

ROCKFALL AND LANDSLIDE HAZARD POTENTIAL AT MOUNT PLASSEN, UPPER AUSTRIA (EASTERN ALPS)

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Mount Plassen is situated west of the Hallstatt village (Upper Austria), and is composed of Jurassic limestone, which overlies Permian fine-grained clastic rocks and evaporates (mainly part of the so-called Haselgebirge). This geotechnical predisposition causes rock spreading of the harder and rigid limestone on the weak, mainly clayey rocks. Associated to this large slope instability are rockfall and sliding processes. Further common process chains include rockfall triggering slides and/or earth flows by undrained loading of the ductile clay material. These potential fast moving earthflows and slides may endanger the houses and infrastructures in the Salzberg high valley and Hallstatt village.

Recent higher rockfall frequency at Mt. Plassen provides evidence for greater, perhaps accelerating displacement rates of the rock spread. A multidisciplinary assessment strategy was chosen to analyse the geologic conditions, to characterize the potential failure mechanisms alongside the Plassen massif and to evaluate the hazard potential of future events. Methods include field mapping (geologic, engineering geologic and geomorphologic), sampling and determination of soil parameters in active process areas, geophysical surveys (airborne geophysics and geoelectric measurements), kinematic measurements (tape dilatometer, geodetic measurements, repeated TLS surveys) and the installation of a photo monitoring.

Analyses of the data indicate that some areas of the Plassen massif are highly susceptible to sliding mechanisms whereas other areas are prone to toppling and rockfall processes. Results of this multidisciplinary approach may form the basis for further decision making such as the installation of a monitoring system or other preventive measures.