



Multispectral in situ measurements of organic matter and chlorophyll fluorescence in seawater: Documenting the intrusion of the Mississippi River plume in the West Florida Shelf

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Limnol. Oceanogr., 46(7), 2001, 1836-1843 | DOI: 10.4319/lo.2001.46.7.1836

ABSTRACT: We performed multispectral, in situ fluorescence measurements of detrital colored organic matter (COM) and chlorophyll a (Chl a) in surface waters of the West Florida Shelf using the Wet Labs spectral absorption and fluorescence instrument (SAFire). Continuous underway measurements allowed simultaneous mapping of the dispersal pattern of riverine organic material and Chl a on the shelf. We used two fluorescence emission ratios to differentiate between riverine and marine COM. The data showed unusually high concentrations of COM offshore. These were attributed to an offshore extension of the Mississippi River plume. Comparisons between in situ Chl a concentrations measured with the SAFire and Chl a values obtained from the sea-viewing wide field-of-view sensor (SeaWiFS) satellite data using OC4 and MODIS algorithms showed that, although both algorithms overestimated Chl a, MODIS performed better than OC4, particularly in areas with high COM concentrations. Analysis of the relationship between Chl a and COM concentrations within the study area showed regional variability probably caused by differences in river source.

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