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Assessment of debris flow magnitude in small catchments of the lombardy alps: the val gola case study

PDF (Size: 501KB) PP. 9-15 DOI: 10.4236/as.2011.21002

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ABSTRACT

Debris flows are among the most destructive of all water-related disasters. They mainly affect mountain areas in a wide range of morpho- climatic environments. Therefore, accurate pre-diction of their run out distances, magnitudes and velocities plays a role of paramount impor-tance, in order to plan and design appropriate structural and non-structural defence measures. In this context, a number of Authors have de-veloped methods feasible to evaluate the ten-dency of a catchment to generate debris flow, without giving an estimation of the magnitude. Other empirical procedures are based on the analysis of historical series of debris flow, oc-curred in similar environments, to assess the relationship between the catchment character-istics and the maximum movable debris vol-umes. In this paper, and with reference to Val Gola—a small catchment in the North-East Lom- bardy where debris flows frequently occur—a number of methods, belonging to each of the above mentioned categories, have been briefly reviewed and applied in order to evaluate their effectiveness and consistency.

KEYWORDS

Val Gola Catchment; Debris Flow; Magnitude Assessment; Frequency Analysis

Cite this paper

 Wrachien, D. and Mambretti, S. (2011) Assessment of debris flow magnitude in small catchments of the lombardy alps: the val gola case study. *Agricultural Sciences*, 2, 9-15. doi: 10.4236/as.2011.21002.

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