

OCEAN OPTICS XXIV

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Thursday, October 11

Poster Session 4

10:30–12:00

Poster 28

A HYPERSPECTRAL PERSPECTIVE ON THE GULF OF MAINE.

Previous biogeochemical surveys in the Gulf of Maine (GoM), provide an understanding of the water properties in the area. However, a hyperspectral optical characterization of the GoM waters has yet to be undertaken. Here we present a preliminary view of hyperspectral and multispectral characteristics of a GoM section and the associated spatial and temporal variability of optical constituents of the water. We conducted 5 surveys in 2017 from July to October along a transect from Yarmouth (NS, Canada) to Portland (ME, U.S.A.). Water optical properties were measured underway using an in-line flow-through system (AC-9), while above-water reflectance was recorded using hyperspectral sensors (HyperSAS). This analysis focuses on 3 bio-physically distinct regions: i) the Scotian Shelf, ii) Jordan Basin (center) and iii) coastal Gulf of Maine. Optical constituents in the water vary spatially, with dissolved organic matter (CDOM) and particles higher near the coastal regions. Phytoplankton contribution to the total reflectance spectra increased over time and is higher in the last cruise in all regions. A separation of the spectral signatures of the regions is evident through time, except towards the end of the summer. Over Jordan Basin, values of the spectral slope of CDOM displays a peak through June to August, likely related to the retention time of water masses in the area and contribution from coastal environments. These findings highlight the increased information content of hyperspectral data compared to multispectral data, and provide new insights into the optical complexity of surface waters in the Gulf of Maine.

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