Using Field Measurements, Numerical Simulation, and Visualization to Improve Utility-Scale Wind Farm Power Forecasts

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PSERC Public Webinar
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2:00-3:00 p.m. Eastern Time (11:00-12:00 p.m. Pacific)

Description: This presentation will describe ongoing research that uses *in situ* microclimate and tower-based measurement, remote sensing, ensemble weather forecasts, and visualization of turbine SCADA data to understand wind farm interactions with crops, turbine-layer flow fields, and the overlying free atmosphere. Diurnally and seasonally changing meteorological conditions indigenous to the U.S. Midwest and Great Plains have a high impact on power production and environmental interactions in wind farms. The nocturnal low-level jet and its accompanying high thermal stratification and high shear of wind speed and wind direction across the rotor layer can lead to inaccurate wind condition forecasts and stress on turbine components. High-resolution (in time) animation of power production by individual turbines in a wind farm provides insight on how turbine-flow interactions change under changing meteorological conditions.

Biography: The presenter is the Pioneer Hi-Bred Professor of Agronomy and Director of the ISU Climate Science Program. He holds a PhD in physics from ISU and is a fellow of the American Meteorological Society. He has federally funded research in both climate science and wind energy. He serves on the Board of Trustees of the University Corporation for Atmospheric Research and was coordinating co-author of the agriculture chapter of the 2014 U.S. National Climate Assessment.

Registration for Webinar Participation: None required. There is no charge for participating!

Participation by Webinar: There are several options for participating.
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Assistance: If you have any questions, please call 480-965-1643 or email pserc@asu.edu.

PSERC's Webinar Coordinator: Venkataramana Ajjarapu, Iowa State University, vajjarap@iastate.edu.

Professor Ajjarapu welcomes your feedback on PSERC webinars and suggestions for future ones.