



Improved assessment of performance for real time flood forecasting systems

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Assessment of performance for real time flood forecasting systems is widely done the same way as the validation of off-line simulation model results. The entire time series of simulated discharge data is compared to the observed data and benchmarked with a chosen criterion. This way of assessing the performance of a forecasting system does not fulfil the requirements of users who utilise their system with a focus on flood forecasting. Using the whole time series for calculating model accuracy is balancing errors of different types occurring during different hydrological situations and does not clearly explain the performance during flood events.

A newly developed routine for automatic identification of the steep rise of a flood wave is presented. Therefore several criteria such as discharge values, their differences and gradients within a moving window are compared with given threshold values. Each time step is then assigned to be part of the steep rising flood wave or not, post processing further improves the result.

The accuracy of a forecasting model can now be calculated for (a) the entire time series and (b) only the rising limbs. The results of the forecasting model HYSIM are used to present the improved validation scheme. Comparing the results of evaluating the complete dataset and the rising-limb sub-data set shows that distinguishing between data sets leads to significantly different model performance.

The presented evaluation scheme gives more detailed information about accuracy of forecasting model output than the commonly used performance assessment. It makes it easier to document model performance under flood conditions and can also give useful information for model enhancement measures.