

Master thesis (MT, 30 ECTS)

Working title Engineering geological mapping of rock slope debris above mountain torrents as an input for risk evaluations with regard to mudflow events

Description:

It is about mapping of rock slope debris fans above mountain torrents.

Talus fans are a result of the erosion of rock faces. The slope inclination and the composition of a debris cone result from the respective rock and its friction angle.

Extreme weather events (e.g. heavy rainfall, melting of snow, etc.) strengthen the runoff of mountain streams.

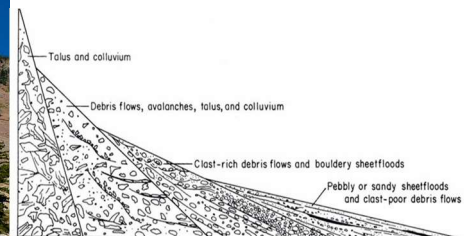


Fig. 3.7. Internal facies partitioning within debris-flow fans. Note decreasing clast size, improved sorting, and development of stratification downflow. (Derived from Blair and McPherson 1993)

The combination of the continuous accumulation of rock fragments and unusual high water discharges of mountain torrents lead to a high risk for mudflow events, due to the availability of rock material and the necessary energy provided by the draining water.

The student(s) should complete following tasks:

- Literature study: "State of the art classification methods regarding talus fans"
- Identification of measurement techniques for grain size distribution in-situ
- Field/laboratory work: mapping of talus fans, sieving curves/grain size distribution, historical debris flow events
- Data acquisition and analysis: checking of weather data (rainfall, snowfall, temperature, discharge curves, etc.
 - Historical debris flow events
- Risk analysis of the magnitude and amplitude of possible debris flows.
- Master Thesis answering the question **"What are the key factors influencing the probability of a mudflow event with respect to the availability of talus sediments?"**

Depending on the working load the thesis will be split into several theses. The thesis can be combined with a master project (preliminary study).

Requirements Passion for field work & laboratory work; Interest in data analysis (e.g. Correlation, etc.)

Supervision Thomas Geisler | *Graz University of Technology*
Gerald Valentin | *Geological Survey of Salzburg*

Start Immediately / by agreement

Duration approx. 6 months

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