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Supporting Information for

Seasonal variability of freshwater plumes in the eastern Gulf of Guinea as inferred from satellite measurements

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Additional Supporting Information (Files uploaded separately)

Movies S1. Summary seasonal spatiotemporal variability of freshwater plumes in the eastern Gulf of Guinea: northwestward extension of freshwater (September-December), southwestward extension of freshwater (January-April) and, damping/dissipation of freshwater plumes extension (May-August).

Introduction

This supporting information provides supplementary information completing the analyses of sections 2.1, 4.1, 4.3, and 5. in the main article. It also includes a movie of monthly seasonal variation of freshwater plume distribution in the eastern Gulf of Guinea.

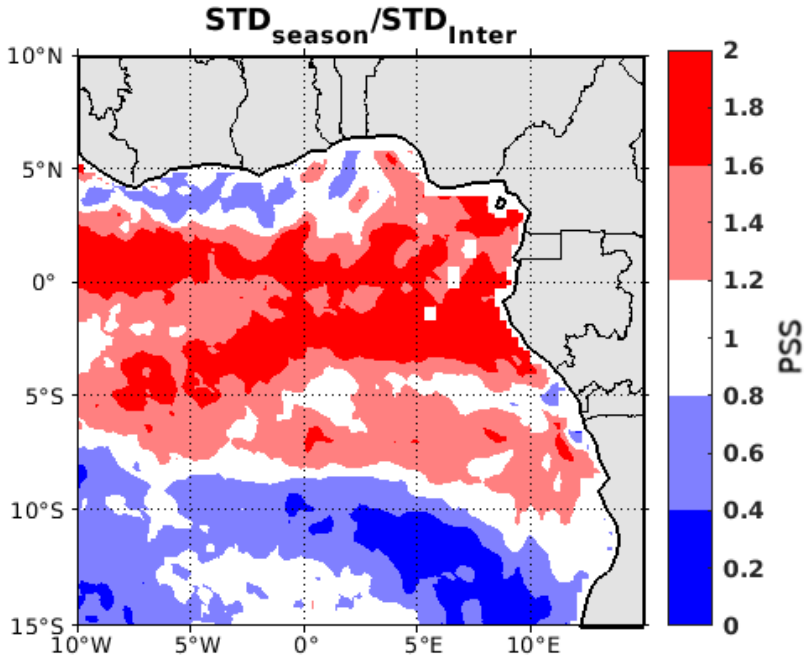

Figure S1. Ratio of standard deviation of the seasonal variability over the inter-annual variability of SSS. In the eastern Gulf of Guinea, the SMOS SSS variability is rather dominated by the seasonal time scale variability of about 1.4-2 pss than the inter-annual time scale variability. However, the inter-annual SSS variability is not much negligible off Congo.

