

Establishing the Soil Water Index Warning Value by Using Lithological Factors and Landslide Ratio: a case study of the Kaoping River basin, Taiwan

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Typhoon Morakot attacked South Taiwan in 2009. The heavy rainfall caused a wide range of landslide in the Kaoping River basin and loss of life and property. Classification of rainfall alert and time for release are important for disaster reduction and prevention. This study collected 79 disaster cases from 2006 to 2016 in the Kaoping River Basin including five lithologic zones. Based on the linear relationship between the H2 of the Tank Model and the Soil Water Index (SWI), the SWI alert value are set by the intersection of the critical line of disaster cases of 50% coverage and the regression line. Furthermore, landslide maps are used to calculate landslide ratio by administrative regions. Finally, the SWI alert value and landslide ratio are combined to establish the alert value of sediment-related disasters. The alert values range from 200 to 350 mm with 4 levels of intervals of 50 mm which could be key references of warning release.

Keywords: Tank Model, Soil Water Index, Kaoping River Basin