Geophysical Research Abstracts
Vol. 21, EGU2019-16236-2, 2019
EGU General Assembly 2019

Multi-parametric analysis of landslide triggering factors - example of the Julian Pra landslide (Vence, France, 06)

Yoann Drouillas (1), Raphael Chochon (1), Thomas Lebourg (1), Séverine Bernardie (2), Nathalie Marçot (3), Carlo Troisi (4), Serena Recagno (5), Bianca Federici (6), Alessio De Melas (7), Maurin Vidal (1), and Romain Besso (1)

(1) Université Côte d'Azur, CNRS, Observatoire de la Côte d'Azur, IRD, Géoazur, Valbonne, France (drouillas@geoazur.unice.fr), (2) BRGM Direction Risques Prévention, Orléans, France, (3) BRGM Direction Régionale PACA, Marseille, France, (4) Regione Piemonte, Torino, Italy, (5) Arpa Liguria (Regional Agency for Environmental Protection), Genova, Italy, (6) DICAT—Dipartimento di Ingegneria delle Costruzioni, dell'Ambiente e del Territorio, Università degli Studi di Genova, Genova , Italy, (7) Studio tecnico Ing. Alessio. De Melas, San lorenzo del Mare, Italy

Long term observation is the only way to upgrade our knowledge on mass movement phenomena and their dynamics processes. Understanding mass movement is conditioned by the monitoring over a long period of time of the parameters that define their instability condition. Relevant instrumentation and data analysis makes possible to define and quantify the various deformation or triggering factors, in particular the fundamental role of water. The interest of this paper is to present the landslide experimental site developed for research and the methodology for understanding and monitoring landslide deformations and this since 2006. The experimental site of the Prat de Julian landslide is located in an urbanized area of the city of Vence (Alpes Maritimes 06). This slide is characterized by a moving mass with a surface area of about 9 ha by 10 m deep composed of sandy-clay on a marly-calcareous substratum. It has been studied since a strong period of activity during the winter of 2000, which affected many buildings and forced some of the population to evacuate the area. The site has been instrumented since 2006 with a meteorological station and a permanent electrical resistivity tomography (ERT) line and since 2009 with two piezometers and two tilt meters. All these measurements have infra-hour or a least daily acquisition period. Studies conducted on the landslide (Lebourg et al. 2010; Hernandez, 2009; Palis, 2017) focused on the fundamental role of water on the landslide dynamics through multivariate and multidimensional studies of the various parameters. All measurements show a strong control of the precipitation variable in piezometers, Tilt meters and ERT profile data with a short reaction time between these variables. It is in the continuity of these analyses that the experimental site underwent a new phase of instrumentation in 2018 with the installation of 4 single-frequency GPS units on the site, a multi-parameter sensor (groundwater level, temperature, conductivity, Redox, LDO, pH, turbidity), a piezometric sensor (groundwater level, temperature, conductivity) and two weather stations. In early 2019 soil moisture sensors will be also installed to correlate the ground infiltration with the groundwater level variations. Finally an innovative water injection system at regular intervals along the ERT profile has been set up for future experimentation on ERT/groundwater interactions. A part of this instrumentation is financed by the INTERREG ALCOTRA AD-VITAM program.