



Recent rock falls and rock avalanches in high-alpine rock walls affected by permafrost. A case study in the Mont Blanc massif (2005-2006).

A. Rabatel (1), L. Ravanel (1), P. Deline (1), S. Jaillet (1).

1. Laboratoire Edytem, UMR 5204 CNRS – Université de Savoie, Le Bourget du Lac, France.

antoine.rabatel@univ-savoie.fr

The impact of climate change on high mountains permafrost is nowadays largely recognized. Thus, the increasing number of rock falls and rock avalanches - which occurred in high steep rock walls - is probably related to the current permafrost degradation. Within the framework of the European project *PERMAdataROC*, 7 high altitude sites (3000-4500 m a.s.l.) with different aspects (Petit Dru, Aiguille du Midi, Grand Flambeau, Aiguille d'Entrèves, Tour Ronde, Aiguille Blanche de Peuterey and Piliers de Freiney - Grand Pilier d'Angle), and a lower altitude site (valley sides of Glacier du Miage, 2250-2750 m a.s.l.) have been selected in the Mont Blanc massif to document this relationship. The study of the structure, fracturing and dynamics of the rock walls is carried out using high resolution (centimetric) digital models realized by terrestrial laserscanning (LIDAR) and terrestrial photogrammetry. First results obtained from the 2005 and 2006 surveys are presented here.

These data on slope instabilities will be crossed with the evolution of the temperature pattern of the studied rock walls, established with the rock temperature monitoring carried out by the *PERMAdataROC* project, in order to determine the role of temperature variations on several time scales (day, season, year, decade...) on the occurrence and magnitude of rock falls/avalanches in steep high-alpine rock walls affected by permafrost.