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Triggered landslide events: statistics, historical proxies, and road network interactions

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Landslides are generally associated with a trigger, such as an earthquake, a rapid snowmelt or a large storm. The trigger event can generate a single landslide or many thousands. This paper examines three themes that I have been working on with different groups of scientists: (i) The frequency-area statistics of several triggered landslide event inventories, which are characterized by a three-parameter inverse-gamma probability distribution (exponential for small landslide areas, power-law for medium and large areas). (ii) The use of proxies (newspapers) for compiling long-time series of landslide activity in a given region, done in the context of the Emilia-Romagna region, northern Italy. (iii) A stochastic model developed to evaluate the probability of landslides intersecting a simple road network during a landslide triggering event.