

IOAN MAC (*) & MIRELA RÎPEANU (*)

THE DEEP - SEATED LANDSLIDES CORRELATED WITH THE PRESENCE OF THE VOLCANIC TUFFS IN THE TRANSYLVANIAN DEPRESSION (Rumania)

ABSTRACT: MAC I. & RÎPEANU M., *The deep-seated landslides correlated with the presence of the volcanic tuffs in the Transylvanian Depression (Rumania)*. (IT ISSN 0391-9838, 1996).

The Transylvanian Basin, a vast intracarpathian morphotectonic area, is dominated by stratigraphic series and lithologic complexes of Neozoic age. The sedimentary layers include numerous horizons of volcanic tuffs, some of them having very wide extensions and being very thick, and others much more thinner, with an ununiform spreading. These tuffs, together with the petrographic complexes in which they were inserted, have been tectonic affected, thus appearing the domes and the diapir folds. The areas with thick horizons of volcanic tuffs are frequently accompanied by profound landslides. The studies developed in this area lead us to idea that the volcanic tuffs play a special role in the process of landslides genesis, through various aspects: the mechanic behavior of the tuff layers at lithostatic pressures, the internal microtectonization which takes place in the packets of rocks, the fact that they enable surface waters to penetrate along the fissures toward depth, the presence of the lenticular soluble materials etc. The landslides which appear in the layers of tuffs have many shapes, from which we mention: the shape of blocks phragmented in corpuses, the shape of isolated monticuli and the shape of structural terraces. The landslides corpuses are affected, later on, by microtectonic processes, which stand out in specific microforms.

KEY WORDS: Landslides, Volcanic tuffs, Transylvanian Depression, Rumania.

RIASSUNTO: MAC I. & RÎPEANU M., *Frane profonde correlate con la presenza di tufi vulcanici della Depressione Transilvanica (Romania)*. (IT ISSN 0391-9838, 1996).

Il bacino Transilvanico, una vasta area morfotettonica all'interno della Catena dei Carpazi, è caratterizzato da serie stratigrafiche e complessi litologici neozoici. Le formazioni sedimentarie, includono numerosi orizzonti di tufi vulcanici, alcuni dei quali molto estesi e potenti, altri molto più sottili e con un'estensione irregolare. Tali tufi, insieme con i complessi petrografici che li includono, sono stati interessati da eventi tettonici, cosicché appaiono in domi e pieghe diapiriche. Le aree dove sono presenti gli orizzonti vulcanici più spessi, sono frequentemente interessate da fenomeni gravitativi profondi.

Gli studi sviluppati in quest'area hanno dimostrato che i tufi vulcanici giocano un ruolo speciale nella genesi dei fenomeni franosi sotto diversi aspetti: il comportamento meccanico dei livelli tufitici sotto pressione

litostatica, la microtettonizzazione interna delle rocce, la penetrazione in profondità lungo fessure delle acque superficiali, la presenza di materiali solubili lenticolari, ecc. Le frane, le cui superfici di taglio si realizzano nei livelli tufitici, presentano diverse forme tra le quali menzioniamo: blocchi frammentati, collinette isolate e terrazze strutturali. I corpi di frana vengono interessati in seguito da processi microtettonici che si manifestano in specifiche microforme.

TERMINI CHIAVE: Frane, Tufi vulcanici, Depressione Transilvanica, Romania.

THE VOLCANIC TUFFS IN THE TRANSYLVANIAN DEPRESSION

The Transylvanian Depression represents a multiphased morphotectonic unit, formed on the area of a vast Neozoic sedimentation basin. The respective basin was outline at the end of Cretacic (the Laramic Phase), but, it was petrographic and structural built up during the Neozoic. Apparently, it had functioned as a monolithic unit; in reality, both in the period of sedimentation and in the exogene sculptural period, existed territorial differences, imposed, after all, by the ununiform instability of the blocks which formed its own ground.

The sedimentation continuity during the Neozoic, the lithostratigraphic and structural characteristics, the geomorphological specific features of the territory, all these, made this geographic space, to be considered as a reference unit of the European continent.

The internal tectonism and the tectonism from the periphery with the adjacent Carpathian units, induced both an intrabasin volcanism and a peribasin volcanism, of Neozoic age. This fact is illustrated by the numerous volcanic tuffs horizons, inserted in a sedimentary column of more than 3000 meters in thicknes. Taking into consideration the spatial repartition and the stratigraphic position, these tuffs have an uniform value: a general or basinal value (the case of the tuff of Dej), a regional value (the tuffs of Borsa-

(*) «Babeş-Bolyai» University, Faculty of Geography, Cluj-Napoca (Rumania).