

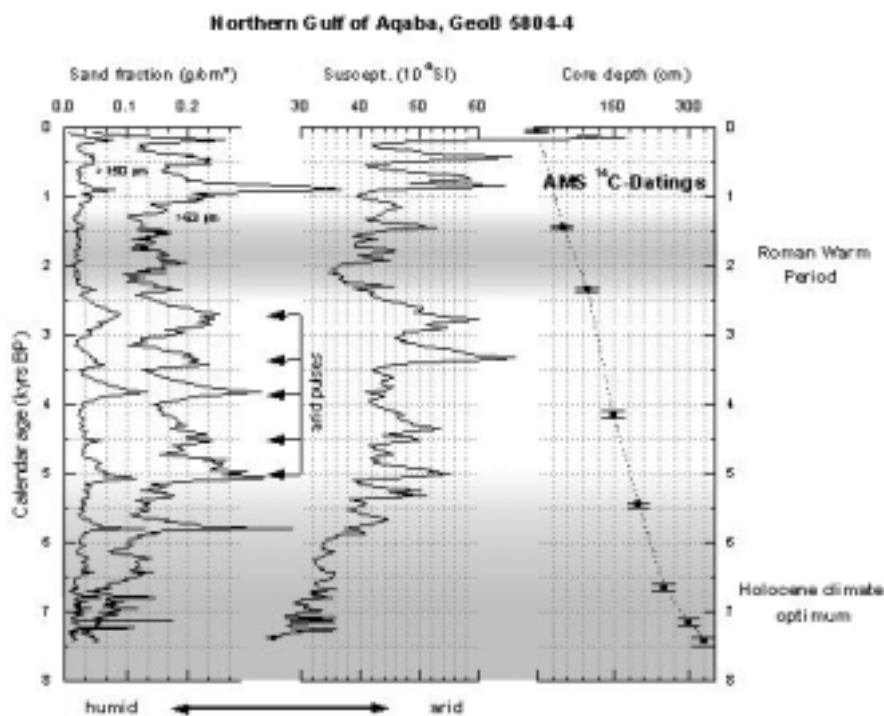
## Late Glacial and Holocene Climate Changes in the Northern Red Sea: Teleconnections to the North Atlantic

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We present well-dated, high-resolution marine paleoclimate records from the northern Red Sea retrieved during RV METEOR cruise M44/3 in spring '99. Continuous high-resolution paleoenvironmental data from the northern Red Sea region are still rare. Our study therefore provides an important link to, e.g., climate reconstructions from the Dead Sea area and the Arabian Sea. Because of its restricted, desert surrounded location, the northern Red Sea and its northernmost extension, the Gulf of Aqaba, suffered extreme oceanographic changes in the past that result in an amplification of paleoclimatic signals in the marine sediments. The continuous deposition of wind-blown and fluviually transported terrigenous material provides a high temporal resolution of changes in the aridity of the adjacent continent. A proxy for changes in the aridity in the Northern Red Sea area is the variation in the terrigenous sediment input. Such changes are documented by independent indicators, i.e. variations of the bulk-sediment chemistry (Fe and Ti content determined by profiling XRF measurements) and magnetic susceptibility. Based on these

data, two major periods of more humid conditions (7500 to 5000 and around 2000 yrs B.P.) are documented in the terrigenous proxies. The first one corresponds to the Mid-Holocene humid climate optimum and the second one to the Roman Warm Period. Besides this major periods, centennial to millennial scale variations occur, which correspond to similar Holocene climate oscillations known from the North Atlantic region. Changes in the marine environment are best documented in the high-resolution (sedimentation rates up to of 0.5 mm/yr) brine sediments recovered from the Shaban Deep. The repeated occurrence of partially laminated, organic-rich, sediments suggest that ventilation of the small basin and therefore the renewal of deep-water was episodically interrupted. Atmospheric processes notably control deep-water formation in the northern Red Sea. Altogether, our records provide evidence of a strong coupling of both aridity changes in the Near East and paleoceanographic conditions in the northern Red Sea to the Late Glacial and Holocene climate evolution in high latitudes of the Northern Hemisphere.



Alternating arid and humid intervals that occurred in the northern Red Sea area during the Holocene as indicated by the sand content and the magnetic susceptibility of the sediment core GeoB 5804-4