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# **HYPERSPECTRAL OCEAN COLOR SCIENCE: BERMUDA AND SANTA BARBARA CHANNEL**

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## **RESEARCH GOALS**

Our goal is to develop validation data sets for the modeling and interpreting of hyperspectral satellite ocean color imagery. This grant supports the addition of new optical measurements to the existing measurement programs for the clear natural waters off Bermuda and the Case II waters of the Santa Barbara Channel. We are just completing our first year and have nearly completed the implementation of addition measurements in the Bermuda BioOptics Project (BBOP) and the Plumes and Blooms (PnB) *in situ* sampling programs. These enhancements will fill the most glaring holes in the BBOP and PnB *in situ* science programs for the task of analyzing and modeling hyperspectral reflectance spectra and satellite imagery.

## **OBJECTIVES**

Our near-term objectives are to 1) make and analyze hyperspectral determinations of above-water radiance reflectance ( $R_{rs}^+(\lambda)$ ) at BBOP, 2) determine *in vivo* absorption spectra for total particulate, dissolved and detrital particulate materials as part of PnB, 3) deploy an *in situ* spectral transmissometer-reflective tube absorption meter during PnB and analyze and interpret its data and 4) interpret and model hyperspectral ocean color observations available from aircraft imagers (such as AVIRIS).

## **APPROACH**

The approach of this grant is to provide supplemental support for the on-going BBOP and PnB *in situ* science programs to provide calibration and validation data sets for the analysis of hyperspectral reflectance spectra. The bulk of the support for the BBOP and PnB programs comes from NASA and NOAA-COP, respectively, and we anticipate these programs to continue for, at least, the next couple years. The ONR supported

enhancements enables these data sets to be collected and used for the interpretation and modeling of hyperspectral ocean color observations.

#### TASK COMPLETED

To date, we have nearly implemented the field aspects of this grant (objectives 1-3 above) and are starting to process and interpret the new data sets. These new data objects are already merged with the PnB data base. In addition, we have just received AVIRIS imagery from JPL of a single overpass over the Santa Barbara Channel made last spring.

#### SCIENTIFIC RESULTS

This work has just completed its first year of support and hence, we have little scientific results to discuss. We expect to have much more to say by this time next year.

#### ACCOMPLISHMENTS

We have nearly implemented the field aspects of this grant (objectives 1-3 above) and are starting to process and interpret the new data sets. We have sampled under an AVIRIS scene in the Santa Barbara Channel last spring and are in the process of working up that data now.