

Early results from the ICDP project DOVE (Drilling Overdeepened Alpine Valleys): Revisiting the Hole of Bad Aussee

Schmalfuss, Clemens; Firla, Gustav; Lüthgens, Christopher; Neuhuber, Stephanie; Fiebig, Markus

Department of Civil Engineering and Natural Hazards, Institute of Applied Geology, University of Natural Resources and Life Sciences Vienna, Peter-Jordan-Straße 82, A-1190 Vienna, Austria.

The sedimentary infill of glacially overdeepened valleys provides an excellent archive of the timing and extent of past glaciations. The first phase of the pan-alpine project DOVE (Drilling Overdeepened Alpine Valleys), co-funded by the International Continental Scientific Drilling Program (ICDP), investigates several drill cores from overdeepenings along the northern side of the Alps and their foreland. One of the investigated sites (ICDP-5068-5) is located near Bad Aussee (Austria), in the central part of the Northern Calcareous Alps within the extent of the former Traun Glacier. After geophysical investigations had pointed to the existence of a large salt body, an exploratory drilling recovered 880 m of Quaternary sediments. The succession mostly consists of fine-grained sediments covered by coarse gravels and basal till from the Last Glacial Maximum (LGM). The drill core was first described by van Husen & Mayr (2007), who proposed the formation of a more than 900 m deep lake following the dissolution of a salt body by subglacial meltwater. However, questions regarding the mechanisms and timing of the formation of this so-called "Hole of Bad Aussee" remain since comparable sites are unknown in the literature. As a part of DOVE Phase-1, the drill core is reinvestigated in detail to improve our knowledge of the Quaternary glaciation history of the Eastern Alps. So far, a sedimentological core description was completed and samples for grain size and total organic and inorganic carbon analysis were taken. The potential for numerical age dating using luminescence and terrestrial cosmogenic nuclide approaches is currently being explored to help establish a chronology of the pre-LGM development of the basin. In this presentation, we present results from the sedimentological core description, field mapping and DEM analysis, which provide new insights into the internal structure and depositional history of the Bad Aussee Basin.