



Meteorological conditions for the triggering of landslides in Asturias (NW Spain). A preliminary analysis of synoptic patterns.

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Asturias is one of the most landslide prone areas in the NW of Spain, where those phenomena cause every year large economic losses and sometimes personal injuries or fatalities. Most of landslides take place during intense rainfall events, which point out precipitation as the main triggering factor. Regional climate is characterized by average annual precipitation and temperature of 960 mm and 13.3°C respectively. Rainfall distribution throughout the year allows the definition of a humid period between October and May, characterized by the succession of frontal systems, and a considerable dry period between June and September, when heavy short storm episodes are usual.

BAPA landslide database (<http://geol.uniovi.es/BAPA>) gathers more than 500 landslide records located with high temporal reliability for eight hydrological years between October 2008 and September 2016. Eight periods with a high concentration of landslides and significant precipitation records have been selected for the study within this time span. Meteorological conditions which took place during each period have been characterized by using data from the National Oceanic and Atmospheric Administration of the EEUU (NCAR/NCEP Reanalysis 1) through the free software Grid Analysis and Display System (GrADS). Seven parameters have been used to characterize each synoptic situation: (i) 500 hPa temperature, (ii) 500 hPa geopotential height, (iii) 850 hPa temperature, (iv) 850 hPa geopotential height, (v) 925hPa wind, (vi) specific humidity, and (vii) sea level pressure.

The final goal is to establish a conceptual model of the most frequent synoptic meteorological patterns which generate rainfall-triggered landslide events in Asturias during the humid and dry periods.