

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.



Introduction to the U.S. Geological Survey's **EROS Data Center** Sioux Falls, South Dakota

NOTE VISITORS' TIME CHANGES

WEEKDAYS

TOURS: 10:30 a.m. & 2:00 p.m.

LOBBY: 8:00 a.m. - 4:15 p.m.



Introduction to the U.S. Geological Survey's EROS Data Center

Sioux Falls, South Dakota

by L. A. Braconnier and P. J. Wiepking

Products and Services

The EROS Data Center is a part of the Earth Resources Observation Systems (EROS) Program of the Department of the Interior, managed by the U.S. Geological Survey.

It is the national center for the processing and dissemination of spacecraft and aircraft acquired photographic imagery and electronic data of the Earth's resources. The center also trains and assists users in the application of such data.

The EROS Data Center provides access to Landsat data, aerial photography acquired by the U.S. Department of the Interior, and photography and other remotely sensed data acquired by the National Aeronautics and Space Administration (NASA) from research aircraft and from Skylab, Apollo, and Gemini spacecraft.

Orders for photos and images, inquiries on the availability of coverage over specific areas, and requests for price information should be directed to:

EROS Data Center
U.S. Geological Survey
Sioux Falls, SD 57198
Phone: (605) 594-6511, ext. 151
FTS: 784-7151

At the heart of the Data Center is a central computer complex that controls a data base of more than 6 million images and photographs of the Earth's surface, performs searches of specific geographic areas of

interest, and serves as a management tool for the entire data reproduction process. The computerized data storage and retrieval system is based on a geographic system of latitude and longitude, supplemented by information about image quality, cloud cover, and type of data. Guided by customer requirements, a computer geographic search will print out a listing of available imagery and photography from which the requester can make a final selection.

Periodically, training sessions in remote sensing are given at the EROS Data Center. Normally, the sessions are up to 1 week long and stress the use of data for a particular application, such as agricultural inventory or water management. About twice a year, a 3-week course is offered for foreign nationals. This course stresses the fundamentals of remote sensing and introduces the application of remotely sensed data to the solution of various natural resource management problems. Formal training is supplemented by color slides and recorded tapes that cover the basic methodology of remote sensing and selected applications.

The EROS Data Center has an expanding capability to perform computer-assisted analysis of imagery. Special devices permit



Application scientists studying Landsat photography.

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the experimental use of digital analysis techniques to classify phenomena by their reflectance or emittance in different parts of the electromagnetic spectrum.

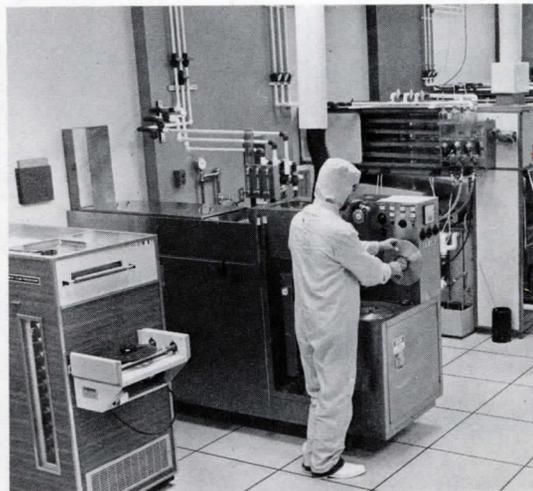
The center also maintains a technical library of information on remote sensing of Earth resources for the use of students who are attending training courses, visitors, and data center personnel.

Landsat Data

NASA's Landsat satellites are unmanned space observatories orbiting the Earth at an altitude of approximately 570 miles [920 kilometers (km)]. Each Landsat circles the Earth every 103 minutes and repeats its orbital path every 18 days, thus providing repetitive coverage of almost the entire globe. The satellites transmit data by telemetry to NASA ground receiving stations in Alaska, California, and Maryland. The data are recorded on magnetic tapes and subsequently converted to computer compatible tapes and photo-like images. Each individual scene covers a ground area of 115- by 115-statute miles (185- by 185-km). Copies are stored at the EROS Data Center for reproduction and sale to users throughout the world.



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Processor unit of EROS Data Center photographic I

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Skylab Data

The NASA Skylab Program consisted of one unmanned and three manned missions. The unmanned space vehicle was placed in orbit in May 1973. The manned missions to the space vehicle were launched on May 25, July 28, and November 16, 1973.

The spacecraft traveled in an orbit 270 miles (430 km) above the Earth and acquired photography, imagery, and other data of selected areas between latitudes 50° N. and 50° S. The data cover a number of scattered test sites selected to support Earth resources experiments.

NASA Aerial Photography

NASA aerial photography is the product of surveys carried out by the NASA Earth Resources Aircraft Program. The program primarily tests remote-sensing instruments and techniques in aerial flights generally over certain preselected test sites within the continental United States.

Imagery is available in a wide variety of formats from flights at altitudes of a few thousand feet up to U-2 and RB-57F flights at altitudes above 60,000 feet.



Processor unit of EROS Data Center photographic laboratory.

