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Ensemble hydrological forecasting based on weather predictions from the TIGGE database

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This study explores a 2-year archive (from October 2006 to October 2008) of meteorological ensemble forecasts from 8 meteorological centres that contribute to the TIGGE database, a component of the THORPEX Interactive Grand Global Ensemble program of WMO. Although hydrological studies based on these database are still few, and are generally based on a limited number of catchments and/or flood events, their results indicate that TIGGE can be a promising tool for ensemble streamflow and flood forecasting. The present study evaluates the performance of hydrological forecasts based on the TIGGE database over 74 catchments in France, with areas ranging from 1,000 km^2 to 10,000 km^2. Streamflow forecasts are issued by the GRP rainfall-runoff model, specifically adapted to run ensemble predictions at daily time steps. The ensemble prediction systems evaluated present a number of members ranging from 15 to 51 and lead-times up to 15 days, according to the meteorological centre. Performance and calibration issues are addressed.