



## **Sensitivity of alpine torrent catchments against climate changes**

H. Staffler (1), R. Pollinger (2), A. Zischg (3), P. Mani (4)

(1) Department for Civil Protection, Autonomous Province of Bolzano South Tyrol, Bolzano, Italy (hanspeter.staffler@provinz.bz.it), (2) Department for Hydraulic Engineering, Autonomous Province of Bolzano South Tyrol, Bolzano, Italy (rudolf.pollinger@provinz.bz.it), (3) Abenis AG, Chur, Switzerland (a.zischg@abenis.ch), (4) geo7 AG, Berne, Switzerland (peter.mani@geo7.ch)

Most of the decisions made in risk prevention have to be made for a period of almost 30-50 years. E.g. hazard zone maps do influence land use planning over a long period. Technical construction measures such as river dams or flood retention basins have an average lifespan of almost 50 years. In practice, today's decisions for long-term risk management activities such as the planning of technical protection measures do not consider the future system status probably affected by climatic changes. Within the Interreg IIIB project "ClimChAlp" we developed an approach for analysing the sensitivity of alpine torrent catchments against climatic changes on the regional scale. The focus of this study lied on the identification of the torrent catchments in which the future hazard scenarios will modify the hazard situation. The sensitivity of the mountain torrent and torrential river catchments was characterised qualitatively by analysing the topographical, geomorphological and hydrogeological characteristics of the catchments. The analyses pointed out that the impacts of climate changes to the hazard situation of torrential and river systems are remarkably varying spatially. The localization of the torrent catchments, where unfavourable changes in the hazard situation will occur, could eliminate speculative and unnecessary measures against the impacts of climate changes like a general enlargement of hazard zones or a general over dimensioning of protection structures for the whole territory. Thus, the procedure provides a further information basis for decision-making in land use planning and natural hazard and risk management with a long-term planning horizon and could

therefore support the discussion about the future strategies for adaptation to alternated climate conditions.