



Multiparametrical survey to understand the dynamic of monitored deep seated Landslide (La Clapière DSL)

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The geology and the structure of a deep seated landslide (La Clapiere with 65 million m³, south eastern France) explains the complex hydrology of the site which plays a key-role in the destabilization and the multiphase dynamics of the slope (water circulation within the sliding mass, fluid exchanges between superficial and deep layers aquifer through faults). To understand fluid circulations within the unstable slope, a pluri-annual multi parametric survey was set up, but since 18 months the survey combines new research multiparametric station. The landslide (La Clapiere) is located in the Argentera-Mercantour massif, and it has been instrumented since 1982 by academic researchers and since 2003 by the Multidisciplinary Observatory of Versant Instabilities (OMIV, the French National Observation Service (SNO)). A permanent electrical tomography monitoring was installed on the landslide since November 2012 to complement the actual monitoring system (GPS, seismic, pluviometric and hydrogeologic data). The aim of this study is to analyze the temporal evolution of resistivity, positioning and pluviometry during the November 2012 to March 2013 period. A qualitative and statistical approach by clustering, principal component analysis (PCA), and probability density function (Pdf) of resistivity data, coupled with pluviometric and GPS data provides a better understanding of the dynamics in this place. Rainfall induces strong accelerations of the rockslide movement. This new statistical study also explained the major roles of the fault and the basement of the landslide, and the time chronology of the water flow in the massif.