12th International Conference on Hydroscience & Engineering
Hydro-Science & Engineering for Environmental Resilience
November 6-10, 2016, Tainan, Taiwan.

Early-Warning for Urban Flooding and Non-Structural Adaptation Measures of Tainan City

Chjeng-Lun Shieh[1], Wei-Lin Lee[1], Chih-Wei Huang[1], Shin-Ping Lee[2]
1. Department of Hydraulic and Ocean Engineering, National Cheng Kung University
2. Disaster Prevention Research Center, National Cheng Kung University
Taiwan

ABSTRACT

For regional flood prevention and response, an effective flood emergency operation center is crucial for the regulators and managers responsible for planning and coordinating a community's preparedness, response and recovery efforts. However, a flood emergency operation center, which has empirically documented links between data bases of hydro information, real-time inundation models and a flood decision-making system, is rare for local governments. Therefore, the aim of this article is to explore how hydro information, real-time inundation models and a flood decision-making system can be integrated to improve the efficiency of flood emergency operation centers. This research involved a case study, namely a local government located in southern Taiwan that suffered a severe flood disaster in 2010 and cooperated with the Disaster Prevention Research Center of National Cheng Kung University (NCKU) to plan and set up a modern flood emergency operation center. Various information techniques are used in the system including Google techniques (Google File System, MapReduce and Google BigTable), GIS (Geographic Information System), the Physiographic Inundation Model and Microsoft Silverlight. Results of this study provide solutions to problems associated with emergency situations, i.e., inadequate evacuation guidelines for people, incomplete geographical information for relief workers, and insufficient on-site information for disaster managers.

KEY WORDS: Real-time inundation model, emergency and response center