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Evaluation of ECMWF reforecasts for flood forecasting for the river Rhine

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Postprocessing of hydrological forecasts follows the trend in the atmospheric community on postprocessing of determinstic and ensemble forecasts. However, postprocessing of hydrological forecasts may require significant longer archives of meteorological forecasts because extreme flood events occur rarely. These long archives do normally not exist. The available forecast archive is certainly not homogeneous because of significant changes in the meteorological forecast model each year. Hence, data requirements for bias correction of flood forecasts are a large issue as they require some form of systematic hindcasting over a long period. Recently, ECMWF started with systematic reforecasting with the current operational ECMWF model. The hindcast system consists of a 5-member ensemble, starting on the same day and month as the real-time forecast for each of the past 18 years. This constitutes a 90-member ensemble for the back-statistics. The use and value of the available ECMWF reforecasts for flood forecasting for the river Rhine using the operational flow forecasting system FewsNL Rhine and Meuse of the Dutch Centre for Water Management (WMCN) are evaluated using the available reforecast archive 1990-2007 and the available observed historical data.