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Permafrost monitoring in northern Norway: Initial results from the IPY-project TSP NORWAY

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The Norwegian funded IPY project 'Permafrost Observatory Project: A Contribution to the Thermal State of Permafrost in Norway and Svalbard' (TSP NORWAY) is a part of the international IPY full project 'Permafrost Observatory Project: A Contribution to the Thermal State of Permafrost (TSP)'. TSP will obtain a "snapshot" of the permafrost environments as a benchmark against which to assess past and future changes by making standardized temperature measurements in existing and new boreholes throughout the World's permafrost regions. The ultimate payoff is long-term and will serve as validation of current models and understanding of how permafrost conditions are reacting to climate change. The permafrost distribution in the North Atlantic area is to a large degree climatically controlled, mainly by the North Atlantic Drift, causing much less permafrost than in any other high latitude terrestrial region on the Northern Hemisphere. The extent of permafrost in the North Atlantic area is, however, not mapped, and it is therefore important to delaminate and assess the thermal state of permafrost. The main objective of TSP NORWAY is to measure and model the permafrost distribution in northern Norway and Svalbard, including its thermal state, thickness and influence on periglacial landscape-forming processes. The current knowledge on the extent and the thermal conditions of permafrost in northern Norway is scarce. Thawing of permafrost in Norway may lead to subsidence of the ground surface, having a substantial impact on e.g. the stability of mountain slopes and on in-

frastructure. Nine 7-31 m deep boreholes were drilled in bedrock in northern Norway in August and September 2007. In two of the boreholes, a measurement setup with 15-20 thermistors connected to dataloggers, with data recording every six hours, were installed. The other seven boreholes were instrumented with miniature temperature dataloggers at selected depths. All boreholes were cased. Periodic recalibration of the installed thermistors is possible and the holes remain accessible for other probes in future. Furthermore, some deep boreholes ($>$ 100 m) drilled for mining purposes were logged for gamma, temperature and electrical conductivity. In addition, a series of miniature temperature data loggers were installed for monitoring surface and air temperatures at selected sites. This presentation summarises first results of this activity and shows a first quantitative picture of permafrost distribution in northern Norway.

http://www.tspnorway.com/