

Job Advertisement
Project staff in Hydro-Geo Science
(PhD position)

In frame of the ÖAW project Hidden.Ice

Project Hidden.Ice - Abstract

Climate observations as well as climate scenarios reveal a rise of temperatures around the globe, with almost twice the global rate in Austria. This temperature increase affects glacier and permafrost distribution in the Alps. Glacier retreat is the most visible manifestation of climate change in high mountain areas and has a significant impact on high mountain runoff. With glacier downwasting and increasing rock fall activity, debris depositions accumulate at current glacier tongues, which partly reduces ice ablation and favours ice storage beneath debris. In addition, this debris, once deposited in the proglacial area, can be assumed to be closely connected to transport in the stream system. In general, areas in the transition from glacial to non-glacial conditions are highly unstable and prone to erosion over a wide range of discharge, but particularly to export of sediments in case of heavy precipitation events. The Hidden.Ice project serves to investigate the hydrological impact of supraglacial debris deposits in the transition zone from glacier ice to proglacial areas in Austria.

First, the project will apply a nation-wide mapping of supraglacial debris and investigate hotspots of increasing debris cover. A detailed study of processes of debris deposition and renewed movement by fluvial transport will be performed at the LTER site Jamtalferner, combining hydrological modelling of the potential transport capacity of sediments in glacial streams, the analysis of grain size distribution on the glacier surface and in the proglacial area, and the calculation of sediment volume changes from UAV-based photogrammetry. Further, documentation of the historical evolution of the channel network will increase our knowledge of the temporal evolution of sediment-rich, proglacial zones.

The Hidden.Ice project makes use of ongoing improvements in the temporal and spatial resolution of remotely sensed data from different platforms (satellite, airborne, UAV-based). In particular, this study will expand the monitoring capabilities at the well-established LTER site Jamtalferner to build up long-term datasets.

Project-Staff

We are looking for a staff scientist motivated to work in an interdisciplinary environment covering the fields of hydrology, geomorphology and glaciology. The advertised position is embedded in the project Hidden.Ice. The candidate will work on the hydrological questions concerning the runoff and sediment transport based on-site evaluation of the glaciological and geomorphological conditions.

It is a shared position of the Unit of Hydraulic Engineering (University of Innsbruck) and the Group Highlands at the ÖAW-Institute for Interdisciplinary Mountain Research. A close cooperation and exchange with the other project partners in the fields of remote sensing and geomorphology is an integral part of the work.

The clear objective is the preparation of a dissertation (PhD thesis).

Special focus is put on the following tasks:

- Installation and maintenance of a discharge monitoring system in the glacier forefield of the Jamtalferner
- Hydrological Simulation of the discharges (including the glacier) and potential sediment transport capacities in the pro-glacial region
- Analysis of elevation changes in the glacial and pro-glacial region of the Jamtalferner from DGM data
- Joint evaluation of observations, measurements and modelling parts with regard to sediment transport in/from the para-glacial region of debris covered glaciers

Start, Duration and extend of employment

Earliest start is May 2019, Duration of employment: 3 years at an extend of 30h/week (PhD-position)

Employment Conditions

The employment is realized as a shared position located at the (a) ÖAW-Institute for Interdisciplinary Mountain Research and (b) the Unit of Hydraulic Engineering (University of Innsbruck) over the complete duration with a minimum (total) gross salary of 2.095,50 €/ month (14-times/year).

The cost categories of the Austrian Science Fund (FWF) and/or the Salary schemes for University Staff according to the Collective Bargaining Agreement applies.

Required Qualification

- Finished Diploma- or master study (Geo-Science, Civil and/or Environmental Engineering or similar studies (e.g. environmental engineering and water management)
- The prior link within earlier works/studies to hydrological, glaciological topics is a benefit
- Knowledge in programming languages (ideally R, Python or Matlab)
- Knowledge in hydrological modelling
- Knowledge in working with Geodatasets (GIS)
- Fit for fields works located in an alpine environment including the basic knowledge of associated risks as a basis for own field research

For further information and application (Letter of motivation, CV, up to 2 Contacts as a reference) please contact until 01.05.2019:

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