

The RAL Seminar Series



NCAR

Precipitation Assimilation and Its Applications in Dynamical Downscaling

by

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***Monday, January 26, 2009
Foothills Lab Building 2, Room 1001
3:30 p.m.***

During this seminar, one of the precipitation assimilation applications in spectral models used in numerical weather predictions from global to regional scales will be discussed. Precipitation assimilation impact on the surface water and energy budgets of a regional spectral model will also be analyzed, together with its influence on the dynamical downscaling of two extreme climate events - the upper Mississippi River Basin 1988 drought and 1993 floods. Particularly for the 1993 flood simulations, the intensity and location of the subtropical upper-level westerly jet and its associated transverse circulations were noticeably improved in the regional simulations where the heavy precipitation core was found. This also suggests that the cumulus convection scheme - in this case, the Relaxed Arakawa-Schubert parameterization scheme - can cause the large-scale features to drift during the regional simulation, and precipitation assimilation reduces this drift. As will be shown, precipitation assimilation not only increases the regional model precipitation simulation skill but also provides improvements in other fields influenced by the precipitation. This positive impact on regional simulations is enough to prove that the precipitation assimilation here proposed does not provide unbalanced initial fields to the regional model predictions. Ultimately, due to the potential impact on land surface variables, improvements in monthly to seasonal predictions are expected.