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NEWS

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NEW SATELLITE TO SURVEY NATURAL RESOURCES

New help from space in managing Earth's natural resources wisely and protecting its environment is promised by a picture-taking satellite that NASA is preparing to launch from California about Jan. 19.

The second Earth Resources Technology Satellite -- ERTS-B, to be designated ERTS-2 when in orbit -- will team up with ERTS-1, in operation since July 1972, to provide repetitive coverage of almost the entire globe.

"If I had to pick one spacecraft, one Space Age development to save the world," Dr. James C. Fletcher, NASA Administrator, said recently, "I would pick ERTS and the satellites which I believe will be evolved from it later in this decade."

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Data from ERTS-2 will be used by more than 100 research teams in federal, state and foreign governments, international organizations, universities and private companies for a broad range of Earth studies -- called the ERTS Follow-on Investigation Program -- in more than 40 states and more than 40 foreign countries.

In addition, NASA, in cooperation with federal and state agencies, will conduct a number of experimental demonstrations designed to show the practical benefits in resource management of multispectral remote sensing from space. These include experiments in water management, agriculture and land use planning.

One is a Large Area Crop Inventory Experiment (LACIE), a joint investigation with the U.S. Department of Agriculture and the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce. It is designed to test whether the use of data, gathered by spacecraft and analyzed with the aid of computers, can improve the timeliness and accuracy of major crop forecasts.

The experiment will combine crop acreage measurements obtained from ERTS data with meteorological information from NOAA satellites and from ground stations to relate weather conditions to yield assessment and ultimately to production forecasts.

The Department of Agriculture will study the experimentally derived production estimates for possible use in its crop reports, which are made public as a routine service to the domestic and international agricultural community.

At the outset LACIE will concentrate on wheat grown in North America. If this activity proves successful and useful the first year, it will be extended in the second year to other regions and ultimately to other crops.

Speaking before the U.N. World Food Conference in Rome last fall, Secretary of State Henry A. Kissinger called the experiment "a promising and potentially vital contribution to rational planning of global production."

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Besides the Department of Agriculture and NOAA, user agencies working with NASA in the ERTS program include the Department of Interior, the Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers and a number of regional, state and local organizations.

ERTS-B is scheduled for launch by NASA from the Western Test Range near Lompoc, Calif., aboard a two-stage Delta rocket. It will be controlled from NASA's Goddard Space Flight Center, Greenbelt, Md., where the collected data initially will be processed.

The primary objective of the ERTS mission is the acquisition of multispectral repetitive data of the surface of the Earth in the form of imagery or in digital format on magnetic tape. Another objective is the development of a relay system to gather data from remote, widely distributed ground sensor platforms.

ERTS-1 data is providing new insight into man's continuing efforts to better manage the Earth's limited resources as well as aiding in the assessment and understanding of environmental changes. Areas in which this data is applicable include: agriculture, range resources, environment, forestry, geology, land use, marine resources, meteorology and water resources.

In its 29 months in orbit, ERTS-1 has returned more than 100,000 images, covering the entire U.S. and many other parts of the globe. It takes 18 days to complete a cycle over the whole Earth, beginning again on the 19th day. Analysis of these images by the world's scientific and technical community already has produced many beneficial results. These include:

Agriculture -- accurate estimates of the acreage of wheat, barley, corn and rice and determination of the growth status of crops at various times during the growing year;

-- evidence of how controlled grazing in the desert areas of the Sahelian region in Africa can lead to the reclamation of desert land for productive use;

Forestry -- accurate estimates of timber volume and of the extent and volume of timber taken through clear-cutting and other timber industry techniques for ecological management;

Land Use, Land Mapping -- up-to-date maps prepared in a matter of days compared to the months or years previously required;

-- development of thematic maps (maps portraying a particular subject). Previously unknown features in Antarctica have been identified, including a group of mountains in southern Victoria Land and at the head of Lambert Glacier;

Water Quality and Resources -- estimates of actual areas covered by water that are replacing previously used rough estimates;

-- before and after views of river flood areas which make it possible to ascertain quickly the areas covered by water for flood relief and flood control purposes;

-- accurate prediction and management of water runoff from snowmelt which provides a large portion of the usable water in the western U.S.;

Minerals and Land Resources -- identification of previously unknown Earth structural features, particularly long linear faults and fractures important for the detection of minerals and potential earthquake zones;

Marine Resources -- provision of synoptic views of coastal zones for predicting the dispersal of river-borne sediments and monitoring the dispersal and effects of dumping industrial wastes and sewage within the coastal zone for use as an aid in harbor planning -- to predict when channel dredging will have to be conducted;

Environment -- classification of strip-mined areas for estimation of mined acreage and reclaimed regions, monitoring of changes in protected wetlands areas due to construction and dredging and filling operations, and the detection of large-scale dumpings and outfalls in bodies of water.

