

Made available under NASA sponsorship  
In the interest of early and wide dissemination of Earth Resources Survey Program information and without liability for any use made thereof.

Enclosure to GEC72L-1090  
8 November 1972

ERTS "A" Experiment No. 589

E72-10168  
CR-128359

Type I Progress Report

September 1, 1972 to November 1, 1972

Dated: November 1, 1972

Title: To determine the boundaries of aircraft and spacecraft data within which useful water quality information can be obtained. ERTS "A" Experiment #589

Principal Investigator: W. C. Coulbourn, PRO45

No serious problems were encountered during the reporting period.

I. Accomplishments during the reporting period:

- a. Installation and checkout of the water quality sensors aboard the Marine Resources Development Foundation boat, Rainbow. This was accomplished at the home base of Marine Resources Development Foundation, Mayagues, Puerto Rico. The boat, Rainbow, arrived at St. Thomas September 30, 1972.
- b. Seventeen (17) current meters were set in selected locations in the harbor.
- c. The biological and physical data collection program was initiated September 30th and will continue until the week of November 20, 1972.
- d. Arrangements with KSC were completed in September for aircraft underflights during the week of ERTS "A" passage, October 17, 1972. This support was made possible only by the utmost cooperation of the KSC personnel, particularly Messrs. P. Claybourne, R. Withrow, and G. O'Conner. The test site was flown at four different tidal conditions and one of the four missions was coordinated with ERTS "A" pass on 17 October. (We understand that an image of St. Thomas was obtained on the October 17th pass but have not determined if the test site is visible on this imagery.)
- e. During the days, October 16, 17, and 18th, optical photometric measurements were taken of incident solar radiance, sky radiance, and irradiance of color panels on the ground and the beach sand. Also we recorded sun elevation and azimuth. Water transmission data in three color bands was obtained by

(E72-10168) TO DETERMINE THE BOUNDARIES OF AIRCRAFT AND SPACECRAFT DATA WITHIN WHICH USEFUL WATER QUALITY INFORMATION CAN BE OBTAINED.  
 W.C. Coulbourn (Grumman Ecosystems Corp., Bethpage, N.Y.) 8 Nov. 1972 3 p CSCL 08H G3/13  
 N73-10349 Unclas 00168

use of standard white panels immersed in the harbor water at one foot and five feet distances using a calibrated photometer. (The white beach should be identifiable on ERTS "A" imagery.)

- f. Four sets consisting of one white and one black, eight feet by eight feet plywood optical targets were fabricated and enplaced in selected harbor locations. The four black targets were submerged about two feet below the surface and four white panels were anchored near the bottom, 18 to 40 feet deep depending upon water clarity. These targets will serve as an additional calibration standard for the I<sup>2</sup>S imagery obtained by the KSC aircraft, and water attenuation data.
- g. The current meters were hauled October 23rd. The record films were removed, four meters repaired, all meters were reloaded with film, tested and reset on location. The film records are being processed. Quality of data obtained will be included in next Type I Progress letter.

The I<sup>2</sup>S film has been flown to Houston MSC, where an absolute sensitometric calibration (step wedges plus computer program) is being applied to the end strips of the I<sup>2</sup>S 2424 film.

II. Accomplishments planned for the next reporting period November, December 1972:

- a. Complete in-situ data acquisition of the harbor waters by November 24, 1972.
- b. Start data analysis program
  - Aircraft I<sup>2</sup>S imagery about 20 November 1972
  - In-situ water quality data about 4 December 1972
  - Select imagery ERTS "A" and aircraft offering the most promise for positive correlation with in-situ data

III. Miscellaneous comments covering items listed in NASA Specification #S-250-P-1C March 1972

- a. The experiment is on schedule.
- b. Funds expended to date are within our planned budget. In order to utilize our scientific personnel most efficiently, we have requested by letter, GEC72L-1076 dated

ERTS "A" Experiment No. 589  
Type I Progress Report  
September 1, 1972 to November 1, 1972

Enclosure to GEC72L-1090  
8 November 1972  
Page 3

1 November 1972, approval to lease from Spectral Data Corporation or I<sup>2</sup>S Corporation a Ground Viewer for use in scanning 800 frames of data, and subsequently analyzing those selected for correlation with ERTS "A" and in-situ data. The lease would be for a period of  $2\frac{1}{2}$  months. An alternative to the above lease is the loan of an I<sup>2</sup>S viewer from KSC. This ground viewer equipment will enable us to prepare a better final report for the same man hours of effort.