



Measuring of Rockfall on Alpine Rockfaces and the Corresponding Talus Cones Using Terrestrial Laserscanning Data

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In high mountain regions rockfall plays a major role as a geomorphic process in terms of sediment budget, and as a natural hazard. During the last three years high-resolution Terrestrial Laserscanning (TLS) data was applied to quantify and to analyse rock fall activity within steep rockfaces in Alpine catchments.

The investigations were carried out in two study areas located in the Northern-, and Southern Alps (Höllental, Northern Calcareous Alps/Germany, Val di Funes, Northern Dolomites/Italy). During this DFG (German Science Foundation) founded project rockfaces and the talus cones were scanned twice a year with two scanning resolutions. Larger events were monitored by scanning large areas of the rockfaces and the corresponding talus cones from a great distance (~ 500 m). In contrast, detailed scans from shorter distances (< 250 m) were used to investigate the capability of the approach to detect smaller events. With this approach, it was possible to quantify rockfall in the single catchments regarding e.g. the lithologic conditions and to determine the differences in rockfall activity between these two catchments.

Beside the quantification of rockfalls, ground based lidar data are also a very helpful tool to characterize the surface properties of talus cones, which influence the runout distances of falling boulders. So the surface roughness of talus cones in the two catchments was characterized from the TLS point clouds by a GIS approach using LIS Desktop and SAGA GIS. The resulting detailed maps of the surface roughness on the talus cones in the two catchments were analysed and so it was possible to determine the different surface roughness in the two catchments.

The submitted poster will show both the quantification of rockfall activity on rockfaces in the two catchments and the analyses regarding the surface condition on the corresponding talus cones.