

Laboratory experiment of subglacial drainage: prototype development

Subglacial drainage has wide-ranging impacts, including the control of glacier sliding speeds, or the determination of hazards from ice dammed glacial lakes. Impressive advances in the understanding of such processes have recently been achieved - both through theoretical modelling and field experiments - but direct observations of subglacial drainage processes are still impossible.

This project will investigate the feasibility of filling this observation-lack by using a physical model of subglacial drainage. The goal is to produce a table-top prototype of a pressurized flume containing ice-water-sediment layers. The model will be used to study the sediment and flow dynamics which lead to subglacial channel growth and shrinkage.

This work is a collaborative effort between the Laboratory of Hydraulics, Hydrology and Glaciology (VAW), and the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL).



Fig. 1: A subglacial channel underneath Rieperbreen, Svalbard (Foto: Jason D. Gulley)

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Particularities:

The topic can be assigned multiple times