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The relationship between extreme precipitation events and landslides distributions in 2009 in Lower Austria

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The prediction and forecast of widespread landsliding for a given triggering event is an open research question. Numerous studies tried to link spatial rainfall and landslide distributions. This study focuses on analysing the relationship between intensive precipitation and rainfall-triggered shallow landslides in the year 2009 in Lower Austria. Landslide distributions were gained from the building ground register, which is maintained by the Geological Survey of Lower Austria. It contains detailed information of landslides, which were registered due to damage reports. Spatially distributed rainfall estimates were extracted from INCA (Integrated Nowcasting through Comprehensive Analysis) precipitation analysis, which is a combination of station data interpolation and radar data in a spatial resolution of 1km developed by the Central Institute for Meteorology and Geodynamics (ZAMG), Vienna, Austria. The importance of the data source is shown by comparing rainfall data based on reference gauges, spatial interpolation and INCA-analysis for a certain storm period. INCA precipitation data can detect precipitating cells that do not hit a station but might trigger a landslide, which is an advantage over the application of reference stations for the definition of rainfall thresholds. Empirical thresholds at regional scale were determined based on rainfall-intensity and duration in the year 2009 and landslide information. These thresholds are dependent on the criteria which separate the landslide triggering and non-triggering precipitation events from each other. Different approaches for defining thresholds alter the shape of the threshold as well. A temporarily threshold I=8,8263*D(-0.672) for extreme rainfall events in summer in Lower Austria was defined. A verification of the threshold with similar events of other years as well as following analyses based on a larger landslide database are in progress.