



## **Erosion and weathering phenomena within the landslide susceptibility assessment of the northwestern Apulian hills (South Italy)**

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The object of this study is an area located in the Tavoliere of Puglia and has the Daunia Apennines at its back. Within the geodynamic model of the Mediterranean area this sector is a domain of the Adriatic Foredeep in the section included between the Daunia mountains and the Murge plateau. The main and widespread outcropping rocks are silty clay sediments well known as “Argille Subappennine” (Plio- Pleistocene) and clastic deposits superimposed made up by coarse-grained conglomerates (Lower Pleistocene). Holocenic terraced deposits close the sequence.

The landscape of the north western Apulia is characterized by low hills severed by wide alluvial valleys due to fluvial erosion. These processes formed terraced deposits appearing in a flat ridge shape with short lateral continuity due to the strong river erosion actions. The prevailing direction of the ridges is E-W. The slopes bordering several old towns located on the top of these ridges, are affected by continuous geomorphological development due to slope movements triggered by different factors such as: i) type of materials involved; ii) slope dips; iii) thickness of weathered soil covers; iv) climatic conditions; v) anthropogenic changes; vi) seismicity.

This study takes into account a test area where the instability phenomena related to weathering and erosion are more remarkable due to both the poor mechanical and physical properties of the clastic materials and the particular structural and geomorphological set up. Altogether, these characteristics make the slopes prone to instability and landslides, involving properties and some parts of the old towns. The role of the

different factors above mentioned has been analyzed with a multi- disciplinary approach, considering that the fundamental control on landscape evolution in erosional landscapes, just like the area under study, is weathering. As a matter of fact, instability is a dynamical process that occurs at a variety of spatial and temporal scales. Therefore the landslide susceptibility assessment has been based on the hierarchical analysis, multiscale, topographical changes in specific weathering processes, products and intensity. These involve weathering and erosional processes and the conversion of rock to weathering products and their allocation. As a consequence, the recognition of the type of mass movements has been carried out.