



Historical earthquake-induced rock avalanche in North of Tunisia

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This paper presents an overview of a historic case of a rock avalanche that was potentially induced by an earthquake in the area of Korbous Northern East of Tunisia. This study is important because Tunisia suffers from the lack of historical events archive and of any previous detailed study about rockslides and landslides. We analyze here the morphological and seismotectonic settings that are considered as the key parameters for earthquake-induced rockslides analysis.

Northern East of Tunisia is an active tectonic area (earthquakes, active faults, etc...) due to its seismotectonic settings in the context of the Africa-Eurasia plate boundary. The region of Korbous is affected by different slope mass movements types mainly triggered by rainfall as it has been the case in fall 2018. But earthquakes acting as rockslide-trigger have not been considered yet. The cliff of Korbous, situated in the eastern part of the Gulf of Tunis, is about 35km and 60km distance from the faults of Tunis and Utique, the two most important historical seismogenic faults in the region, which could be the cause of an earthquake-induced rockslide favored by local geological and morphological conditions.

By using landscape analysis techniques combined with field observations and measurements, structural measurements (Angelier 1990) and aerial photos interpretation we

- i) identified the main joints orientation that confirmed the geology model of the cliff (the main scarp cracks orientation and failure surface) and
- ii) determined the initial localization of the source area, the volume and the propagation trajectory of the rockslide.

By dating several samples from the quaternary sedimentary sequence at the foot of the slope associated with the rockslide deposit we could define the material ages and consequently the timing of related mass movement and corresponding seismic event.

We found that most criteria of identification that mark a “typical earthquake-triggered landslides” described by Havenith and Storm (2018) and Havenith and Bourdeau (2010) are fulfilled in the case of Korbous rock avalanche.