
Diatom productivity in the eastern Gulf of Guinea during the last 40,000 years

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Résumé

Opal content and diatom assemblages were analysed in core GeoB4905-4 to reconstruct siliceous productivity changes in the eastern Gulf of Guinea during the last 40.000 years. Opal and total diatom accumulation rates presented low values over the considered period, except during the Last Glacial Maximum and between 12.000 calendar years (12 cal. ka BP) and 5.5 cal. ka BP, the so-called African Humid Period, when accumulation rates of brackish and freshwater diatoms to the core site were highest. Conversely, accumulation rates of windblown diatoms exhibited an opposite pattern with higher values before and after the African Humid Period and greatest values during Heinrich Events, the Younger Dryas and since 5.5 cal. ka BP. Our results demonstrate that siliceous productivity in the eastern Gulf of Guinea was directly driven by the nutrient load from local rivers, which discharges were forced by precipitation over western Equatorial Africa. Precipitation in this region is controlled by the West African monsoon which is, in turn, dependent on the presence and intensity of the Atlantic Cold Tongue (ACT). The ACT was weakened and warmer, trade winds were less vigorous, could convection and precipitation were greater during the AHP though centennial-to-millennial timescale dry events were observed at \sim 10 cal. ka BP, \sim 8.5 cal. ka BP and \sim 6 cal. ka BP. Conversely, the ACT was more intense, trade winds were more vigorous and African climate was more arid during H1, the Younger Dryas and since 5.5 cal. ka BP. Our results therefore give indication on the ocean and atmosphere dynamics over the last 40.000 years.

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