



Shallow landslides in weathered soils: a case study from the Apennine chain in southern Italy

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Stability conditions in an area located at the eastern Daunia Mts. are presented in this study. The Daunia Mts. belong to the outermost part of the southern Apennine chain, which consists of a Neogene thrust belt resulting from the deformation of the Apulian continental margin.

In particular, the study area, in the territories of Alberona, Volturara Appula and San Bartolomeo in Galdo, is located at the north-western boundary of Apulia (southern Italy) in one of the most seismic zones of Italy. It is characterised by low structural and topographic elevation, only locally exceeding 1000 m above sea level. The geological setting is very complex and represented by a series of tectonically deformed turbiditic formations of pre-Pliocene age covered by discontinuous Quaternary and Holocene deposits, including terraced alluvial deposits and colluvial slope sediments. The outcropping units are rich of weathered argillaceous deposits in chaotic setting and prone to landsliding. The area is affected by intense landslide activity, mostly related to periods of heavy and prolonged rainfalls (mean annual rainfall is above 600 mm). The most common types of mass movement are shallow slips, flows and complex landslides consisting of rotational slumps evolving to flows. They are mainly re-mobilisations of shallow landslides involving weathered clayey soils.

This study presents the site characterisation, including geology and hydrogeology, assessment of the pore pressures and soil properties, especially shear strength parameters for both drained and undrained conditions, mechanics of sliding, and analysis of stability, slope hazard and deformations pre- and post-failure. In particular, an attempt will be made to evaluate the weathered characteristics of the formations involved in landsliding.