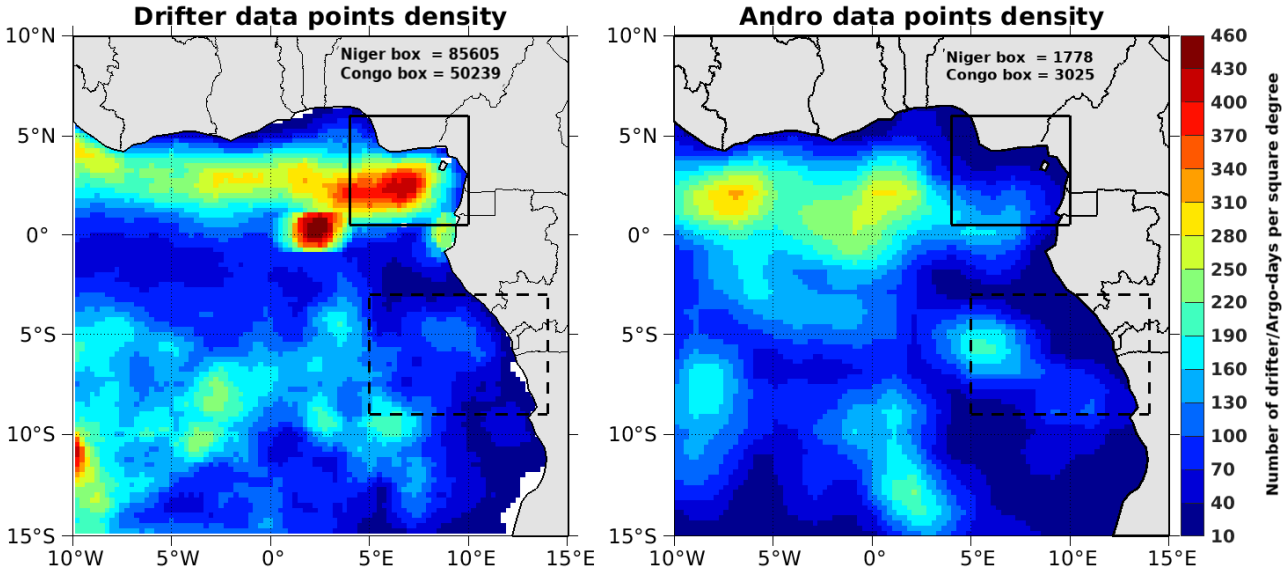

Figure S2. Sampling data points density for Andro and Drifter currents in the Gulf of Guinea.

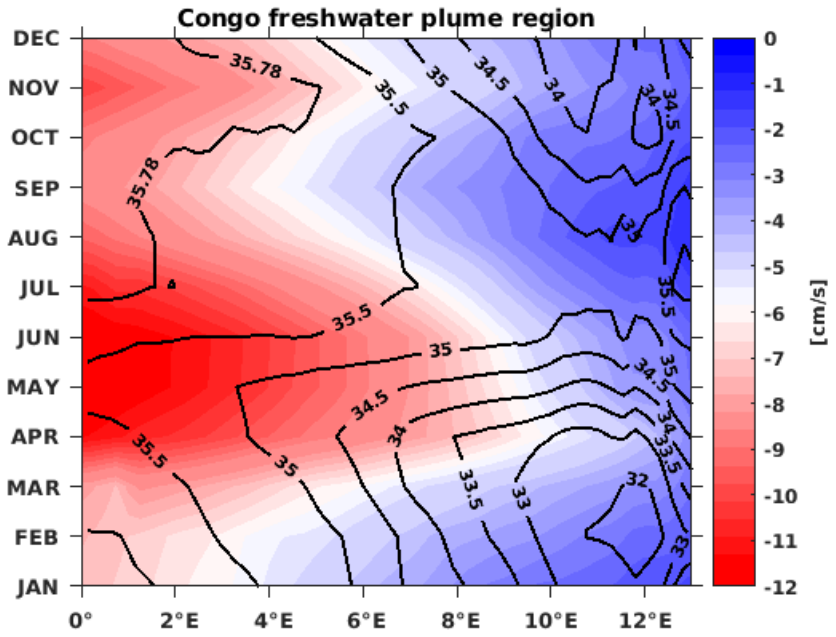

Figure S3. Time-longitude diagrams of zonal Ekman-driven currents (shaded color, cm/s) in Congo freshwater plume region, where black contours correspond to SSS (same as in Figures 6e in the main article).

