



Reprocessing & 3D Presentation of ERT Data from the Unstable Rock Slope Area at Åknes, Western Norway

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The risk of rockslide in Åknes, western Norway is very high (observed movement: 5-8 cm per year) and the Norwegian Water Resources and Energy Directorate (NVE) has engaged in evaluating countermeasures. The Geological Survey of Norway (NGU) has conducted ERT investigations in Åknes from 2004 until 2007, followed by inversion and interpretation which aided the general geological understanding at the time. However, groundwater drainage is now proposed as a new approach to control the unstable masses.

The goal for this project is to provide NVE with updated ERT results and interpretations which are compatible with software such as PETREL in order to create a 3D multidisciplinary model for Åknes. In this sense, a recent ERT profile has been added to the 10 old ones and new processing and interpretation took place with the use of up-to-date Res2DInv software.

Topography was obtained from contemporary LiDAR data whereas the inverted resistivity statistics combined with prior NGU experience and borehole data formed and shaped the color scale utilized. With the use of this custom-made color scale, fractured bedrock areas were highlighted and distinguished between water-saturated (representing the glide-plane) and drained (representing the unstable masses) validating observations that the largest volume of unstable bedrock is concentrated on the northwestern part of the slope.

Moreover, using additional ERT processing routines, possible vertical structures have been identified which could represent possible fracture zones. Projecting them on the surface has unveiled an interesting coherence with prior structural mapping. Generally, reprocessing of ERT has provided updated inversion results and fine-tuned interpretations exported in ASCII format and thus enabling more 3D plotting possibilities.