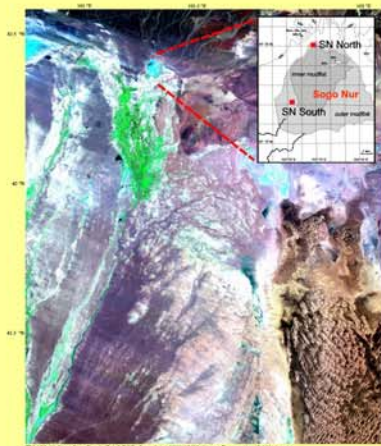


# Ostracod-inferred lake evolution in northwestern Inner Mongolia during the last 2500 years

Mischke, S. & Schudack, M.E.

Institute of Geological Sciences, Freie Universität Berlin, Malteserstr. 74-100, 12249 Berlin, Germany (e-mail: smischke@web.de)



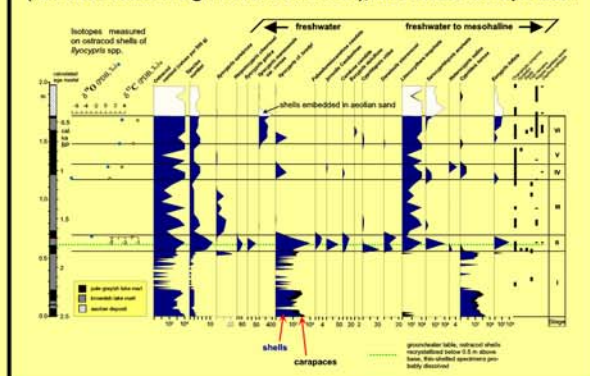
Lake Sogo Nur (also: Eastern Juyanhai) turned from a permanent into a temporary lake in the 60s of the last century as a result of water withdrawal in the Hexi Corridor region for agricultural purposes and urban water consumption.



Study area

The lake is fed by the endorheic Hei River which drains the Qilian Mountains in the south. With peaks of more than 5000 m altitude, rain and snow arrives in summer mainly with the onset of the Asian and Indian summer monsoons. To investigate the late Holocene lake history in the foreland of the mountain range and the general climatic evolution in this region, two sections were dug into the dried Sogo Nur basin and analysed for microfossils. Both sections were dated by two radiocarbon samples from each site. The microfossil records and radiocarbon results from both pits correspond well, however, only the results from the Sogo-Nur-North section were presented here.

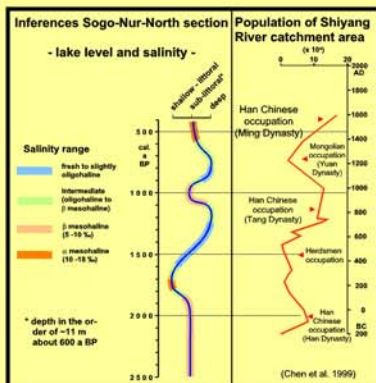
Lithology, distribution of fossils of the Sogo-Nur-North-section, (absolute numbers given for ostracods), and stable isotope data



## Results

In total, shells of 15 ostracod taxa were recovered from the sediments of Lake Sogo Nur. In the lowermost half metre of the section, only shells of thick-shelled taxa occur.

In addition to ostracod shells, remains of Charophyta, Gastropoda and Cladocera are abundant. Fish remains and diaspores of *Ruppia maritima* (macrophytes) occur less frequently. Radiocarbon samples from 0.7-0.74 m and 1.56-1.61 m above the base yielded calibrated ages of 1645 +/- 75 a BP and 610 +/- 115 a BP and provided the base to establish the chronology of the section.



## Discussion

Most species from the sampled section are known from relatively low salinities (< 10 ‰) indicating that the lake water within the closed basin was seeping into the ground and therefore did not reach salinities as high as other closed-basin lakes in arid regions.

Based on ecological requirements of living specimens, shallow and more saline conditions were inferred for periods centred about 200 AD and 900 AD and for the top of the lake sediments (1500 AD). The latter two lake phases correspond to periods of the rising Han Chinese population (of Tang and Ming Dynasty) especially in the middle reaches of the Hei River. The inferred lake level rise about 1200 AD possibly corresponds to the decline of farming during the Mongolian occupation of the Yuan Dynasty.

However, further studies are needed to identify environmental changes caused by climatic and/or human impact more clearly.

Reference: Chen, F., Shi, G., Wang, J. 1999. Environmental changes documented by sedimentation of Lake Yema in arid China since the Late Quaternary. *Journal of Paleolimnology* 22, 109-119.