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Geotechnical long term measurements at Mt. Rotes Kögele and Mt. Zwerchwand/Austria

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Mt. Rotes Kögele and Mt. Zwerchwand are instable rock walls in the area of Hallstatt and Bad Goisern/Upper Austria (Salzkammergut). Both localities are observed in cooperation of the Austrian Torrent and Avalanche Control and the Departments of Applied Geology, Universities of Erlangen and Karlsruhe/Germany.

Major rock falls occurred at Mt. Zwerchwand in the years 1978, 1980, 1982 and 1983 and 1985 at Mt. Rotes Kögele, demonstrating the potential hazard of both localities. Additionally the Stambach earthflow beneath Mt. Zwerchwand (about 20 Mill. m^3) was reactivated in 1982 endangering the village of Bad Goisern.

Detailed geotechnical investigations showed that these rock falls occurred due to the process of rock spreading causing extensive toppling. Hallstatt Limestones (Upper Triassic) and Tressenstein Limestones (Upper Jurassic) act as rigid rock caps. The Permian Haselgebirge acts as mechanically weak and mobile subsoil causing extensive deformations in the overlying limestones.

For both localities detailed geotechnical maps were produced. Aditionally they are observed with geotechnical and geodetical methods. Inclinometric measurements at the Stambach earthflow beneath Mt. Zwerchwand have been repeated since 1988. They indicate a slow, but steady creep of the whole earthflow since the slowing down of the movements after the 1982 event. The continous toppling of a 50 m high rock pillar at Mt. Zwerchwand is observed with tape dilatometer measurements.

The lateral movements combined with toppling processes at Mt. Rotes Kögele are ob-

served with repeated geodetical measurements (Differential GPS) and tape dilatometer measurements since 1992. Movements in the range of cm/year up to dm/year are observed. The further collapse of parts of the rock wall has to be feared.