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Monitoring of snow avalanches - a new approach to measuring flow induced vibrations in the ground and in the air

T. Sikora (1), A. Kogelnig (2), I. Vilajosana (1), E. Suriñach (1), M. Hiller (3), and F. Dufour (4)

(1) Grup d'Allaus (RISKNAT), Dept. Geodinàmica i Geofísica, Fac. de Geologia, Universitat de Barcelona, Martí i Franquès s/n, 08028 Barcelona, Spain, (2) Institute of Mountain Risk Engineering, University of Applied Life Sciences and Natural Resources, Vienna, (3) WSL, Swiss Federal Institute for Snow and Avalanche Research SLF, CH-7260, Davos Dorf, Switzerland. , (4) Institut Fédéral pour l'Etude de la Neige et des Avalanches, SLF Antenne ENA-Valais Rue de l'Industrie 45 CH-1950 Sion

Naturally released and artificially triggered snow avalanches are observed and their dynamical properties measured at the Vallée de la Sionne experimental site (SLF, Switzerland). Snow avalanche flow induces vibrations both in the ground and in the air. Seismic and infrasound (low frequency acoustic waves) sensors can therefore be used to simultaneously record avalanche events. Both types of sensors were deployed during the 2008-2009 winter. Two 3D seismic stations (1Hz eigenfrequency) and two infrasound microphones were placed in the neighbouring area. One of the infrasound sensors has a spatial wind noise reduction system consisting of star configured porous garden hoses covered by snow. The present study shows preliminary results focusing on the comparison and correlation of seismic and acoustic signals. Signal analysis in the time and frequency domains can provide the answer to the question of whether there is a correlation between seismic and acoustic time series. Our goal is to gain more knowledge of the vibrations induced by avalanches in both the ground and in the air in order to improve monitoring systems and the knowledge of snow avalanche characteristics.