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GEOLOGICAL FEATURES AND SPECTRAL ANOMALIES IN SATELLITE IMAGERY OF THE ADIRONDACK MOUNTAIN REGION

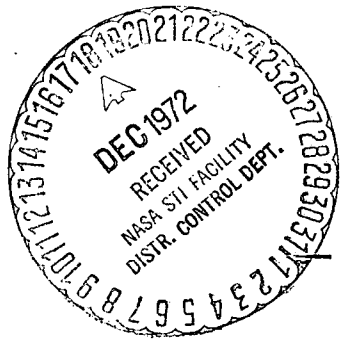
Isachsen, Yngvar W., Geological Survey, New York State Museum and Science Service

Under a NASA research contract, an evaluation is being made of the geological usefulness of multispectral scanner imagery obtained by the Earth Resources Technology Satellite (ERTS-I) over the diverse geological terranes of New York State.

In the present imagery, obtained during the foliage of summer and fall, the greatest amount of spectral geology is displayed in the Adirondack region where bedrock geology is strongly linked to topography. Of four repetitive ERTS cycles, 18 days apart, images obtained October 10th and 11th provided cloud-free coverage of the Adirondack region. Of the four spectral bands imaged, band 5 (0.6 - 0.7 micrometers) and band 7 (0.8 - 1.1 micrometers) provided the most information.

The boundary between the basement rocks of the Adirondack Dome and the surrounding Lower Paleozoic rocks is well delineated except in the Northwest Lowlands and along parts of the eastern Adirondacks. Along the northern border, contacts between the basement and the Potsdam Sandstone and between the Potsdam and Theresa formations are surprisingly well shown by differences in land use patterns.

Within the basement complex, the most prominently displayed features are numerous north-northeast trending faults and topographic lineaments, and arcuate east-west valleys developed in some of the weaker metasedimentary rocks. The majority of the faults and lineaments shown on the Geologic Map of New York at 1:250,000 appear in the ERTS imagery. In addition, many new linears were detected, as well as a number of anomalous curvalinear elements, some circular in plan and measuring up to 25 km in diameter, which do not bear any clear relationship to mapped geological contacts.



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