Vacancy for

PhD position in Karst Hydrology

within the research project "RObust Conceptualisation of KArst Transport (ROCKAT)" funded by the German Research Foundation (DFG).

We invite applications for a TV-L 13 position, 75% for 3 years, starting February 1st 2021.

This position will deal with the development of coupled lumped flow and transport models for karst systems. Therefore, experimental set ups for an automatized event-based hydrochemical sampling will be established in two test sites in Germany (Erft spring) and France (Baget spring). The continuously growing hydrochemical database and existing hydrological data will be used to obtain a conceptual understanding of transport processes in two contrasting karst systems. Based on the gathered knowledge, coupled lumped flow and transport routines will be developed for the different compartments of karst aquifers, i.e. the epikarst, conduits and matrix. Finally, the modeling routines will be applied and tested for various karst systems around the globe in different climate zones and different spatial scales to ensure their transferability.

The PhD candidate will be responsible for the set-up, maintenance and use of the hydrochemical data base. She or he will analyze existing and new data to create conceptual models for solute transport in the two study areas. In close collaboration with an in parallel working PhD student at the TU Munich, lumped solute transport modeling routines will be developed for the different compartments of karst aquifers. The PhD candidate will test the developed transport routines in both study areas as well as in various karst systems worldwide. Therefore, it will be required to couple the solute transport codes with different karst hydrological flow models (in Python, R or Matlab) and apply already existing and new techniques for parameter estimation, sensitivity analysis and uncertainty quantification (also in Python, R or Matlab). The outcomes of this research should be published in international peer-reviewed journals.

All applicants should have a MSc degree in hydro(geo)logy, environmental engineering/sciences or in a closely related field. We encourage applications from enthusiastic dedicated individuals with strong quantitative skills as well as good writing skills in English (German and French are an asset) who enjoy working in the multi-disciplinary team of the ROCKAT project (in total 5 researchers) and the Hydrological Modeling & Water Resources group at Freiburg University. Strong experience in programming and hydrological modeling are essential, as well as the willingness to visit collaborating research groups within and outside Germany.

We offer an interdisciplinary, international work environment within a formal PhD program (http://www.gs.esgc.uni-freiburg.de). An intensive exchange of the PhD students between Freiburg and the research teams at Technical University of Munich (Germany), the University of Toulouse (France) and the Erftverband (Germany) is foreseen.

The University of Freiburg is an equal opportunity employer and is committed to increasing the proportion of women scientists. Consequently, we actively encourage applications from qualified women. We also welcome applications from candidates with severe disabilities who will be given preferential consideration in case of equal qualification.

Please send your application including a cover letter, CV, an example of your own scientific writing, a statement of research interests, certificates & transcript of your highest degree earned and the names and contact details of at least two potential references in one pdf-file to Andreas Hartmann (andreas.hartmann@hydrology.uni-freiburg.de) and to Daniel Bittner (daniel.bittner@erftverband.de). Application deadline is November 29th 2020.