



Development of design impact forces of debris flow

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Natural hazards are of major importance for alpine regions. Such natural hazards are avalanches, flooding, rock falls, slope failure or debris flow. Against such natural hazards mitigation measures are provided to reach an acceptable level of safety in exposed regions. One of the mitigation measures are torrential barriers. Such barriers are heavily used in the Austrian region of the alps. Until now these structures are designed by extremely simple rules of thumb. But to ensure sufficient safety, more advanced models for design are required. In addition, as such barriers are structures; they should follow the general design requirements for structures for example stated in the Eurocode. Therefore a need for the development of more advanced models to estimate design impact forces of debris flows or rock falls are required. This is the goal of the presented study. First, at the University of Life Sciences Vienna an intensive test program was launched to measure impact forces of miniaturized standard debris flow. Second, impact forces on debris flow were measured on a real debris flow at an outdoor experimental site. In the third step impact forces were calculated backwards using damages on barrier structures or destroyed structures. Of course, in addition an extensive reference search has been carried out. Finally it has to be stated, that such design forces are heavily influenced on the geological conditions at site.