

Extracting Ensemble Information in Real Time to Improve Forecasts of Severe Convection

Brian Ancell (Texas Tech University, Lubbock, TX)

Ensemble sensitivity analysis (ESA) is a technique that extracts relevant information from ensembles that can subsequently be used in a variety of ways to improve forecasts in real time. ESA identifies atmospheric flow features at and prior to severe events that are linked to high-impact forecast aspects of convection such as high winds, heavy precipitation, hail size, and rotation (known as response functions). Since ESA highlights how upstream features, such as jet stream wind maxima/minima or low-level moisture gradients, determine the evolution of convection in the coming hours/days, it can add value to the forecasting process through forecaster awareness. It can also improve forecasts by adjusting the ensemble based on weighting individual members more if they are more skillful in sensitive areas – a technique known as ensemble subsetting. This presentation will show how ESA has been developed toward an operational tool in recent years from Warn-on-Forecast timescales to forecast horizons of days, the obstacles overcome and the knowledge gained while doing so, and the current status of operational ESA.