



Hydrogen isotopes of biomarkers as palaeoclimate proxy of Lake Nam Co, Tibetan Plateau

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The Tibetan Plateau is a key region to investigate the Asian Monsoon and its change through time. Unfortunately, only a few continuous records exist that cover the Last Glacial Maximum (LGM) with a high temporal resolution. The Nam Co is located at the boundaries of two dominant monsoon systems in the southern part of the Tibetan Plateau and may explore past variations of environmental conditions and monsoon activity in this period. Biomarkers isolated from lacustrine sediments of Nam Co and their hydrogen isotope content hold aquatic and terrestrial records of environmental conditions. Here we focused on sedimentary n-alkanes of a 23 cal ka BP old sediment core.

Due to the high sensitivity of the n-alkane biomarkers a first increase of bioproductivity was already detected at about 21.3 cal ka BP indicating increased temperatures and a freshwater input to the system. In general, our results display the LGM as a dry and arid period. A change to moister conditions reflecting the strengthening of the Asian monsoon and first warming at the Nam Co is already revealed at 18.8 cal ka BP. Changing environmental conditions with low temperatures and bioproductivity, connected to the Younger Dryas, is recorded at 12.1 cal ka BP. The largest changes to a strong monsoon intensity occurred at 9.5 cal ka BP representing the beginning of the Early Holocene warming. The Mid and Late Holocene is characterized by several short-term fluctuations in monsoonal intensity and climatic conditions.

The distribution and the compound-specific hydrogen isotope ratios of n-alkanes reflect known environmental history and climate variability in special consideration of the moisture origin.