



Landslide dams stability indexes: regional differences between Cordillera Blanca (Peru) and Alps (Europe) results

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Landslide dams collapse are catastrophic event whose consequences (outburst floods and debris flows) pose a hazard on lives and properties in downstream areas. The rapid assessment of landslides dams stability and evolution is a complex topic and is still being studied and tested. Different studies suggest the use of geomorphological index in order to assess their formation and evolution. Their equations result from the composition of same morphometrical attributes, usually easy and fast to collect, characterizing the landslide (e.g. landslide area or volume) and the interested river (e.g. river slope or valley width).

Morphological indexes set empirical thresholds values for landslide dam formation and stability. The thresholds values can vary according to the regional characteristics and the dimension of the used dataset. For this reason, their reliability can change in study areas different from the region where the indexes were designed.

The main objective of this study is to verify the reliability in the assessment of landslide dams formation and stability of some indexes from the literature with different dataset. Two completely different region, Peruvian Cordillera Blanca and European Alps, have been selected for this purpose as the homogenous lithological and structural characteristics of the Cordillera Blanca valleys are opposed to the more heterogeneous environments and a greater variety of sedimentary, metamorphic, and igneous rocks, present in the Italian territory.

Difference and similarity in the results of the two dataset are discussed and changes to improve stability analysis proposed.