Geophysical Research Abstracts
Vol. 13, EGU2011-1026, 2011
EGU General Assembly 2011

The hydrosedimentological response to rainfall of a mountainous catchment: the river Isabena

José A. López-Tarazón (1), Ramon J. Batalla (1,2), Damià Vericat (2,3), and J. Carles Balasch (1)

(1) Department of Environment and Soil Sciences, University of Lleida, Lleida, Catalonia, Spain (jlopez@macs.udl.cat, 34 973702613), (2) Hydrology Group, Forestry and Technology Centre of Catalonia, Solsona, Catalonia, Spain, (3) Institute of Geography and Earth Sciences, Aberystwyth University, Wales, UK

This work examines the relations between rainfall, runoff and suspended sediment transport in the Isábena basin during a *quasi*-average hydrological year. The Isábena is a mesoscale river basin that drains a mountainous area comprising patches of highly erodible materials (badlands). Thirty-four floods were studied, with a very variable response observed. Runoff coefficients ranged from 0.32 to 33%. The sedimentary response was also highly variable, with maximum suspended sediment concentrations (SSC) oscillating between $<$0.1 and 90 g l^{-1} and flood sediment loads varying from 27 to 54,000 tonnes per hydrological event. Most sediment load was concentrated in spring when competent floods occur frequently. Pearson correlation matrix and backward stepwise multiple regression indicate that the hydrological response of the catchment is strongly correlated with total precipitation, event duration, and rainfall of the previous days. Very low correlation was observed with rainfall intensity. The relation between rainfall and sediment transport followed the same trend. Sediment variables (e.g., total load, SSC) were significantly correlated with variables such as total rainfall and rainfall over the previous days, although the significance level was lower in comparison with the runoff related variables. There was again no correlation between sediment variables and rainfall intensity. On-going research in the area suggests that, apart from rainfall, factors such as sediment availability in the badlands and accumulation of sediment in the channels influences the river's sedimentary response.