An Early Warning System for fluvial flooding in the Netherlands

Femke Davids (1), Jasper Stam (2), Eric Sprokkereef (2), and Marc van Dijk (1)

(1) Deltares, Delft, The Netherlands, (2) (2) Water Management Centre for the Netherlands, Rijkswaterstaat, Ministry of Infrastructure and Environment, The Netherlands

Fluvial flooding is one of the major natural hazards in the modern world. In a densely populated area, such as The Netherlands, the possibility of flooding of the Rhine and Meuse poses a significant threat to society. There is a clear need for reliable and robust hydrological forecasting. The Water Management Centre for the Netherlands and Deltares have developed an early warning system that uses real-time data provided by a large number of European meteorological and hydrological gauging stations, weather forecasts from three different weather services, and rainfall-runoff and hydraulic models. Data assimilation techniques are used to update both model states and parameter outputs. In addition, a post processing method, quantile regression, is applied to hydrological ensemble output.

This presentation will demonstrate the operational flood early warning system (based on Delft-FEWS) applied to these rivers. Recent challenges are, for example, the visualization of uncertainties on deterministic and probabilistic forecasts, the clear communication and visualization of the enormous amount of data available, and snow modelling.