Overview of Data Analysis laboratory

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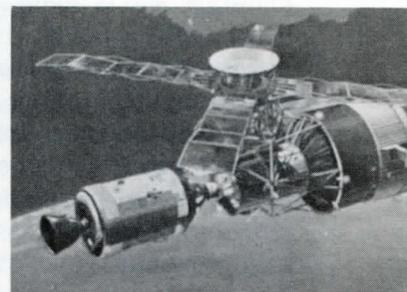
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Landsat.



Skylab Spacecraft.

Aerial photography is available in black and white, color, or false-color infrared. Because these data are acquired at relatively low altitudes, ground features such as roads, farms, and cities are easily identifiable. Electronic data from the more sophisticated research sensors on the aircraft may also be obtained through the Data Center.

Aerial Mapping Photography

For the past 25 years, aerial photography has been acquired by the U.S. Geological Survey and other Federal agencies for mapping of the United States. The photography is black and white and the aerial-survey altitude ranges from 2,000 to 40,000 feet, depending on the planned use of the photographs.



laboratory.



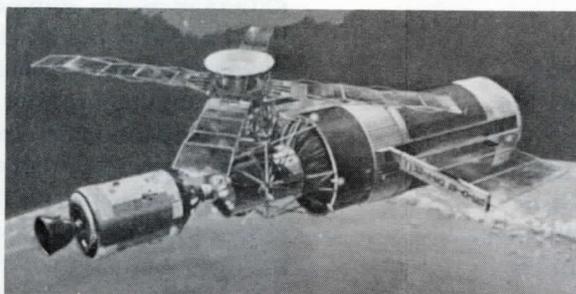
Overview of Data Analysis laboratory at the EROS Data Center.



User Services Area of



Landsat.



Skylab Spacecraft.



NASA U-2 airplane.

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Visits, Tours, and News Media Inquiries

The visitors' lobby of the EROS Data Center is open to the public from 8 a.m. to 4:30 p.m. on weekdays and from 10 a.m. to 4:30 p.m. on Saturdays. Pictorial exhibits and photographic gallery displays are in the lobby area. Guided tours and film presentations for individuals and small groups are offered on weekdays at 10:30 a.m. and 2:30 p.m. Guided tours and educational slide and film presentations may be arranged for upper elementary school, high school, and college groups, and for service clubs and professional organizations, as well as for the news media.



at the EROS Data Center.



User Services Area of the EROS Data Center.

EROS Program

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, 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 EROS Program to gather and use remotely sensed data collected by satellite and aircraft of natural and man-made features on the Earth's surface.

The potential application of remote-sensing techniques for inventory and management of the Nation's Earth resources and monitoring of the environment has been demonstrated in many ways. Landsat imagery, by its synoptic coverage, has 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 proven effective in monitoring strip mining and reclamation of strip mines and is useful for gaging the environmental impact of the Alaskan pipeline. It is also used for evaluating range conditions over vast areas of the Western United States and for updating small-scale maps.

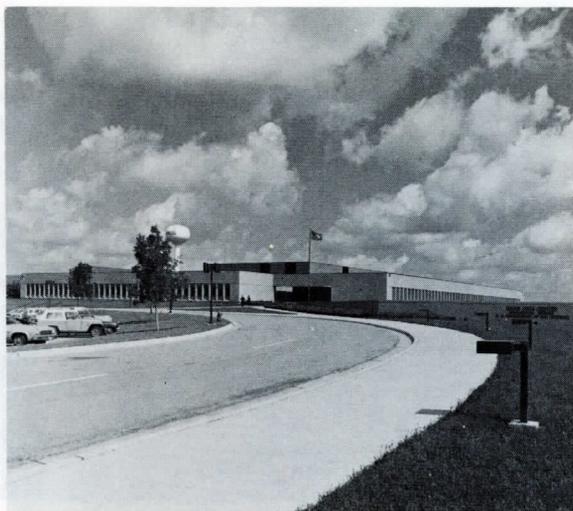
In addition to meeting the needs of the Department of the Interior, the EROS Program has the responsibility of providing copies of remotely sensed data in response to public demand and of providing user training and assistance to further the understanding and use of remotely sensed data.

National Cartographic Information Center

The National Cartographic Information Center (NCIC) is headquartered in the Geological Survey's National Center in Reston, Va. It provides a unique service to those customers requiring information on the availability of cartographic data, including multi-use maps, geodetic control, aerial photography, and space imagery. Qualified personnel in the fields of geodesy, photogrammetry, photography, and cartography are ready to help those with specialized needs.

The EROS Data Center functions as an integral part of the NCIC system for those requesting information about available aircraft or space imagery and for those

The principal facility at the EROS Data Center is the 120,000-square-foot Karl E. Mundt Federal Building, dedicated August 7, 1973.



wanting to place orders for these data. This service is readily available by a direct terminal link to the Data Center's computerized data base. Inquiries and orders for data are transmitted daily from NCIC to the EROS Data Center to provide a timely response to customer needs.

The EROS Data Center is located on a 318-acre tract approximately 16 miles northeast of Sioux Falls, South Dakota. Privately owned or rental cars are needed for travel to and from the center. There is no scheduled transportation from Sioux Falls.

