Geophysical Research Abstracts
Vol. 15, EGU2013-4387, 2013
EGU General Assembly 2013

Holocene mega-droughts in central India - Long-term climate variability and the possible influences of ENSO activity

Sushma Prasad (1), Ambili Anoop (1), Philip Menzel (2), Nils Riedel (3), Birgit Plessen (1), Nathani Basavaiah (4), Birgit Gaye (2), and Martina Stebich (3)

(1) German Research Center for Geosciences (GFZ), Sec 5.2, Climate Dynamics and Landscape Evolution, Potsdam, Germany (sushma@gfz-potsdam.de), (2) Universität Hamburg, Institute of Biogeochemistry and Marine Chemistry, Hamburg, Germany , (3) Senckenberg Research Station for Quaternary Palaeontology, Weimar, Germany , (4) Indian Institute of Geomagnetism, New Panvel, Navi Mumbai, India

Understanding the variability of Indian Summer Monsoon activity and the influences of different climatic forcing factors on the monsoon strength is of high importance because of the crucial effect of monsoonal rainfall for the largely agricultural based south Asian societies. The discovery of the weakening relationship between El Niño Southern Oscillation (ENSO) and the Indian Summer Monsoon rainfall (ISM) in recent decades has raised the question about the ISM-ENSO links during the Holocene. Long term high resolution palaeoclimate data from central India, the so called “core monsoon region”, can help to address this issue.
Here we present the first well dated 11.5 cal ka high resolution multi-proxy record from Lonar lake, central India. Lithology, evaporites, stable isotopes, and palynological data, suggest generally moist conditions in the early to mid-Holocene, followed by a trend towards more arid conditions that started between 4.7 and 4.2cal ka BP. Moreover, we identified centennial to millennial-scale dry and wet phases throughout the Holocene and discuss possible reasons for ISM variability. Based on the comparison of the arid events from Lonar record with the available data on Holocene ENSO events we hypothesize that the rainfall variability is stronger affected by ENSO during the late Holocene, possibly caused by the weakening of summer insolation.