



Sedimentation history in the Gaxun-Nur Basin - Pleistocene transition from a more humid to a more arid depositional environment in hyperarid NW China

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Central Asia is a large-scale source of dust transport, but also held a prominent hydrological system during the late Quaternary. The endorheic Hei River drainage basin is situated north of the Tibetan Plateau and is related to glacier melt and summer precipitation in the northern Tibetan Qilian Mountains (400-200 mm/yr). During the late Quaternary the runoff fed terminal lakes at the northern margin of the hyperarid Gaxun-Nur Basin (<40 mm/yr). Using sediment analyses from a 223 m core that has been retrieved in the center of the Gaxun-Nur basin we discuss trigger mechanisms that kept alive a large lake system over a long time period before the system disappeared towards modern day. This is examined on glacial / interglacial timescales and considers climate variability, neotectonics, and human overprint. The studied sediment properties include granulometric and mineralogical (i.e. XRF scans, XRD mineral analyzes) changes, and the vegetation history based on the pollen contents. It also includes multivariate statistics. We propose a sedimentation model for the transition from a more humid to a more arid sediment environment during the Pleistocene giving better insights into the natural variability of the water shed. This information is needed to predict the future hydrological situation for humans under ongoing climate change.