

Optical Constituents Along A River Mouth and Inlet: Variability and Signature in Remotely Sensed Reflectance

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GOALS

The goals of this proposal are:

1. Measure the variability of optical properties in-space along a river mouth/inlet and observe the variability in time at a single position over a tidal cycle.
2. Relate this variability to the concentration and dynamics of dissolved and particulate materials, including variability in the particulate size distribution.
3. Relate the optical properties to the ocean reflectance so that algorithms to invert surface color to in-water constituents can be tested and improved.

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APPROACH

Our approach consisted of conducting physical and optical measurements from a small, fast and easy to handle vessel which could supply necessary power. In addition we deployed a satlantic HTSRB measuring upwelling radiance and irradiance and downwelling irradiance.

WORK COMPLETED

We conducted 5 days of sampling of which the last three days with the IOP package at the New River Inlet using two profiling packages, one containing a LISST and a camera and the other containing a CTD, an ac-9, a BB-9, a turbidity sensor, and a CDOM fluorometer (the IOP package). Additionally we deployed a radiometer buoy so that we can relate our result to hyperspectral remote sensing reflectance.

Measurements were done as follows: In days 1 and 2 samples were collected at different locations along the river. In day 3 we anchored the R/V and performed profiles ~once every half an hour at one location. In Day 4 we followed a dye patch as it was advecting with the tide. Finally in day 5 we sampled out at sea and in the Inlet to characterize the end members of the inlet (see Fig. 1 for station locations).

Data from the IOP package were processed and will posted, within the coming week, on the WWW at <http://misclab.umeoce.maine.edu/data.php>.

RESULTS

We are in the analysis phase and have no results, other than the data collection, to report as of yet.

IMPACT/APPLICATIONS

This proposal seeks to improve our ability to assess and predict the distribution of optical properties in the coastal region. Such information is needed to assess underwater visibility of relevance to both diving operations and underwater communication.

RELATED PROJECTS

Instruments used in this work have been purchased through a DURIP grant (N000141010776 to E. Boss)

Data set collected regarding optical properties of suspended particles will supplement the one collected during OASIS (N000141010508).

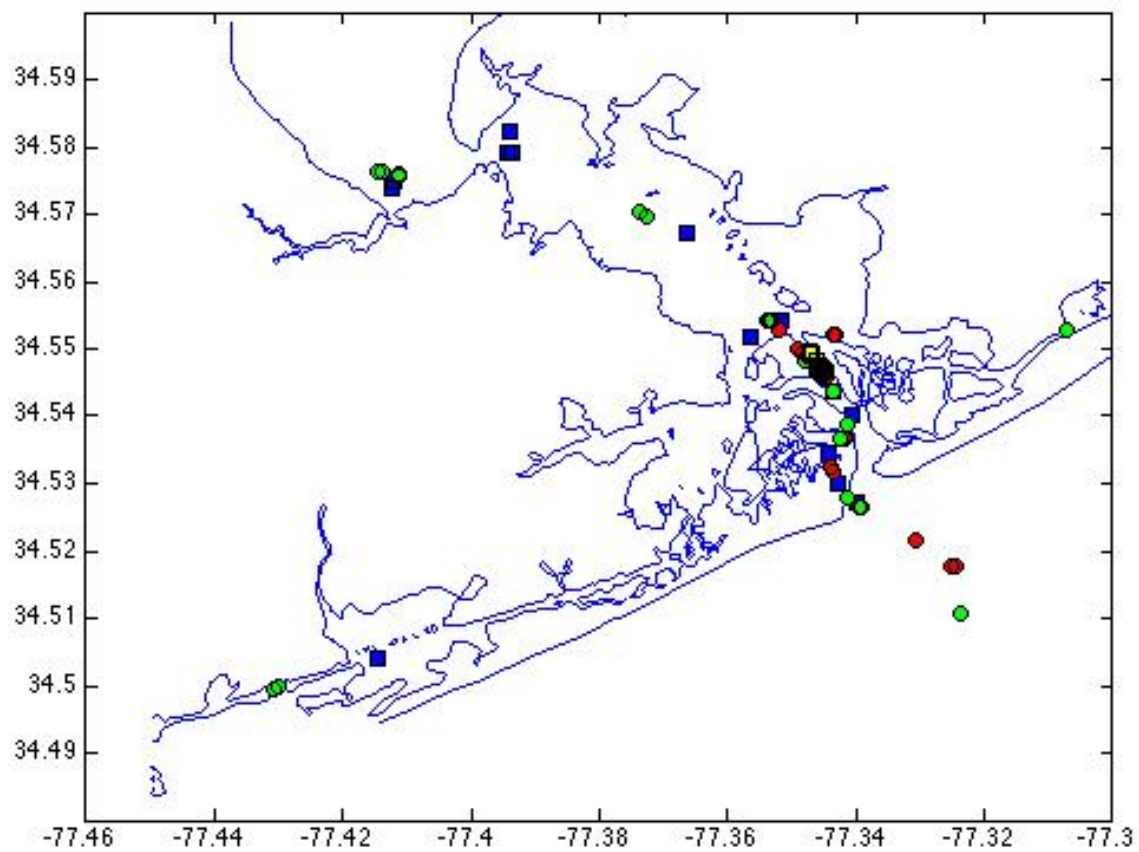


Figure 1. Map of station where we sampled. 5/9/12-blue squares, 5/10/12-red circles, 5/11/12-large black circle (time series), 5/12/12-green circle, 5/13/12-yellow square