

**ATS/CIRA Colloquium**

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**ATS 101**

**Hosted by Russ Schumacher**

## **Unscrambling Weather and Water Forecast Errors to Improve Ensemble Hydrometeorological Predictions**

As extreme flooding events and the associated cascade of societal flood risks and damages continue to inundate our newsfeeds, we as a scientific community are called to re-examine opportunities for improvement in flood prediction, risk communication, and societal preparedness. To achieve measurable improvement in forecasting the impact of water on the ground, one place to start is with a renewed focus on holistic understanding of current flood forecast challenges. To accomplish this, is important to understand the causes of forecast errors, and be able to distinguish, describe, and quantify errors stemming from both (1) the atmospheric inputs that serve as forcing for hydrologic model prediction, and (2) hydrologic model structure, parameters, and states. This talk will provide an overview of the challenge of disentangling hydrometeorological forecast errors, and provide examples of current research seeking to do this more effectively. Preliminary results will be shown from studies examining the impact of (1) precipitation post-processing on medium-range streamflow forecasts, (2) shorter-range forecasts of high-impact rain-snow events, and (3) a flash flood case study affected by both precipitation forecast skill and land-use treatment in the hydrologic model. These projects collectively underscore the opportunity to better bridge the meteorological and hydrologic communities through improving how we collectively understand our errors and uncertainties.

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