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Quantification of sediment input and remobilisation on different spatial and temporal scales (Reintal, Bavarian Alps)

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Highlighting processes in the topmost parts of alpine sediment cascading systems (weathering, detachment, transport) in this session, our contribution deals with the last link in the considered chain, namely on processes of transport and remobilisation in the Reintal basin (Bavarian Alps). Highly variable in terms of frequency and magnitude, these processes cause specific patterns of sediment storages and principally, two ways of originating quantitative information about process rates can be adopted. Whereas recent *process quantification* based on field measurements remains difficult to obtain, geophysical and morphometrical techniques allow for *sediment storage quantification* with a relatively high level of accuracy. Subsequent back calculations ("from archive to process") based on sediment storage volumes and -ages deliver averaged rates of sediment transfer for a considered time frame (e.g. time since deglaciation). Both mentioned approaches were performed within this study, delivering complementary, short and long term information for analysing the current status of this geosystem and verifying models of landscape development (e.g. paraglacial model).

Applying a multi-method approach (orthophoto-interpretation, field measurements, GIS-techniques), recent rates of sediment input and remobilisation have been observed on two spatial scales (3.4 km^2, 0.42 km^2). Within both considered scales, recent remobilisation overbalances recent sediment input (by a factor of 6 and 11, respectively). This confirms the model of paraglacial landscape adjustment with overriding secondary paraglacial processes (remobilisation) at a later stage of the paraglacial period due to the reworking of primary paraglacial sediment storages.

Regarding sediment input processes, an opposed scale-dependent behaviour could be observed. At the catchment scale (3.4 km^2) recent rates of sediment input just explain one third of the presently stored sediments in the basin, confirming the paraglacial model again. At the smaller scale, a stretch of highly active talus slopes in the central part of the basin (0.42 km^2), this relation is reversed. Herein, a linear extrapolation of the current input rate through the Holocene would yield an even higher volume of stored sediments than observed.

These scale-dependent tendencies are fortifying the basically high spatio-temporal variability of clastic sediment fluxes in alpine environments and should be kept in mind for the choice of size and location of eventual test sites.