

Analysis of near-surface temperature variability in alpine terrain - Sonnblick area, Austria

Stefan Reisenhofer, Central Institute for Meteorology and Geodynamics, Austria

Within the project 'Permafrost Monitoring Sonnblick' (PERSON) the spatial distribution of permafrost is investigated by the 'Zentralanstalt für Meteorologie und Geodynamik' (ZAMG) in the Sonnblick area, in the Hohe Tauern in Austria. The aim of PERSON is to identify parameters affecting permafrost (geological, geomorphological, orographical and climatic factors), to determine its spatio-temporal behaviour under present day climate conditions and to estimate its possible future extension under a climate change scenario.

PERSON makes use of a permafrost monitoring network that was installed 2005 in the Sonnblick area and is made up by four study sites: On the one hand the spatial extension of permafrost was focused at the ice-dammed lake Pilatus and the rock glacier Zirmsee. On the other hand, at two sites, namely Goldbergspitze and Wintergasse measurements of 'Ground-Surface Temperature' (GST) and 'Bottom Temperatures of the Snow cover' (BTS) are measured. In order to record temperatures in the uppermost layer of the ground and avoid heating by direct solar radiation loggers were buried a few centimetres into the ground or installed in boreholes at depths between 2 and 140 cm. Each of the 'Near Surface Temperature' (NST) borehole mouths is closed up with insulating foam to protect the measurements from atmospheric influence. The evaluation of the GST and NST data with the analysis of their topographic variables will be presented.