



PROVENANCE OF EOLIAN DUST COLLECTED OFF NW AFRICA

J.-B. Stuut (1), M. Zabel (1), V. Ratmeyer (1), P. Helmke (1), E. Schefuß (1), G. Lavik (2), R. Schneider (3)

(1) Research Center Ocean Margins (RCOM), Universität Bremen, Klagenfurter-strasse 2, 28334 Bremen, Germany (2) Max Planck Institute for Marine Micro-biology, Celciusstrasse 1, 28359 Bremen, Germany (3) Département Géologie et Océanographie, UMR-CNRS 5805 EPOC, Université Bordeaux I, Avenue des Facultés, 33405 Talence, France
jbstuut@rcom-bremen.de

Atmospheric dust samples collected along a transect off the West African coast have been investigated for their physical (grain-size distribution), mineralogical, and chemical (major elements) composition. On the basis of these data the samples were grouped into sets of samples that most likely originated from the same source area. In addition, shipboard collected atmospheric meteorological data, modeled four-day back trajectories for each sampling day and location, and Total Ozone Mapping Spectrometer (TOMS) Aerosol Index (AI) data for the time period of dust collection (February-March 1998) were combined and used to reconstruct the sources of the dust samples. On the basis of these data we were able to determine the provenance of the various dust samples. It appears that the bulk of the wind-blown sediments that are deposited in the proximal equatorial Atlantic ocean are transported in the lower-level (>900 hPa) NE trade-wind layer, which is a very dominant feature North of the Intertropical Convergence Zone (ITCZ). However, South of the surface expression of the ITCZ, down to 5°S, where surface winds are (South-)Westerly, we still collected sediments that originated from the North and East, carried there by the NE trade-wind layer, as well as by Easterly winds from higher altitudes. The fact that the size of the wind-blown dust depends not only on the wind strength of the transporting agent but also on the distance to the source, hampers a direct comparison of the dust's size distributions and measured wind strengths. However, a comparison between eolian dust and terrigenous sediments collected in three submarine sediment-traps off the West coast of NW Africa shows that knowledge of the composition of eolian dust is a prerequisite

for the interpretation of paleo-records obtained from sediment cores in the equatorial Atlantic.