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# Power-law statistics of a landslide inventory of Wanzhou District, Three-Gorges Reservoir, China.

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Landslides with high frequency and large property loss are one of the most well-known nature hazards in the world. The area of the Three Gorges Reservoir in China has a lot of landslide distributions due to geological factors and human activities. Analysis of frequency-size distribution of landslides has been frequently applied by numerous researchers. Hereby, Power-law statistics is a widely used method to determine the frequency-area (and –volume) distribution of landslides. In this study, we perform statistical analysis for a landslide inventory of the Wanzhou District in the Three-Gorges reservoir area of China. The goal is to prove that power-law statistics method for the frequency-size distribution of landslides is also applicable in Chinese environments. As the landslide investigation data is always incomplete, we proposed a way of dealing with incomplete data in this study in order to predict the total number of landslides in the study area. This study is carried out in Wanzhou District, the Three-Gorges Reservoir, China, where landslides occurred in high frequency. The landslide data has been received from the Three Gorges Geohazard Control Headquarters, which are based on a detailed field landslide investigation in 2010. The field observations have been carried out by the staff of the local environmental monitoring station and the local geologic prospecting agency.

In this study, the power-law statistics has been focused on and the frequency-size and frequency-volume distribution of landslides have been analyzed. The data set contains 711 landslides. As it is an incomplete data, at the first the power-law relationship between the frequency and the area of landslides need to be analyzed, then the total number of landslides based on the ideal equation proved by other researchers has been predicted, and the real parameters within the equation used in the last step for this study area have been calculated. Finally the results have been compared with previous studies. The results from this study will help the local department and involved institutions to get an overview of how many landslides might exist in the area and can give directions to those who will take part in field investigation of landslides.