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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY  
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ERTS PHOTOGRAPHY ALREADY USEFUL

Images being returned from the first experimental Earth Resources Technology Satellite (ERTS-1) have already been found to have practical applications to such earth science disciplines as hydrology, cartography, and geology, according to scientists of the U.S. Geological Survey, Department of the Interior.

At a seminar held at NASA's Goddard Space Flight Center, Greenbelt, Md., four USGS scientists of the Interior Department's EROS (Earth Resources Observation Systems) program reported "excellent preliminary results" from photography being returned to earth by ERTS-1.

The Interior Department, through its EROS program, managed by the U.S. Geological Survey, represents the largest single recipient and user agency of data obtained from NASA's earth resources surveying satellite program. Ten Interior agencies are involved in numerous ERTS experiments, assessing the use of data in such problems as geology, hydrology, geography, cartography, marine geology, geophysics, volcanology, and seismology.

Reporting at the preliminary results seminar:

- \* Dr. James F. Daniel, hydrologist, USGS, St. Louis, Mo., said that real-time relay of water data using the satellite will begin next week. He said that water data in the Delaware River basin, including daily readings and measurements on dissolved oxygen, water temperatures, acidity, and specific conductance at a dozen points throughout the watershed will be relayed from automatic recording data "platforms" via ERTS-1 to Goddard, and then to USGS Records Center, Philadelphia, Pa. Such data, Daniel pointed out, formerly required perhaps weeks to collect. Now, the data can be made available to users in the Delaware Basin within hours of the actual measurements.

