

RAINFALLS INDUCING LANDSLIDES AND DEBRIS FLOWS.

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It is well known that the rainfall is one of the most important factors that cause mass movements of the type of landslides and debris flows. Several authors have shown the correlation between rain precipitation and slope failures, but most of them are valid for local conditions. Most generalized criteria to establish critical rains relate intensity to rain duration. Some authors consider other factors which vary with respect to the number of days accounted as previous rains. A review of the rainfall that caused such types of mass movements was carried out, and its interpretation allowed the establishment of a new type of criteria of rain events, correlating accumulated precipitation against duration of rains encompassed within a major rain event. From such graph, it can be seen that the lower boundary to all of the cases registered is a curve that represent the minimum triggering condition, with the expression: $P = 21.1 (t)^{0.48}$ being 'P' the precipitation in millimeters and 't' the period of time in hours (valid for a period of up to 10 days). Above this curve, the mass movements increase in catastrophic degree the higher it plots in the graph, since it will correspond to larger rain fall return periods. Additionally, it can be seen that the mentioned critical curve envelops and contains all other criteria of critical rains transformed to the same type of graph. This graph also allowed the distinction between rainfalls that promote landslides and those triggering debris flows.