



Validation of the geological-technical model of a great landslide in weathered and degraded rocks: Serra di Buda landslide (Calabria, Southern Italy).

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The Serra di Buda landslide, described in this paper, is located in Northern Calabria (Italy), near the town of Acri (Sila Massif). Serra di Buda slope is composed by weathered Paleozoic high-grade metamorphic rocks. The effects of weathering processes are particularly intense in the study area, moreover the geotechnical properties of fresh rocks have been strongly modified. As a consequence, the rock masses are prone to erosion and landslides. Serra di Buda slope shows several evidences of mass movements, and an overall high disturbance in the morphology. The whole slope is involved in a deep-seated deformation, with discontinuous movements that produce local superficial effects, like scarps and tension cracks, and damage to infrastructures. The results of a multidisciplinary study concerning geomorphologic, engineering-geological, hydrological and geotechnical aspects has been performed to achieve a clear comprehension of the phenomenon. In particular, field surveys (at 1:2000 scale) and aero-photo interpretation have been carried out in order to clarify the structural, geological and geomorphological setting of the landslide develop. Field observations and interpretation of in situ and laboratory tests have been used to define the features of the weathering profile. The reconstruction of the subsoil geometry of the site, based on preliminary geological and geomorphological surveys, is validated by borehole-logs, the results of cognitive monitoring, and seismic refraction surveys. The geophysical surveys, in particular, provide useful information to evaluate thickness and lateral continuity of class VI outcropping materials. The results confirm that the weathering and the degradation conditions of rock masses, connected to sub-horizontal structures, represent the predisposing factor for the Serra di Buda deep landslide.