



Typhoon Season 3Di flood simulation for Emergence Response : A case study in Taiwan

Wong Hock Kiet (1), Shieh Chjeng-Lun (2), Lien Ho-Cheng (3), Hsu Yung-Chia (4), and Hsu Chih-Hung (5)

(1) National Cheng Kung University, Department of Hydraulic and Ocean Engineering, Department of Hydraulic and Ocean Engineering, Taiwan, Taiwan, Province Of China (ikhowong93@hotmail.my), (2) Department of Hydraulic and Ocean Engineering, National Cheng Kung University, Tainan, Taiwan, Province Of China (shieh@dprc.ncku.edu.tw), (3) National Center for High-performance Computing, Taoyuan, Taiwan, Province Of China (hlien@nchc.narl.org.tw), (4) Hydrotech Research Institute, National Taiwan University, Taipei, Taiwan, Province Of China (ychsu1978@gmail.com), (5) Disaster Prevention & Water Environment Research Center, National Chiao Tung University, Taoyuan, Taiwan, Province of China (aaronhsu219@gmail.com)

Nowadays the whole world is facing climate change. During typhoon season in Taiwan, precipitation has become more concentrate and more intense. Due to urban development, the land surface becomes impermeable, which reduces the volume of infiltration. Thus, when flood event occurs, people suffers the loss from inundations of properties. For better flood control management, the simulation of flooding event is needed.

This study uses 3Di (An urban flood simulation software developed by the Catchment Hydrology Department Deltares Delft, the Netherlands) flood simulation in South of Taiwan, Sanye district. Combine with Forecast Precipitation Radar (1hr – 3hr) (QPESUM & ETQPF) which provided by Taiwan Weather Bureau. Using the forecast data, we can simulated the flood area, flood depth and when the flood occurs.

Basis on the information, we can plan out for the emergence response, such as when we have to start operating our pump stations, and where to locate the mobile pumping machines. By adjusting the pump operations and location in simulations. We can understand the benefits of the emergence response that we plan out, by estimating and comparing the economic loss at those flood area among many real-time simulation scenarios.

Keywords: Sanye District; Urban flooding; Flood simulation; Forecast Precipitation Radar; Emergency Response; Economy loss.