



Hydrologic Requirements for Ensemble Representations of Uncertainty in Precipitation Observation, Analysis and Forecasting

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Ensemble precipitation analysis is an emerging field in hydrology. Hydrologic prediction systems tend to be highly non-linear making hydrologic response sensitive to variability and uncertainty in input forcing. Accordingly, the Hydrologic Ensemble Prediction Experiment (HEPEX) has initiated a new test-bed project to encourage development, testing and application of methods for ensemble representations of precipitation observations and analysis of uncertainty.

This presentation will review why ensemble precipitation estimation is important for hydrologic prediction systems and operational forecasting. Examples will be used to show how single-value best estimates of precipitation contribute to biased estimates of streamflow and/or to biased estimates of calibrated hydrologic model parameters. Accurate estimation of uncertainty in hydrologic initial conditions requires ensemble precipitation analysis so that effects of complex non-linear storage processes on initial condition uncertainty can be represented for ensemble hydrologic prediction.