

# *THE RAP SEMINAR SERIES*



## NCAR

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### **Distributed Hydrologic Modeling in the Southern Great Plains**

by

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Foothills Lab, Building 2, Auditorium Room 1022,*

Hydrologic modeling in the Southern Great Plains is being conducted within a collaborative study among NCAR/RAP, Berkeley National Lab, USDA Agricultural Research Service and Princeton University. The Red/Arkansas River basin has been the focus of several investigations to study the interaction of atmospheric forcings with the land surface, subsurface, and vegetation process. The basin was the first large-scale area studied under the GEWEX Continental Scale International Project (GCIP). Portions of the basin include the operational region of the International H2O Project (IHOP-2002) and the Department of Energy IOP 2002 experiments. A 30-year simulation using a fully distributed land surface model at 1 km resolution for the Red/Arkansas River basin is being performed. Forcing data (precipitation, incoming radiation and surface meteorology) interpolated from meteorological and rain gauge observations are used. Results will help clarify the source of long-term hydrologic variability within the basin. We have also investigated the controls on soil moisture under different wetting and drying conditions in the Whitewater Watershed, a subbasin within the system, and used a land surface model to determine how subgrid spatial variability of soil moisture might be represented. In the absence of detailed measurements, a land surface model that has been shown to reproduce soil moisture patterns in the Southern Great Plains, was used in fully distributed mode to generate small scale (30m) soil moisture data. The study is being extended to perform event-based distributed hydrologic modeling over the Walnut River watershed and its subbasins using radar rainfall data and observational meteorological forcings. Different hydrologic models with different degrees of complexity will be used.

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