

# **Tails of natural hazards: Implications for ecology, erosion, and risk**

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There is increasing evidence that the extremes of many natural hazards satisfy power-law or other heavy-tailed frequency-size statistics. Examples include earthquakes, volcanic eruptions, landslides, snow avalanches, forest and wildfires, meteorite impacts, and possibly floods. Although power-law distributions are commonly associated with the frequency-size distribution of small to large earthquakes, the frequency-size statistics of many other natural hazards are frequently associated with distributions that are more thin-tailed. The occurrence for large and very-large events using power-law frequency-size distributions is often much more conservative, with a greater chance of a large event occurring in a given period of time, compared to thinner tail distributions. The choice of the statistical distribution used or assumed has many implications to Earth Sciences research. In this paper we will present the frequency-size distributions for wildfires and landslides, both found to be robustly power-law for the medium and large events, and the implications of these statistics to erosion, ecology, and risk.