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Multiple Cenozoic lake episodes in the Suguta Valley, Northern Kenya Rift

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A two weeks helicopter expedition in June 2007 was conducted to investigate the late Cenozoic lacustrine deposits of the Suguta Valley, northern Kenya. One of the objectives of this expedition was to sample and map records of Plio-Pleistocene and early Holocene lake desposits and paleosoils as well as datable tephras and also to map paleo-lake shorelines to reconstruct the environmental history of an ancient mega lake. The results of the analysis will close an important data gap of climate and environmental records of the Pleistocene and the Holocene, and provide the missing geographic and paleoclimatic link between the northern, central and southern Rift Valley. To constrain spatially and temporally the high lake phases in the Suguta Valley, we mapped the elevation and the extent of paleo-shorelines by using a high-resolution differential GPS. To get details about the ancient mega lake Suguta we sampled unique up to 40 m thick Pleistocene and early Holocene paleo-lake sequences and analyzed the samples for sediment characteristics, geochemical properties and microfossil contents. The lacustrine sequences partly overlain and covered by basalt lava flows mainly comprises laminated clays, diatomaceous clays and diatomites, intercalated with units of pyroclastic ash and lapilli tuffs, which have been submitted for $^{40}Ar/^{39}Ar$ dating. Seventeen AMS ^{14}C dates measured on snail shells (Melanoides sp.) from lake sediment sequences and lake deposits, which are associated with the highest paleo-shorelines, cluster between 16,900 and 10,550 cal. yr BP. These dates suggest that the Suguta mega lake existed at the beginning of the so-called African Humid Period (spanning

ca. 15,500 to 5,500 cal. yr BP) often viewed as a tropical response to the last glacial-interglacial transition defined in the mid- and high-latitudes by a strong increase in air temperatures. We expect that the data of the Pleistocene sequences will provide a detailed age control for environmental changes in the Suguta Valley in the Mid Pleistocene and help to test the hypothesis of prominent episodes of large, but fluctuating lakes in East Africa. Furthermore, the sedimentological and micropaleontological analysis of the well-dated lacustrine sequences as well as the paleo-shoreline data set of the early Holocene will help to test the hypothesis of an abrupt onset and termination of the African Humid Period as a nonlinear response to gradual insolation forcing.