

## **Relationship between landsliding and sediment flux in the Central Swiss Alps, Case study on the Schimbrig landslide, Entlebuch.**

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We explore feedback mechanisms and limits of interactions between production and sediment transport in the Waldemme drainage basin, central Swiss Alps. This area is characterized by abundant landslides affecting principally flysch units and is therefore an important sediment source. Multi-temporal aerial photographs were analyzed and high-resolution elevation models were extracted using digital photogrammetric techniques in order to quantify volumetric changes on the Schimbrig landslide. Sediment discharge data were used to constrain the significance of the landslide for the receiving system. The temporal extent of the photogrammetric analysis ranges from 1962 until 1998, including an important earth slide surge in 1994. It is shown that during period of dormant activity of the landslide, nearly the totality of the displaced sediment of the landslide was removed, whereas during active periods, only a fraction of the displaced landslide mass was exported. Interestingly the 1994 earth slide surge didn't disturb the long term sediment discharge pattern. However suspended sediment pulses measured downstream correlate with higher than average precipitation events. This was particularly the case in August 2005 when a storm event triggered several debris flows and earth flows on the Schimbrig area. But this storm event didn't result in an increase in the slip rates of the whole landslide's main body. Therefore we propose debris flows and earth flows to perform the connectivity between hillslope processes (e.g. landsliding) and the trunk stream during and between landslide activity.