Identifying hydrological pre-conditions and rainfall triggers of slope failures for 2014 storm events in the Ialomita Subcarpathians, Romania

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Like in many parts of the world, in Romania, landslides represent recurrent phenomena that produce numerous damages to infrastructure every few years. Various studies on landslide occurrence in the Curvature Subcarpathians reveal that rainfall represents the most important triggering factor for landslides. Depending on rainfall characteristics and environmental factors different types of landslides were recorded in the Ialomita Subcarpathians: slumps, earthflows and complex landslides. This area, located in the western part of Curvature Subcarpathians, is characterized by a very complex geology whose main features are represented by the nappes system, the post tectonic covers, the diapirism phenomena and vertical faults.

This work aims to investigate hydrological pre-conditions and rainfall characteristics which triggered slope failures in 2014 in the Ialomita Subcarpathians, Romania. Hydrological pre-conditions were investigated by means of water balance analysis and low flow techniques, while spatial and temporal patterns of rainfalls were estimated using radar data and six rain gauges. Additionally, six soil moisture stations that are fitted with volumetric soil moisture sensors and temperature soil sensors were used to estimate the antecedent soil moisture conditions.