



The impact of rapid mass movements on valleys: Examples from the Eastern Alps

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Mass movements are a frequent and an increasingly well observed phenomenon of the topographic development of the Eastern Alps. Already the early researchers, e.g. A. Heim (1932) in his stimulating work "Bergsturz und Menschenleben", highlighted the influences of sturzstom-events on the development of valley floors. In many cases, rivers were blocked, thereby forming impounded lakes which got filled by sediment and finally drained. Frequently later erosional and sedimentary processes respectively removed or concealed the evidence of such events. In the geomorphological evolution the disruption of the steady state river equilibrium may therefore become the longest lasting indication, which enables the identification of former mass movements.

The progress in geochronology, e.g. surface exposure dating of boulders (Ivy-Ochs et al., 1998) as well as dating by luminescence (OSL) of backwater sediments has enabled a better chronological constraint of such mass movements. Consequently these methods may be applied to date fluvial responses originated by mass movements.

We present a comparison of selected valley sections in the Isel and Drau valley (Eastern Tyrol) where such events took place and where deposits of rapid mass movements have been dated. In our investigations we analysed river profiles, in particular the knickpoint evolution. Additionally we considered sedimentation rates and changes of mass balance. We also indicate how such studies may be used to test the reliability of above mentioned geochronological methods.

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