

Name of research institute or organization:

WSL Institute for Snow and Avalanche Research SLF

Title of project:

Permafrost Monitoring at high Alpine Sites

Project leader and team:

Dr. Marcia Phillips (Project leader, permafrost researcher)

Martin Hiller (Electronics)

Andreas Moser (Electronics)

Christian Simeon (Mechanics)

Project description:

SLF monitors the evolution of permafrost temperatures in a series of vertical and horizontal boreholes located at high altitudes in the Swiss Alps (Cremonese et al. 2011). One crucial aim is to determine how different types of permafrost terrain react to temperature changes and modifications of spatial and temporal snow cover distribution. Rockwalls and ridges are particularly relevant because they tend to react very rapidly to change as they lack or have a strongly reduced insulating snow cover. Changes in rock or ice temperature or modifications in ice or water content can lead to rockwall instability. SLF has just started a new SNF DACH project entitled 'Influences of Snow on Permafrost Rockwalls' in collaboration with the University of Bonn which aims to investigate the role of snow on the thermal regime and mechanical stability of rockwalls. Data from the Jungfrau Ostgrat will be used in the context of this project.

The sub-horizontal borehole is located at 3590 m in the N oriented wall of the Jungfrau Ostgrat. It is 20 m long and equipped with 9 thermistors and a data logger. Rock temperatures vary between -4 and -8°C. The main form of heat transfer appears to be conduction. The high elevation of the borehole and the fact that it is located in a steep, exposed rocky ridge make the data particularly valuable.

Key words:

Mountain permafrost; thermal regime; active layer; rock walls; snow cover distribution.

Internet data bases:

www.permos.ch

Collaborating partners/networks:

PERMOS (the borehole is a candidate for the PERMOS network)

Scientific publications and public outreach 2011:

Refereed journal articles and their internet access

Cremonese E., Gruber S., Phillips M., Pogliotti P., Boeckli L., Noetzli J., Suter C., Bodin X., Crepez A., Kellerer-Pirklbauer, Lang K., Letey S., Mair V., Morra Di Cella U., Ravel L., Scapozza C., Seppi R., Zischg A. (2011). An inventory of permafrost evidence for the European Alps (short communication). *The Cryosphere* 5, 651-657. www.the-cryosphere.net/5/651/2011/

Address:

WSL Institute for Snow and Avalanche Research SLF
Flüelastrasse 11
CH-7260 Davos Dorf
Switzerland

Contacts:

Marcia Phillips
Tel.: +41 81 417 02 18
Fax: +41 81 417 01 10
e-mail: phillips@slf.ch
www.slf.ch