

265009 The Cartographic Application of  
Imagery in Polar Regions

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

ERTS/A Proposal No. 149

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

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

Cloud free imagery is not available for the entire experimental areas in Antarctica and the Arctic. It became necessary to research the browse file at NASA to select usable imagery to supplement that imagery received on automatic distribution.

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

Preliminary mosaicking continues at 1:1,000,000-scale for 14 specific coastal areas surrounding the Antarctic continent, (see attached graphic). Researching the NASA browse file has been most successful with approximately 150 to 200 ERTS scenes selected and ordered for use in the experimental mosaics. The percentage of cloud cover for these scenes range from 0 to 75. The larger percentage seems excessive but that portion that is cloud free fills holiday areas within the experimental mosaics.

Using ERTS imagery as source, sketch maps at 1:1,000,000 scale are being prepared by USGS cartographers over several of the 14 specific areas. These sketch maps will be made available to the American Geographical Society, U.S. mapping agencies engaged in Antarctic mapping, and to foreign countries associated with the Scientific Committee on Antarctic Research.

The Fairbanks 1:1,000,000-scale IMW, ERTS preliminary mosaic was prepared without control. To insure a more accurate position of the ERTS imagery an analytical solution is being run for four joining sheets; Fairbanks, Umiat, MacKenzie, and Dawson. The Fairbanks mosaic will be relaid to the control base.

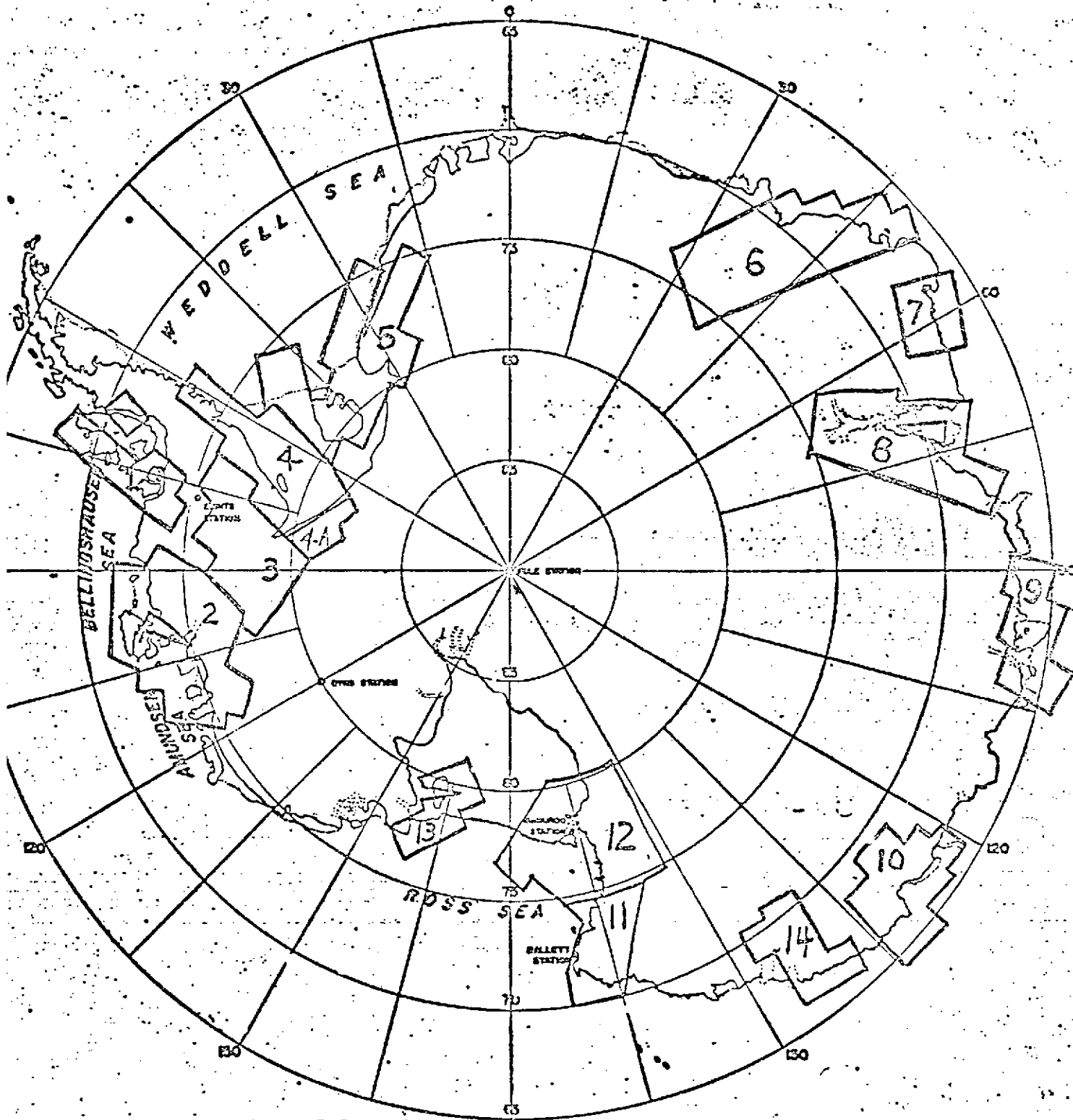
Plans are to continue with researching the NASA browse files for supplemental imagery. Work will continue with mosaicking, preparation of sketch maps, and completing the analytical control solution and preparing a plotted control base which will be used to lay the mosaics.

