

E7.4-10002

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EVALUATE ERTS IMAGERY FOR MAPPING AND DETECTION OF CHANGES  
OF SNOWCOVER ON LAND AND ON GLACIERS

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Type 1 Progress Report for Period 1 July 1973 - 31 August 1973

E74-10002) EVALUATE ERTS IMAGERY FOR  
MAPPING AND DETECTION OF CHANGES OF  
SNOWCOVER ON LAND AND ON GLACIERS

Progress Report, 1 Jul. - 31 (Geological  
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Prepared for:

Goddard Space Flight Center  
Greenbelt, Maryland 20771

TYPE 1 Progress Report  
ERTS-1

a. Title: Evaluate ERTS imagery for mapping and detection of changes of snowcover on land and on glaciers.

ERTS-A Proposal No.: 342-7

b. GSFC ID No. of P.I.: IN 045

c. Statement and explanation of any problems that are impeding the progress of the investigation:

No official word has been received on the status of our Data Analysis Plan dated 1 May 1973, which requested additional funds to study 1973 summer images; nor has any preliminary information been forthcoming on the status of these funds. Thus work has only proceeded at a low level of effort, in order to save enough money to prepare the final reports.

Although the spring and summer in the Pacific Northwest have been abnormally clear and dry, cloudy periods coincided with almost all of the ERTS passes over test sites 1 and 2 (Mt. Rainier and North Cascades). The single cloud-free pass covered the west side of these areas only on 6 April. Partly because of this problem, it has been difficult to schedule U-2 overflights for use as "ground truth" for these most important test sites.

d. Discussion of the accomplishments during the reporting period and those planned for the next reporting period:

Incoming ERT images have been cataloged and given cursory inspection. Certain images have been identified for future study on the ESIAC at SRI or by optical techniques in Tacoma. These include new tasks and extensions of work done previously, as follows:

1. Differences in reflective signature between dry snow and wet snow, especially in several major snowfields in the Coast Mountains of southwest British Columbia.

2. Changes in snowcover in western Chugach Mountains near Anchorage, Alaska, in same area as the thoroughly analyzed 27 September 1972 image.

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3. Inventory and monitoring of glacier dammed lakes (which can cause damage when they break out); lakes around 10 different glaciers in Alaska have been selected for this.

4. Measurement of change in termini in Hubbard and Columbia tidal glaciers.

5. Continuation of work on measurement of snowcover in specific drainage basins, equivalent snowline altitudes (ELA), monitoring of surging glaciers, and image enhancement techniques to better identify snow in shadow or in trees.

Several scene-corrected images have been received and studied; because the radiometric corrections have been applied in blocks these images appear to be less useful for automatic processing than the bulk system-corrected images.

Excellent U-2 imagery, flown for another investigator, has been obtained of the Olympic Peninsula on 11 July. This is being studied to see if another useful test can be made of the automatic procedure (ESIAC) for measuring snow-covered area from ERTS imagery. In this case, two ERTS passes on consecutive days are required for analysis.

Dave Hirst, Photographic Technician, visited the ERTS NDPF and EROS-Sioux Falls in order to better interface our processing procedures with those of NASA and EROS.

e. Discussion of significant scientific results and their relationship to practical applications or operational problems including estimates of the cost benefits of any significant results.

NONE.

f. A listing of published articles, and/or papers, preprints, in-house report, abstracts of talks, that were released during the reporting period:

Research Symposium, "New Approaches to Snowpack Water Resources Management through Electromagnetic Techniques," USGS, Menlo Park, California, 27 August 1973.

g. Recommendation concerning practical changes in operations, additional investigative effort, correlation of effort and/or results as related to a maximum utilization of the ERTS System:

NONE.

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h. A listing by date of any changes in Standing Order Forms:

7 November 1972

1 May 1973

i. ERTS Image Descriptor forms:

In preparation.

j. Listing by data of any changed Data Request forms submitted to Goddard Space Flight Center/NDPF during the reporting period:

NONE.

k. Status of Data Collection Platforms:

N/A