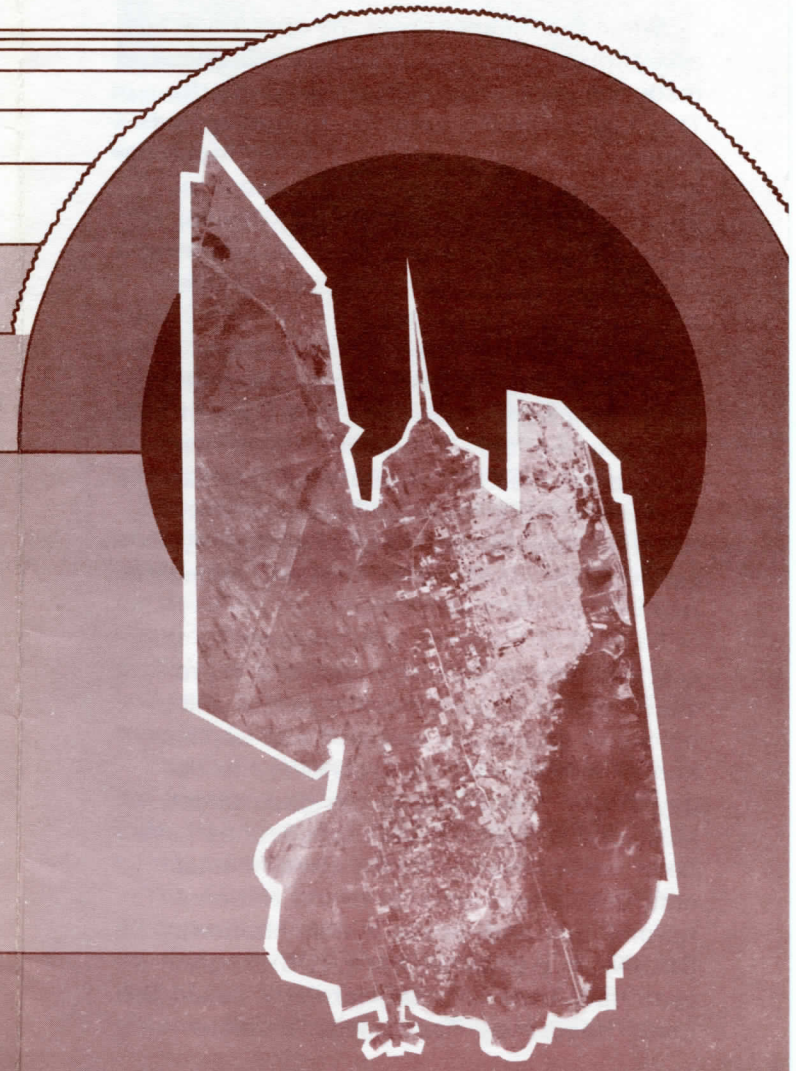
As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

EROS:
A Space Program for Earth Resources



U.S. Department of the Interior/Geological Survey

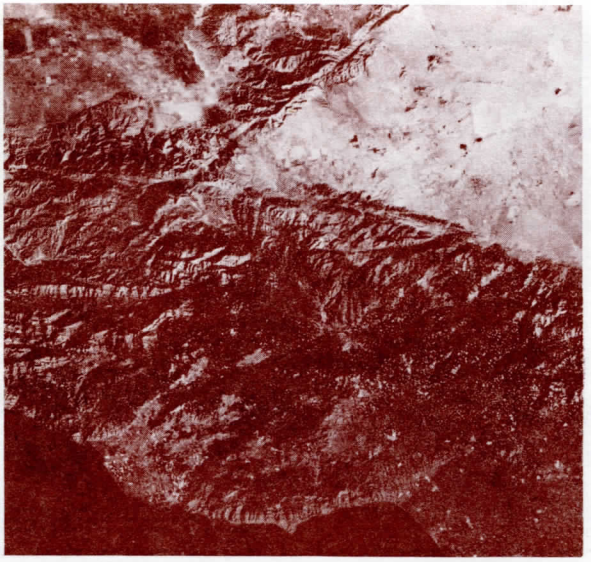
EROS:
A Space Program for Earth Resources

by G. G. Metz and P. J. Wiepking

Within the technology of the space age lies a key to increased knowledge about the resources and environment of the Earth. This key is remote sensing—detecting the nature of an object without actually touching it. Although the photographic camera is the most familiar remote-sensing device, other instrument systems, such as scanning radiometers and radar, also can produce photographs and images.

On the basis of the potential of this technology, and in response to the critical need for greater knowledge of the Earth and its resources, the Department of the Interior established the Earth Resources Observation Systems (EROS) Program to gather and use remotely sensed data collected by satellite and aircraft of natural and manmade features on the Earth's surface.

