



Soil moisture in relation to landslide triggering in Asturias (NW Spain)

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Given their geological and climatic conditions and its rugged orography, Asturias is one of the most landslide-prone areas in the N of Spain. Most of the landslides occur during intense rainfall episodes. Thus, precipitation is considered as the main triggering factor within the study area.

Asturias climate is characterized by an average annual precipitation of 960 mm, showing maximum and minimum values in autumn and summer respectively. Two main precipitation patterns are frequent: (i) frontal rain associated to autumn and winter low pressure systems, or orographic rain due to northern maritime air masses, and (ii) heavy short rainfall episodes, due to strong instability of air masses during spring and early summer. Average annual number of rainy days ranges from 123 (> 1mm in 24h) to 30 days (> 10mm in 24h), giving as a result meaningful wet periods (with more than 100 mm in several consecutive days).

All the aforementioned contribute to maintain high soil moisture levels through long periods, favoring the triggering of landslides. In the present work, soil moisture conditions in the locations of several recorded landslides are analyzed during two rainfall episodes: October-November 2008 and June 2010. Both episodes are representative of the most frequent precipitation patterns in the region.