Geophysical Research Abstracts,
Vol. 10, EGU2008-A-11540, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-11540
EGU General Assembly 2008

Reconstruction of Late Glacial and Holocene climate fluctuations in Central Nepal based on lacustrine sediments

W. Zech (1), M. Zech (1), R. Zech (2), K. Karki (3) and B. Glaser (1)

(1) Institute of Soil Science and Soil Geography, University of Bayreuth, Germany, (2) Institute of Geography, University of Bern, Switzerland, (3) Himalayan College of Agricultural Sciences and Technologies, Nepal (w.zech@uni-bayreuth.de / Fax: +49-921-552246 / Phone: +49-921-552247)

We present results from two overlapping lake sediment cores that we sampled at Panch Pokhari in 4050 m altitude, Helambu Himal, Nepal. They are 4.5 m long, reach back to 13 ka BP (uncal ^{14}C ages), and were analysed at 1-5 cm resolution for grain size, TOC, N, S, δ^{13}C, δ^{15}N, HI/OI and elementary composition. We interpret low TOC, N and S contents as evidence for reduced lacustrine biomass production and hence lower temperatures. Generally, this coincides with enriched δ^{13}C and δ^{15}N values, narrow C/N ratios and lower HI. We speculate that these latter proxies are influenced by longer ice cover, more intensive mineralization/degradation of the organic matter, and possibly a higher relative contribution of terrestrial soil organic matter input. The grain size analyses show that during assumed cold periods (low TOC) the silt contents, probably at least partly of eolian origin, are increased. On the other hand fine sands are interpreted to be of fluvial origin; they are more abundant during warmer periods and/or periods of increased monsoonal precipitation.

Down-core interpretation following the reasoning outlined above indicates that climatic fluctuations at Panch Pokari were very similar to those known from the North Atlantic region and that warm periods generally coincided with increased monsoonal precipitation: After deglaciation a warm, humid Late Glacial period around 12 ka BP might correlate with the Bölling-Alleröd. Then a dramatic cold reversal, coinciding

with the Younger Dryas, is documented between 11 and 10 ka BP. During the Early Holocene, high silt contents are in agreement with findings that glaciers advanced regionally due to increased monsoonal precipitation. After the mid-Holocene climate optimum around 6-4 ka BP pronounced neoglacial climatic fluctuations are recorded between 4 – 3 ka BP.