

## Study of Landslide Behavior with Topographic Monitoring and Numerical Modeling

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**Abstract :** Landslide of Ain El Hammam (AEH) has been an old slip since 1969; it was reactivated after an intense rainfall period in 2008 where it presents a complex shape and affects broad areas. The schist of AEH is more or less altered; the alteration is facilitated by the fracturing of the rock in its upper part, the presence of flowing water as well as physical and chemical mechanisms of desegregation in joint of altered schist. The factors following these instabilities are mostly related to the geological formation, the hydro-climatic conditions and the topography of the region. The city of AEH is located on the top of a steep slope at 50 km from the city of TiziOuzou (Algeria). AEH's topographic monitoring of unstable slope allows analyzing the structure and the different deformation mechanism and the gradual change in the geometry, the direction of change of slip. It also allows us to delimit the area affected by the movement. This work aims to study the behavior of AEH landslide with topographic monitoring and to validate the results with numerical modeling of the slip site, when the hydraulic factors are identified as the most important factors for the reactivation of this landslide. With the help of the numerical code PLAXIS 2D and PlaxFlow, the precipitations and the steady state flow are modeled. To identify the mechanism of deformation and to predict the spread of the AEH landslide numerically, we used the equivalent deviatoric strain, and these results were visualized by MATLAB software.

**Keywords :** equivalent deviatoric strain, landslide, numerical modeling, topographic monitoring

**Conference Title :** ICSM 2017 : International Conference on Soil Mechanics

**Conference Location :** Barcelona, Spain

**Conference Dates :** August 17-18, 2017