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A 25 ka record of the aeolian terrigenous signal in the North-Eastern Tropical Atlantic Ocean

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An important fraction of the sediments in the North-Eastern Tropical Atlantic Ocean is composed of terrigenous particles supplied by atmospheric transport from the Sahara and Sahel regions. Study of this aeolian material in marine sedimentary records can thus provide means to document changes in aridity and wind systems in West Africa.

We present results from sediment core MD03-2705, which was taken on a seamount ∼500 km off the Mauritanian coast (18°05N; 21°09W; 3085 m water depth) located on the submarine ridge connecting the Cape Verde Archipelago with the African margin. Considering this particular environmental setting, it can be assumed that the terrigenous fraction in this record is largely of aeolian origin [Jullien et al., 2007].

We discuss grain size, clay mineralogy, major and minor elements, as well as Strontium and Neodymium isotopes of the carbonate-free fraction of the first 180 cm of the core, covering the important climate changes of the last 25 ka and notably the Younger Dryas and the African Humid Period. This latest period, defined from ∼12.3 to 5.5 ka, was characterized by a marked reduction in siliciclastic sediment flux in the NE Tropical Atlantic [deMenocal et al., 2000a] in response to a « green Sahara » covered by vegetation and paleolakes that must have reduced the terrigenous material available for aeolian deflation and transport in West Africa. Comparison of our results with the recent geochemical study carried out on the neighboring site ODP658C [Cole et al., 2009] should further our understanding of the interpretation of the dust proxies in the North-Eastern Tropical Atlantic sediments in terms of environmental changes in the Sahara-Sahel region during the last 25ka.

Jullien E., Grousset F., Malaizé B., Duprat J., Sanchez-Goni M. F., Eynaud F., Charlier K., Schneider R., Bory A., Bout V. and Flores J., 2007. Low latitude 'dusty events' vs high latitude 'Icy Heinrich events' ?, Quaternary Research, 68, 3, 379-386.

deMenocal, P.B., Ortiz, J., Guilderson, T., Adkins, J., Sarnthein, M., Baker, L. and Yarusinsky, M., 2000. Abrupt onset and termination of the African Humid Period: rapid climate responses to gradual insolation forcing, Quaternary Science. Review, 17, 395-409.

Cole J.M., Goldstein S.L., deMenocal P.B., Hemming S.R., Grousset F.E. (2009) Contrasting compositions of Saharan dust in the eastern Atlantic Ocean during the last deglaciation and African Humid Period, Earth and Planetary Science Letters, 278, 257-266.