Lehrstuhl für Hydrologie und Flussgebietsmanagement
School of Engineering and design
Technische Universität München

Open position starting from 01.06.2023 for two years as

# Post Doc in Hydrological Modeling of Alpine Catchments

## About us
The Chair of Hydrology and River Basin Management of the Technical University of Munich and the Chair of Hydrology of the University of Bern are cooperating in the DFG Research unit SEHAG (https://sehag.ku.de/).

## Summary of the project
The project is part of the 2nd phase of the DFG research unit "SEHAG – „Sensitivity of high Alpine geosystems to climate change since 1850 "that investigates the impact of climate change on high Alpine geosystems since the end of the Little Ice Age (1850). Scientists of various disciplines (climatology, geomorphology, hydrology, vegetation and photogrammetry) collaborate closely to develop for the first time a reconstruction of the historical development of high Alpine geosystems, based on the case studies of Kaunertal and Horlachtal in Austria, and Martelltal in Italy. The second phase started on 01.04.2022 and runs until 31.03.2025. The first ongoing project phase focused on changes in geosystems and their causes from 1850 to the present day. In the second phase, field data collection will be further completed, along with improved model parameterizations for all studied subsystems (glaciers, permafrost, vegetation, hydrology, etc.), to enable a model-based analyses of potential future developments up to 2050, based on data from dynamically downscaled climate model projections.

## Job description
This postdoc project focuses on the quantification of climate change impact on **groundwater storage in high Alpine catchments** based on a combined experimental modelling approach (the retained model is WaSiM). The work aims at answering the question how the role of groundwater storage for high Alpine water resources will evolve under ongoing climate change, based on detailed analyses of the three selected case studies. This will be achieved by further developing existing hydrological modelling approaches with the main focus of improving the representation of surface water – ground water exchanges in high alpine environments. Detailed field data will be used to calibrate this model and achieve the best possible representation of the studied system. The developed model will be used to investigate how the relative role of subsurface water storage as compared to above ground water storage in snow and ice will evolve in a warming climate.

## Your Profile
The successful candidate holds a PhD in hydrology or related science and should have a keen interest in hydrological modelling over time scales of decades to centuries. Prior experience in hydrological modelling (ideally with WaSiM) and familiarity with a scripting language (Matlab, R or Python) is a must, as is experience in handling time series and geospatial data (such as digital elevation models or spatially-distributed climate data). Fluently spoken English and a good level of English writing skills are a prerequisite. Prior field work experience and German language skills are a plus.

Lehrstuhl für Hydrologie und Flussgebietsmanagement
School of Engineering and design
Technische Universität München

**We offer**

Work on this project represents a unique opportunity to benefit from a well-established interdisciplinary collaboration. The uniqueness of the project stems on one hand from the long term simulations that range back into the past but also from the well-designed and established exchange of modelling results and experimental data from all project partners to further advance our integrated understanding of the evolution of the studied geosystems. The successful candidate will be offered **a fixed-term position of 1 year located at TUM** (Germany), funded by the German Research Foundation (DFG) **AND a fixed-term position of 1 year located at University of Bern** (Switzerland) funded by the Swiss National Science Foundation (SNF). Expected starting date is 01.06.2023. Salary is TV-L E13 (100%) according to the German TV-L system (https://oeffentlicher-dienst.info/c/t/rechner/tv-l/allg?id=tv-l-2023, about 55.000€) for the first year. For the second year at Uni Bern, the brutto annual salary amounts to 88'000 CHF.

The candidate will work in Munich (Germany) in TUM main campus for the first year and in Bern (Switzerland) for the second year (**relocation required**). The position offers the unique opportunity of gathering international experience during the PostDoc in a research unit including also Austrian and Italian partners. Moreover, the work will allow the development of both modeling and field skills by contributing to field work in three well equipped research sites. Disabled candidates will be given preference over other equally qualified applicants. The University seeks to raise the number of women in research and teaching and therefore urges qualified women to apply.

**How to apply**

We are looking forward to receiving your application by 10.05. 2023. The application shall include (in a **single pdf**) a concise letter of motivation, your CV with publication list, the contact details for two persons willing to act as a reference, as well as a filled-in version of a **questionnaire** with structured information that can be downloaded here:

https://docs.google.com/document/d/1ILyWzIp9cXiisskmh0JXCjn7XbtROHOnvs-frvSxHUPc/edit?usp=sharing

**Applications without questionnaire will not be considered**. Applications have to be sent to:

gabriele.chiogna@tum.de

*For questions (not for applications), please contact:*

Prof. Dr. Gabriele Chiogna, gabriele.chiogna@tum.de, https://www.cee.ed.tum.de/hydrologie/mitarbeiter-list/gabriele-chiogna/
Prof. Dr. Bettina Schaefli, bettina.schaefli@giub.unibe.ch, https://www.geography.unibe.ch/research/hydrology