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Analysing global landslide risk using a database of landslide fatalities

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There is no doubt that existing datasets on the global burden of landslide fatalities significantly underestimate the impact of these events. There are a range of reasons for this, including problems with the ways in which statistics are collated, the relatively high occurrence of landslides in remote locations in which reporting is difficult, and the frequency of large numbers of relatively small landslides (rather than small numbers of large events), for which data collation is challenging. In consequence, investment into the prevention of landslides has lagged behind that of other, no more significant, hazards such as volcanic eruptions and tsunamis.

Over the last two years we have been collating a worldwide landslide database, initially concentrating on events that cause fatalities as these are the most reliable data. This has been supplemented by an attempt to construct a database for historical landslide events, stretching to the start of the 20^{th} Century. Although this project is in an early stage, the analysis of the dataset has generated some interesting results. It is clear that in terms of fatalities, landslide disasters are focussed upon less-economically developed countries, especially in mountainous regions that are subject to precipitation extremes such as intense monsoon rainfall or typhoons. Excluding rare, very large events, in most years the majority of rainfall-induced landslide fatalities occur during the northern hemisphere summer in China and South Asia. A second peak occurs in the annual cycle during December and January, as heavy rains along the Indonesian archipelago induce extensive landslide activity. Interestingly, the data suggests that the number of fatalities each year caused by rainfall induced landslides is closely correlated with the global temperature anomaly, which may account for a clear increase in landslide occurrence worldwide over the past twenty years. The dataset is allowing new insights to be gained on a global scale of the level of risk associated with landslide events, and serves as a reminder as to where resources should be focussed in order to reduce the global disaster burden of landslides.