

## Debris-flow Fatalities in China from 1990 to 2017

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China is the country seriously susceptible to debris flows and suffers heavy fatalities every year. We collected basic data of more than 280 debris-flow events with 4829 fatalities during 1990-2017 from news report, official statistics and scientific papers etc. Spatial, temporal characteristics of fatalities have been documented, in addition, the magnitude-frequency of fatalities, death toll and accumulation volume of debris flow relationships have been statistically analyzed. Debris flow hazards in the southwest mountainous area, especially in Sichuan and Yunnan province have caused most fatalities. Villages or towns with greater population density are most vulnerable locations and a large number of fatalities have occurred on night especially early morning. Besides local residents, migrant workers of mines, hydropower stations and highway construction areas and motor vehicle passengers are also vulnerable to debris flows. The magnitude frequency curves of fatalities are well fitted by a power law with the exponent -1.049, the relationship of death toll with debris flow accumulation volume shows two different trending curves which may be attributed to two kinds of population vulnerability of different villages or towns to debris-flow hazards.