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# MMM SEMINAR NCAR

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## Elevated Convective Systems and Extreme Rainfall

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Extreme precipitation in the warm season can result from a variety of weather systems, but most such events in the U.S. occur in association with elevated convective systems, in which the unstable air feeding the convection originates above the surface. These events also tend to be poorly predicted by numerical weather prediction models. This presentation will look at past and possible future research directions for both surface-based and elevated mesoscale convective systems (MCSs). Then, the synoptic- and mesoscale processes responsible for the maintenance of elevated, heavy-rain-producing MCSs will be discussed from the perspectives of both traditional composite analysis and a principal component analysis-based method. Quasi-idealized simulations, which incorporate either the mesoscale ascent, or the full three-dimensional variability, in elevated MCS environments, are used to address the respective roles of large-scale forcing for ascent, convectively generated cold pools, and convectively generated gravity waves. Using ensembles of forecasts, we explore the key sensitivities in rainfall amounts to initial conditions and physical processes, and hypotheses identified from the ensemble-based analyses are then tested in a more idealized framework. Finally, remaining limitations in understanding and prediction, along with plans for addressing them in the upcoming Plains Elevated Convection At Night (PECAN) field experiment, will be discussed.

*This seminar will be recorded and available via webcast at:  
<http://www.fin.ucar.edu/it/mms/fl2-live.htm>*

**Thursday, 24 April 2014, 3:30 PM**

Refreshments 3:15 PM

NCAR-Foothills Laboratory

3450 Mitchell Lane

Bldg 2 Small Seminar Room 1001