



Ensemble Kalman Filtering for improving operational flood forecasting with a 1D-hydraulic model: a case study for the River Rhine

A.H. Weerts

Deltares Delft Hydraulics, The Netherlands (albrecht.weerts@deltares.nl/Tel. +31-15-2858922)

Data assimilation is a key element of real-time flood forecasting. A sophisticated way of improving the flow and water level forecast is to update the state of the hydrological model or the hydraulic models through sequential data assimilation. The main aim of this paper is to (1) evaluate the effect of state updating on forecast accuracy for the River Rhine (at multiple locations) using an Ensemble Kalman Filter (EnKF), (2) study the effect of the ensemble size on the accuracy of the forecast results, (3) study the effect of the specification of the correlated spatial noise on the forecast accuracy. We have applied the EnKF to the 1-D hydraulic model of the Rhine used in the operational flood forecasting system FEWS-NL using a variety of time-invariant spatially-correlated noise to account for input, system and model-structural errors. First results indicate that the water level forecasts using EnKF are more accurate for lead-times at least out to 48 hours.