

09

CR-139555

DYNAMICS OF SUSPENDED SEDIMENT PLUMES IN LAKE ONTARIO

Edward J. Pluhowski
U.S. Geological Survey
Water Resources Division
Northeastern Region
National Center, Mail Stop #432
Reston, Virginia 22092

1 May 1974

Type 1 Progress Report for Period
1 March 1974 - 30 April 1974

Prepared for:

Goddard Space Flight Center
Greenbelt, Maryland 20771

"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."

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

1342D

RECEIVED

AUG 19 1974

1 SIS/902.6

Reproduced by
NATIONAL TECHNICAL
INFORMATION SERVICE
U S Department of Commerce
Springfield, VA 22151

Type 1 Progress Report

ERTS-1

- a. Dynamics of Suspended Sediment Plumes in Lake Ontario.

ERTS-1 Proposal No.: 342-4D

- b. GSFD ID: IN 058

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

None.

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

A trip was made to the project site April 22-26 to obtain turbidity, suspended sediment concentrations, and water-temperature measurements during a satellite overpass. Sky conditions ranged from partly cloudy to a complete overcast during the trip. Accordingly, it does not appear likely that useful imagery will be forthcoming for this trip. Hydrologic and meteorologic data ^{were} ~~was~~ obtained from the U.S. Geological Survey, Subdistrict Office at Ithaca, N.Y. on April 23, 1974 for earlier productive satellite overpasses.

- e. Discussion of significant results and their relationship to fundamental applications or operational problems.

The absence of turbidity plumes during the winter was well documented in an unusually successful sequence of images obtained February 10-12, 1974. Useful imagery of the south shore of Lake Ontario was obtained on 3 successive days at a time when sky cover over the area normally approaches complete coverage. Imagery of the Oswego, Genesee, and Niagara rivers failed to detect any plumes, however faint. Despite strong northwest winds on February 11 there was no indication of shoreline erosion generated by wave action.

e. -- Cont'd

Frozen ground, snow cover, shoreline icing and minimal construction and farm activity without doubt reduces the probability of sediment movement in winter. Thunderstorm activity over the study area is very rare during the cold season so that the erosive energy of rainfall is greatly reduced. Moreover, a fairly high percentage of the winter precipitation is in the form of snow or sleet further reducing the impact of rainfall energy on sediment transport.

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

None.

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

Imagery beyond the March 17, 1974, cutoff date for this proposal is urgently needed. I have requested that the cutoff date be extended to June 30, 1974. This will ensure coverage of the 1974 high-flow season which normally begins around April 1 in western New York. During the spring freshet season the Genesee River and Oswego River plumes are clearly definable and at their greatest areal extent. Spring imagery of these plumes is needed to help define movement and fate of the heavy sediment load entering Lake Ontario from these watercourses.

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

None.

i. ERTS Image Description forms:

A new listing is in preparation.

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

None.