

Integrated monitoring system of the San Vito Romano rockslide (Central Italy)

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San Vito Romano is a small town 40km east of Rome (Central Italy). Since the village began to grow, during the 70s, the new buildings started showing evidences of landslide activity, included ground settlement and cracking. In response, several boreholes have been realised along the following years in the entire municipality area and many geotechnical data became available. By the way, after the recent landslides event occurred in July 2011, the need to deploy devices to monitor deformations became of paramount importance. As consequence, rainfall and temperatures started to be daily monitored, 6 extensimeters in real time connection were placed on the most damaged buildings and periodical inclinometric and piezometric measurements started to be conducted. Moreover, a geomorphological field survey has been realised and PSInSAR data from ERS, Envisat and Cosmo SkyMed satellites have been investigated.

This work aims to integrate the information provided by the all in-situ and remote sensing techniques in order to reconstruct dimension, typology, state of activity and triggering factors of the phenomena that affect San Vito Romano.

The study area is about 2km² wide. Here, siliciclastic formation with a high percent of clayey minerals outcrops and a significant thickness of landslide deposits have been recognized in many borehole stratigraphies.

The preliminary results show that the study area is affected by shallow rapid landslides as like by deep seated phenomena. The first mainly involve clayey layers and colluvium/eluvium coverture while the second is rockslide that affects the bedrock for >20m in depth. In both cases, ground displacements seem to be directly connected with rainfall intensity and underground water level variation.

Data have been elaborated through geostatistical, GIS and time series analysis and the overall results will be presented and discussed in the full work.