



The establishment of experimental watershed in Taiwan

Yu-Chi Wang, Shun-Chung Tsung, Hau-Wei Wang, Cheng-Hsin Chen, Ya-Chi Chang, Jui-Yi Ho, Shih-Chiang Lee, and Jian-Hao Hong

Taiwan Typhoon and Flood Research Institute, National Applied Research Laboratories, Taichung City, Taiwan, Province Of China (yuchi@narlabs.org.tw)

The rainfall distribution in Taiwan is non-uniform in space and unsteady in time. The water level in the river usually rises rapidly due to the steep slope gradient in the upland area of the watershed. In addition, urbanization and high rainfall intensity result in an increase in surface runoff and decrease the time of concentration. All of these lead to flooding-related disasters and influence people's lives. Thus, the establishment of a more complete hydro-information will increase our understanding of the characteristics of watersheds, prevent disasters, and mitigate damages.

To overcome these deficiencies, the Water Resources Agency (WRA), Ministry of Economic Affairs has identified Yilan and Dianbao River Basin to develop a long-term monitoring, then Taiwan Typhoon and Flood Research Institute is responsible for this project. The monitoring sites had been installed in 2012. The sensors for monitoring include rainfall gauge, water level sensor, water surface velocity sensor and pressure-type water depth sensor. Totally, there are 73 sites in the experimental watershed, including the sites installed by the Central Weather Bureau and the Water Resources Agency. Over 30 million data have been collected and validated. Most of data have been passed the processes and considered reliable data. Then, three types of models are applied including rainfall-runoff, river routing and two-dimensional flood models. The simulation results can properly fit the monitored data in these selected events and indicates these models are proper for the experimental watersheds and suitable used for real-time warning. Finally, for purpose of hydrological monitoring and disaster mitigation, a website has been created to show the monitoring data. The users can login and browse the real time monitoring data and figure of temporal data in the past 24 hours and get the information for flood mitigation and emergent evacuation.