

## **Monitoring permafrost at Hoher Sonnblick, Austria**

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In the southern summit area of Hoher Sonnblick (3105 m a.s.l., Austrian Central Alps) Permafrost in bedrock has been monitored in three 20 m deep boreholes since 2007. The mean gradient between the topmost and the lowest borehole is 27° and the total altitude difference counts 34 m.

The top borehole is located next to the Observatory; the lowest borehole is adjacent to a continuous snow field and Goldbergkees. The thickness of the debris layer around the boreholes is about 2 m or less as measurements with ground penetrating radar indicated. The active layer thickness ranges between 0.7 m and 1.35 m in the past six years in the borehole next to Goldbergkees and between 0.8 m and 1.04 m between 2008 and 2011 at the topmost borehole and depends most on the depth and duration of the snow cover. Ground temperatures have been increasing slightly in the past three years. These measurements are the longest series in Austria but for the detection of significant changes in the thermal state of the permafrost at Sonnblick a longer observation period is needed. Additionally data from seismic and geoelectric measurements, temperature sensors at the ground surface and extensive meteorological measurements from the Sonnblick Observatory are available.