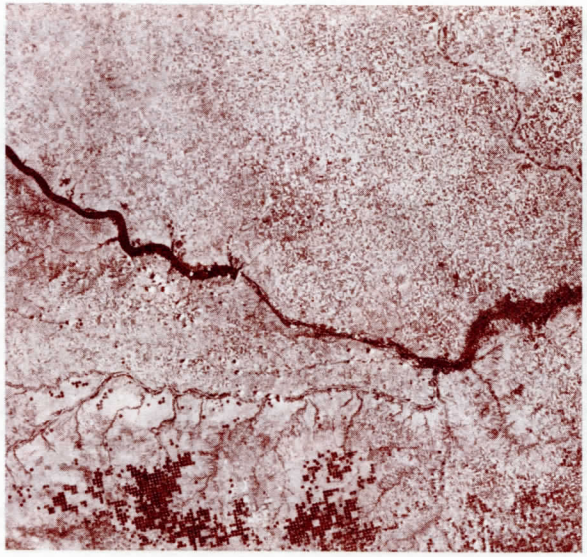
The EROS Program, administered by the U.S. Geological Survey, works with representatives of departmental bureaus and offices to coordinate research and application of remote-sensing technology to the day-to-day operations of the department. Most of the research and applications have been made possible by the experimental data acquisition systems of the National Aeronautics and Space Administration (NASA). In particular, the EROS Program uses data from Landsat, formerly called the Earth Resources Technology Satellite



Landsat imagery offers geologists a new vantage point for development of structural analysis (Los Angeles area, 2698-17371).

(ERTS), from the Earth Resources Experiment Package (EREP) of Skylab, and from NASA's Aircraft Program.

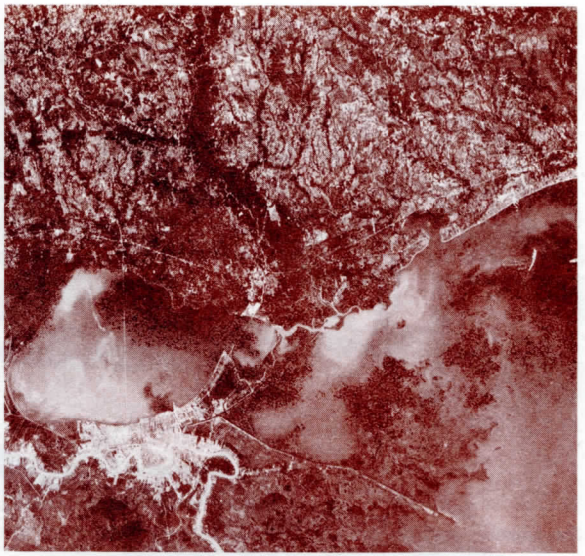
The potential application of remote-sensing techniques for inventorying and managing the Nation's earth resources and monitoring our environment has been demonstrated in many ways. Landsat imagery, because of its synoptic coverage, has, for example, identified previously unmapped geologic structures as targets for exploration for oil, gas, copper, and other minerals, and is being used to inventory water impoundment areas. The repetitive coverage of satellite data provides information for land-use planning with a timeliness not previously possible. The capability of detecting changes in land use has proved effective in monitoring strip mining and reclamation of strip mines and was useful for gaging the environmental impact of the Alaskan pipeline's construction. It is also used for evaluating range conditions over vast areas of the Western United States. The satellite imagery is also useful for updating small-scale maps.



Repetitive Landsat coverage records changes in agricultural patterns and water resources (Nebraska/South Dakota, 2542-16311).

In addition to meeting the needs of the Department of the Interior, the EROS Program has the responsibility of providing copies of remote-sensing data in response to public demand and of providing a variety of professional services to further the understanding and use of remotely sensed data. The EROS Data Center, established in 1971, and located permanently in 1973 on a 318-acre site about 25 km (16 miles) northeast of Sioux Falls, S. Dak., serves these functions. The Data Center reproduces and distributes as sale items copies of imagery, photography, electronic data, and computer products collected by 16 different organizations, including the U.S. Geological Survey and NASA.

Inquiries concerning availability of data from the EROS Data Center result in a geographic computer search to determine data available over a specific area of interest. This computer search can be requested by a letter, visit, or phone call to either the EROS Data Center or one of the regional facilities located throughout the country. An inquiry form is available and



Regional planners can estimate man's impact on the environment from Landsat images (New Orleans area, 2443-15460).

may be used to request information on coverage over a specific area of interest.

Training courses are offered at the EROS Data Center to develop government and public capabilities to manipulate, interpret, and use remotely sensed data. The courses range from 1 to 4 weeks and may be oriented to specific disciplines or to the basic understanding of remotely sensed data.

The Data Analysis Laboratory is an important part of the training and assistance programs. The laboratory staff is responsible for developing, maintaining, and operating state-of-the-art automatic and semiautomatic digital and analog image analysis hardware/software systems in support of all technology transfer programs.

The Data Center also works closely with the remote-sensing programs and Landsat data receiving and processing facilities being developed in foreign countries.

The EROS Program Library, dedicated to all aspects of remote sensing, is located at the Data Center. The collection of more than 7,000 titles consists of books, monographs, periodicals, reprints, and reports

The newest remote sensing techniques are developed and demonstrated at the EROS Data Center's Data Analysis Laboratory.

in paper copy or on microfiche. The library, a research tool for students in training at the Center as well as for visitors, is an archive for the EROS Program and services interlibrary loans.

Additional information about the EROS Program can be obtained by writing to:

EROS Program
U.S. Geological Survey
1925 Newton Square East
Reston, VA 22090

Descriptions of products available from the EROS Data Center, order forms, and price lists can be obtained from the:

EROS Data Center
U.S. Geological Survey
Sioux Falls, SD 57198

Tel. (605) 594-6511

The Data Center will also provide information about training on request.

Viewing microfilm of Skylab imagery, EROS Data Center, Sioux Falls, South Dakota

Production photo laboratory. Personnel are clad in protective clothing to maintain the ultra-clean laboratory environment.

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