



Analysis of one gravitational slope cycle

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Since about twenty years of studies on landslides, we realized the role and subtle interactions that existed between the structural complexity, masses dynamics and complex internal circulation of fluids. The La Clapière DSL (Deep-Seated Landslide) is now very well known by the scientific community (volume, impact, challenges, observations...), but this mass of knowledge, has not yet been compiled nor looked through a coupled analysis of its spatial and temporal variability.

Since 2007, a will to share and access to uniform data was set up by the Versant Instabilities Multidisciplinary Observatory (OMIV, National Service of French Observation (SNO)). This observatory (with associated laboratories) allowed the installation of permanent and autonomous measuring stations: GPS, meteorology, seismology, water chemistry sources. For two years now, a permanent electrical tomography device is installed at the bottom of the slope to complement the current monitoring system, and allowed a deeper understanding of the physical changes in the massif. The analysis of these data allows to observe different dynamic regimes, as well as different responses to external factors: instantaneous, delayed, long-term variability. The purpose of this synthesis study is to analyze the temporal and spatial evolution of the electrical resistivity, displacement and hydrometeors for one year cycle (November 2012 to November 2013). Thus, a qualitative and statistical approach by clusters, principal component analysis (PCA), and temporal pseudo-3D of these variables was established. This new statistical study also explains the major role of the fault and the base of the landslide, as well as the chronology of the water flow in the massif, allowing a better understanding of the complex and uneven in time dynamic in this area.