Relationship between surface salinity and ocean color in the plumes of the Niger and Congo rivers

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This study focuses on the relationship between surface salinity and ocean color in the plumes of the Niger and Congo rivers. Near the coast, low salinity, relatively rich nutrient concentration and suspended matter characterize water of the river plumes. These waters mix with oceanic waters along current paths. The objective of this work is to analyze the nature of the relationship between salinity and CDM (Colored Detrital Material). This study is based on salinity measurements by the sensor Soil Moisture and Ocean Salinity (SMOS) and CDM estimates derived from Moderate Resolution Imaging Sensor Spectroradiometer (MODIS) observations in the Eastern Tropical Atlantic. We first described the monthly maps of different variables in 2010 and studied correspondences between physical and biological fields. For the study of plumes, the calculation of trajectories following the minimum monthly salinity was done, and then we analyzed the SSS vs. CDM relationships along these trajectories. Satellite data of SSS and CDM allowed a first analysis of the spatio-temporal evolution of these two variables. Our results show some spatial coherence between salinity and CDM in the waters of the plume at monthly time scale, but there are areas in which the spatial structure of salinity and CDM do not coincide because some trajectories behave strangely relative to the SSS plume. Away from the river mouth, flow variations have a minor role on SSS seasonal variation. The rest of the variation is probably due to the current variability, or more precisely to the SSS advection.

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