



Real time flood forecasting in the Upper Danube basin

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In this contribution, we report on experiences with developing the flood forecasting model for the Upper Danube basin and its operational use since 2006. The model system consists of a hydrological model for the catchments and a hydrodynamic model for the Danube and uses meteorological forecasts for the next 48 hours. The parameters of the hydrological model were estimated based on the Dominant Processes Concept. Runoff data are assimilated in real time to update modelled soil moisture.

An analysis of the performance of the hydrological model indicates 88% of the snow cover in the basin to be modelled correctly on more than 80% of the days. Runoff forecasting errors decrease with catchment area and increase with forecast lead time. The forecast ensemble spread is shown to be a meaningful indicator of the forecast uncertainty.

We also show forecasts from the 2013 flood in the Upper Danube basin. There was a tendency for the precipitation forecasts to underestimate event precipitation and for the runoff model to overestimate runoff generation which resulted in, overall, rather accurate runoff forecasts.