



Mud flow detection experiments at Schesatobel, Austria

I. Vilajosana (1), M. Bacher (2), E. Suriñach (1), H. Hübl (2), G. Khazaradze (1), L. Garcia de Yebenes (2)

(1) Grup d'Allaus (RISKNAT), Dept. de Geodinàmica i Geofísica, Universitat de Barcelona, 08028 Barcelona, Spain (vilajosana@ub.edu). (2) Snow and avalanche research. Dept. of Structural Engineering and Natural Hazards, Institute of Mountain Risk Engineering, BOKU - University of Natural Resources and Applied Life Sciences, Vienna, Austria.

The applicability of infrasonic sensors for detection of mud flows is discussed and compared with the use of geophones and pressure measurements. The analysed data come from three types of sensors: geophones, microphones and pressure load cells. These sensors were placed at an experimental site located in Austria's biggest erosion area, the Schesatobel (Vorarlberg). Two debris flow experiments were performed by the Institute of Mountain Risk Engineering in springtime 2004 and 2006. To trigger the experiments a 2000 m³ water reservoir were opened by an excavator. Several meters below the point of the water discharge a debris flow was initialized which created an erosion channel with a mean inclination of 20% in the transport section. Time, frequency and time-frequency analysis techniques were employed to obtain characteristics of the signals recorded at the various instruments. Preliminary results indicate that mud flow signal behaviour is similar to the signal behaviour observed from other mass movements like landslides and snow avalanches. Time frequency representation of infrasonic signals generated by mud flows could be a useful tool for their detection. In addition, comparison between the data from the various types of sensors shows that the three are complementary for detection purposes.