



Marine Isotope Stage 3 recorded in palaeolake sediments in the Eastern Alps

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Greenland ice core data indicate that the last glaciation in the Northern Hemisphere was characterized by relatively short and rapid warmings followed by gradual coolings (Greenland Interstadials or Dansgaard-Oeschger (D/O) cycles). While the Last Glacial Maximum (LGM) and the following Late Glacial are well documented in the Eastern Alps, continuous records of the time period preceding the LGM are only known from stalagmites. Although most of sediment which filled the Alpine valleys before the LGM was eroded and redeposited during the LGM, thick successions have been locally preserved along the sides of margins of longitudinal valley-forming distinct terraces. The Inn valley in Tyrol (Austria) offers the most striking examples of such river terraces which are known to be mostly composed of Upper Pleistocene sediments in the Eastern Alps. During the past 15 years a large number of continuously-cored drill cores was obtained during a tunnelling project in the lower Inn valley, offering the unique possibility to study these sediments in great detail.

This study focuses on the Unterangerberg terrace near Wörgl, where drill cores penetrated lacustrine sediments underlying LGM gravel and till. Radiocarbon and infrared stimulated luminescence (IRSL) dating show that these sediments were deposited during Marine Isotope Stage (MIS) 3 and reach back into MIS 4. The sediments show cyclic changes in grain size coinciding with the abundance of biogenic material (charophyta, plant macro-remains, mollusc shells, etc.). In some cores 1-2 m organic-rich (lignite) layers are also present. Ongoing work aims at establishing a reliable internal chronostratigraphy using radiocarbon and luminescence in order to link proxy data series (grain size, loss on ignition, pollen data) to the pattern of D/O events known from Greenland and other regional archives.