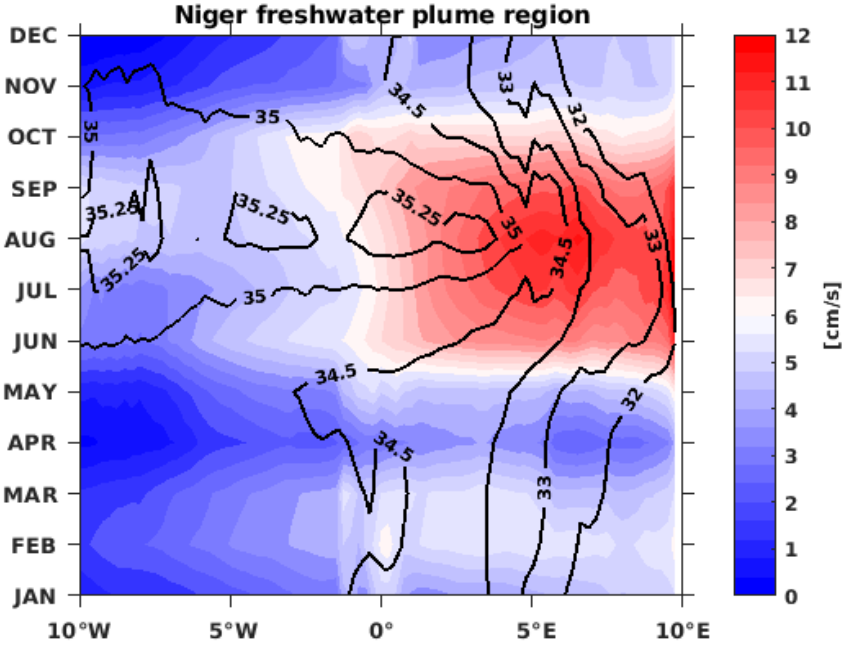

Figure S4. Time-longitude diagrams of zonal Ekman-driven currents (shaded color, cm/s) in Niger freshwater plume region, where black contours correspond to SSS (same as in Figures 6d in the main article).

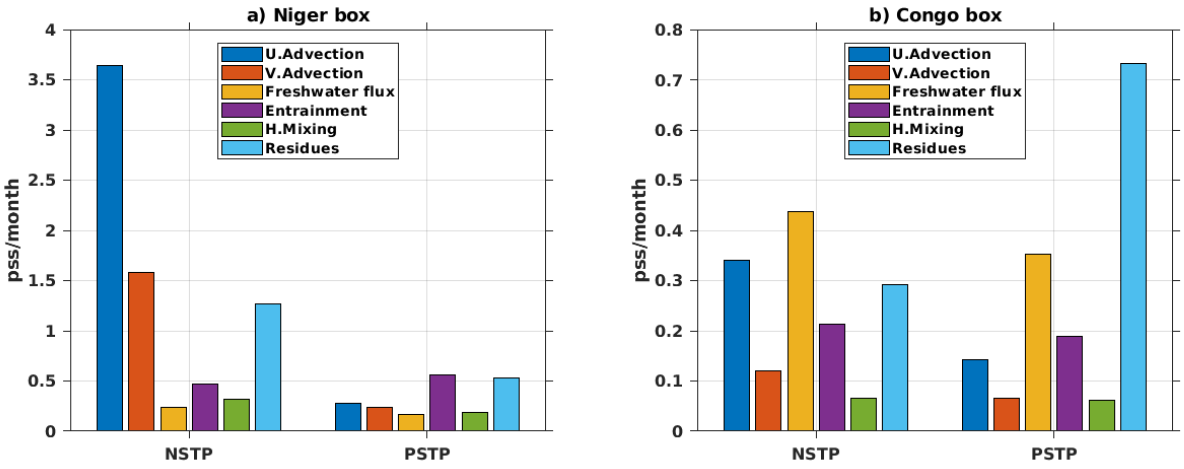

Figure S5. Absolute mean contribution of each term of the MLS budget a) in the Niger box and b) in the Congo box (same as in the Figures 9 and 10 in the main article), over NSTP (Negative Salinity trends Period, August-November for Niger box and October-September for Congo box) and PSTP (Positive Salinity Trends Period, December-July for Niger box and April-July).

