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New insights into the kinematic behaviour of the Alpe di Roscioro rock slope instability, Canton Tessin, Switzerland

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New insights into the kinematic behaviour of the Alpe di Roscioro rock slope are presented. The Alp d'Roscioro is an unstable rock slope in Canton Tessin, Switzerland, which entered a critical phase of instability in early 2010 leading to the evacuation of an industrial complex located at the foot of the slope. Since 1989 the instability has been monitored by Cantonal authorities following the discovery of large tension cracks behind the main scarp. In 2002, approximately 150K m3 failed in the highly fractured southern section, with renewed activity taking place in northern section in 2010, resulting in a smaller failure of approximately 30K m3.
In an effort to better understand the potential hazard, field investigations and ongoing insitu monitoring were combined with new remote sensing acquisitions, such as helicopter and ground-based lidar, and ground-based radar interferometry (GPRI). The combination of techniques has led to significant advancements in knowledge concerning structural predisposition and kinematics, and the distribution and volume of unstable compartments. Ongoing research is focused on further elucidating the failure mechanism, and defining possible failure scenarios (i.e. input for run out analysis).