FACTORS CONTROLLING THE INSTABILITY CONDITIONS IN AN AREA OF DAUNIA APENNINES (APULIA)

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Abstract – The paper presents a first attempt in describing the factors who play a role in the instability conditions of an area located at the border of Daunia Apennines. The main outcropping rocks are silty clay sediments well known as "Subapennine Clays" (Plio-Pleistocene) and superimposed clastic deposits made up by coarse-grained conglomerates (Lower Pleistocene). Pleistocenic and Holocenic terraced deposits close the sequence. The landscape of this area is characterized by low hills and intervening wide alluvial valleys. The slopes bordering several old towns located on the top of these ridges are affected by geomorphological evolution governed by erosion and instability processes. The mass movements observed in the study area have been analyzed with reference to the different factors triggering slope instability taking into account also the erosional actions. The main factors identified are: i) type of materials involved; ii) slope gradient; iii) thickness of weathered soil covers; iv) climatic conditions; v) anthropogenic changes; vi) seismicity.

Studies on the assessment, forecast and prevention of instability phenomena have to consider the inner complexity of these topics. They are related to remarkable parameters which are depending ones from the others. The control on the slope stability conditions is aimed at forecasting the effects of the changes, often irreversible, on the morphology, the physical-mechanical characteristics of the rocks involved and the slope evolution. The human actions have been taken also into account.

As a matter of fact, instability is a dynamical process that occurs at a variety of spatial and temporal scales. Therefore, in the landslide susceptibility assessment of the study area the "instability principle of geomorphic equilibrium" has been used as a criteria for distinguishing between achievement of a new steady-state and unstable divergence in interpreting geomorphic changes. As a consequence, the driving role of erosional processes in landscape evolution has been focused.

Riassunto – Il presente lavoro descrive i fattori agenti sulla instabilità di un'area localizzata al fronte dell'Appennino Dauno. L'area in studio è caratterizzata da estesi affioramenti delle "Argille Subappennine" (Plio-Pleistocene) su cui poggiano depositi clastici terrazzati alluvionali e deltizi (Pleistocene Inferiore), che si presentano sotto forma di dorsali piatte. Il paesaggio dell'area oggetto di studio è caratterizzato da rilievi collinari di modesta acclività separati da ampie vallate alluvionali incise da un articolato reticolo idrografico. Per tener conto dell'incidenza relativa dei diversi fattori e dei pesi attribuibili a ciascuno di essi, il problema è stato affrontato considerando l'instabilità dinamica interna dei fenomeni, pregressi e/o ancora in atto, di weathering ed erosione dei pendii che "bordano" le dorsali su cui sorgono alcuni centri abitati.

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