Atmospheric simulations of the 2004 North American Monsoon circulation: NAMAP2

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We report on results from NAMAP2, a coordinated set of simulations of the 2004 North American monsoon season (the year of the NAME Extended Observation Period) carried out retrospectively by ten modeling groups. Time-varying SST was the principal prescribed surface boundary condition for NAMAP2 simulations. We describe the fidelity of the model simulations with respect to several different analysis products. Emphasis in the analysis in placed on how well the models reproduce the seasonal and diurnal cycles of precipitation, monsoon onset, and the Gulf of California Low Level Jet.

All models achieved some degree of fidelity in simulating the onset and seasonal evolution of the monsoon and the diurnal cycle of precipitation. In significant ways these simulations represent a marked improvement over the previous NAMAP model assessment carried out before the NAME field season. As expected, however, there were considerable differences among models in the amounts of precipitation. These differences are diagnosed in terms of convective vs. resolved precipitation with marked deficiencies noted in both components of simulated precipitation.

An extensive set of NAMAP2 graphics is freely available in an online atlas. The results discussed here have been summarized in a recent short article in CLIVAR Exchanges and are being prepared for publication.