Geophysical Research Abstracts, Vol. 8, 04038, 2006
SRef-ID: 1607-7962/gra/EGU06-A-04038

Geological model (3D) based on interpretation of 2D resistivity profiles and drill core logging – location of potential slide surfaces at Åknes, western Norway

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Unstable rock slopes possess a threat to the inhabitants along Norwegian fjords. Åknes is a large potential landslide of 30 - 45 million m^3 rock mass and is situated in an area with many historic landslides. These historic landslides have caused tsunamis, leading to several casualties. Åknes is situated in the vicinity of one of Norway's most visited tourist attractions – the Geiranger fjord, listed on the UNESCO's World heritage list.

The potential landslide area at Åknes has been mapped by 2D resistivity, seismics, structural mapping, core drillings and geophysical logging of the boreholes. Compiled, these data will give a detailed 3D geological model of the area, by which the depth to and the extent of the slide surface can be predicted.

A grid of 2D resistivity profiles indicate an undulating slide surfaces that can be followed from the large tension fracture at the back to the foot of the mapped, potential slide area. Correlating with drill cores, the sliding surface coincide well with intensely fractured bedrock or occurrence of fault rocks, such as gouge and breccia. Geophysical borehole logging such as resistivity, water conductivity, gamma ray of bedrock, and sonic log of P- and S-wave will support the properties of the bedrock found in the 2D resistivity profiles and in the drill cores.

Structures mapped in the area, amongst others steeply dipping tension fractures with SW-NE orientation can explain the different, internal moving patterns within the slide area. These tension fractures and other structures are indicated on the resistivity profiles.

By locating the sliding surface of the rockslide, a more precise estimate of the volume is possibly as well as understanding the sliding mechanism of the area. Further surveys of the area, such as borehole monitoring, will contribute to locating the sliding surface more precisely.