ERTS-B carries the same complement of sensors as its predecessor. These include a return beam vidicon (RBV) camera subsystem, a multispectral scanner (MSS) subsystem and a data collection (DCS) subsystem. The RBV and the MSS provide independent images of the same 185-by-185-kilometer (115-by-115-mile) area of Earth in various spectral bands. The DCS collects and relays data from remotely located ground platforms to the ERTS data acquisition stations.

The 891-kilogram (1,165-pound) ERTS-B will be placed into a 920-km (570 mi.) circular, near polar orbit. Circling the globe every 103 minutes, the spacecraft's remote sensors will view a 185-km (115-mi.) wide strip of the Earth running nearly north-to-south at an angle to the equator of 99 degrees.

In this type of orbit, surface coverage of the Earth will proceed westward, with a slight overlap, such that the globe will be covered once every 18 days. The spacecraft's orbit is synchronous with the Sun. Thus ERTS-2 (like ERTS-1) will cross the equator at the same time (9:30 a.m. local time) every orbit. This consistent constant lighting of Earth, the best condition for the spacecraft's imaging systems.

Synoptic, repetitive coverage of Earth's surface under consistent observation conditions is required for maximum utility of the multispectral imagery to be collected by ERT-2.

Three NASA tracking and data acquisition facilities receive video information from ERTS. They are at Fairbanks, Alaska; Goldstone, Calif.; and Greenbelt, Md. In addition, Canada has a ground data acquisition station for ERTS at Prince Albert, Sask., and data processing facilities in Ottawa. Brazil has a receiving station at Cuiaba and processing facilities near Sao Paulo.

Italy and Iran are constructing similar facilities under agreements signed last year with NASA. Additional agreements are now being negotiated with other nations.

Data received from the satellite at the three U.S. data acquisition facilities will be sent to the NASA Data Processing Facility (NDPF) at Goddard. NDPF can handle some 1,300 scenes a week covering 45 million sq km (17 million sq. mi.).

Copies of all ERTS data and photos will be forwarded to the Department of Interior's Earth Resources Observation Systems (EROS) Data Center at Sioux Falls, S.D. On receipt at Sioux Falls the data are in the public domain and copies can be purchased by anyone. The Department of Commerce will also have data available at its National Oceanic and Atmospheric Administration (NOAA) Center at Suitland, Md., and the Department of Agriculture at its data products facility at Salt Lake City, Utah.

The overall ERTS program is the responsibility of NASA's Office of Applications, Washington, D.C.

Project management for the ERTS spacecraft, the Delta launch vehicle, the ground data handling system (GDHS), and the world-wide tracking network rests with the Goddard Space Flight Center, Greenbelt, Md.

Launching of the Delta is supervised by the Kennedy Space Center's unmanned launch operations team.

The Large Area Crop Inventory Experiment will be managed at the Johnson Space Center, Houston, Tex.

Prime contractor for the ERTS spacecraft, the data collection system aboard the spacecraft, and the ground data handling system at Goddard is the General Electric Co., Space Division, Valley Forge, Pa. Hughes Aircraft Co., Space and Communications Group, El Segundo, Calif., is prime contractor for the multispectral scanner; and RCA, Astro-Electronics Division, Princeton, N.J., is prime contractor for the return beam vidicon camera. RCA, Defense Communications Division, Camden, N.J., is the prime contractor for the wide-band video tape recorders. The McDonnell Douglas Astronautics Co., Huntington Beach, Calif., is prime contractor for the Delta launch vehicle.

NASA costs for the ERTS program are about $197 million. This includes $112 million for two spacecraft and their instruments, $42 million for the data handling facility at Goddard and ground operations, $34 million for support of investigations, and about $9 million for two launch vehicles.

(END OF GENERAL RELEASE: BACKGROUND INFORMATION FOLLOWS.)