Geophysical Research Abstracts, Vol. 9, 08664, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-08664

Paleoclimate reconstruction for the East African Rift from geochemical studies of mammalian teeth

T.C. Brachert (1), D.E. Jacob (1), O. Kullmer (2), D.F. Mertz (1), F. Schrenk (2), I. Semanda (3)

(1) Institut für Geowissenschaften, Johannes Gutenberg-Universität Mainz, 55099 Mainz, Germany, (2) Forschungsinstitut und Naturmuseum Senckenberg, Senckenberganlage 25, 60325 Frankfurt, Germany, (3) Geology Department, Makerere University, P.O. Box 7062, Uganda

Lake sediments of continental rifts represent unique archives of terrestrial palaeoecology and palaeoclimate. Nonetheless, various types of time-averaging in the terrestrial geological record tend to dampen reconstructed environmental variability. To unravel the dynamics of climate change in the Western Branch of the East African Rift (Lake Albert, Uganda) during the late Neogene, we use a new approach combing data from palaeocommunity changes over geological time cales, with sub-annually resolved proxy data (δ^{18}O, δ^{13}C) derived from of mammalian teeth. Mammalian fossils sampled during summer 2006 are dominated by teeth of hippopotamids (50%) and suids (25%). Hippopotamids in our collection are characterized by small sized specimens of unclear taxonomic affinity (Boisserie, 2005). Large and small modern hippopotamid species, however, differ to some degree with regard to dietary preferences and environment. Correspondingly, palaeoenvironment interpretations of stable isotope data (δ^{13}C) from molar tooth enamel, must take into account causes for hippopotamid body size. Perikymatic lines are well visible at the surface of small hippo enamel, because they lack an outer layer of cementum as is present in large hippos. Perikymata counts and data on growth increment variability provide the basis for age models for high-resolution stable isotope series during periods of tooth growth and represent independent data on palaeoenvironment variability.

Boisserie, J.R. (2005) Zool. J. Linn. Soc. **143**, 1-26