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Risk analysis for landslide disaster in Taiwan

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Taiwan is located in the region of frequent typhoon and earthquake activities. Due to the fractured geology, steep slopes, and speedy stream flows, residents in mountainous area are usually threatened by the slopeland disasters, such as landslides and debris flows. Thus, the characterization of high recurring areas and the strategy to face environmental change are vital to disaster reduction. In this paper, the historical typhoon precipitation, geological conditions, slope gradients, slope aspects, and road distribution were investigated to characterize the slopeland disasters in Taiwan. The result reveals that the distribution of disaster sites was highly related to typhoon precipitation. Rainfall accompanying with the typhoons which impacted northern Taiwan resulted in greater damage compared to others. Among the geological regions, the disaster sites were mainly located in the sedimentary rock regions. In terms of land utilization limitation for slope gradients, the sites were concentrated in the critical areas (gradient of 4.3% $\sim$ 40%). Due to the unstable geological conditions, those sites have high recurring potential. From the records of previous slopeland calamities, the fulfillment of disaster prevention successfully reduced the loss of lives and properties. In order to continue and promote the efficiency of disaster reduction, the investigation of global climate variation and the fulfillment of disaster management strategy will be the principal issues in the future.