



Seismic monitoring of fracture processes from a creeping landslide in the Vorarlberg Alps

M. Walter, M. Joswig

Institute of geophysics, University of Stuttgart, Germany
(Marco.Walter@geophys.uni-stuttgart.de)

Our study is focused on the geophysical investigation of the creeping landslide Heumoes Slope in the Vorarlberg Alps, Austria, as one of five sub-projects within the research group “Coupling of Flow and Deformation Processes for Modelling the Movement of Natural Slopes”, funded by the “German Research Foundation” (DFG). The main task is to monitor single fracture processes during the movement of the slope by using small arrays. In different periods of time we have been able to detect and locate single fractures down to ML -2.4, which could be assigned to the sliding slope. Active seismics were used to determine the extension of the slope instability in the depth. The temporal occurrence of the detected fractures, up to 26 hours after intense rain events, seems to approve the assumption of a rainfall-triggered movement of the slope. The spatial distribution of the epicentres correlates with slope areas of higher movement rates. At present, it is uncertain, which processes lead to the impulsive stress relief within a glacial, cohesive material, which sets up the Heumoes Slope. New results based on drillings during the summer 2007 will be presented. Beside the intense rainfall events which lead to instabilities of the slope, it seems to be possible that local earthquakes of ML >2.0 cause stress relief within the sliding body. It seems that two earthquakes of ML >2.0 in 10 km distance triggered fracture processes of the Heumoes Slope in June 2007.