



Rockslide investigations in Sogn & Fjordane, Norway

M. Boehme, I. Henderson and A. Saintot

Geological Survey of Norway, Trondheim. (martina.bohme@ngu.no)

During the last century Norway has been afflicted by several natural disasters. In future times there is likely to be an increase in problems regarding landslides in recent permafrost regions due to climate changes. Therefore a better understanding of present day potential landslides will optimise incipient research in new regions and help to find new target regions for possible rock slope instabilities.

Historical data and geological studies show that Sogn & Fjordane is one of the Norwegian counties that is most affected by landslides and has the biggest loss of people due to landslides and related tsunamis after 1900 in Norway. Two big historical events in Loen (1905 and 1936) with a total of 135 victims are documented. To predict landslide events and therefore prevent such big humanitarian disasters in future, it is important to investigate the potential for rockslides in Sogn & Fjordane and to study systematically current rock slope instabilities. We present an overview of current rock slope instabilities in Sogn & Fjordane and introduce selected examples.

Several possible rock slope instabilities have already been identified from previous studies mainly based on interpretations of aerial photographs or from field observations. These sites could represent an increased risk for inhabitants and infrastructure and have therefore been the subject for fieldwork in the summer of 2007.

All sites have been checked for the presence of critical factors like (a) the presence of distinct open fractures at the back of possible detached blocks, (b) the dip and azimuth of the foliation with respect to the valley, (c) the presence of a weakened plane at the bottom of the block that could form a basal shear plane and (d) the presence of lateral limitations of the block, such as transfer structures. Sites where several structures are developed form a high potential for future rockslides. Those have been studied in detail

and GPS measurement points for an annual monitoring have been placed at five sites. Detailed structural and geomorphological analyses of these high potential instabilities have been conducted and form the basis for a comparison of these sites. Assuming that future rockslides will occur under similar geological and geometrical circumstances as past rockslides have occurred, this type of study is essential to limit the effect of big landslide catastrophes in the future.