

**Nuclear Science and Engineering Program
Seminar Announcement**

Wind Energy Overview and Wind Speed Forecasting

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Wednesday, October 21
4:00 pm
Hill Hall 202

Abstract. Wind energy is a fast-growing industry, and in this talk, we will discuss the advantages and challenges related to producing electricity from wind. The status of wind energy throughout the world and the US will be reviewed along with turbine and wind farm design. The role of wind forecasts will be discussed in terms of why they are needed and how they are used. A short-term forecasting method that relies on regimes identified by fitting a Gaussian mixture model (GMM) to the wind vector will be presented, and we build regimes based on a single site, a local average of sites, and a region-wide average. We compare the performance of the models with GMM identified regimes to three state-of-the-art (SOA) reference models that each account for wind regimes differently. The models are evaluated at different forecast horizons at ten sites across the Pacific Northwest. GMM regimes based on local information produce the best forecasts and have a significantly improved accuracy at a region-wide level over the SOA models.

Biography. Amanda Hering graduated summa cum laude from Baylor University with a bachelors degree in mathematics. She joined the Department of Applied Mathematics and Statistics at The Colorado School of Mines as an Assistant Professor in 2009 after earning her Ph.D. in Statistics from Texas A&M University. She is the CSM Site Director for the Center for Research and Education in Wind, and her research interests are in the areas of spatial and space-time modeling, wind speed forecasting, model validation, and multivariate methods. Since joining the faculty at CSM she has overseen seven masters and one doctoral degree. She collaborates regularly with research groups at NCAR, NREL, and NOAA. She is a member of Phi Beta Kappa.

