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Multiple Urban Flood Simulations Using Ensemble Precipitation Forecast: An Example of Zhonghe District, New Taipei City

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ABSTRACT

This study applied precipitation ensemble forecast on urban flood simulation which is launched by Taiwan Typhoon and Flood Research Institute (TTFRI). The precipitation ensemble forecast is the product of Taiwan Cooperative Precipitation Ensemble Forecast Experiment (TAPEX). There are 22 members of dynamic models which are provided by different institutions in Taiwan. To better simulate urban flooding, overland flow model developed by National Taiwan University and Storm Water Management Model (SWMM) of US EPA are used in flood simulation which can simulate the overflow from the man holes to the overland flow. The study area is taken as Zhonghe District, New Taipei City, Taiwan. It is suffered floods frequently in the past. When the torrential rain warning is issued, the ensemble precipitation forecast are used as input, and the overland flow model and SWMM are performed. In addition, overland flow simulations are also conducted for precipitation forecast of each member. The flood-prone area and the corresponding flood depth can be provided to related authorities for taking disaster-prevention measures.