

Made available under NASA sponsorship
in the interest of early and wide dis-
semination of Earth Resources Survey
Program information and without liability
for any use made thereof."

E7.4-10383

CR-137168

THE CARTOGRAPHIC APPLICATION OF ERTS/RBV IMAGERY IN POLAR REGIONS

William R. MacDonald
U. S. Geological Survey
Reston, Virginia 22092

1 January 1974

Type II Progress Report for Period 1 July 1973 - 31 December 1973

(E74-10383) THE CARTOGRAPHIC APPLICATION
OF ERTS/RBV IMAGERY IN POLAR REGIONS
Progress Report, 1 Jul. - 31 Dec. 1973
(Geological Survey, Reston, Va.) 4 p HC
\$4.00

N74-18992

Unclas
00383

CSCI 08B G3/13

Prepared for:

Goddard Space Flight Center
Greenbelt, Maryland 20771

Publication authorized by the Director, U. S. Geological Survey

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle THE CARTOGRAPHIC APPLICATION OF ERTS/RBV IMAGERY IN POLAR REGIONS (SR 149)				5. Report Date 1 January 1974	
7. Author(s) William R. MacDonald (IN ³⁹¹)				6. Performing Organization Code	
9. Performing Organization Name and Address U.S. Geological Survey National Center, Stop 515 Reston, Virginia 22092				8. Performing Organization Report No.	
12. Sponsoring Agency Name and Address Mr. Frederick Gordon ^o , Jr. Goddard Space Flight Center Greenbelt, Maryland 20771				10. Work Unit No.	
				11. Contract or Grant No. S-70243-AG	
				13. Type of Report and Period Covered Type II Progress Rpt 1 July 73 - 31 Dec. 73	
				14. Sponsoring Agency Code	
15. Supplementary Notes					
16. Abstract ERTS-1 scene, 1174 19433-7, 13 January 1973 was enlarged to 1:500,000 and 1:250,000-scale. The scene covers the Ross Island and Dry Valley area of Antarctica. Both the single scene products contain a grid and marginal information. Proof copies have been produced and are presently being reviewed prior to authorization for printing. ERTS imagery was used in a cooperative effort between USGS and the American Geographical Society (AGS) of New York to revise the AGS 1:3,000,000-scale Arctic Region map manuscripts prior to publication of the map at 1:5,000,000-scale, scheduled for printing by mid-year, 1974. The same selected band 7 70mm imagery was also used to lay a working mosaic of the Alaska-Western Canadian quadrant of the Arctic Area. Sufficient cloud free imagery was not available to complete a mosaic for the three remaining experiments for both the Arctic and Antarctic.					
17. Key Words (Selected by Author(s)) Polar cartography Glaciology Sea Ice Nunataks Shelf ice				18. Distribution Statement	
19. Security Classif. (of this report) Unclassified		20. Security Classif. (of this page) Not Applicable		21. No. of Pages 4	22. Price* 4.00

*For sale by the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Figure 2. Technical Report Standard Title Page

Type II Progress Report

ERTS-A

- a. Title: The Cartographic Application of ERTS/RBV Imagery in Polar Regions

ERTS-A Proposal No.: SR 149

- b. GSFC ID No. of P.I.: IN 391

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

New investigative efforts on the Antarctic experiments were inactive because no imagery was received over any portion of Antarctica during this reporting period. Complete and final cartographic image products over the experimental areas can not be prepared due to the absence of cloud free imagery obtained over the polar regions.

Indexing of the large volume of imagery received remains a time consuming and costly procedure. It has become necessary to convert a percentage of the money allocated to each experiment from strictly cartographic investigations to the manual tasks of indexing.

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

Arctic

Sufficient cloud free imagery has now been selected for the Fairbanks, Alaska 1:1,000,000 photoimage mosaic (Experiment No. 7). The mosaic will be completed by next reporting period with a print proof available for review.

A Cartographer from the American Geographical Society (AGS) of New York completed the temporary assignment with USGS in the cooperative effort to research, select, and use the ERTS Arctic region imagery in the compilation of the AGS 1:5,000,000-scale map and to lay a working mosaic by quadrants of the Arctic region in support of Experiment No. 6. Changes to the AGS map manuscripts using the ERTS imagery were mostly shorelines and

realignment of major rivers. One mosaic covering the Alaskan-Canadian quadrant using 70mm imagery, was laid, however the other three quadrants remain incomplete due to insufficient cloud-free imagery.

Antarctica

A single image product was prepared at 1:250,000 scale and 1:500,000 scale. The ERTS-1 scene used was 1174 19433-7, 13 January 1973. The image scene contains a grid and marginal information. Proof copies are now being reviewed by scientists for possible applications to scientific programs in Antarctica.

Mosaic preparation continues on the Victoria Land Coast photo-image strip mosaic, Thwaites Area, and McMurdo Sound region.

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:

Emphasis was placed on investigation of the ERTS-1 imagery over the Arctic region in support of Experiment No. 6. Once again our investigations showed that ERTS imagery can successfully be used for revising coastlines on small-scale maps and detecting changes i.e., realignment of rivers, repositioning of land features which were previously depicted on maps.

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

Abstract and paper "The Cartographic and Scientific Applications of ERTS-1 Imagery in Polar Regions," presented at the ASP/ACSM fall convention, Orlando, Florida.

Abstract and presentation, NASA's Discipline Panel Review of Investigation of Proposal SR-149.

Abstract and paper "New Space Technology Advances Knowledge of the Remote Polar Regions," presented at the 3rd ERTS-1 Principal Investigator's Symposium.

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:

To best meet project requirements for SR-149 and international user's needs it is suggested that NASA allot maximum tape time to acquire ERTS imagery in the Antarctic during the austral season (October - March) on an annual basis.

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

i. ERTS Image Descriptor forms: N/A

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