

REAL TIME ENSEMBLE & DETERMINISTIC WEATHER PREDICTION SYSTEMS

R&D PROJECT

RESEARCH PARTNERS:

- > Texas Tech University
- > National Oceanic and Atmospheric Administration (NOAA)
- > Shell Wind Energy

PROJECT TERM:

- > Ongoing

INDUSTRY PROBLEM:

- > Critical need to provide probabilistic forecast information essential for decision-making
- > Probabilistic forecasts must be at sufficiently high resolution to capture the full range of scales that influence atmospheric events of interest

SOLUTION:

- > The TTU weather prediction system is a cutting-edge data assimilation/forecasting system that provides high-resolution forecasts, and associated forecast uncertainty and probabilities, over much of the United States.
- > The system combines a state-of-the-art ensemble Kalman filter data assimilation technique with the Weather Research and Forecasting (WRF) atmospheric model on a 864-core computing cluster to produce 48-hr extended probabilistic forecasts at both 12km and 4km grid spacing twice daily.
- > The system integrates 42 simultaneous, equally-likely simulations to characterize the inherent uncertainty present in any given forecast.
- > The system can be used to guide future wind farm siting since the best locations are where the resource is both plentiful and predictable.
- > Forecasting applications include:
 - Air quality
 - Fire weather
 - Road weather
 - Wind power
 - Severe weather