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ERTS-1 Project No. MMC-298

ARCTIC AND SUBARCTIC ENVIRONMENTAL ANALYSES UTILIZING ERTS-1 IMAGERY

Sixth Bimonthly Progress Report

23 August 1973 - 23 October 1973

Prepared by

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Objectives: (Reference NASA Contract S-70253-AG dated 14 June 1972):

* Analyze and map the sediment deposition in harbors, inlets and docking facilities in the Cook Inlet.

* Map the permafrost areas of Alaska as inferred by vegetative patterns. Compare major tonal and textural permafrost patterns with Mariner imagery.

* Correlate the snow pack cover of Caribou-Poker Creek with stream runoff.

* Map and inventory the icing of the Chena River.

* Items 2 and 4 above are to be correlated with the University of Alaska studies in the same area.

Accomplishments:

Three cycles (Nos. 23-25) were completed over Cook Inlet during this reporting period. Only one image (1410-20563) acquired on 6 September 1973 was useable and interpretations based on this frame verified earlier findings. All except the central portion of the inlet was cloud covered. The shape of the plumes from the Kasilof, Drift and Big Rivers indicates that the water at the river mouths is moving north into the inlet. This northerly flow occurred during mid-flood tide (maximum high water occurred at 2:09*). The intrusion of clear, saline water which occurs during flood tide, as previously reported **, was observed. The clear oceanic water remains as a distinct water mass to the approximate latitude of Kenai. At this location mixing with the sediment laden inlet

* National Oceanic and Atmospheric Administration, 1972, Tide tables for West Coast of North and South America, p. 126.

** Anderson, D. M., L. W. Gatto, H. L. McKim and A. Petrone, 1973, Sediment Distribution and Coastal Processes in Cook Inlet, Alaska: Symposium on Significant Results from ERTS-1, March 5-9, 1973, p. 1323 - 1339.

water produces a zone of mixed water. Bottom scouring and sediment reworking may also cause some of the apparent differences in suspended sediment concentration west of Kenai.

The 9.5"x 9.5" color prints have better tonal characteristics for vegetation mapping than B/W prints and were therefore used to corroborate the distribution of vegetation in selected areas of the 59,000 square mile area in north central Alaska (reference Third Type 1 Report, dated 23 February, 1973.)

Work to be accomplished next reporting period:

Imagery of the Cook Inlet area will be analyzed and interpretations compared to earlier findings. Detailed analysis of the two terrestrial thermokarst areas considered analogous to some of the Martian terrain will continue. Work will begin on the preparation of the Type III, Final Report.

Recommendations:

None

Changes in Standing Order Forms:

None submitted

ERTS Image Descriptor Forms:

None submitted

Data Request Forms:

None submitted

Data Query Forms:

None submitted