



## **On earthquake-related landslides: the case of the March 20<sup>th</sup>, 2006 Kherrata earthquake (Mw=5.3) and the Laâlam landslide (Babor chain, Wilaya of Bejaia, North-East Algeria).**

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On March 20<sup>th</sup>, 2006, an earthquake struck the mountainous area of the Babor chain (Wilaya of Bejaia, NE Algeria), with a magnitude Mw of 5,3 (ETHZ). The epicentre was located near the Kherrata village. This earthquake was felt on a large area of the north-eastern part of Algeria. The macroseismic epicentre, where intensity reached VIII (EMS scale), was located on the village of Laâlam, at about 20 km north-east of Kherrata. Here, many houses were damaged or collapsed totally, causing 4 died and 68 wounded persons. Field investigations revealed that these casualties were caused by a landslide triggered by the earthquake. Many fissures were visible throughout the site. They trend mainly N070, N030 and N0160, with a dominance of the N070 fissures. The Laâlam site is prone to landslide, as revealed by some evidences on old land instabilities. This is due to three main factors: (1) The village is built on a slope of about 10° facing the West, laying between the Tachachit Mountain (1277 m) at the south and the Adrar El Alem Mountain (1233 m) at the north. (2) The slope terrain is made of argillaceous and schistose Cretaceous deposits, surmounting unconformably a Liassic calcareous substratum that emerges at the ridges of the aforementioned two mountains. (3) Rains and snow melting aliment the Zentout River that traverses the Laâlam village, but also infiltrates and circulates in depth, washing and eroding the soft cretaceous material. The quite heavy recent houses built with bricks and concrete, with up to two floors, could constitute in some cases a fourth factor, by producing a weight overcharge on the slope. These factors intervene synchronously for reducing

the slope equilibrium and increasing the land instability at the Laâlam village. The March 20<sup>th</sup> 2006 Kherrata earthquake was the ultimate factor that released the Laâlam landslide.