Geophysical Research Abstracts
Vol. 13, EGU2011-7960, 2011
EGU General Assembly 2011

Environmental change and natural hazards in Vrancea Seismic Region

Dan Balteanu, Mihai Micu, Viorel Chendes, Dana Micu, Mihaela Sima, and Carmen Dragota
Romanian Academy, Institute of Geography, Bucharest, Romania (mikkutu@yahoo.com)

The impact of climate change on natural hazards contributes to the raise of uncertainties within risk assessments. The future distribution in time and intensity of precipitation in alternation with prolonged drought waves should be taken into consideration when dealing with medium-long term hazard assessments.
The sub-crustal earthquake province of Vrancea (Romanian Curvature Carpathians) represents an area severely affected by a wide range of mass movements and erosion processes. The large presence of landslides (shallow slides, mudflows and deep-seated debris slides) is related especially to the loose rock formations, the morphometrical features and the intense human activity, featuring recent deforestations and inappropriate land management measures. Strong earthquakes with a magnitude over 7 on Richter scale have a significant share in activating deep-seated landslides and rock-falls. The heavy summer rainfalls (maximum rainfall/24 hours over 200 mm, with a maximum rainfall intensity of 5-6 mm/min), and subsequently spring showers which in the Carpathians quite often are overlapping snowmelt, are responsible for frequent floods and flash floods. Since the projected changes in quantity, timing and intensity of some climatic parameters are expected to play a major role on future land degradation processes, the need for an environmental change study grew in importance. During the post-communist period, besides several positive impacts, some activities like deforestation, land abandonment and large-scale neglecting of land management works had an important impact on land degradation.
The climatic scenarios developed for the region within the FP6 research project CLAVIER are leading to an increase concern relaying on: earlier spring landslide occurrence related to earlier and sudden snowmelt, prolonged interval of landslide occurrence till late autumn, a slightly increasing frequency of torrential rainfalls leading to a decrease of slope stability and an increase of earlier potential catastrophic flood occurrence based on more liquid precipitation in winter and earlier snowmelt.
Using the climatic simulations based on A1B IPCC scenario provided by REMO 5.7 model (Max-Planck Institute for Meteorology), the paper focuses on the correlation between predicted seasonal shifts in the precipitation regime and their potential impact which might entail slope instability in the studied region.