



0.1 State of the art in modelling rockfall-forest interactions for hazard mapping

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Rockfall is a dangerous phenomenon, which could pose serious risk to humans and their infrastructure in many parts of the world. To protect against the risk posed by rockfall one may choose between civil engineering, eco-engineering or a mix of the two. In the European Alps, the existing forest cover can often reduce or stop the hazard posed by rockfall. To investigate the potential of forests to protect against rockfall as an alternative for civil engineering constructions and to quantify the protective effect of a forest, we use 3D simulation models and related hazard mapping techniques. In this paper we will present a series of simulation models that we developed, starting from the scale of a single tree impacted by a single rock to the scale of an active rockfall slope covered by forest. This series of models enabled us to develop and test a new and simple tool, which can be used to assess the hazard posed by rockfall at the bottom of a forested slope. We will show that the development and use of models that simulate a specific natural hazard at different scales provides structure in the research, defines the remaining questions clearly and demonstrates new possibilities. We experienced that it was necessary to use complex models to arrive at a simple tool.