

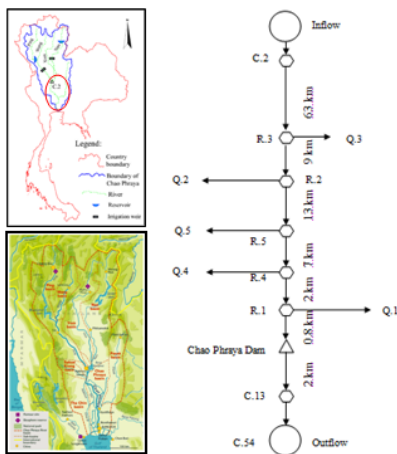
## Integrating Models in the Lower Part of Chao-Phraya River Basin for an Early Flood Warning System

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Chao-Phraya river basin is the most important river basin in Thailand to produce the main country products; therefore, flood can make loss to national economy and properties. In this study, the mathematical models have been applied to prepare flood information for an early flood warning system that purposes to provide the 7 days ahead forecasting.

### 1. MODEL APPLICATIONS

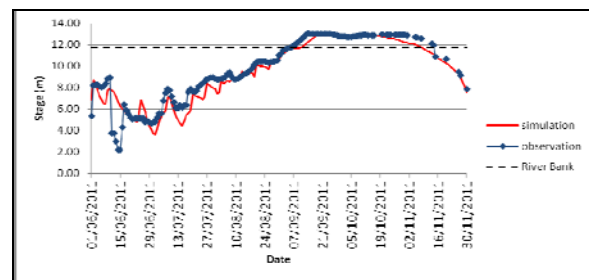
HEC-RAS model can simulate the flow in the main channel to provide flood forecasting information for the real time warning system with unsteady state condition and it needs some boundary data in the upstream (C.2), downstream (C.54) and lateral flow from river branches (R.1, R.2, R.3, R.4 and R.5) which can be estimated by ANNs, Harmonic Analysis and Multiple Linear Regressions, respectively, that are shown in **Fig. 1**.



**Fig.1** The boundary data of HEC-RAS

### 2. FLOOD WARNING INFORMATION

The flow simulation can predict the flood magnitude from river flow which exceeds the river capacity. In **Fig. 2** shows the flood from verification results in 2011 at Singburi province. Therefore, the information will be monitored to an early flood warning system.



**Fig. 2** Verification results at Singburi station (C.3)

### 3. SUMMARY

The flood forecasting by integrating models has been done in October, 2006 and it can obtain the fairly satisfied results. The trend of forecasting accuracy is decreasing when the time step is increasing. Moreover, the statistical evaluation of verified model is more than 90% of correlation coefficient; therefore, the calibrated HEC-RAS model can estimate the satisfied accuracy of water level during June to November, 2011. Finally, an early flood warning system can monitor the flood duration and magnitude from the exceeded discharge capacity; however, it needs to improve for more reliable flood information.