



Simplified Spatially-distributed Model for Inundation Simulations

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Although traditional inundation models have been applied with good accuracy in Taiwan, they usually require a long computing time for simulations. However, the meteorological and geographical conditions in Taiwan frequently cause inundation within a short time period when storm occurs. The lead-time for emergency response is too short to indicate the areas with high flood risks for evacuation by using the traditional inundation models.

The study established an inundation model for Taiwan and integrated the QPESUMS system which constructed and developed by the Central Weather Bureau. The radar precipitations by the QPESUMS system, as well as the rain-gauge records, are considered in the inundation model for real-time simulations. The precipitation data of typhoon NARI were simulated and evaluated different scale of grid size that the accuracy and efficiency of model would be suggested for practical applications.

The Keelung River basin is adopted as the study areas of the inundation model. By use of QPESUMS radar precipitation for the typhoon HAITANG and KROSA, the inundation simulations can be calculated in a short time. The model will be executed in the future, to simulate the flood scenarios induced by the occurring and the forecasted rainfalls. The inundation will be predicted in 1-3 hours ahead to help the emergency managers taking proper strategies for disaster mitigations.

Traditional inundation models have been widely applied with good accuracy to many studies in Taiwan. The main drawback of these models is that extraordinary requirement of computing time, which causes the obstacle for real-time applications. The meteorological and geographical conditions in Taiwan frequently result in flashfloods within short time periods when storms occur. The lead time for emergency response is too short to indicate the areas with high flood risks by using the traditional inundation models.