Projection of Landslides in China during the 21st Century under the RCP8.5 Scenario

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More and more rainstorms and other extreme weather events occur in the context of global warming, which may increase the risks of landslides. In this paper, changes of landslides in the 21st century of China under the high emission scenario RCP8.5 (Representative Concentration Pathway) are projected by using a statistical landslide forecasting model and the regional climate model RegCM4.0. The statistical landslide model is based on an improved landslide susceptibility map of China and a rainfall intensity-duration threshold. First, it is driven by observed rainfall and RegCM4.0 rainfall in 1980-1999, and it can reproduce the spatial distribution of landslides in China pretty well. Then, it can forecast the landslide changes of China in the future under the RCP8.5 scenario. The results consistently reveal that landslides will increase significantly in most areas of China, especially in the southeastern, northeastern and western parts of Northwest China. The changing pattern at the end of the 21st century is generally consistent with that in the middle of the 21st century, but with a larger increment and magnitude. In terms of the probability, the proportion of grid points that are very likely and extremely likely to experience landslides will also increase.