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Spatial and temporal characteristics of rainstorm induced disaster due to typhoon events in Taiwan

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Taiwan, being located at the subtropical zone in western Pacific Ocean, suffers average 4.6 typhoons in a year. Because of the high intensity precipitation in typhoon evens, typhoons bring serious water-related disasters in Taiwan. Accumulated evidences show that the precipitation distribution of typhoon is highly affected by terrain relief and aspect. In this study, we divided slope areas of Taiwan into several geographical regions according to routes of typhoon. Obviously, analysis showed that the windward directions regions corresponding to the typhoon route might probably rain heavily due to the topography effect. The precipitation and routes records of typhoon events from 1971 to 2005 were used for analysis. The precipitation data of every typhoon event was analyzed by taking its rainfall pattern, typhoon path, total precipitation and intensity. Furthermore, comparisons were performed among the different geographical regions. The results showed that the rainfall distribution is quite different among the different types of typhoon route. Moreover, 3000 records of historical disaster events were located on the geographical areas, and we found that the disaster distribution and the geographical areas induced by rainstorm are highly coincident. According to the results, we further established the forewarning zones where heavy rainstorm and further disaster may occur when typhoon routes had been forecasted.