

## **Paleohydrological evolution in the northeastern Qinghai-Tibet Plateau: Implications from stable isotope records from Lake Qinghai, China**

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Lake Qinghai, the largest water body in China, is located in the northeastern corner of the Qinghai-Tibet Plateau. It lies on the outer margin of the Asian summer monsoon, where westerly winds are prevailing. Lake Qinghai became a hydrologically closed lake since at least post-glacial time, as clearly evidenced by the isotopic evidence of  $\delta^{13}\text{C}$ - $\delta^{18}\text{O}$  covariance for authigenic carbonates in the sedimentary sequence. The permanent expansion of the lake began from the onset of the Holocene, as evidenced by a marked negative shift in  $\delta^{18}\text{O}$ , in combination with other sediment indication. The early-Holocene lake-levels were however shallower than the mid-to-late Holocene, as clearly indicated by the presence of in-situ dropped seeds from the rooted aquatic plant, *Ruppia*, in the early-Holocene sediments, and by other sedimentological evidence as well. This conclusion (Yu and Zhang, 2008) is further confirmed by the result from stable isotope study in using  $\delta^{13}\text{C}_{\text{org}}$  as a lake level indicator (Liu et al, 2013). Evidently, the effective moisture on the NE Qinghai-Tibet Plateau did not simplistically follow the monsoonal moisture pattern, which was thought to be driven solely by insolation that peaked at the early Holocene. Further investigation is required in order to better understand the causal mechanism associated with changes in temperature and westerlies circulation. This study is financially supported by the NSFC grant Nos. 41471013, U1407206, 40871008.