

# Suspended sediment concentration and optical property observations of mixed-turbidity, coastal waters through multispectral ocean color inversion.

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Multispectral satellite ocean color data from high-turbidity areas of the coastal ocean contain information about the surface concentrations and optical properties of suspended sediments and colored dissolved organic matter (CDOM). Empirical and semi-analytical inversion algorithms published to date are insufficient to retrieve this information when suspended sediment concentrations exceed order  $10^2 \text{ g m}^{-3}$ , however. This is in part because high-gain “ocean” bands on orbiting sensors saturate over bright, turbid waters, and because of the difficulty of obtaining satellite/in situ field match-ups under high-turbidity conditions that persist for short periods of time. We present an alternative semi-analytical algorithm that simultaneously utilizes high- and low-gain bands on the MODIS/Aqua sensor, and is tuned for coastal Louisiana using mass-specific inherent optical properties of local suspended sediments. The multispectral inversion method is applicable to both moderate and high turbidity conditions. We discuss the sensitivity of the algorithm to optical model assumptions, and compare inverted sediment and CDOM IOPs from MODIS/Aqua imagery to published data for the study region.