Geophysical Research Abstracts
Vol. 19, EGU2017-9317, 2017
EGU General Assembly 2017

Seismic behavior of snow avalanches with respect to other mass movements as regards the seismic energy - duration power law relationship

Emma Suriñach (1), Anne Mangeney (2,4), Clara Levy (2,3), Pere Roig (1), and Virginie Durand (2)

(1) Allaus-RISKNAT Research Group Departament de Dinàmica de la Terra i de l'Oceà. Universitat de Barcelona (UB). 08028 Barcelona. Spain, (2) Institut de Physique du Globe de Paris, CNRS UMR 7154, Université Paris Diderot-Paris 7, Paris, France, (3) Bureau des Recherches Géologiques et Minières, Orléans, France, (4) ANGE team, CEREMA, INRIA, Laboratoire Jacques-Louis Lions, Paris, France

The seismic energy released to the ground in the frequency content of [1-15] Hz by different snow avalanches at the Rygfonn site (Norway) was recovered. The approximate length of the avalanche paths was 2 km and the vertical drop was 900 m.
Seismic records were obtained at two sites; one on the avalanche path and the other at a distance of 400 m. The seismic energy released was estimated at source as a function of time and distance. Seismic characteristics of the ground, e.g. attenuation factors (intrinsic attenuation and geometrical spreading) and Digital Elevation Model of the area were taken into account for this calculation as in Vilajosana et al. (2008). The coincidence of the energy recovered at each position of the source from the records obtained at both sites validates the approach.
Power laws relating the total released seismic energy and the signal duration of the avalanches were compared with the power laws obtained in very different environments with different types of mass movements (i. e. rockfalls and pyroclastic flows in La Réunion by Hibert et al., 2011 and in Montserrat by Levy et al., 2015). Although differences are evident, and a sensitivity of the power law to the parameters involved is detected, similarities in the dynamics and seismic emission of these phenomena are observed.