



Diatom-inferred paleohydrological changes in lake Abiyata (Ethiopia) at the termination of the African humid period (5.5 cal. kyr BP)

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Diatom remains in lake sediment are a powerful proxy of paleohydrological changes. The composition of fossil diatom assemblages gives indication on lake water level, through the proportion of benthic/pelagic habitat, and on water salinity which is related to the precipitation-evaporation balance. In this study, a sediment core from lake Abiyata (Ethiopia) was re-analyzed focusing on the termination of the African humid period which occurred around 5.5 cal. kyr BP and gave rise to the Sahara desert. The diatom assemblages of lake Abiyata revealed a clear period of transition lasting 500-600 years, between two relatively stable states corresponding to a large freshwater and then a shallow saline lake. The transition was characterized by a high variability of the assemblages and a short peak of conductivity inferred using a transfer function. In spite of the hypothesized interference of site-specific and ecological thresholds, the observed variations indicated an alternation of humid and dry periods during the transition rather than a continuous decrease in monsoon intensity. This variability in precipitation may have been an early warning signal announcing a climatic regime shift. Hydrological simulations on the lake basin could help to better understand the variations in diatom assemblages in response to climate fluctuations during this rather abrupt termination of the African humid period.