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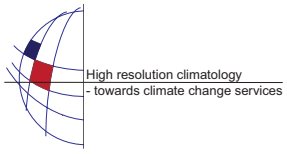

Error discrimination of an operational hydrological forecasting system at a national scale

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The use of operational hydrological forecasting systems is recommended for hydropower production as well as flood management. However, the forecast uncertainties can be important and lead to bad decisions such as false alarms and inappropriate reservoir management of hydropower plants.

In order to improve the forecasting systems, it is important to discriminate the different sources of uncertainties. To achieve this task, reanalysis of past predictions can be realized and provide information about the structure of the global uncertainty. In order to discriminate between uncertainty due to the weather numerical model and uncertainty due to the rainfall-runoff model, simulations assuming perfect weather forecast must be realized.

This contribution presents the spatial analysis of the weather uncertainties and their influence on the river discharge prediction of a few different river basins where an operational forecasting system exists. The forecast is based on the RS 3.0 system [1], [2], which is also running the open Internet platform www.swissrivers.ch [3]. The uncertainty related to the hydrological model is compared to the uncertainty related to the weather prediction. A comparison between numerous weather prediction models [4] at different lead times is also presented.

The results highlight an important improving potential of both forecasting components: the hydrological rainfall-runoff model and the numerical weather prediction models. The hydrological processes must be accurately represented during the model calibration procedure, while weather prediction models suffer from a systematic spatial bias.

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