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Enhanced hazard assessment of a steep limestone rock slope above the federal road B 305

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Rock fall events of the last years show that in many cases infrastructure like railways, highways and roads are affected, as has been demonstrated by the rock fall in Gurtnellen on June 5th, 2012 with one casualty and on Nov. 14th, 2012. To minimize the rock fall risk it is necessary to analyze, assess and anticipate the processes by means of rock fall modeling. Up to now it is common to perform the determination of input parameters using fact sheets referring to the requirements of the chosen code in terms of input parameters (Dorren 2010, GEOTEST 2006). In many cases it is not sufficient to only attend to the common parameter lists, but it is required to collect enhanced data. In the current project it has been worked out that it is essential to think about the following accessory questions when performing rock fall modeling:

• How can we achieve additional knowledge about block sizes by acquiring enhanced data considering the source areas?
• How can we round off the input data for rock fall modeling by performing kinematic analysis?
• To which extent can the approaches of Barton & Choubey (1977) be an amendment to rockfall modeling?

These questions are addressed in a steep forested limestone slope that extends above the federal road B 305 near Ramsau in the Bavarian Alps, 30 km southwest of Salzburg.
The extension of the source area was mapped combining the information of hillshades generated of a 1m-DTM and fieldwork. During the project we performed a detailed analysis of the discontinuities in the source area, which implies the evaluation of discontinuity patterns as well as a kinematic analysis (Markland 1972, Talobre 1957). In a second step, we focused on a key object, a single block subject to planar failure, where it was possible to directly enter the detachment surface. We performed an accurate mapping of the release surface with special regard to fracture roughness as well as rock bridges (Barton & Choubey 1977, ISRM 1978 and Woszdilo 1989). The Joint compressive strength (JCS) was determined in situ for the detachment surface as well as for the rock bridges using a Schmidt Hammer (N2-Type) referring to Barton & Choubey (1977), Schmidt (1957) und Woszidlo (1989).

In this contribution, we show how to determine reproducible and quantitative geological key-parameters in release areas to improve the parametrisation of rock fall modeling.