

## **Variability of solid load in the proglacial Fagge River, Tyrol (Austria)**

Henning Baewert (1,2), Martin Weber (3), Matthias Faust (1), David Morche (1,4)

(1) Martin-Luther-University Halle-Wittenberg, Institute of Geosciences and Geography, Physical Geography, Halle/Saale, Germany (henning.baewert@googlemail.com), (2) G.U.T. - Gesellschaft für Umweltsanierungstechnologien mbH, Merseburg, Germany, (3) Landesbetrieb für Hochwasserschutz und Wasserwirtschaft Sachsen-Anhalt, Halle/Saale, Germany, (4) Catholic University of Eichstätt-Ingolstadt, Chair of Physical Geography, Eichstätt, Germany

Glaciers can strongly affect sediment dynamics in high-mountain basins. They receive clastic material from rock walls by gravitational processes of various magnitudes (rock slides to rockfalls) or by subglacial erosion and transport sediments downvalley like a conveyor belt. At the glacier tongue the meltwater with its accompanying river load enters the proglacial system. Fine material is moving in suspension leading to turbid meltwater. The coarse fraction of the meltwater load is rolling or sliding as bedload on the proglacial channel bed.

As glaciers are vulnerable to and thus indicators of climate change the sediment transfer systems in Alpine glacier basins will respond as well. Since the end of the Little Ice Age (LIA) around 1850 glacier in the European Alps have been melting down and their front lines have been retreating. Where the glacier ice is gone large amounts unconsolidated sediments are deposited (moraines, glaciofluvial deposits) and can easily be reworked during subsequent rain storms or snowmelt. As a consequence it is of great concern whether more solid load (higher sediment availability) or less solid load (trapping effect of proglacial lakes) is transported in proglacial rivers in the near future. Due to glacier retreat the amount of unconsolidated, sparsely vegetated sediments, which are prone to rapid remobilization, is increasing. Because more of these sediments are available for fluvial sediment transport, it is generally assumed that glacier retreat leads to an increase in sediment discharge from proglacial zones.

The main objective of this study is to present a budget of the fluvial sediment transport within the proglacial Fagge River for the observation period 2012 - 2014. This quantification of solid sediment transport is needed for further investigations on the way to a holistic sediment budget for the whole glaciated catchment of the Gepatschferner in Tyrol/Austria.