



Paleoclimate variability in the NW Himalaya over the past three millennia

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High resolution proxy studies from the continental deposits such as lakes and speleothems during the Holocene have provided important clues to the drastic changes in the past climatic conditions across the Indian subcontinent. However, the timing, duration, regional pattern and causes of these climate fluctuations are not well understood. Here, we present the results of our investigations on the radiocarbon dated core sediments from the Rewalsar Lake (Mandi, Himachal Pradesh, India; 31.6322° N, 76.8332° E) based on the isotopic and grain size studies. Climatically, Rewalsar Lake is situated in the transition zone between the mid-latitude westerlies and Indian summer monsoon. The catchment of the lake area (~1.7 km²) is mainly comprised of fine grained sandstone, grey siltstone, shales and fine spikes of mica seen in the siltstone (Das and Haake 2003).

Our results suggest that the productivity of the lake is a complex one and governed by three main processes: i) In-situ productivity, ii) Diagenesis, and iii) Anthropogenic activities. The $\delta^{15}\text{N}$ value during the period of AD 1200-1400 suggests an extreme eutrophication which led to stratification in the lake and absorption of atmospheric nitrogen. The most recent climatic events – the Medieval Warm Period, Little Ice Age and Roman Warm Period are constrained based on the grain size variations.