Geophysical Research Abstracts
Vol. 16, EGU2014-5779, 2014
EGU General Assembly 2014

Landslide development within the Barlad Plateau of Eastern Romania

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The Barlad Plateau, extending about 8,230 square kilometers is considered as the most typical unit of the Moldavian Plateau of the Eastern Romania. The Miocene-Pliocene clay-sandy layers are inter-bedded with shallow sandstone and limestone seams. These sedimentary layers that have outcropped as a result of erosion are gently dipping toward S-SE in the form of a monocline. Landslides have been recognized as an important environmental threat in the major subunits of the Barlad Plateau, namely: Central Moldavian Plateau, Falciu Hills and Tutova Rolling Hills.
Four main areas of monitoring landslides were explored such as successive aerial photographs of the 1960, 1970, 2005 and 2009 flights, repeated field surveys for a thorough reconnaissance of the study area, classical levelling work and GIS software applications as TNT Mips and Arc GIS. Also, the Caesium-137 technique has been used to get information on documenting sedimentation rates in some small catchments.
Results have indicated that the landslide development is strongly controlled by the northern and western looking steep faces of cuestas, by changes of rock composition and by human impact. Also, it showed great pulses in conjunction with the rainfall distribution. For example, half of the Upper Barlad catchment that drains an area of 22,560 ha is covered by landslides. Furthermore, the active landslides amounted 11% of the total (2,317 ha) after the rainy 1968-1973 period and since 1982 under drier conditions they gradually limited to 444.0 ha (2% of the total).