



## **Analysis of a complex landslide with an airborne LIDAR DEM**

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Tsunamis induced by large landslides are a major natural risk in Norwegian fjords. The Åkerneset landslide (Sunnylvfjord, western Norway) has been selected in 2004 for a pilot survey on investigation and monitoring methods. The sliding area is about 600 m wide and 1300 m high and its total potential sliding volume is about 30 millions cubic meters. The mean topographic slope is 40-45%, with bare rocks on the top, grass and forest in the lower part. This complex landslide is composed of several compartments suspected to move with different velocities and directions along several faults and sliding planes. For a preliminary assessment of the site, one of the first steps was to acquire by helicopter a high-resolution lidar DEM (1 m resolution) coupled with colour air photos. These data have been used to get a first image of the case: 1) contour and geometry of the landslide; 2) identification of the main sets of discontinuities; 3) basic stability analysis (kinematics tests); 4) estimation of the potential volumes using the SLBL method; 5) first estimation of the velocity vectors by photogrammetrical comparison with the airphotos available in the archives. Since the Åkerneset landslide is intended to become an important site for the assessment and the development of monitoring and investigation procedures, several other methods have already been used (fieldwork, georadar, electricity, seismic, GPS monitoring, leveling, stability numerical modelling), and others will start soon. So the results from this preliminary DEM analysis can be matched to the information obtained by other means. Even at this early stage of the investigation, the lidar DEM has already proved to be a very useful tool, providing a solid base for future works.