Geophysical Research Abstracts,
Vol. 11, EGU2009-6976, 2009
EGU General Assembly 2009

A new approach for empirical runout prediction of alpine debris flows

C. Scheidl (1) and D. Rickenmann (1,2)

(1) Institut of Mountain Risk Engineering, University of Natural Resources and Applied Life Sciences, Vienna, Vienna, Austria (christian.scheidl@boku.ac.at), (2) Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Mountain Hydrology and Torrents, Switzerland

A new technique to forecast the runout of a debris flow event is introduced. First, processes of recorded, past torrential alpine events in Austria, Switzerland and Northern Italy are identified, using common classification techniques. Similarly to previous studies, we apply an empirical equation based on the planimetric area and volume to our dataset, and we compare it's the obtained mobility coefficients with published results based on other data. We present a new empirical approach to determine the mobility coefficient which is a key parameter to predict the runout behaviour of debris flows. It is based on geomorphologic catchment parameters. The predictive equation is implemented in a GIS based simulation program and combined with a simple flow routing algorithm, in order to determine the potential runout area covered by debris-flow deposits. The simulation uses the ARC-Objects environment of ESRI© and is adapted to run with high resolution (2.5m x 2.5 m grid) elevation models, generated from LiDAR data. The program called TopRunDF is tested with debris flow events of 1987 and 2005 in Switzerland for areas where LiDAR generated elevation models are available.