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Decision support systems for flood scenario elicitation and hazard mapping

Alberto Pistocchi (1,2)
(1) GECOsistema srl Cesena/Bolzano, Italy (Alberto.pistocchi@gecosistema.it), (2) EURAC Bolzano, Italy

Improved management of flood hazards in mountain catchments entails the investigation of large woody debris transport, their impact in terms of bridge clogging, and the combined effect of these phenomena with high flows in mountain rivers. Moreover, the effects of woody debris may combine with those of possible levee failure in the valley bottoms. The contribution reviews the state of the art of models and methods for the characterization of both aspects, and illustrates a blueprint of a decision support system where information on woody debris recruitment, transport capacity of the stream network, cloggability of hydraulic structures and levees are combined with hydrological information to identify the most appropriate scenarios one should consider for precautionary and realistic flood hazard assessment. The decision support system is exemplified with reference to the case study of South Tyrol, Italy.