The RAL Seminar Series

NCAR

Feature-specific analysis and prediction in climate simulation and weather prediction

by

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Foothills Lab Building 2, Room 1001
1:30 p.m.

Precipitating weather systems have life cycles involving formation, evolution, and decay. Climate scientists, numerical modelers, and operational hydro-meteorologists are especially interested in understanding how the characteristics of precipitation systems change over space and time. For example, a topic of current interest is whether global climate change can be observed in the changing characteristics of precipitating weather systems.

In addition, there are many outstanding questions regarding the ability of numerical weather prediction systems to predict realistic weather events that translate and evolve over time and space. These questions can be addressed with appropriate evaluation methods. For example, at Purdue we have been developing a real-time prediction system using twice-daily runs of the Weather Research and Forecasting (WRF) model. We are interested in the evaluating the quality of these forecasts, and determining how well the model accurately predicts temporal changes in the morphological characteristics of convective precipitation systems. Automated techniques of identifying and tracking individual weather systems must be developed and applied to forecast and observed data, and methods of comparing forecasts and observations of time-varying features are also required. These methods can also be applied to simulations of current and future climate that contain realistic spatial structure.