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How much the length of data samples influences forecast verification and post processing of hydrological ensemble predictions?

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In hydrometeorological forecasting, researchers and operational forecasters are continually concerned about the evaluation of forecasts against observed data. Forecast verification is a key step for understanding the forecasting system, improving its performance and building new post-processing methods to achieve reliable forecasts for its users. To perform robust forecast verification and post-processing data requirements are usually demanding: there is a need of long series of forecast-observation pairs over varied climatic and hydrological conditions. This study investigates how much forecast verification and post-processing of hydrological ensemble predictions are sensitive to the length of data samples. The analyses are based on daily forecasts issued by a lumped soil-moisture-accounting type rainfall-runoff model over approximately 70 catchments in France. The model is driven by the 10-day ECMWF ensemble precipitation forecasts (51 members) for a period of 3.5 years (March 2005 to September 2008). The evolution of verification scores and of the parameters of a simple post-processing procedure that corrects model biases and takes into account the dispersion errors is analyzed using a moving average procedure applied to subsets of the full data set. Results of the sensitivity analyses are presented as a function forecast lead time.