Geophysical Research Abstracts
Vol. 21, EGU2019-10655, 2019
EGU General Assembly 2019

Survey of snow avalanche interaction with retarding mounds at Taconnaz, French Alps

Hervé Bellot, Thierry Faug, Florence Naaim-Bouvet, Emmanuel Thibert, Firmin Fontaine, Frédéric Ousset, and Mohamed Naaim

Irstea Grenoble - Univ. Grenoble Alpes, UR ETGR, Saint-Martin d'Hères, France (thierry.faug@irstea.fr)

The Taconnaz avalanche protection system combines several structures, including large and small retarding mounds and a 25-m-high catching dam, whose aims is to dissipate the energy of large snow avalanches, deflect them and shorten their run-out distance. A large part of the protection system was recently rebuilt and/or improved in order to face the scenarios of high return period snow avalanches, by trying to avoid significant overflows in the areas downstream of the 25-m-high catching dam where a number of infrastructures are exposed to risks (individual houses, a hotel, the Chamonix valley international road). During renewal and rebuilding of the protection structures, velocity and pressure sensors were installed on some of the new and large retarding mounds set up at the entry of the protection system. The detection of any signal above a certain threshold from the pressure sensors allows the automatic record of velocity and pressure measurements once an avalanche has reached one of the instrumented retarding mounds. Since the beginning of the measurements, three significant avalanche events were recorded on 29 December 2010, 12 April 2013 and 8 March 2017. The present study gives a brief description of the avalanche path, the protection system, the instrumentation and the experimental techniques used. The results in terms of pressure and velocity signals are presented in detail for each of the three avalanche events. The data analysis allows us to extract the signatures of both fast and slow avalanche impact dynamics on the one side, and to detect the loads due to solid bodies on the other side. Furthermore, a survey of the deposits is conducted. This provides useful information about the link between the avalanche impact dynamics and the geometry and morphology of the surrounding avalanche deposits.