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Designation:

Description:

The Cape Verde Frontal Zone (CVFZ) in the southern boundary of the Canary Current Upwelling Ecosystem, is a highly dynamic area, featuring large vertical and horizontal export fluxes of organic matter (OM) due to the interaction of the Cape Verde Front (CVF) with the Mauritanian upwelling. To study the interplay between transport and biogeochemical processes driving the distribution of OM in the CVFZ, full-depth profiles of dissolved (DOM) and suspended particulate (POM) OM were obtained during the FLUXES I cruise in August 2017. Distributions of surface DOM and POM and their stoichiometry were influenced by the mesoscale variability at the frontal region, showing significant differences north and south of the CVF and between stations close and distant to the Mauritanian coast. The C:N molar ratio of DOM and POM showed average vertical gradients, increasing from 12.1 and 8.0 in surface to 15.6 and 17.0 respectively in deep waters, deviating from the traditional Redfield ratio. In the meso- and bathypelagic zones, meridional and cross-shore gradients were detected within samples belonging to the same water mass, indicating that their properties were re-shaped by biogeochemical processes within the CVFZ. Correlations between apparent oxygen utilization and OM indicate that DOM+POM contributed only to 8.1% of the carbon and 17.8% of the nitrogen mineralisation in the water column, suggesting that the local carbon demand is mainly supported by sinking POM and N containing compounds are mineralised to a larger extent than C containing compounds.

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BIOGEOCHEMISTRY OF DISSOLVED AND SUSPENDED ORGANIC MATTER IN THE CAPE VERT FRONTAL ZONE (NW AFRICA)

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