

## Integration of Satellite Observations and Distributed Hydrological Model for Evaluation of Flood Control Capacity in Large Lake - A Case Study of Tonle Sap Lake -

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Quantitative evaluation of flood control capacity and flood risk in Tonle Sap Lake is one of the key issues for efficient flood control and water resources management in lower Mekong River basin. However, it is difficult to evaluate the flood control capacity due to insufficient in-situ observations and complex hydrological system of this area, where flood control capacity is varying by expanding/shrinking of lake size in wet/dry season and flood water of Mekong River flows into the lake in wet season. Even though, a variety of hydrological researches on Tonle Sap Lake have been done by using observed water level, discharge, lake level, flood control capacity and flood risk of Tonle Sap Lake is not well clarified yet. In this study, new lake model was developed and integrated to distributed hydrological model YHyM/BTOPMC (University of Yamanashi Hydrological Model and core model of Block-wise use of TOPMODEL and Muskingum - Cunge method). In the model, variation of water level and storage of Tonle Sap Lake was obtained from Satellite observations by TERRA/MODIS images and TOPEX/POSEIDON altimeter data, and used to calibrate the model parameters to simulate water exchange process between Mekong River and Tonle Sap Lake. In this application, decreasing of peak discharge due to effect of reverse flow from Mekong River to Tonle Sap Lake and flooding capacity around Tonle Sap Lake were simulated reasonably. These models are expected to apply to assess variations of flood risk associated with change of hydro-meteorological condition.

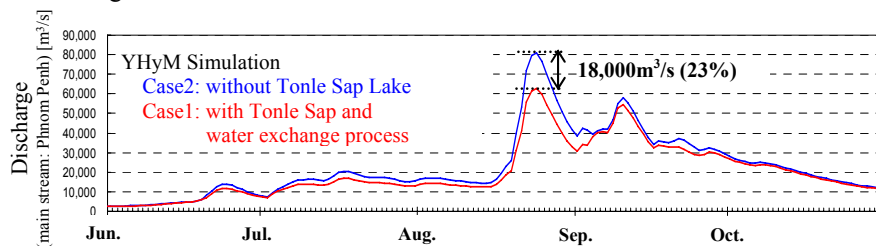


Figure 1. Simulation Example : Peak cut estimation at Phnom Penh YHyM/BTOPMC (1989)