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BIOGEO-OPTICS: OPTICAL SCATTERING CROSS SECTIONS FOR SUSPENDED MINERAL AND ORGANIC MATTER OF COASTAL AND NEAR-COASTAL WATERS

The Naval Research Laboratory and NASA are sponsoring new initiatives in the study of in-water optical properties of suspended matter for coastal and near-coastal ocean waters. Improved remote sensing algorithms for suspended matter in coastal ocean water will not be forthcoming until the mass of suspended particulates is properly partitioned into inorganic and organic fractions. Such has not been the case heretofore where the occurrence of Total Suspended Solids (TSS) has been used to explain in-water scattering. We have been measuring TSS and then ashing the sample after the drying step. With this information on mass concentration of mineral and organic matter and the particulate spectral scattering coefficient from the WET labs AC-9 instrument we determine the scattering cross section of mineral and organic matter by multiple linear regression. This accurate partitioning into suspended mineral and organic components allows meaningful models and calculations using the known average refractive indices of mineral and organic matter. We are at the stage now of assessing the composition of the suspended particulate matter and assigning meaningful optical scattering cross sections for further modeling and research. The data for this effort come from cruises in Mobile Bay, AL, the Southwest pass of the Mississippi River, and Monterey Bay, CA. We will compare regional patterns of the optical scattering cross section for suspended mineral and organic matter.

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