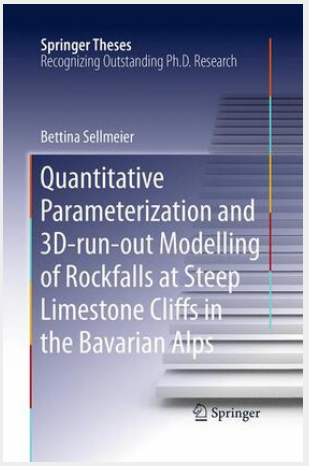
Sellmeier

Quantitative Parameterization and 3D¿run¿out Modelling of Rockfalls at Steep Limestone Cliffs in the Bavarian Alps



This pioneering work deals with the parameterization of rockfalls in the context of 3D run-out modelling at a study site in the Bavarian Alps. The main objective was to cover not only low-magnitude, high-frequency rockfalls (3) but also Mid-Magnitude events, which involve rock volumes of between 10 and 100 m3 (boulder falls) and between 100 and 10,000 m3 (block falls). As Mid-Magnitude events have been insufficiently covered in terms of rockfall modelling up to now, a geomechanical approach has been developed to characterize those events by means of a case study. For a 200 m3 limestone block a potential failure scenario was analysed by combining a deterministic failure analysis with a numerical process-based run-out model. To model potential run-out scenarios of the 200 m3 block, the beta version of the code RAMMS:Rockfall, developed by the Swiss Institute for Snow and Avalanche Research (SLF), was applied. RAMMS:Rockfall makes it possible to include the block shape and thus consider the effects of varying block shapes on the run-out distance. The run-out modelling for the entire project site was performed using the scientific code Rockyfor3D (Dorren/ecorisQ). To provide quantitative information in terms of input parameters, a field recording of block sizes at the talus slope, as well as a detailed discontinuity analysis at the source area, were conducted. The book successfully demonstrates how detailed and quantitative field investigation can contribute to 3D rockfall modelling.

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