Geophysical Research Abstracts
Vol. 14, EGU2012-12731, 2012
EGU General Assembly 2012

Reconstruction of westerly and monsoonal atmospheric systems affecting climate of Central Asia: a view from sediment records of the Eastern Mediterranean and the Northern Arabian Sea

H. Schulz (1), P. Munz (1), K. Pascher (1), A. Lückge (2), B. Gaye (3), and M. Kucera (1)

(1) Department of Geosciences, Paleobiology, University of Tübingen, Hölderlinstraße 12, 72074 Tübingen, Germany., (2) Federal Institute for Geosciences BGR, PF 510153, 30631 Hannover, Germany., (3) Institute of Biogeochemistry and Marine Chemistry, University of Hamburg, Bundesstraße 55, 20146 Hamburg, Germany.

Large swings of the Intertropical Convergence Zone ITCZ are assumed to have occurred during the latest Pleistocene, reflected in land and ocean temperatures, precipitation, and hence vegetation cover and land albedo of Northern India, Tibetan Plateau and Central Asia. However, reconstruction of the ITCZ in this region is difficult and fragmentary at best. For instance, specific terrestrial climate proxies, e.g. lake sediments, tree rings, or ice cores are still in the state of development and calibration, but show first potential to better understand the interferences between (1) the Westerlies and (2) the Indian and Asian monsoons reaching Asia's interior. These components may have modulated local climates along W-E and S-N gradients, respectively. However, reconstruction is complicated further, since both Westerlies and monsoons, show pronounced variability in their seasonal intensities. A mosaic of records with high temporal resolution is necessary to achieve, but is still far from sight.

Here, we present marine proxies and first climate reconstructions that show the potential to reconstruct the seasonal signal of sea surface temperatures and monsoonal intensities. For instance, we emphasize the role of winter cooling and deep convective mixing in the NW-Arabian Sea, in particular leading to enhanced winter productivity. On the other hand we estimate on the intensity of surface ocean cooling due to enhanced summer upwelling, that was linked to the early Holocene Northern Hemisphere Insolation Maximum and a northward shift of the ITCZ.