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A New Approach to Calibrate Antecedent Precipitation for Rainfall-triggering Landslide Forecast

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Abstract: To calibrate antecedent precipitation is a key issue for prediction of rainfall-induced landslides many regions. In this study, a method calculating for effective antecedent rainfall is derived from the power-law relation of the landslide frequency and the rainfall level. The decay factor of antecedent daily rainfall before the landslide event in this model depends on the scaling exponent defined by the power-law correlation and the decay process of daily rainfall within a given period preceding a given day is not independent but is interrelated each other, that is, the impact of rainfall in the prior i days on soil moisture is associated with the precipitation from the prior $(i-1)$ days. One practical significance of this result is that the effective antecedent rainfall can be easily determined using the available landslides and related rainfall measurements for a region.

Key words: landslides; forecast; effective antecedent precipitation; fractals

《长江上游泥石流综合危险度区划》出版

由中国科学院水利部成都山地灾害与环境研究所钟敦伦等编制的《长江上游泥石流综合危险度区划》最近由上海科学技术出版社出版。其为专题地图形式的长江上游泥石流危险度区划研究总结, 由《长江上游泥石流综合危险度区划图》及其说明书组成, 是作者对长江上游不同区域泥石流发育的环境背景、泥石流的活动与危害及分布、不同区域的经济发展程度、泥石流自然危险度区划指标与分级、社会经济水平区划指标与分级、自然危险度和经济发展程度相结合的泥石流综合危险度区划的研究成果, 对长江上游山区发展及泥石流的防灾减灾具有参考意义。

(卞 泽)