# The Attribution of Hydrological Ensemble Prediction Uncertainty Due to Inputs, Models, Parameters and Initial State

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Meteorological ensemble forecasts, their pre- and hydrological post-processing, and multimodel combination approaches are different components of an integrated ensemble hydrological prediction system. Which part of the system plays the most important role in the skill metrics of the hydrological ensemble forecasts? How to quantify and decrease the uncertainty and increase the skill metrics of the integrated system? In this presentation, we will address those questions via a case study. A hydrological ensemble prediction system (HEPS) was developed at Beijing Normal University is used for the purpose, which includes several pre- and post-processing approaches and contains different hydrological models. Using hindcasts generated by meteorological ensemble forecasting systems (e.g., GEFS, TIGGE), HEPS can create ensemble hydrological predictions. The case study will involve Feilaixia basin in South China. This study is intended to quantify the uncertainty due to different components, such as meteorological ensemble forecasts, pre-processing of those forecasts, and hydrological post-processing approaches and hydrological model. Although the accuracy of meteorological ensemble forecasts is still limited, pre- and post-processing approaches often help generate ensemble forecasts with reasonable skill metrics.