Geophysical Research Abstracts
Vol. 21, EGU2019-9153-2, 2019
EGU General Assembly 2019

Seasonal variability of Niger and Congo Rivers plumes in the Gulf of Guinea.

Odilon Joël Houndegnonto (1), Nicolas Kolodziejczyk (1), Christophe Maes (1), Bernard Bourlès (2), Casimir Da-allada (3), and Nicolas Reul (1)

(1) LOPS, Université de Bretagne Occidentale (IRD, Ifremer, CNRS), France (odilon.houndegnonto@univ-brest.fr), (2) IMAGO (IRD), Brest, France., (3) ESTBR, University of Abomey (UNSTIM), Benin.

Recent advances in Sea Surface Salinity (SSS) remote sensing capabilities from the Soil Moisture and Ocean Salinity (SMOS) mission provide us for the first time a new overview on freshwater plumes. In the Eastern Gulf of Guinea, as far as we know, the freshwater plumes remains poorly documented from observations, because of data scarcity as well as the low spatial resolution of available *in situ* data. Using the unprecedented long time series of SMOS SSS satellite data (8 years) and some available *in situ* measurements in combination with ocean surface currents, River Runoff, and Precipitation rate, seasonal variability of freshwater plumes as well as the mechanisms controlling their horizontal and vertical distribution and dynamics will be analyzed and presented. We found that freshwater plumes are more extensive in boreal winter, then exhibit a maximum extension in April and decrease in summer with a minimal extension in August. North of the equator, SSS variability is associated with the ITCZ precipitation meridional seasonal migration as well as the Niger River discharge. South of the equator freshwater plumes are mainly due to the Congo River discharge. The horizontal spreading of the buoyant freshwater plumes is largely controlled by surface currents. Seasonal extension of Congo River's freshwater plume also impacts the upper layer stratification. The analysis of vertical structure of salinity, temperature, density, Brunt-Väisälä frequency and Turner angle, reveals that the water column is stably stratified off Congo basin, but reveals that a complex vertical structure of salinity barrier layers is present. All these different factors and physical mechanisms will be discussed.