

Bi-weekly Seminar

12pm - 1pm, Friday, April 12, 2019
UWM EMS 715

The Weather-Climate Interface and Data Science

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Abstract:

In 2008, the National Center for Atmospheric Research defined the weather-climate interface as the “set of common and challenging problems that have hindered both weather prediction and climate projections, and where the skills and interests of both communities are essential to their solution.” From a practical standpoint, a key interest of policy makers and planners is to translate broad descriptions of climate change to specific actions that can build climate change resiliency. To that end, in this talk, I will demonstrate how a broad range of analysis and data science post-processing techniques are readily applicable to both weather forecasting and climate data/simulations where the interest is in extracting information concerning the details of high impact weather and weather-dependent conditions. Examples presented will include using numerical weather prediction to understand the impacts of urban planning choices such as Green roofs to the local meteorology of Chicago; multiple linear and logistic regression models to anticipate weather-induced electrical power outages; correlated stochastic models of the Great Lakes water budget to understand future variability in water levels; agent-based/evolutionary programming models to estimate precipitation phase, convection occurrence, and tropical storm intensification; and artificial neural networks to predict snowfall and to identify heavy rainfall potential from synoptic and larger scale flow information.