



Rockfall susceptibility assessment in the "Upper Moelltal", Carinthia, Austria

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Many regions in Austria and Italy are recurrently affected by rockfall processes which pose a significant hazard to settlements and infrastructure. Decision makers in the Federal State Governments/Local authorities are strongly dependent on methods/techniques and adequate data in order to delineate potentially endangered areas and to plan more detailed investigations.

In these premises, the Federal State Government of Carinthia, Austria (Devision 15: Environment) initiated with the Regione Autonoma Friuli-Venezia Giulia (Direzione Centrale Ambiente e Lavori Pubblici-Servizio Geologico & Servizio Gestione territorio rurale e irrigazione) and Regione del Veneto (Segreteria Ambiente e Territorio Direzione Difesa del Suolo), Italy an INTERREG IVA project, called MASSMOVE (Project Code 1381-08-1: "Minimal standards for compilation of danger maps like landslides and rock fall as a tool for disaster prevention"). The main aim of this bi-national cooperation project is the evaluation of methods and the definition of minimum requirements concerning susceptibility and hazard assessment of two process types, sliding and falling. To follow these goals, the project partners assigned external experts with the investigation of different study areas in Italy and Austria.

The rockfall investigation side in Austria is situated in the "Upper Moelltal" in Carinthia and covers an area of about 120 km². The Italian experts (UNIMIB-University of Milano, UNITS-University of Trieste) deal with a few study areas with a much smaller area-extent in the provinces Friuli and Veneto. Thus, the range of spatial extents (regional, local, slope) and consequently a variety of possibly applicable methods and available data qualities is covered within the project.

As part of this paper the results of the rockfall susceptibility assessment in the "Upper Moelltal" are presented. Due to the relatively large size of the study area, spatially continuous field mapping/investigations are inefficient and often not possible (remote areas). Hence, various methods at regional extent were evaluated to delineate potentially endangered areas (conflict areas) for more detailed investigations at local extent.

Reliable delimitation of conflict areas is only possible if all potential source areas and damage potentials (elements at risk) are taken into account. Depending on the project goal, e.g. hazard zoning as basis for landuse planning or dimensioning of protective measures, a "damage potential catalogue" must be established before the assessment begins. An increase in the number of "protection categories" also increases the complexity of detailed assessment. A combination of the applied methods at regional extent enables the delineation of potential conflict areas and results in a considerable reduction of time and cost concerning the assessment at local extent. The data validity domain of the resulting output maps can be evaluated as medium-quality, which at maximum will allow semi-quantitative, more spatially differentiated indications of the hazard potential. These maps are particularly important to define priorities for large scale investigations at slope scale, e.g. hazard assessment and the proposal of protective measures.