

Uncoupling the optical signatures in coastal waters with ocean color sensors

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Ocean color signatures are used to determine the changing coastal water properties and improve our understanding of physical and biological processes. Optimization methods were applied to spectral signatures from satellite and aircraft sensors to uncouple the water and bottom components for several different coastal environments representing river plumes and shallow water areas in turbid and clear waters. We determine the dissolved organic matter, backscattering coefficient and chlorophyll properties of the water, in addition to bottom albedo and water depth for these different areas. Optimization methods provide unique solutions based on the non-linear spectral decomposition. These methods were applied to multi- and hyperspectral imagery (SeaWiFS, MODIS and Phylls) sensors and validated with in-situ measurements, to illustrate the changes in coastal optical properties and their inter-relationships.