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Connection between seawater light absorption coefficient and salinity in Chesapeake Bay

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In many practically important cases it is necessary to estimate inherent optical properties of sea water using only available oceanographic data. Among many hydrographic parameters of sea water only salinity has significant correlation with such optical parameter as absorption coefficient. This correlation is due to the coupling between salinity and concentration of dissolved organic matter.

In order to derive dependencies between absorption coefficient and salinity we used mooring data collected during Cope 97 experiment in Chesapeake Bay. The derived correlation dependencies are based on hundreds of thousands data points; these dependencies show significant correlation between salinity and optical absorption coefficient for certain water types. The recovered absorption data were used to estimate other inherent optical properties such as scattering and backscattering coefficients and optical remote sensing reflectance. The applicability of derived relationships to remote sensing and optical modeling of sea waters is discussed.

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