



THE SCALE FACTOR IN THE GRAVITATIONAL MODELING OF LANDSCAPE : THE EXAMPLE OF THE CENTRAL APENNINES (ITALY)

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The present work is a synthesis of the knowledge, after 40 years of researches, about the conditioning exerted by gravitational movements in the landscape modeling of central Apennines. The sector of interest is made by a Mesozoic-Cenozoic sequence of limestones interbedded with calcareous and cherty marls. This sequence, during the Neogene, has been affected by an east-verging thrust system who created several overlapping nappes.

The same system was later disjointed by a Pliocene-Quaternary extensional tectonics, related to a generalized and intense tectonic uplift. This litho-structural context and the Quaternary tectonics (still active, with earthquakes of magnitudes greater than 5), have generated gravitational phenomena of different type and size:

a) Gravity slide tectonics: these phenomena occur in correspondence of tectonic discontinuities (thrust planes, tectonized bands and marly levels), are superimposed (or often in contrast) with the deformation related to the regional tectonics, are not affected by the topographic gradient at the local scale and affect deep and large portions of bedrock for long tracts of the mountain ridge (over 20 km²);

b) Deep-seated gravitational slope deformations: this group affect large portions of the slope (approximately 2 km²) characterized by rock masses with rigid deformation. The attitude is mostly sub-horizontal or slightly inclined and the rock masses are overlapped to layers with ductile behavior that are linked to lithostratigraphic or, sometimes, tectonic discontinuities (highly fractured bands). The most common types are represented by lateral spreads, deep-seated rock slides and sackungs.

c) rock slides: these movements are present with high incidence and different typology and size. Their frequency and intensity is closely linked to the lithostructural and tectonic conditions while the most common type is represented by translational slides.

The most characteristic geomorphological elements are represented by steps, trenches (closed and / or open), bulgings and rotations of blocks. The dimensions are extremely variable and closely related to the size of the rock masses involved.

