

Konrad Greinwald  
Department of Biology/Geobotany  
Albert-Ludwigs University of Freiburg  
Schänzlestr. 1  
D - 79104 Freiburg

## Master Thesis Offer

Starting date: June/July 2019

*The relationship between soil aggregate stability and vegetation complexity in high alpine glacier forelands.*

### Research question

What are the emerging patterns of soil aggregate stability and of root traits (e.g. RLD and RD) across a proglacial chronosequence and a complexity gradient?

### Relevance

The stability of hillslopes is an essential ecosystem service, especially in alpine regions with soils that are prone to erosion. Climate change is increasing the frequency and intensity of rainfall and is accelerating glacial retreat leading to an exposure of bare land. Hence, identifying and understanding processes of soil stabilisation on alpine slopes is a key priority to avoid further soil degradation and connected risks to human safety in these areas.

### Experimental Design

The master thesis is included into the German-Swiss Hillslope project. The HILLSlope Chronosequence And Process Evolution (HILLSCAPE, see [www.hillscape.ch](http://www.hillscape.ch)) project focuses on the vertical and lateral redistribution of water and matter along hillslopes and how this redistribution affects and is affected by soil, vegetation and landscape development. For the master thesis parts of the Hillslope experimental design will be used. The fieldwork will be conducted in the glacier foreland of the Griedgletscher which is located close to the Klausenpass in central Switzerland. The chronosequence is made up of four moraines with ages of approximately 50 years, 160 years, 2000-3000 years BP and 8000-11000 years BP. Soil sample coring and vegetation surveys will be conducted at three different vegetation complexity levels per moraine. Soil aggregate stability measurements and analyses of root traits are going to take place at the Geobotany laboratory in Freiburg.

The student will gain experience in vegetation surveying, measuring pedological characteristics, usage of tools for root trait determination as well as statistical analysis of ecological data.

### Contact

If you are interested please mail to [konrad.greinwald@biologie.uni-freiburg.de](mailto:konrad.greinwald@biologie.uni-freiburg.de) with a brief introduction of yourself.

