

Spectrum and potential of high-resolution climate archives in the Eastern Sahara

Kröpelin, S.^{1*}, Karls, J.², Melles, M.²

¹ Institute of Prehistoric Archaeology, University of Cologne

² Institute of Geology, University of Cologne * s.kroe@uni-koeln.de

Annually laminated lacustrine, semi-lacustrine, speleothem and spring deposits, and mollusc shells provide detailed evidence on environmental and climate change during the late Pleistocene and Holocene in today's largest hyperarid region, the Eastern Sahara of Southwest Egypt, Northwest Sudan and Northeastern Chad. Examples along a north-south transect will be presented to show results of different analyses and to discuss the potential and prospects of ongoing work. For the Western Desert of Egypt, they include micro- stratigraphic studies of late Pleistocene (MIS 5) stalagmite archives from the central Egyptian limestone plateau (27°N-30°E), and early to mid-Holocene mud layers of a seasonal to episodic rain pool (playa lake) in the canyon of Wadi Bakht in the Gilf Plateau plateau (23°N-26°E). Examples from the Sudanese desert comprise thin-section analyses of early Holocene varved deposits from a paleolake at the Selima oasis (21°N-29°E) and of near-surface groundwater-fed moss travertines at the banks of the extinct Lower Wadi Howar (17°N-29°E), once the Nile's largest tributary from the Sahara. High-resolution oxygen isotope studies at shells of *Etheria elliptica* fresh-water oysters in alluvial wadi deposits there indicate the annual pattern of rainy seasons during the middle Holocene. In Northern Chad, a recently extracted core from the bottom of Lake Yoa at Ounianga Kebir (19°N-21°E) provides a complete Holocene high-resolution record with a wide spectrum for multi-proxy analyses.