

Optimization of rainfall thresholds for a flood warning system to Taiwan urban areas during storm events

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Flood is one of the most damage disaster that always happen around the world. Because of the extreme weather change, the flood disaster damage becomes higher than before. In recent years, Taiwan suffered from flood damage frequently by excessive rainfall induced by extreme weather, like typhoons. Therefore, it is necessary to build an effective flood warning system to reduce the flood damage. The operational flood warning system in Taiwan is based on the rainfall thresholds. When cumulative rainfall over the rainfall thresholds, the flood warning system would alert the local government where region would happen flood disaster. According to the flood warning system alert, the governments have more time to prepare how to face the flood disaster before happens. Although Taiwanese government has a preliminary flood warning system, the system has still lack of theoretical background. For this reason, the alert accuracy of the system is limited. Thus it is important to develop the effective rainfall thresholds that could predict flood disaster successfully.

The research aims to improve the accuracy of the system through statistical methods. When the accumulated rainfall reaches the alert value, the warning message would be announced early to government for dealing with flooding damage which would happen. According to extreme events, the data driven and statistical methods are adopted to calculate the optimum rainfall thresholds. The results of this study could be applied to enhance rainfall thresholds forecasting accuracy, and could reduce the risk of floods.