



Time-trend analyses of precipitation data using rainfall thresholds for landslide triggering

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Time-trend analyses of precipitation data are generally performed using standard sets of statistical parameters that characterise normal and extreme weather conditions. However, in the context of rainfall-induced landslides, these parameters may not provide the best indication of trends for potentially-triggering precipitation. The present study describes the steps for producing time-trend analyses of precipitation in reference to threshold levels for landslide triggering. In the first step, a given rainfall time series is resampled and converted to "storm" pairs consisting of two rainfall parameters (e.g., intensity and duration). These pairs are grouped in bins which are bounded using thresholds for different levels of landslide susceptibility or frequency. Time-trend analyses are then performed using the "storm" pairs contained in each bin. The procedure is illustrated with examples using datasets from Casita and San Cristóbal volcanoes (Nicaragua) and Eastern Puerto Rico, spanning 49 and 59 years of observations, respectively. The main potential application of this procedure is in the context of assessment of impacts in climate change scenarios.