

RUTGERS ENERGY INSTITUTE PRESENTS **WIND ENERGY**

UNDERSTANDING MESOSCALE INFLUENCES ON OFFSHORE WIND ENERGY PRODUCTION: CAS STUDIES IN RAMP PREDICTION AND RESOURCE ASSESSMENT

By Dr. Joseph Brodie

Director of Atmospheric Research

Rutgers University Center for Ocean Observing Leadership

(RUCOOL)

BIO

Joe Brodie is a meteorologist and physical oceanographer with a primary interest in the modeling of the complex coastal environment. His research focuses on using modeling tools to study climate change and working with these tools to further society's use of renewable energy technologies to reduce its climatic influence.

ABSTRACT

One of the challenges in the ongoing push for the development of offshore wind energy in New Jersey, the Mid-Atlantic, and the United States as a whole is a thorough and effective understanding of the metocean conditions found in targeted wind energy areas. Atmospheric observations can be sparse, particularly of winds at hub heights. To that end, atmospheric mesoscale modeling helps with both quantifying the available offshore wind resource, and understanding phenomena which will impact the wind farms once built. In this seminar, I describe the use of the Weather Research and Forecasting (WRF) mesoscale atmospheric model in evaluating the potential offshore wind resource for a hypothetical farm, by modeling a selection of case studies in order to effectively capture the variability of weather in the region. Additionally, I discuss how WRF performs in case studies of predicting wind ramp events, which are sudden changes in wind speed that result in large, rapid changes in wind power produced, and can have significant impact on electrical grid operations. Finally, I describe some ongoing research efforts to quantify how well operational models predict wind energy features like ramp events under various conditions, with the hope of being able to better quantify uncertainty and improve forecasting skill.



WHEN

**September
21**

**11:30am –
12:30pm**

WHERE

**Alampi
Room**

**Marine and Coastal
Sciences Building**

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