Chair of Landslide Research and Hydrogeology

Hydrogeology in environments with glacier-permafrost-interaction

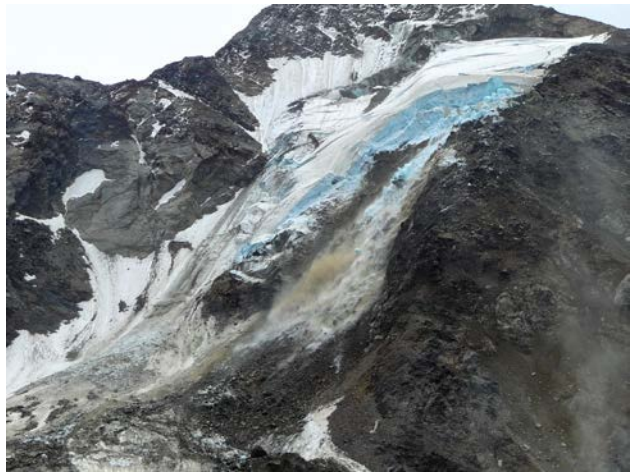
MOTIVATION

The warming of permafrost rock slopes in interaction with glacier discharge, snowmelt or liquid precipitation leads to substantial changes in the hydrogeological situation and accelerates permafrost thaw.

This change in the hydrogeological situation may trigger rock slope instabilities.

Therefore, mapping the thermal state of permafrost, glaciers, and sources of water is critical to assess hydrogeology and anticipate future hazards in alpine cryopshere.

CASE SITE: Bliggspitze Kaunertal, Tirol;
Periglacial environment with morains, rock glaciers,..



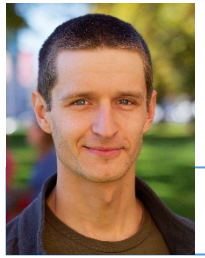
This thesis is **a collaboration between the chair of alpine hazards and of hydrogeology**. You have the expertise of both. The aim of this study and the applied methods can be adapted according to own skills in discussion with us. Your main supervisor will be Felix Pfluger from alpine hazards and co-supervisers Dr. Arno Rein / Christian Tomsu from hydrogeology.

The thesis consists of field work..

- Mapping of springs in summer 2024; measuring temperature, electrical conductivity, discharge
- Analysis of water isotope taken from the springs

And Modelling with FeFlow:

- Simulating groundwater flow in permafrost slopes using the piFreeze plugin in Feflow
- Assessing the impact of external forcings such as glacier/snowmelt or precipitation on permafrost degradation and the hydrogeological situation
    - Data on glaciers and permafrost will be provided by the work of colleagues.



For further information please contact

Contact: Felix.pfluger@tum.de

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