (Purdue) and internally developed.

Funding:
State funding and contracts with federal agencies.

Other Information:
TNRIS is directed by a task force of member agencies; Systems Central staff provide remote sensing support to these agencies and other users.
## REMOTE SENSING PROGRAM SUMMARY
### UTAH

**Contact:**
Martha Smith  
Remote Sensing Coordinator  
Utah Geological and Mineral Survey  
606 Black Hawk Way  
Salt Lake City, Utah 84108  
(801) 581-3066

**Institutional Framework:**
State Planning Coordinator Office and Utah Division of State Lands

**Participating Agencies and Organizations:**
- Department of Natural Resources  
- Division of State Lands  
- Division of Water Rights  
- Division of Water Resources  
- Division of Wild Life Resources  
- University of Utah, Department of Geography  
- State Planning Coordinator's Office

**Applications:**
- Range land: cover species, quantities  
- Forestry: cover types, growth stage, fire hazards  
- Wild life cover: cover types, density (for environmental studies)  
- Irrigated agricultural areas: change in area with time  
- Snow pack: estimation of water supply

**Status:**
Under development with assistance from NASA's Western Regional Applications Program

**Equipment:**
Univac 1108—(in transition to 1130) at University of Utah

**Software:**
N/A

**Funding:**
N/A

**Other Information:**
N/A
REMOTE SENSING PROGRAM SUMMARY
VERMONT

Contact: Dennis Malloy
Vermont State Planning Office
108 State Street
Pavilion Office Building
Montpelier, Vermont 05602
(802) 828-3326

Institutional Framework: No single entity has lead agency responsibility; State Planning Office serves as coordinator.

Participating Agencies and Organizations:
Agency of Environmental Conservation
Dept. of Forests and Parks
Dept. of Water Resources
University of Vermont, School of Natural Resources
Vermont Mapping Advisory Committee

Applications:
Forest Cover Type Classification
Water Resources Inventory
Land Use/Land Cover Inventory and Analysis

Status: Under development

Equipment: N/A

Software: N/A

Funding:
State funds, EPA, HUD, NASA

Other Information:
State has utilized computer facilities of NASA's Eastern Regional Remote Sensing Applications Center and the University of Vermont.
REMOTE SENSING PROGRAM SUMMARY
VIRGINIA

Contact: Warren Hypes
NASA Langley Research Center
Hampton, Virginia 23665
(804) 827-2486

Institutional Framework: Commonwealth Data Base, Department of Taxation, has prime responsibility. Commonwealth Data Base (CDB) project has subcontracted Landsat digital data processing responsibility to the Virginia Institute and Marine Science which is administratively attached to the College of William and Mary.

Participating Agencies and Organizations: State Agencies
Planning District Commissions
Counties

Applications: Forest classification of James City County
Biomass quantification for determining natural hydrocarbon background
Vegetative changes on abandoned strip mines
Land use/Land cover classifications of selected counties.

Status: Under development

Equipment: William and Mary computer: IBM 370/165
Remote terminals include Apple II, Bell 43,
and Decwriter III

Software: Basic software program is the ORSER program developed and sold by Penn State University

Funding: Funds are provided by appropriations from the Virginia General Assembly to the Commonwealth Data Base project
REMOTE SENSING PROGRAM SUMMARY
VIRGINIA—Continued

Other Information: Other remote sensing capability exists at:
Virginia Polytechnic Institute and State University, Blacksburg, Virginia
Old Dominion University, Norfolk, Virginia
REMOTE SENSING PROGRAM SUMMARY
WASHINGTON

Contact: Mike McCormick
Dept. of Planning & Community Affairs
Capital Center Bldg., FN-41
Olympia, Washington 98504
(206) 753-1928
or
Luke Krebs
Computer Service Center
Washington State University
Pullman, Washington 99164
(509) 335-6611

Institutional Framework: Department of Planning and Community Affairs
Department of Natural Resources
Computer Service Center

Participating Agencies and Organizations:
Department of Natural Resources
Department of Game
Department of Revenue
Department of Transportation
Universities in state of Washington

Applications:
Clear cutting study (Timber) for Department of Revenue
Land use/land cover (Puget sound)
Wildlife habitat studies
Timber inventory
Water resource studies

Status: Operational

Equipment:
AMDAHL 470/V8 processor
Interactive Image Processing System 70/E
PDP 1134-A

Software:
VICAR/IBIS (NASA) software
STC (Stanford Tech. Corporation) System 511
REMOTE SENSING PROGRAM SUMMARY
WASHINGTON—Continued

Funding: NASA, state general funds, Pacific Northwest Regional Commission

Other Information: Users have access to VICAR/IBIS on AMDAHL through time-sharing network
# REMOTE SENSING PROGRAM SUMMARY
## WEST VIRGINIA

| Contact: | Peter Lessing  
| West Virginia Geological and Economic Survey  
| P.O. Box 879  
| Morgantown, West Virginia 26505  
| (304) 292-6331 |
| Institutional Framework: | West Virginia Geological and Economic Survey (State Agency) |
| Participating Agencies and Organizations: | State Agencies, Consultants and Citizens |
| Applications: | Lineaments Analysis (geological features) |
| Status: | A demonstration application of landsat has been conducted. |
| Equipment: | N/A |
| Software: | N/A |
| Funding: | West Virginia Geological Survey |
| Other Information: | Limited use of landsat in remote sensing work. |
REMOTE SENSING PROGRAM SUMMARY
WISCONSIN

Contact: Bob Merideth
Environmental Remote Sensing Center
University of Wisconsin-Madison
1253 Meteorology & Space Science Bldg.
Madison, Wisconsin 53706
(608) 263-4578

Institutional Framework: Department of Administration
Environmental Remote Sensing Center—University of Wisconsin

Participating Agencies and Organizations: Wisconsin Departments of Natural Resources, Administration, transportation, and Agriculture; State Cartographer of Wisconsin; University of Wisconsin-Madison U.S. Geological Survey, Wisconsin Water Resources Division; U.S. Environmental Protection Agency; National Aeronautics and Space Administration.

Applications:
—water quality classification of over 3,000 inland lakes with direct applications to continual trophic status assessment and inland renewal programs
—land cover classification for much of Wisconsin for use in hydrologic modeling of sediment/pollutant runoff and in low-flowing stream estimation
—atmospheric corrections for satellite imagery

Status: Operational

Equipment: UNIVAC 1100/82 processor, graphics, terminal and Harris/6 minicomputer, PDP 11/45 and 5 computer terminals, stereo scopes, light tables, Talos digitizer, radiometers, viewers, scanners, drum dryers, enlargers
REMOTE SENSING PROGRAM SUMMARY
WISCONSIN—Continued

Software: Software package of over 130 programs developed at the Environmental Remote Sensing Center for use on the UNIVAC 1100 system.

Funding: Contracts and grants from federal sources: NASA, USGS, EPA, TVA, NSF; some state funding

Other Information: N/A
REMOTE SENSING PROGRAM SUMMARY
WYOMING

Contact: Collin Fallat
Department of Agriculture
2219 Carey Avenue
Cheyenne, Wyoming 82002
(307) 777-7321

Institutional Framework: State Planning Coordinator's Office and the
University of Wyoming Department of Geology.

Participating Agencies and Organizations:
State Engineer
Water Development Commission
Wyoming Game and Fish Department

Applications: Mapping of land use and land cover

Status: Planned

Equipment: N/A

Software: N/A

Funding: N/A

Other Information: The State of Wyoming currently has limited remote sensing capability. The major application of remote sensing techniques in Wyoming has been through the University of Wyoming, primarily of a research nature.