

Different scale in erosive events magnitude: implication for sediment management

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Frequency analysis is a key point in natural hazards assessment. This is also the case for debris flows, which are the main concern of this study.

Many years of field observations and data from literature show that erosion data are clustered. If we compare debris flow volume with their frequency, or with the annual erosion rate, we can see that different size classes can be regrouped. We could then distinguish between two classes of events, the one that are exceptional and the one that are modal.

This has a great importance on the frequency analysis of such phenomenon. Both classes have several implications for the risk analysis. Modal event can occur without destroying protection structures, but they can reduce their effectiveness (previous storage in retention basin, protection dam height reduction by deposition in gully bed, etc.). Exceptional events can occur less frequently (or in less places) than what is considered until today by taking account of a single family of events. Therefore, the consideration of several classes must be taken into consideration when the hazard zoning is mapped.