



Leibniz-Institute of  
Freshwater Ecology and Inland Fisheries

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The Leibniz-Institute of Freshwater Ecology and Inland Fisheries (IGB) ([www.igb-berlin.de](http://www.igb-berlin.de)) is the largest freshwater research institute in Germany with a mission for the generation, dissemination and application of knowledge about freshwater ecosystems. The IGB program is unique in that it combines basic and applied research for the benefit of both. Cooperating intensively with the scientific community (universities, research institutes), government agencies, as well as the private sector, guarantees the development of innovative solutions to the most pressing challenges facing freshwater ecosystems and human societies. The IGB is part of the Forschungsverbund Berlin e.V. (FVB) and the Leibniz Association ([www.leibniz-gemeinschaft.de](http://www.leibniz-gemeinschaft.de)). Within the framework of a legal entity the FVB represents eight research institutes operating in the fields of natural, life, and environmental sciences which pursue common interests while maintaining scientific autonomy. IGB is linked through joint professorship to three universities in Berlin.

The Department of Ecohydrology at the IGB offers a:

**Master Thesis “Modelling sediment dynamics of an Alpine river network”**

Stream and river networks form spatially heterogeneous landscapes, where the hydrological regime and sediment transport influence channel width, depth and stability, and result in a mosaic of erosional and depositional landforms. Small-scale physical heterogeneity of the riverbed and substratum size may influence the local available niche space for organisms and has been shown to influence community composition and diversity of macroinvertebrates and microbial biofilms, for instance.

The aim of this project is to gain knowledge about the sediment dynamics of a river network and to infer potential influences on the benthic microbial community. To this end, mathematical modelling will be used to infer the sediment size distribution throughout the river Ybbs network (Austria). This stream network has already been subject of several scientific studies. Available data include discharge and rainfall time series, and stream depth, width and slope from > 100 sites. A ground-truthed digital elevation model and a probabilistic hydrological model have been developed and used to characterize network properties and the hydrological regime.

We search for a master student holding a Bachelor degree in relevant disciplines (Environmental Sciences, Ecohydrology, Hydrology, Geological Sciences or related) with experience/motivation in mathematical modelling to develop and calibrate a model of the sediment size distribution in the river Ybbs network on the basis of available data. This master thesis will bridge several research groups, namely the group of Gabriel Singer (Department of Ecohydrology, IGB, Berlin), the group of Jakob Schelker (ECOCATCH, WasserCluster Lunz, Austria) in collaboration with Katharina Besemer (WasserCluster Lunz), and the group of Manousos Valyrakis (School of Engineering, University of Glasgow, UK). The master student will spend 2-3 months at the University of Glasgow for the development of the model. Potential need of additional field data may require a short stay at the WasserCluster Lunz in Austria.

Enquiries or questions should be directed to **Dr. Gabriel Singer** ([gabriel.singer@igb-berlin.de](mailto:gabriel.singer@igb-berlin.de)).

Please upload complete application documents as a single pdf-file including CV, a short letter of motivation, copies of relevant degrees as soon as possible but no later than **30<sup>th</sup> September 2017** via the IGB's ([www.igb-berlin.de/job-offers.html](http://www.igb-berlin.de/job-offers.html)) online job-application facility (button “Apply online”).

**We are looking forward to your application!**