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Rainfall Threshold of Triggering Landslide-an Example of Typhoon Soudelor in 2015

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Typhoon Soudelor (2015) stroke southern New Taipei City, Taiwan. It brought huge damages to Xindian District and Wulai District, and those damages including 7 large landslides, blockages to access roads, and strands of hundreds of residents. The main reasons of landslide due to the high intensity rain brought by Typhoon Soudelor. The rain gauges near the sites of landslides showed the maximum hourly rainfall of 70 (mm) and the accumulative rainfall is 500-800 (mm). The largest area of the above-mentioned landslide is 9.7 ha.

According to the study conducted in (Cheng et. al, 2014), the average 3hr-rainfall intensity and 24hr-accumulative-rainfall can used for indicators for the rainfall threshold of triggering landslide. Based on the historical landslide events, three rainfall threshold of triggering landslide can be gotten for probability of 30%, 60%, and 90% respectively. Using the rainfall data of Typhoon Soudelor, it is found that the rainfall recording in gauges located very near the line of probability of 90%. The average 3hr-rainfall intensity of 70 (mm/hr) and 24hr-accumulative-rainfall of 700 (mm) are used for probability of 90%. As for probability of 30%, the 3hr-rainfall intensity is 30 (mm/hr) and 24hr-accumulative-rainfall is 300 (mm). As for probability of 60%, the 3hr-rainfall intensity is 50 (mm/hr) and 24hr-accumulative-rainfall is 500 (mm). The curve of trigging landslide adopted in this study is ellipse, and may be modified by verifying more data.