



Human evolution in a variable environment: the amplifier lakes of Eastern Africa

Martin Trauth (1), Mark Maslin (2), Alan Deino (3), Annett Junginger (1), Moses Lesoloyia (4), Eric Odada (5), Daniel Olago (5), Lydia Olaka (1), Manfred Strecker (1), and Ralph Tiedemann (6)

(1) University of Potsdam, Institute of Earth and Environmental Science, Potsdam, Germany (trauth@geo.uni-potsdam.de, +49 331 9775700), (2) University College London, London, UK, (3) Berkeley Geochronology Center, Berkeley, USA, (4) Milgis Trust, Naro Moru, Kenya, (5) Department of Geology, University of Nairobi, Nairobi, Kenya, (6) University of Potsdam, Institute of Biochemistry and Biology, Potsdam, Germany

The development of the Cenozoic East African Rift System profoundly re-shaped the landscape and significantly increased the amplitude of short-term environmental response to climate variation. In particular, the development of amplifier lakes in rift basins after three million years ago significantly contributed to the exceptional sensitivity of East Africa to climate change compared to elsewhere on the African continent. These amplifier lakes respond rapidly to moderate, precessional-forced climate shifts, and as they do so apply dramatic environmental pressure to the biosphere. Rift basins, when either extremely dry or lake-filled, form important barriers for migration, mixing and competition of different populations of animals and hominins. Amplifier lakes link long-term, high-amplitude tectonic processes and short-term environmental fluctuations. East Africa may have become the cradle of humankind as a consequence of this strong link between different time scales.