Extreme rainfall-induced landslide changes based on landslide susceptibility in China, 1998-2015

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Nowadays, landslide has been one of the most frequent and seriously widespread natural hazards all over the world. Rainfall, especially heavy rainfall is a trigger to cause the landslide occurrence, by increasing soil pore water pressures. In China, rainfall-induced landslides have risen up over to 90% of the total number. Rainfall events sometimes generate a trend of extremelization named rainfall extremes that induce the slope failure suddenly and severely.

This study shows a method to simulate the rainfall-induced landslide spatio-temporal distribution on the basis of the landslide susceptibility index. First, the study on landslide susceptibility in China is introduced. We set the values of the index to the range between 0 and 1. Second, we collected TRMM 3B42 precipitation products spanning the years 1998-2015 and extracted the daily rainfall events greater than 50mm/day as extreme rainfall. Most of the rainfall duration time that may trigger a landslide has resulted between 3 hours and 45 hours. The combination of these two aspects can be exploited to simulate extreme rainfall-induced landslide distribution and illustrate the changes in 17 years. This study shows a useful tool to be part of rainfall-induced landslide simulation methodology for landslide early warning.