RESEARCH TOPICS

Microseismic activity analysis of rock slope instabilities, monitoring of large scale field cases and use of acoustic emission technique in lab scale studies.

The research is mainly focused on the application of the microseismic and acoustic emission techniques to measure the mechanical stability of the rock material and the associated rock structure, referring to lab scale studies and large scale field studies. Regarding the field cases, it is planned the study of at least three sites in the Alps; the microseismic signals, picked up by a monitoring system, are classified, in order to understand which are the events corresponding to the rock activity, and then located. At the present time the research is focused on the improvement in the use of an open source program (NonLinLoc by Anthony Lomax) for the location of seismic events, able to consider a three-dimensional velocity model, necessary because of the possible unhomogeneity of the rock material. Another aim of this kind of studies is to find a relationship between the climatic changes in the high mountains, and the consequent permafrost degradation, and the most important mechanisms that control the slope stability and rockfalls events. For this reason at the lab scale it is expected a number of laboratory tests on iced specimens in order to try to simulate the influence of the ice on the joints expansion and the consequent mechanical behaviour of the rock material.

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