Geophysical Research Abstracts
Vol. 12, EGU2010-3276-1, 2010
EGU General Assembly 2010

Preliminary results of the ground geophysical monitoring in Gschliefgraben

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In September 2009, a fully automatic multiparametric in place column D.M.S. IUT, (68 sensors, active monitoring depth = 33 m) designed and manufactured by the Italian company C.S.G. S.r.l., was installed in an inclinometric borehole by helicopter at Gschliefgraben landslide. The landslide is affecting houses and a road at the eastern rim of the Traunsee and caused considerable damage in 2007/2008. The survey area is located at the border of the Flysch Zone and the Northern Limestone Alps, which is known to be prone to landslide activity. Extensive drainaging reduces the amount of precipitation seeping into the ground. Thus, the displacement monitored in real time by DMS at the present time seems to be not strickly dependent of rainfall. The preliminary data show a main sliding zone occurring at 10-12 m bgl. The mean velocity was 10 mm/month in the interval time 24 September – 24 November, then the time history shows an increase up to 15 mm/month until the end of December. In the first days of January 2010 the velocity trend is reducing to 2 mm/week.

An extensive geolectrical survey has been performed before to interpret the subsurface structure regarding possible depths and spatial delimitation of the sliding zone and to find the best position of the monitoring system. In the vicinity of the inclinometer a geoelectric monitoring system (GeoMonitor4D, developed by the Geological Survey of Austria) was installed to correlate measured resistivity values with displacement rates. It consists of 2 profiles, with a length of 120m and 192m.

Both systems send their data once a day automatically by UMTS to the data centers in Ricaldone (Italy) and Vienna (Austria).

In spring 2010 a second DMS column will be placed at the foot of the hill. The integrated analysis of the airborne and ground measurements, carried out by the Geological Survey of Austria combined with several other parameters, provided by the Torrent and Avalanche Control, will contribute to understand the complex geological and cinematic model of the landslide with particular attention to the geoindicators.

The project is in part financed by the 7th EU-FP project "Safeland–Living with the landslide risk in Europe".