



Sedimentation of biogenic opal in the coastal upwelling off Mauritania, NW Africa

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The North Atlantic Ocean is generally regarded as an ocean with low concentrations of silicic acid in the subsurface waters and, consequently low production and export of biogenic opal. The molar ratio of BSi:Corg of sinking particles is typically around 0.1. However, recent sediment trap data from the coastal upwelling off Mauritania indicate much higher ratios. Biogenic opal fluxes at the eutrophic sediment trap site CB-eu off Cape Blanc, Mauritania may reach values of 200-300 mg m⁻² day⁻¹. Farther offshore at the mesotrophic site CB-meso, these values decrease by one order of magnitude. Larger particles containing biogenic opal are advected from the coastal to the open ocean sediment trap site, mainly during winter-spring blooms. This transport obviously occurs within a bottom-near particle layer which could be modelled with a Regional Ocean Modelling System (ROMS) using particle settling rates in the order of 30 m per day. Particle blooms moving offshore within this layer appear rather patchy but have sometimes been captured with optical systems. Deposition of biogenic opal and organic carbon occurs in particle depocenters at the continental slope as suggested by the analysis of surface sediments. We have no indications of increased biomass or export of biogenic opal in the Mauritanian upwelling system during the last decade, as suggested for other Eastern Boundary Current Systems.