- e. Discussion of significant scientific results and their relationship to practical applications or operation problems including estimates of the cost benefits of any significant results (To be prepared in scientific abstract form of 200 words or less):

A 1:1,000,000-scale sketch map has been prepared from ERTS imagery of the Prince Olav Coast, Antarctica. This is the first such mapping of the extent of the ice tongues of the Shtrese and Fietta Bay glaciers. Shtrese in particular is of interest in that ERTS shows the tongue extending out into the Lutzom-Holm Bay approximately 32 miles further than ever depicted on existing maps. (ERTS scenes 1547-05221 and 05223 dated 21 Jan 74, band 7.) This sketch map and others in work covering coastal areas of the Antarctic continent show many coastal changes when compared to what is believed to be the most current published maps. These sketch maps along with the accompanying mosaics will be a bench mark for future revision to existing maps and charts and also an invaluable source for new mapping.

Resulting from the browse file research, ERTS imagery is now available over Mt. Siple, Antarctica. Although we do not have complete cloud free imagery we expect to provide a source in the form of a 1:1,000,000-scale mosaic to correctly position Mt. Siple relative to the Executive Committee Range. A mosaic at 1:500,000 scale is also being compiled that will serve as a source for future revision of 1:250,000-scale maps of the Ellsworth Mountains, change and improve the shape and size of the islands within the Ronne Ice Shelf, and redefine the ice front of the Ronne and Filchner Shelves.

- f. A listing of published articles, and/or paper, preprints, in-house reports, abstracts of talks, that were released during the reporting period: N/A
- 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: N/A
- 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/NDF during the reporting period: N/A
- k. Status of Data Collection Platforms (if applicable): N/A.



Area	Images Selected
Alexander Island	- 10
Hurston Is.-Thwaites Ice Tongue	- 32
Ellsworth Land	- 6
Livingstone Coast-Ronne Shelf	- 28
Sentinel Mtns.	- 6
Wilhelmsen Shelf-Shackleton Range	- 27
Prince Olav Coast	- 20
Emping-Mawson Coast	- 6

Area	Images Selected
8 Lambert Gl.-Amery Shelf	- 15
9 Queen Mary Coast	- 5
10 Banzare-Sabrina Coast	- 10
11 Victoria Land Coast	- 14
12 McMurdo LNW	- 25
13 Cape Colbeck-Ross Shelf Ross. Is.	- 9
14 Adelie Coast	- 6