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LANDSLIDES IN THE CARPATHIAN CURVATURE PALEOGENE FLYSCH. PARTICULARITIES

ABSTRACT: CIOACĂ A., *Landslides in the Carpathian Curvature Paleogene flysch. Particularities*. (IT ISSN 0391-9838, 1996).

The folded formations of the Curvature area Paleogene Flysch generate a particular morphology which shows up in the wide diversity of primary or secondary landforms. These landforms, the work of longer subaerial evolution and of present day neotectonic movements which accelerate erosion, depend on the varied resistance of sandstone rock to climate rather than on the narrow-folded structure itself. The relief being young, cement and granulometry are best revealed by landsliding which permanently maintains instability on slopes. As a consequence, most landslides entail an appreciable transfer of material from the slope to the valley, barring it and favouring the formation of small lakes behind the natural dams. This type of landslides has a high incidence on the landscape, as natural storage lakes usually lasting for more than one generation.

A few case-studies of the marginal flysch in the Curvature area (the lakes Ciocul Paltinului on the Bâsca Fără Cale River; Negru Lake on the Zăbala and a former lake on the Bâsca Rozilei, no longer visible today), formed by the landsliding in the Ruptura settlement area offer some information on the morphodynamical features of these landslides.

KEY WORDS: Landslides, Flysch, Curvature Carpathians, Rumania.

RIASSUNTO: CIOACĂ A., *Frane nel flysch paleogenico nel settore della Curvatura dei Carpazi. Peculiarità*. (IT ISSN 0391-9838, 1996).

Le formazioni flischoidi paleogeniche piegate dell'area di Curvatura dei Carpazi, generano una particolare morfologia che si evidenzia in una grande varietà di forme primarie e secondarie del paesaggio. Queste forme, che sono il risultato di una lunga evoluzione subaerea e di movimenti neotettonici attuali che provocano un'accelerazione dell'erosione, dipendono dalla variabilità di resistenza delle rocce arenacee più che dalla struttura fortemente piegata. La franosità mantiene permanentemente l'instabilità dei versanti. Come conseguenza, la maggior parte delle frane provoca un apprezzabile trasferimento di materiale dal versante ai fondivalle, causandone lo sbarramento e favorendo la formazione di piccoli laghi a monte di queste dighe naturali. Questo tipo di frane ha un'alta influenza sul paesaggio, poiché questi laghi rimangono per più di una generazione.

Alcuni piccoli casi studiati come il Lago Ciocul Paltinului sul Fiume Bâsca Fără Cale, il Lago Negru sullo Zabal ed un ex lago sul Bâsca Rozilei (non più visibile oggi), formati da fenomeni franosi nell'area di Ruptura, forniscono alcune informazioni sulle caratteristiche morfodinamiche di questi fenomeni gravitativi.

TERMINI CHIAVE: Frane, Flysch, Settore della Curvatura dei Carpazi, Romania.

THE CURVATURE CARPATHIANS

Because of the discordant disposition of major orographic lineae against structural lines, the Curvature Carpathians¹ represent, from a morphogenetic viewpoint, the most intricate part of all flysch-underlain mountains. (GEOGRAFIA ROMÂNIEI, vol. III, 1987). The flysch sheets, remarkably parallel, fall into two large subunits: Cretaceous (the inner strip) and Paleogene (the outer strip). What distinguishes these two subunits is not only age of the respective formations, but also their particular structure and rock composition (MUTIHAÇ & IONESI, 1974). All in all, the Curvature mountain relief is the reflection of tectonic events: slow-going sinking on the inner flank, or reduced positive crustal movements and marked uplifting on the outer flank.

The Cretaceous flysch features by highest altitudes (Postavaru, 1799 m; Piatra Mare, 1883 m; Baiu, 1995; Ciucaş, 1954 m), engendering a corresponding orographic asymmetry. Since limestone formations prevail (limestones, conglomerates and sandstones with limestone cement) sinking and rock-and-soil falls have a higher incidence. The Paleogene flysch consists mainly of sandstone formations in alternation with argillaceous schists and with thin intercalations of limestone in the Negru Lake area). This lithological and structural aggregate is called the morphostructural unit of mountains developed on Paleogene flysch. In terms of grain size, mineral composition of particles and degree of gluing together, we distinguish at least two subunits: the Tarcau sandstone flysch and the Fusaru sandstone flysch. The former is responsible for sinking, sliding and gullying; the latter for landslides and mud flows. As a rule, the drainage network crossing the Paleogene flysch along one and the same valley, meets all such geomorphological processes; they are triggered by the different sandstone facies alternating with clay and marly schists. For example, the

¹ The Curvature Carpathians correspond to the southern part of Eastern Carpathians.

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