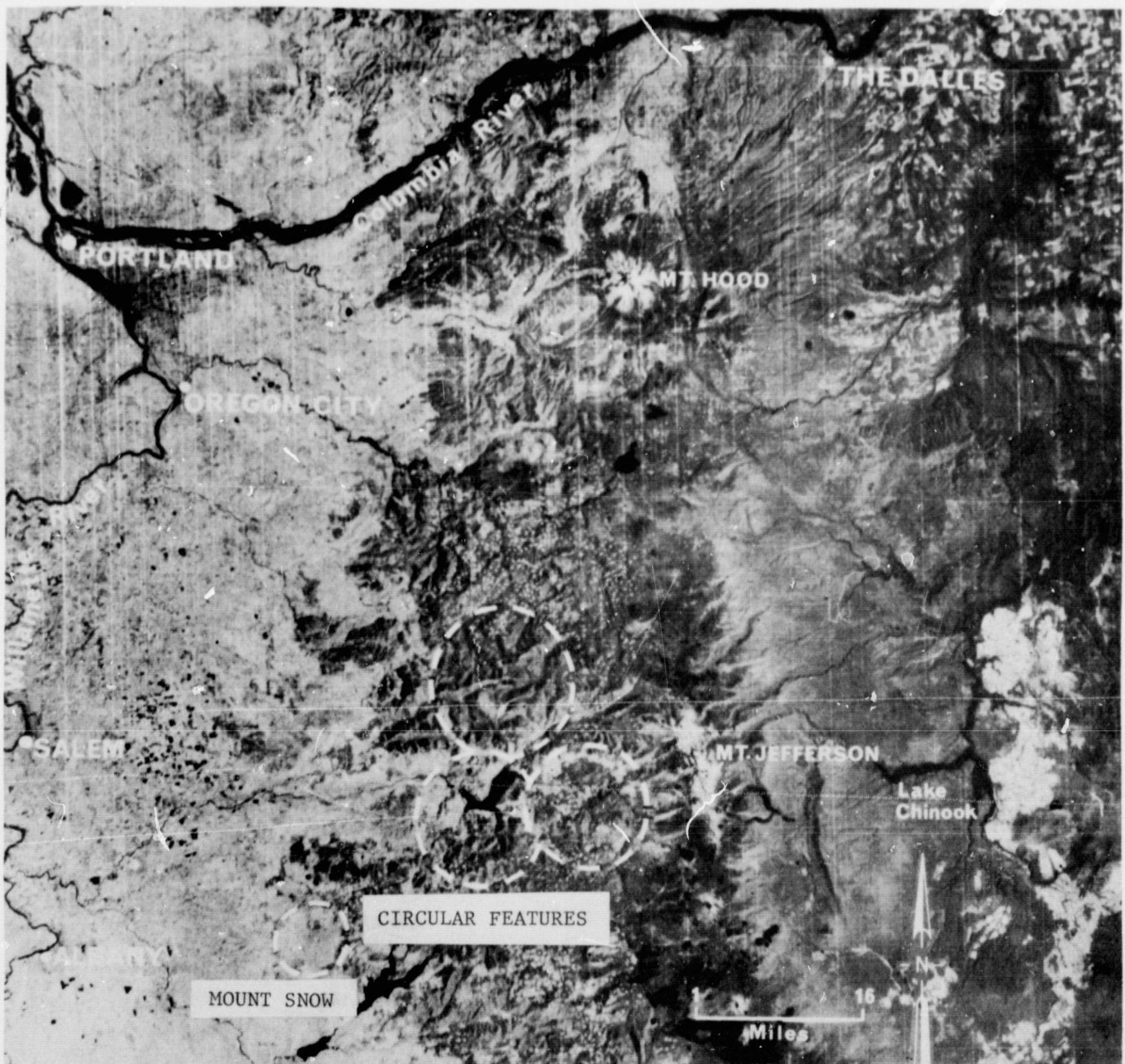
Original photography may be purchased from:  
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 (E72-10045) ERTS PHOTOGRAPHY ALREADY  
 USEFUL J.F. Daniel, et al (Geological  
 Survey) 29 Sep. 1972 3 p  
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- \* Dr. Alden P. Colvocoresses, mapping specialist, USGS, Washington, D.C., reported that "although ERTS was not designed primarily for topographic mapping, it shows tremendous promise in this field." Although such imagery is ineffective for contouring mountains and determining elevations, it can, and does, however, show the earth's surface in true horizontal perspective. "By covering the earth every 18 days, ERTS provides the map-maker, for the first time in history, with essential data for producing up-to-date small-scale maps," Colvocoresses reported. While the maps would not portray details such as streets and buildings, larger features, such as major highways and waterways, urban areas and agricultural areas, and, importantly, changes in land use on a regular basis, can be depicted, he said.
- \* Dr. James R. Wray, geographer, USGS, Washington, D.C., reported that ERTS imagery shows great promise for the inventory of gross land use. "Our understanding of metropolitan regions - in which three-fourths of our population lives - can only be helped by periodic synoptic overviews which the space imagery provides," Wray said, adding that "one of the bonus uses of ERTS imagery will be as a 'text' for learning and teaching what it is that makes our country tick." Concentrating on urban change detection, some of Wray's studies include: traffic flow and daytime distribution of population; defining "open space" land; assessing environmental hazards such as earthquakes and landslides affecting areas of possible urban expansion; identification of land to be preserved for agriculture and recreation; and mapping of areas susceptible to land and water pollution. Wray discussed images of San Francisco and central California as dramatizing the "breadbasket" role of the Central Valley, and as examples of useful data from space for managers, planners, and environmentalists.
- \* William D. Carter, geologist, USGS, Washington, D.C., reported that data extracted from ERTS-1 images have revealed several interesting geologic features in various regions of the U.S. Images of the Boston-Cape Cod region have clearly shown the intricate bottom topography of the ocean between Woods Hole and Martha's Vineyard; comparisons with aerial photography taken earlier show that changes in ocean bottom features have taken place. A color composite of the Gainesville, Florida, area, showing distribution of verdant vegetation throughout the seasons, might be used as a guide for ground water exploration. An ERTS view of Pyramid Lake and Reno, Nevada, shows a circular feature suggesting a resurgent caldera; that is, an old volcanic extrusive center that has been uplifted and/or collapsed, or an eroded dome. The feature is not now shown on existing maps. A view of the Cascade Range in Oregon from the Columbia River to the south identifies several circular and linear features that are not shown on recent geologic maps.

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ERTS-1 view of Cascade Range in Oregon from the Columbia River to the south identifies several circular and linear features that are not shown on recent geologic maps of the area.

U.S. Geological Survey scientists, analyzing such imagery as part of the Department of the Interior's EROS (Earth Resources Observation Systems) program, point out that many of these features are not as yet explained, but could be domes or calderas somewhat similar to Crater Lake. Recognition of such features could be important to current studies of geothermal resources, and in unraveling the geologic history of the Cascade Range.