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Landslide susceptibility assessment in the Southern part of Vrancea-Buzau Seismic Region

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Vrancea-Buzau Region (extending across some 8,000 km2 of the Romania's Curvature Carpathians) represents one of Europe's most seismically-active areas. The sub-crustal earthquakes occurring there are responsible for the damages inflicted to half of Romania's territory, and its effects are extending towards NW in Ukraine and to the SW, to Bulgaria. The region's seismicity represents an important landslide preparing (and in certain conditions even triggering) factor, integrating itself into a landslide-prone framework which includes heavy summer rainfalls alternating with long-lasting droughts and spring showers overlapping snowmelt. The purpose of this paper is to outline the landslides mechanisms, forms and processes, and also to present a landslide susceptibility assessment for the southern half of the region, a case-study within FP7 MC-ITN Project CHANGES, as a basis for the entire region's landslide risk assessment. The GIS database includes thematic maps, aerial images, different-scale DEM's (and derived parameters), climatic data and landslide inventories derived from geomorphological field mapping and local authorities (Buzau County Inspectorate for Emergency Situations) databases. The evaluation of susceptibility classes was performed through statistical analysis (bivariate and multivariate), the results being also validated through statistical methods and also on field. In the mean time, the susceptibility classes resulted helped in assessing the quality of a previously-done, expert-judgment-based landslide susceptibility assessment which covers the entire Romanian territory (Balteanu at al., 2010). The importance of this paper is that it provides a strong background for the assessment of landslide hazard, vital in establishing proper risk management strategies, necessary for such an affected yet poor region of Europe.