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# **Evaluation of the Assumptions to Relate Inherent Optical Properties to Apparent Optical Properties in the Coastal Waters**

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## **ABSTRACT**

Simulation of the remote sensing reflectance from the coastal waters based on measured inherent optical properties (IOP's) at the surface always involves some uncertainties related to the parameter depth profiles and spectral shape of bidirectional reflectance function which by assumption is assumed to be spectrally flat. These assumptions were tested on several cruises in the eastern Long Island, Chesapeake Bay, and in Georgia waters near Sapelo Island in which we compared reflectance simulated from measured spectra of attenuation and absorption. These calculations were made assuming a spectrally flat backscattering ratio with the directly measured reflectance spectra. Attenuation and absorption were measured using WET Labs acs instrument with 82 wavelength channels, reflectances were detected by GER spectroradiometer in the fiber optic mode with the sensor just below water level. The values of bidirectional reflectance function were estimated by independent measurements of Satlantic hyperspectral profiler. Chlorophyll a concentration was as small as 2.7 mg/m<sup>3</sup> in Georgia cruise and as big as near 400 mg/m<sup>3</sup> in the red tide conditions. The sensitivity of reflectances to the uncertainties in the assumptions in the model are evaluated and the magnitude and spectral dependence of backscattering ratio on concentrations of chlorophyll a and mineral particles explored.

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