Geophysical Research Abstracts
Vol. 15, EGU2013-4655, 2013
EGU General Assembly 2013

A record of Quaternary humidity fluctuations on the NE Tibetan Plateau based on magnetic susceptibility variations in lacustrine sediments of the Qaidam Basin

Christian Herb (1), Andreas Koutsodendris (2), Weilin Zhang (1,3), Erwin Appel (1), Jörg Pross (2), and Xiaomin Fang (3)

(1) Department of Geosciences, University of Tübingen, Germany (christian.herb@uni-tuebingen.de), (2) Institute of Geosciences, Goethe University Frankfurt, Germany, (3) Institute of Tibetan Plateau Research, Chinese Academy of Sciences, Beijing, China

Magnetic susceptibility (χ) and other magnetic proxies play an important role in paleoclimatic studies as they hold the potential for high-resolution records of past environmental change. Nevertheless, it is necessary to understand the cause of the variation in magnetic proxies by comparing them to more direct climate proxies such as pollen or stable isotopes. In this study we have compiled a high-resolution magnetic proxy dataset of the ca. 940-m-long core SG-1, which was drilled in the lacustrine sediments of the western Qaidam Basin on the northeastern Tibetan Plateau. Our record spans the entire Quaternary ($\sim$2.8 to 0.1 Ma). The magnetic susceptibility record is compared to the *Artemisia*/Chenopodiaceae (A/C) ratio, which is used to discriminate between dry and more humid phases in the Qaidam Basin, based on (i) 41 samples spanning the Middle Pleistocene Transition (MPT; $\sim$1 Ma BP) and (ii) additional 40 samples selected from intervals of minimum and maximum χ values throughout the core. For the drill core SG-1, we observe a high correlation of the A/C ratio with χ results: minima of χ correspond to maxima of the A/C ratio (representing more humid phases) and vice versa. Additionally, spectral analysis of the χ record shows the emergence of the 100-ka Milankovitch cycle after the MPT. This testifies to the fact that cyclic variation of χ represents a response to global climate change.