ATS/CIRA Colloquium

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A New Idealized Modeling Technique for Approximating Environmental Variability

Hosted by Russ Schumacher

Friday, March 14, 2014

ATS room 101; Discussion will begin at 11:15am
Refreshments will be served at 10:45am in the weather lab

A new modeling technique, known as base-state substitution (BSS), is introduced as a novel way to approximate environmental heterogeneity in idealized simulations. After a certain amount of model run time, base-state substitution replaces the original horizontally homogeneous background environment with a new horizontally homogeneous environment while maintaining any perturbations that have developed during the preceding simulation. This allows the user to independently modify the kinematic or thermodynamic environments, or replace the entire sounding without altering the structure of the perturbation fields. The BSS modifications can be made gradually or instantaneously, depending on the needs of the user. Both the gradual and instantaneous BSS procedures will be demonstrated for simulations of deep moist convection, using first a wholly idealized setup and then a pair of observed near-storm soundings. The theoretical basis of BSS, as well as several unique aspects of the approach will be discussed.

Link to colloquium videos and announcement page: http://www.atmos.colostate.edu/dept/colloquia.php