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Hydropedology associated to landslides behavior in Andean hillslope

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The Antioquia department is one of the regions of Colombia with the highest number landslide episodes, where 69,5% of those are associated to the hydrologic regime. Little is known about the water controls on the landslide dynamics, especially in tropical environments. For the case of the hillslopes of the Medellin City Valley, the main detonating factor is rainfall; its location at an intertropical zone with high erosion and rainfall, the high relief mountain ranges and the common presence of hillside deposits, which are occupied by urban centres of expansion, make it possible the frequent occurrence of landslides. Our study area is located at a specific experimental site on the western slope of the Medellin City Valley, where we monitor hydrologic variables through the implementation of runoff plots, lysimeters, and a rain gauge station. The objective was to understand the soil water behavior, as this is one of the most important triggering factors for the occurrence of landslides in this zone. Additional information was sought by means of the study of these fluxes from the concept of mass balance and its physical behavior, with the aim to understand the existent relationship between soil hydrology, rainfall and the occurrence of mass movements. These results will allow to generate a physical analysis that will conduce to an understanding of the occurrence of mass movements along hillslopes at tropical locations.

Key words: Hydrology, soil water, mass movements, rainfall, lysimeters