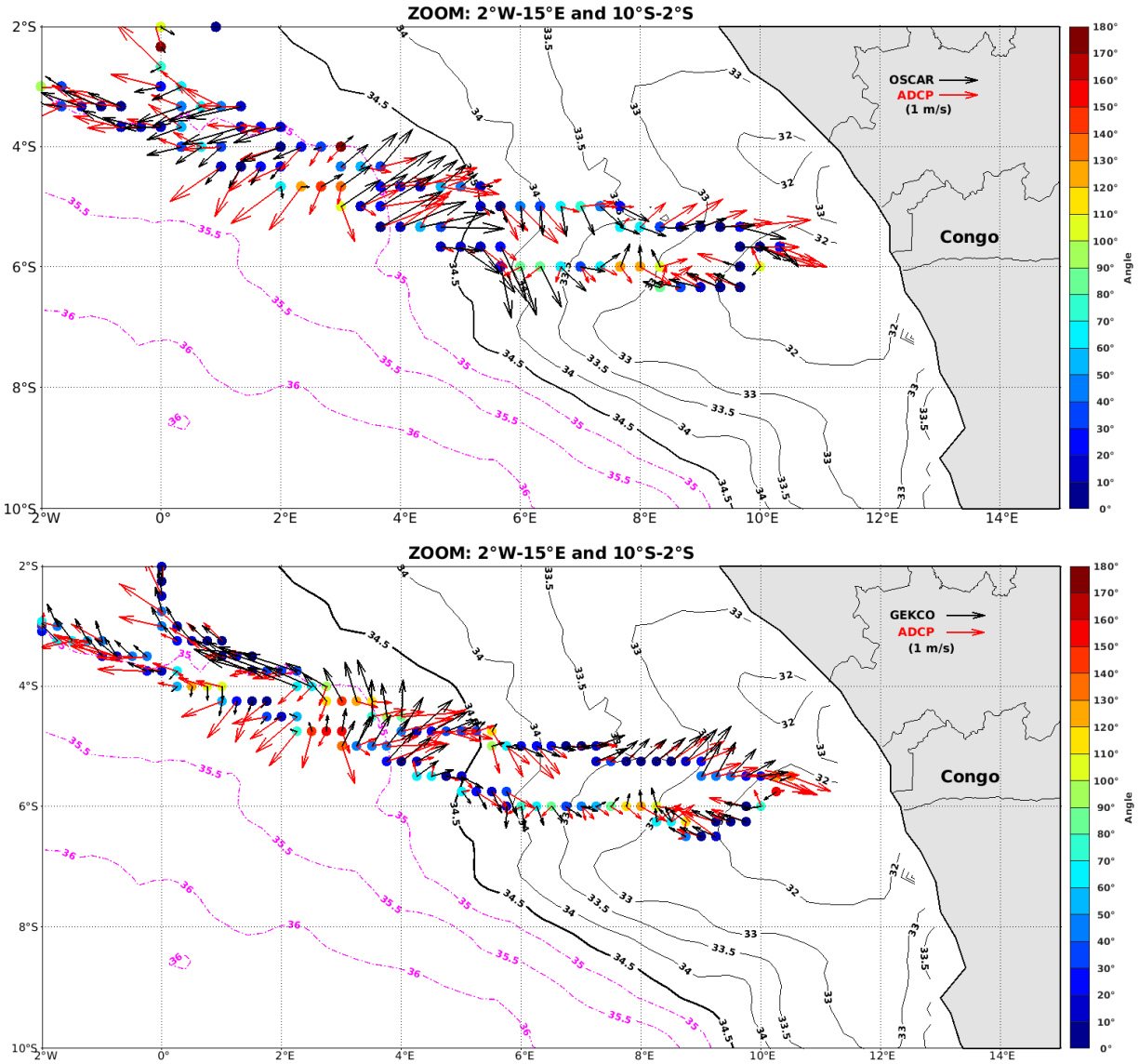

Figure S6: Angular deviation between ADCP currents averaged over the depth of 30-m (from PIRATA FR27) and OSCAR (top panel) and GEKCO (bottom panel) products. Arrows are currents directions: black for OSCAR and GEKCO and red for ADCP currents. Colorous dots represent the associated angular values. SSS contours are shown: black contours for freshwater plumes and magenta contours for outside of plumes.

Movie S1. Summary seasonal spatiotemporal variability of freshwater plumes in the eastern Gulf of Guinea: northwestward extension of freshwater (September-December), southwestward extension of freshwater (January-April) and, damping/dissipation of freshwater plumes extension (May-August).