



## **Landslide size distribution in seismic areas**

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In seismic areas, the analysis of the landslides size distribution with the distance from the seismic source is very important for hazard zoning and land planning. From numerical modelling (Bourdeau et al., 2004), it has been observed that the area of the sliding mass tends to increase with the ground-motion amplitude up to a certain threshold input acceleration. This has been also observed empirically for the 1989 Loma Prieta earthquake (Keefer and Manson, 1998) and 1999 Chi Chi earthquake (Khazai and Sitar, 2003). Based on this, it possible to assume that the landslide size decreases with the increase of the distance from the seismic source. In this research, we analysed six earthquakes-induced landslides inventories (Papua New Guinea Earthquake, 1993; Northridge Earthquake, 1994; Niigata-Chuetsu Earthquake 2004; Iwate-Miyagi Nairiku Earthquake, 2008; Wenchuan Earthquake, 2008; Tohoku Earthquake, 2011) with a magnitude ranging between 6.6 and 9.0 Mw. For each earthquake, we first analysed the size of landslides as a function of different factors such as the lithology, the PGA, the relief, the distance from the seismic sources (both fault and epicentre). Then, we analysed the magnitude frequency curves for different distances from the source area and for each lithology. We found that a clear relationship between the size distribution and the distance from the seismic source is not evident, probably due to the combined effect of the different influencing factors and to the non-linear relationship between the ground-motion intensity and the distance from the seismic source.