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Coccolithophore response to oceanographic changes during the Holocene African Humid Period off Mauritania-Senegal, Northwest Africa

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Core MD03 2705 -DUST- was recovered at 18žN-21žW at a water depth of 3100 m off Mauritania-Senegal (NW Africa) during Marion Dufresne II Cruise (PICABIA). The sediment sequence mainly consists of continuous foraminifer and nannofossil oozes. This 36 m long piston core covers the last 1.1 million year and its average sedimentation rate is 3.2 cm/ky. Qualitative analyses carried out in coccolithophores together with wind-transported microfossils (phytholiths and fresh-water diatoms) from continental NW African areas, allow us to interpret variations in the direction and intensity of winds and their relationship with superficial oceanographic dynamics during the African Humid Period (9-5.5 ka). The terrigenous record exhibits a well-defined period of low influx associated with the African Humid Period, when the Sahara was nearly completely vegetated supporting perennial lakes. This period has been attributed to a strengthening of the African monsoon due to gradual orbital increases in summer season insolation. Variations in the water surface productivity of coccolithophores (variations in the nutricline/thermocline position) were monitored using the ratio (N) between Noelaerhabdaceae (inhabitants of the upper photic zone) versus Florisphaera profunda (a lower photic zone inhabitant). High values in the N ratio imply a relatively nutricline/thermocline position. During the African Humid Period the high productivity conditions are related with high values in the N ratio with abundant specimens of Emiliania huxleyi and Gephyrocapsa $<$3 microns. The rapid shift to arid conditions at the end of this period is coincident with high abundance in fresh-diatoms and phytholith and a positive pulse in the Ti/Al ratio, suggesting intensification in the wind regime. At the same time it is observed an increase of Calcidiscus leptoporus

and a dramatic decreasing of Gephyrocapsa muellerae, interpreted as return to warm conditions.