

Ostracods of Lake Nam Co, southern Tibet, as indicators of Holocene monsoon variability

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Lake level records from the Tibetan Plateau (TP) provide substantial information about past changes in effective moisture and hydrological conditions in response to Asian monsoon dynamics. Ostracod species assemblages from sediment cores were identified and, together with stable oxygen and carbon isotopes signatures of their valves, were used to reconstruct the Holocene lake level history of Lake Nam Co, southern Tibet. Modern ostracod species assemblages from surface sediments, collected from water depths ranging between 2 and 64 m served as reference, which includes the species distribution related to the water depth. *Leucocythere dorsotuberosa* HUANG, 1982 f. *postilirata* and *Fabaeformiscandona gyirongensis* (HUANG, 1982) were identified as deep water indicators (20–30 m water depth); and *Leucocytherella sinensis* HUANG, 1982 as well *Eucypris gyirongensis* YANG, 1982, as indicators for shallow water.

Ostracod species assemblages and their $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ signatures from a long core covering the last ~6,800 cal a BP reveal five hydrological periods. Monospecific ostracod assemblage consisting of only *L. sinensis* and lowest $\delta^{18}\text{O}$ values indicate high lake levels, possibly caused by high freshwater (precipitation and/or melt water) input into the lake and/or lower evaporation characterizing the period ~6,600 to ~5,400 cal a BP. The highest species diversity of 8 species and a distinct increase in $\delta^{18}\text{O}$ characterize the mid-Holocene transition to a drier climate caused by lower precipitation and higher evaporation rates after ~5,400 cal a BP and lasting until ~3,800 cal a BP. Further increase in $\delta^{18}\text{O}$ values and relatively high species diversity between ~3,800 and ~1,300 cal a BP indicate arid climate probably attributed to weak monsoonal activity. After ~1,300 cal a BP increasing numbers of deep water indicators suggest a rising lake level which is terminated by the onset of the “Little Ice Age” (LIA). High-resolution information of lake level history of Lake Nam Co during the past ~600 years was provided by ostracod species assemblages and $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ values from two short cores. Increasing $\delta^{18}\text{O}$ values between ~400 and ~200 years BP points to increasing evaporation and decrease in melt water input as a result of cooling during the LIA. On the basis of our ostracod-based transfer function a lake level drop of 5 m below present level was reconstructed.

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