BEDLOAD DYNAMICS IN RAPIDLY CHANGING PARAGLACIAL ZONES

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PROJECT FACTS

- Part of HIDDEN.ICE project
- Funded by ÖAW Earth System Science (ESS)
- Start: 05/2019
- Study area: LTER site Jamtal | Austria

RESEARCH QUESTIONS

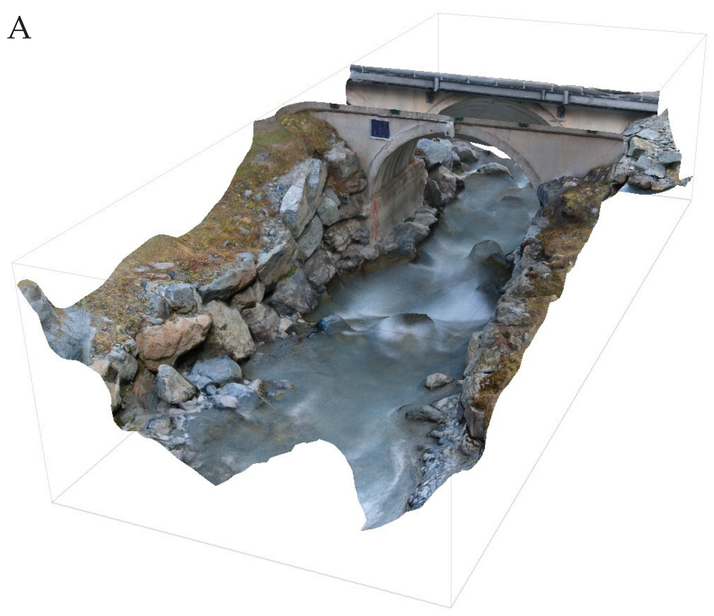
1. What are the feedbacks between increasing debris cover and a shifting runoff regime due to a changing composition of glacier melt, snow melt and heavy rainfall events?
2. How is coarse sediment including supraglacial debris from the proglacial transition zone connected to downstream fluvial transport?
3. How do renewed movements of sediment and the channel network evolve in the proglacial area of partly debris-covered glaciers over time?

INTRODUCTION

With glacier downwasting and increasing rock fall activity, debris accumulates at current glacier tongues. This debris, once deposited in the proglacial area, can be assumed to be closely connected to bedload transport in the stream system.

METHODS

1. Hydrological modelling of the runoff in the Jamtal catchment
2. Hydraulic modelling of the potential transport capacity supported by bedload trap measurements
3. Analysis of the sediments grain size distribution
4. UAV-based photogrammetry | ALS | TLS calculating sediment volume changes and capturing the evolution of the channel network



A. Photogrammetric 3D point cloud of Jambach runoff gauge.
B. Calibrated runoff (2019)
C. Water level - discharge relation
D. TLS survey at Jamtalferner (08/2019)
E. Surface elevation change (dz) between 2006 and 2019 at the glacier tongue...
F. ...and in the proglacial area

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