



Risk assessment based on a combination of historical analysis, a detailed field study and numerical modeling on the alluvial fan Gadeinerbach as a basis for a risk management concept

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The catchment Gadeinerbach in the District of Lungau/Salzburg/Austria is prone to debris flows. Large debris flow events dates back from the years 1934 and 1953. In the upper catchment large mass movements represent debris sources. A field study shows the debris potential and the catchment looks like a “sleeping torrential giant”. To carry out mitigation measures a detailed risk management concept, based on a risk assessment in combination of historical analysis, field study and numerical modeling on the alluvial fan was conducted. Human activities have partly altered the surface of the alluvial fan Gadeinerbach but nevertheless some important hazard indicators could be found. With the hazard indicators and photo analysis from the large debris flow event 1934 the catchment character could be pointed out. With the help of these historical data sets (hazard indicators, sediment and debris amount...) it is possible to calibrate the provided numerical models and to win useful knowledge over the pro and cons and their application. The results were used to simulate the design event and furthermore to derive mitigation measures. Therefore the most effective protection against debris with a reduction of the high energy level to a lower level under particular energy change in combination with a debris/bedload deposition place has been carried out. Expert opinion, the study of historical data and a field work is in addition to numerical simulation techniques very necessary for the work in the field of natural hazard management.