



A streamflow assimilation system for ensemble streamflow forecast over France

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SAFRAN-ISBA-MODCOU (SIM) is a hydro-meteorological model used at Météo-France to predict soil water content and river streamflows. In order to produce a better initial state for the Ensemble Streamflow forecasts, an assimilation system is developed at Météo-France. This system uses past streamflow measurements in order to assess the best initial state of soil water content of the model for streamflow prediction. The data assimilation system is developed with a modular software (PALM, from the Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique), and is based on the Best Linear Unbiased Estimator method. Data from a maximum of 186 gauge stations are assimilated over France. This first study focuses on the selection of the best model variables for the assimilation process : root zone layer only or root and sub root layers taken together or apart. Two versions of SIM, including or not an exponential profile of hydraulic conductivity in the soil, are tested, and a set of classical hydrologic scores will be performed in order to describe the performances of the experiments. The impact of this improvement of the initial state of the model on ensemble streamflow forecasts scores will be assessed in a subsequent work.