



Coarse sediment transport and production in torrents: preliminary results of a starting project in the Northern French Alps

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Quantification of volumes for coarse sediment transport in small upland catchments is of great concern for the protection and prevention against flood hazards in mountainous terrains. This contribution presents a starting research project dedicated to the characterization and prediction of the sediment responses of small alpine catchments. The main objectives are to (1) explore the potential of sediment traps for the characterization of sediment yields at the regional scale and to (2) quantify event-based sediment budgets at the catchment scale. The regional approach is based on the exhaustive inventory of sediment traps, the characterization of watershed physical features from GIS analysis of conventional spatial databases and the reconstruction of sediment yields from archives analysis. This dataset will allow us to develop empirical relationships between basin characteristics and sediment yields and to characterize the main factors controlling erosion in the Northern French Alps. The Manival Torrent (drainage area: 7 km²) is one catchment in the Northern Prealps which channel cross-sections and a sediment trap will be frequently surveyed providing total coarse sediment yields, change of temporary sediment storage in channel, and location and characterization of sediment supply from hillslopes. Multidate high-resolution DEM from airborne LiDAR surveys is also planned to be used for the quantification of sediment responses. Intended results for this study will contribute to the need for quantifiable approaches for the prediction of catchment sediment responses and the understanding of the channel-hillslope coupling processes.