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# Seismic monitoring of slope dynamics caused by the mudslide at Super-Sauze in the southern French Alps

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In this study, we describe the application of 'Nanoseismic Monitoring' (Joswig 2008, First Break) to the fast moving mudslide at Super-Sauze in the southern French Alps. The unstable slope with an estimated volume of 750000 cubic meters mainly consists of jurassic, black marls and shows an immense dynamic behaviour with velocities of more than 3 cm/day (Amitrano et al. 2007, Bulletin de la Société Géologique de France).

During a 10 days field campaign in July 2008, we were able to detect and locate different signals (type 'A' – 'C') caused by the movement of the mudslide. While the events of type 'A' are caused by rockfalls in the source area of the slope, we could identify different types of signals (type 'B' and 'C'), which have been obviously generated by material failure within the unstable part of the mudslide. The spatial distribution of the epicenters (type 'B'), respectively the estimated source area (type 'C'), correlates well with parts of the slope moving with higher velocities at the surface.

The comparison of the results achieved by the seismic monitoring of slope dynamics with observations based on UAV-based remote sensing approaches (Niethammer & Joswig 2009, EGU), assists with the estimation of source areas and possible source mechanisms. Most of these signals have been generated close to the "in-situ crests" (Amitrano et al. 2007, Bulletin de la Société Géologique de France), which are mostly covered by the mudslide material today. Our preliminary assumption is that the events of type 'B' are generated by impulsive fractures within the sliding material, while the events of type 'C' are caused by activities at the boundary between the sliding material and the bedrock. We hypothesize that these type 'C' events are induced by "scratching" and "grinding" of the moving material against these in-situ crests.