

A spatio-temporal view of the African Humid Period via leaf wax isotopes

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Abstract:

The spatial and temporal evolution of the African Humid Period (AHP) remains a topic of debate. Here, we propose to investigate the spatiotemporal patterns of the initiation, termination, and “interruption” of the AHP (by millennial-scale climate events such as the Younger Dryas and Heinrich Event 1) using a transect of cores collected in 2007 as part of the CHEETA (Changing Holocene Environments of the Eastern Tropical Atlantic) cruise and the δD_{wax} proxy for aridity. In particular we will investigate whether apparent spatial variability in AHP defined by marine sediment cores is a function of sedimentation rate or is truly representative of regional climate heterogeneity. This molecular proxy investigation will complement ongoing work by Peter deMenocal, David McGee, Gisela Winckler and others who are developing inorganic records of climate change in the same sediment cores. δD_{wax} uniquely provides a semi-quantitative, vegetation-mediated proxy estimate for terrestrial aridity, and is known to be sensitive to hydroclimatic changes elsewhere in Africa [Tierney et al., 2008]. The results of this work will thus add a new dimension to the collaborative CHEETA project and, if needed, will be used to secure future funding through federally-funded programs.