



## **IPY Permafrost Observatories in Norway and Svalbard**

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Permafrost exist in many places close to its thermal boundary, and it therefore responds over time especially to changes in air temperatures, radiation, snow precipitation, wind and vegetation. During the IPY, the International Permafrost Association (IPA) is coordinating the IPY cluster no. 50 called 'The Permafrost Observatory Project: A Contribution to the Thermal State of Permafrost (TSP)'. In this cluster the focus is on obtaining a spatially well distributed set of observations on past and present status of permafrost temperatures and active layer thicknesses. This is done mainly by establishing thermal monitoring in boreholes to different depths, and by monitoring the active layer thickness in Circumpolar Active Layer Monitoring, CALM sites, in addition to establishing periglacial landform monitoring networks. Borehole and active layer measurements are part of the GCOS/GTOS Global Terrestrial Network for Permafrost (GTN-P) database. The IPA-IPY permafrost legacy is to establish a permanent, bipolar network of observatories collecting long-term monitoring data to improve process understanding under changing climatic conditions.

The TSP activities consist of several national projects such as the TSP NORWAY project, which has its fields activities in Svalbard and northern Norway. In Scandinavia only sparse quantitative data on the distribution and thermal state of permafrost exist. During the IPY we hope to establish the North Scandinavian Permafrost Observatory with Swedish and Finnish colleagues, covering a transect from maritime Norway, into continental NW Sweden and NW Finland.

In Norway part of the observatory is with steep rock sides along populated fiords. Here rockslides occurred most likely during the Holocene, and in historical time generating

tsunamis. Monitoring of potential unstable rock slopes have started by local authorities. Potential thawing of permafrost due to climatic warming could decrease the stability of the unstable rock slopes. Nine new boreholes were established as part of the TSP NORWAY project to map the extent and temperature of the permafrost in northern Norway in summer 2007. Permafrost exists all over the Svalbard landscape, where we are establishing the Svalbard Nordenskiöld Land Permafrost Observatory, containing both maritime and continental high-arctic areas and different permafrost landforms. Focus is on the continental Longyeardalen and Adventdalen area ( $78^{\circ}15'N$ ), to use the excellent research infrastructure for year-round investigations at the University Centre in Svalbard, UNIS. Periglacial process monitoring is intensified in different landforms, and new boreholes are planned and will be drilling in spring 2008.