

Regional Climate Simulations of the North American
Summer Monsoon for Year 1990

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The NCEP regional spectral model (RSM) is used to simulate the North American summer monsoon for year 1990. The case selected for this study is from NAMAP project. The area covers the NAMs Tier 2 area (10-40N, 90-120W). The model is initialized on May 1, 1990 with the initial and boundary conditions from the Reanalysis II. The lateral boundary conditions are supplied every 6 h. The soil conditions are predicted by the model. The simulations will be evaluated against the observed gridded and satellite derived rainfall and station data.

The preliminary result of the control simulation shows that the RSM captures the evolution of the monsoon reasonable well. The model simulation shows that rainfall starts from the southern Mexico in June and propagates northward. Similar to the observations, over the Arizona and New Mexico (AZNM) area, rainfall started in July and intensified in August. After the mid-August, rainfall diminished. The inverse relationship between rainfall over the AZNM and the central United States is also captured by the model. The drawback is that the model simulation is too dry over western Arizona and northern Texas.

Sensitivity tests will be performed to test the impact of soil moisture, different cumulus convection schemes. The mechanism of the monsoon evolution and the relationship between the moisture surges from the Gulf of California and rainfall will be examined. Results will be reported in the meeting.