Geophysical Research Abstracts
Vol. 14, EGU2012-9492, 2012
EGU General Assembly 2012

Climate-induced spatio-temporal changes of rock glacier kinematics and temperature regime of permafrost in the Hohe Tauern Range, Austria: One work package within the permAfrost project

A. Kellerer-Pirklbauer (1,2), M. Avian (1), V. Kaufmann (1), E. Niesner (3), and B. Kühnast (4)

(1) Institute of Remote Sensing and Photogrammetry, Graz University of Technology, Austria, (2) Department of Earth Sciences, University of Graz, Austria, (3) Department of Applied Geological Sciences and Geophysics, University of Leoben, Austria, (4) KNGeolektrik e.U., Leoben, Austria; andreas.kellerer@tugraz.at

High latitude as well as high mountain areas are recognized as being particularly sensitive to the effects of the ongoing climate change. Large areas of mountain permafrost in the European Alps are for instance close to melting conditions and are therefore very sensitive to minor changes in climatic conditions. Degrading permafrost might cause slope instabilities and therefore pose a threat to both infrastructure and humans in alpine and subalpine environments. However, knowledge regarding permafrost distribution and its climatologically driven dynamics in the European Alps is still far from being complete. To increase the knowledge about permafrost occurrence and dynamics in Austria and the Eastern European Alps, the national project "permAfrost – Austrian Permafrost Research Initiative" was launched in 2010. The project consortium consists of permafrost researcher from the University of Innsbruck, Graz University of Technology, University of Leoben, University of Salzburg, and Vienna University of Technology and is coordinated by the Austrian Academy of Sciences. permAfrost is a first step establishing a nation-wide permafrost monitoring program in Austria. One work package (WP) of permAfrost focuses on climate-induced spatio-temporal changes of rock glacier kinematics and temperature regime of permafrost at the three rock glaciers Weissenkar (N46°57′, E12°45′), Hinteres Langtalkar (N46°59′, E12°47′) and Dösen (N46°59′, E13°17′), all located in the Hohe Tauern Range, central Austria. This WP aims to continue and improve previous research in the field of kinematics, volumetric and thermal monitoring of rock glacier and permafrost and to understand the inner structure of the three mentioned rock glaciers. To reach this aim, a synergistic approach by using geodesy, aerial photogrammetry, terrestrial and airborne laser scanning, different geophysical techniques and automatic ground temperature and climate monitoring is applied. First results from the different parts of this WP as well as synoptical considerations are presented.