



Real time forecast with Extend Kalman Filter on the Lo river basin (Vietnam)

Hoang Son Nguyen (1), Stefano Barontini (1), Minh Cat Vu (2), Le An Ngo (2), Thanh Tung Hoang (2), and Roberto Ranzi (1)

(1) Università di Brescia, DICATA-Dipartimento di Ingegneria Civile, Architettura, Territorio e Ambiente, Brescia, Italy (ranzi@ing.unibs.it, +39 030 3711312), (2) Water Resources University, Hanoi, Vietnam

In the last three decades, the transboundary Red River basin (169,000 km² at the sea outlet including the Thai Binh river system) and its tributaries, as the Lo river (38,165 km² at the Viet Tri outlet), in the northern part of Vietnam, have experienced significant changes with the construction of major reservoirs for hydropower, flood control and irrigation purposes. Because of the multiple objectives of the reservoir operations, the real time flood forecast at some critical 'nodes' of the river network becomes more and more important in the Red River system. Here we present an improvement of the hydrometeorological flood forecasting system based on deterministic mesoscale Quantitative Precipitation Forecasts and the distributed hydrological model DIMSOSHong already implemented there since 2008. The EKF-Extend Kalman Filter method based on surface runoff observations is used to update the state variables of the hydrological model. Also real time river level data available at the Ghenh Ga station, in the Lo riverbasin are used for this demonstration. Near-real time data including rainfall, water level, and Tuyen Quang and Thac Ba reservoir operation scenarios are used as well. Improvements of the updated modelling framework with respect to the standard QPF-DIMOSHong modelling chain are presented and discussed.