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Towards the use of hydrometeorological thresholds for the regional-scale LEWS of Catalonia (NE Spain).

Rosa M Palau[1,2], Marcel Hürlimann[2], Marc Berenguer[1], and Daniel Sempere-Torres[1]
[1]Universitat Politècnica de Catalunya, Centre de Recerca Aplicada en HIdrometeorologia, Department of Civil and Enviromental Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain (rosa.m.palau.berastegui@gmail.com)
[2]Universitat Politècnica de Catalunya, Department of Civil and Enviromental Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain

Risk mitigation for shallow slides and debris flows at a regional scale is a challenge. Landslide early warning systems (LEWS) are a helpful tool to anticipate the time and location of possible landslide events so that the authorities in charge of managing the landslide risk can plan their actions.

Traditionally, regional LEWS rely on rainfall information to asses if the landslide triggering conditions are met. However, in many cases, soil moisture is a predisposing factor that plays a major role in landslide initiation. Therefore, accounting for soil moisture conditions could improve the performance of LEWS.

Here we present the preliminary results defining hydrometeorological thresholds for the region of Catalonia (NE Spain). Such thresholds have been derived combining rainfall information from ground-based radar observations and the volumetric water content simulated by the LISFLOOD hydrological model. The information of recent and historical landslide events contained in a landslide inventory has been used to adjust the hydrometeorological thresholds.

The new hydrometeorological thresholds have been implemented into the regional-scale LEWS for the region of Catalonia. Finally, the performance of the two versions of the LEWS (i.e. solely based on rainfall observations and adding soil moisture conditions) has been analysed for a recent rainfall event that triggered multiple landslides.