



## **A 4 Million year record of wind variability over the Indian Ocean (IODP Exp. 359, site U1467, Maldives)**

Christian Betzler, Sebastian Lindhorst, Dick Kroon, and Liviu Giosan

University Hamburg, Institut für Geologie, Geowissenschaften, Germany (christian.betzler@uni-hamburg.de)

The lithogenic fraction of carbonate drift sediments from the Maldives provides a unique record of atmospheric transport over the northern central Indian Ocean during the past 3.5 to 4 Myrs. The record stems from the Inner Sea, which is a perched basin in this carbonate platform with a relief of more than 2000 m above the surrounding seafloor. The percentage of particles in the medium to coarse silt size fraction (8-63  $\mu\text{m}$ ), which is indicative of aeolian flux sums up to values of up to 35 % of the lithogenic fraction. This portion remains stable at a lower level (20 - 25 %) until about 1.4 Ma. In younger times, there is an increase in wind-transported material to 25 - 30 % and the variability is higher, starting with the Mid Pleistocene Transition (MPT). The size of the largest particles fed into the system (range 10-20  $\mu\text{m}$ ), indicated by the  $d_{90}$  of the grain-size distribution, increases between 4 and 3.5 Ma, and remains on a high level throughout the Pliocene Climate Optimum (3.3-3.0 Ma). Subsequently, there is a fining until 1.4 Ma, and a slight coarsening afterwards combined with a higher grain size variability. Superimposed onto these large trends there are pronounced higher frequency fluctuations with durations of 400 and 100 kyrs. The wind transport intensity rather follows a precessional controlled variability. This, however, is at the limit of the temporal data set resolution. Strontium and Neodymium isotope analysis of the lithogenic material indicate a mixed origin of the dust particles from two sources: A North Africa-Arabian-Middle East source and a Thar Desert Indian source.