ANALYSIS AND RECONSTRUCTED MODELING OF THE DEBRIS FLOW EVENTS 2012, 2013 IN AUSTRIA WITH NUMERICAL SIMULATION MODELS

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debris flow, event analysis, numerical simulation

An extreme accumulation of heavy rainfall events, most of which were of a small spatial extent, led to flooding across the entire province of Styria from June to August 2012 and the entire province of Salzburg from May to June 2013. High intensity debris flows and landslides occurred in the geologically unstable Greywacke zone. Numerous immediate response measures were already undertaken on the day of the event's occurrence. The aim of the very detailed event documentation and –analysis was to understand the extreme process sequence and to reconstruct and simulate the debris flow itself two-dimensionally. The catchment area Lorenzerbach (Event 2012) with a catchment area of 5.84 km² and the catchment Sattelbach (Event 2013) with 1.40 km² are situated in the greywacke zone. Both catchments are prone to debris flows. Due to the data basis the retroactive accounting of such debris flow events is difficult. The recorded phenomena were compiled in the course of the event documentation and the input values were determined for the calculation. Because of the complexity of the particular process, it was only possible to state one band width with almost all necessary input values. It is nevertheless only possible to conclude the applicability (possibilities and borders) of these simulation models through a retroactive accounting of such events. The washout zone in the upper catchment area, the estimated debris flow load, the analysis of the debris flow sampling as well as the reconstructed (swing markers?) and the deposit areas respectively could be basically classified as significant input values. Flow resistances in the form of buildings were integrated into the model on the basis of laser data. The bed load input from the upper reach up to the apex of the debris cone is taken into consideration in the form of sectional material input. The results of the flow depth show a relatively high accordance with the reconstructed flow heights.