

6/18/87

AN HISTORICAL PERSPECTIVE (1966-1987)

On September 21, 1966 the EROS (Earth Resources Observation Satellite, later changed to Earth Resources Observation Systems) program was announced by Interior Secretary Stewart Udall in a news release:

"Project EROS is based upon a series of feasibility experiments carried out by the U.S. Geological Survey with NASA, universities, and other institutions over the past two years."

Secretary Udall named Dr. William T. Pecora, Director of the U.S. Geological Survey, to head the program and to carry out and sponsor a broad range of activities related to the application of remote sensing technology to the inventory, monitoring, and management of the Earth's resources. A memorandum sent the following year from Under Secretary Charles Luce to the Assistant Secretaries and Bureau Heads stated:

"In developing and implementing the EROS program we intend to build upon the established expertise and the arrangements for liaison and collaboration which now exist within the Geological Survey. EROS is, however, a Departmental program in the fullest sense of the term."

The memorandum from Under Secretary Luce also addressed administrative considerations for EROS as follows:

"Within the Department, the EROS program will be so defined and its funding and management so arranged that it will have the unity and self-sufficiency which are essential for its success. Funds necessary for research and applications studies; hardware and information systems design and acquisition; and data processing, delivery and dissemination to users will be sought as a single appropriation. Participating Bureaus and offices will, however, provide the staff and resource needs for their operational use of the data derived from the program."

In the early years (1966-1970), EROS activities were concentrated on sponsoring research within the Department directed at the eventual operational use of conventional and space-acquired remotely sensed data for satisfying resource managers' needs for information, and serving as the Departmental spokesman for consolidating inputs and requirements for the experimental satellite remote sensing programs within NASA. During these times EROS was primarily engaged in managing research monies obtained through direct Congressional appropriation and from NASA, as well as performing research with EROS personnel. Research was sponsored in the Divisions of the Survey, other cooperating Bureaus, in academia, and private industry in preparation for the Earth Resources Technology Satellite-1 (ERTS--now called Landsat) launched in July 1972.

EROS played a major role in defining the performance specifications for Landsat-1, in consultation with the Department of Agriculture. The research sponsored and managed by EROS since 1966 forms a large part of the scientific foundation for today's application of Landsat and other forms of remotely sensed data to the resource missions of the Bureaus within Interior.

From 1970 to 1975, EROS assumed, with the creation of the EROS Data Center in Sioux Falls, South Dakota, major responsibilities for processing, archiving, and distributing large quantities of remotely sensed data from NASA satellites (Landsat) and Interior-acquired aerial mapping photography. In addition, the EROS Data Center carried out significant applications research and cooperative demonstration projects, trained and assisted Interior and other users in the use of remotely sensed data acquired from aircraft and spacecraft, became a major participant with the Survey's Topographic Division (now National Mapping Division) in the National Cartographic Information Center (NCIC) program, and generally developed substantial expertise in advanced computer data handling and analysis technology.

During the late 1970's (1975-1980) the EROS Data Center implemented digital data processing systems for satellite data and assumed an increasing portion of the Landsat ground system processing responsibilities. Some 90 percent of the EROS Congressional appropriation was being used at the EROS Data Center for ongoing data handling, applications research, and technology transfer activities, generally directed at Interior's needs, but also encompassing to a limited degree the needs of

other Federal agencies, international users, and the general public. By the end of the decade, the EROS Data Center had a total operating budget of over \$16 million annually, employed some 400 professionals and technicians, operated equipment and facilities costing over \$40 million, and had become nationally and internationally recognized in the field of remote sensing technology.

In November 1979, the White House issued a Directive on Civil Operational Remote Sensing (NSC-54) committing the Nation to an operational satellite land remote sensing system and assigning NOAA the management responsibility for such a system. Furthermore, the Directive mandated the identification of facilities (including the EROS Data Center), hardware, and personnel that should be transferred to NOAA. Pursuant to Directive NSC-54, NOAA prepared and issued a "Transition Plan for Civil Operational Land Remote Sensing from Space." This plan called for the transfer of Landsat data archiving, processing, and public distribution functions from the EROS Data Center to the NASA Goddard Space Flight Center in Maryland in the FY 1983-1984 time period. Commerce and Interior agreed to leave the EROS Data Center in Interior, but \$2.5 million of the EROS Congressional appropriation plus \$3.6 million from expected data sales were transferred to NOAA in FY 1983. The Transition Plan further documented the NOAA and Interior agreed-upon position that the EROS Data Center would continue to be operated by Interior and would continue to provide aircraft and satellite Earth resources information and data products, applications

research, analytical services, training, and technical assistance to Interior bureaus and offices. Sometime in the 1980's the EROS Data Center would transfer the Landsat data archiving and public distribution functions to either NOAA, in the mid-1980's, or to a private sector owner/operator somewhat later in the decade.

In September 1985, the EOSAT Company was selected by Commerce as the Landsat owner/operator to proceed towards a commercialized, privately owned and operated system. The EROS Data Center continues to provide processing, archiving, and distribution of Landsat data, under Memorandum of Agreement with NOAA, in support of EOSAT. In addition to constructing, launching, and operating future satellites, EOSAT plans to build a processing and distribution facility at Lanham, Maryland and, as a result, the EROS Data Center's role would be phased down in FY 1988 or 1989 to multispectral scanner data processing only and maintaining existing Landsat data archives (funding for EOSAT is in doubt; hence the EROS Data Center may have a continuing role with Landsat in the foreseeable future).

Since 1979 two comprehensive studies of EROS and its primary responsibilities have been conducted. In 1979 the Survey established an interdivision EROS Study Group, chaired by Mr. William Overstreet, to determine if improvements were needed to increase the effectiveness, visibility, and stature of EROS and to present options on its organizational placement. In 1984 the Survey established an interdivisional Remote Sensing Task Force, chaired by Mr. William Radlinski, to develop the Survey's role in remote sensing and evaluate how the development and

applications of remote sensing technology was progressing in the Survey. For both of these comprehensive studies, detailed reports with specific recommendations were delivered to the Director.

On February 12, 1982, a Director's memorandum to the Executive Committee called for disbanding EROS's parent organization (Office of Earth Science Applications) and transferring of EROS into National Mapping Division.

In anticipation of a reduced role in support of Landsat, the EROS Data Center has broadened and diversified its mission and responsibilities. For example, the Data Center is currently handling and using large quantities of other forms of digital data in addition to traditional remotely sensed data. Significant research activities are underway in the use of spatial data bases and information systems that employ not only satellite data, but digital cartographic, geophysical, climatological, geographic, and other disparate data sets. As a result, the Data Center possesses considerable experience in the development, creation, and use of large digital data bases. Current major activities at the Center include Interior requirements coordination; remote sensing research and development (e.g., Land Analysis System); geographic information systems research and development; advanced cartographic systems software development; image mapping; digital cartographic data production/derivative products; aerial photo storage, reproduction, and distribution; digital Earth sciences data storage, reproduction, and distribution; operation of an inquiry,

order, and customer accounting system; operation of a nation-wide computer network for accessing and ordering data products; direct reception and processing of AVHRR image data; Landsat data processing, storage, product generation, and distribution in support of NOAA and EOSAT; training and technology transfer in remote sensing and GIS; and Federal government support for purchase of EOSAT and SPOT data. The EROS Data Center currently employs approximately 340 people (about 50 percent professional), conducts business with a \$17 million annual budget (about 65 percent reimbursable from non-Survey funds), has facilities and equipment valued at about \$50 million, and operates a field office (in Anchorage, Alaska).