



Understanding the geometry of the basal sliding surface by geomorphic interpretation of the neighborhood of the Åknes landslide (Norway)

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Recent investigations demonstrated that the Åknes landslide (Møre og Romsdalen county, central Norway) is affected by complex movements and several sliding surfaces. Nevertheless the landslide is globally controlled by the main foliation of the rock mass acting as a dip slope. In order to improve the model of the basal sliding surface, the slope located southwest of Åknes landslide has been investigated.

The area displays a dip slope of the foliation with a series of quasi-vertical steps relaying the foliation dip slopes. In order to characterize this stepped surface, which is supposed to occur also at the bottom of Åknes landslide, the high resolution digital elevation model (HR-DEM) derived from aerial laser scanning is analyzed. Additional field investigations (orientation of foliation and other discontinuities) and detailed ground based laser scanner images on the stepped surface were also performed.

These investigations and analyses permit to determine the characteristics (orientation, roughness, spacing, persistence) of the discontinuity sets forming the failure surface, as well as the percentage of rock bridges and the frequency of these steps. This allows for the determination of the causes and origins of the steps and provides some key parameters for the basal sliding surface of the Åknes landslide. The dependence of fracture orientation upon the orientation of the foliation plane is also evaluated. Finally, the hypothesis, that the steps are surfaces similar to the open back crack on the top of the Åknes landslide, is examined.