

Sutthipong Chaluy 2014: The Study on Real Time Flood Forecasting in the Mae Wang Thong Basin. Master of Engineering (Irrigation Engineering), Major Field: Irrigation Engineering, Department of Irrigation Engineering. Thesis Advisor: Mr. Wisuwat Taesombat, D.Eng. 163 pages.

Mea Wang Thong river basin is a subbasin of the Nan river basin has an watershed area of 1,970 square kilometers. The upstream areas of the river is located on the high mountain region of Phitsanulok and Phetchabun. The river slope is steep and has no reservoir to slow the flow of water during the rainy season caused flooding of the hill down to the river overflowing its banks every year. This study was selected 2 sets of models used for flood forecasting in telemetry project in Thailand namely MIKE11-NAM/HD/DA model package and InfoWorks PDM/RS/FloodWorks model package. First, NAM and PDM rainfall- runoff model with the selected data set during 2012 - 2013 were carried out for the calibration and verification model at two telemetry stations namely TNwt.6 and TNwt.15. The NAM and PDM result was summarized as the statistical indices r values which have a range of 0.83 to 0.88. Second, HD and RS hydrodynamic model calibration was carried out by steady state basis. It found that the river roughness coefficient (Manning'n) are in a ranged of 0.025 to 0.090. Third, an application of the river basin modeling - MIKE11-NAM / HD model and InfoWorks PDM/RS model were simulated flooding by upstream boundary with observed flow in every 15 minutes at TNwt.21 station and downstream boundary with rating curves at TNwt.22 station including lateral flow calculated from rainfall-runoff model. The result was summarized as the statistical indices r values which have a range of 0.91 to 0.93 which were nearby the observed data at TNwt.6 and TNwt.15 stations, respectively. Finally, MIKE11-DA was selected as flood forecasting model. The highest flood event in the period of September-October 2013 was chosen to determine the performance of DA model. The runtime of DA model was setup that the hindcast period was three days backward, and forecast period was one days forward. The forecasts of water level by DA model were generated continually predicted water level in every 15 minutes every day started from 28th September to 4th October 2013. The results found that DA model has shown its accuracy in forecasting flood hydrographs that close to the observed values at all four stations – TNwt.21 TNwt.6 TNwt.15 and TNwt.22- located along the Wang Thong river basin. The average accuracy of forecasting results at all stations revealed that for first day forecast in advance at 6.00 am 12.00 am 18.00 pm 24.00 pm that the average accuracy was 94.36, 87.63, 82.45 and 79.71 respectively.

---

Student's signature

---

Thesis Advisor's signature