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Subseasonal forecast of cumulative precipitation over the Sahel with the NCEP Climate Forecasting System: Impact of model resolution and initial conditions in the simulation and prediction of the West African Monsoon

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Subseasonal forecast of atmospheric conditions over the Sahel during the Monsoon period may be beneficial locally and remotely (downstream). Here we first review the skill of the NCEP Climate Forecasting System (CFS) to forecast anomalies of cumulative precipitation at lead times between weather and climate prediction (Vintzileos and Thiaw, 2006). We show that there is a window of lead times between 10 and 40 days in which forecast of cumulative precipitation is skillful. During the West African Monsoon period of 2006 we were posting on the internet, free-access, twice daily, real time forecasts of anomalies of cumulative precipitation over the Sahel. Here we also review the skill of the operational CFS during the 2006 Monsoon. We show that with the exception of the significant transition from anomalous dry to wet conditions which occurred during mid-July 2006 the CFS presented some skill in forecasting cumulative precipitation. Dynamical instabilities of the atmospheric flow and local sea - land contrast are important for the West African Monsoon. We investigate the importance of discretization of the atmospheric component of the coupled model with a series of hindcasts at truncations of T62, T126 and T254. Preliminary results show that at T254 features of the mean precipitation field like its northward extension are better resolved. Implications to forecast skill are shown. Coupling of the land and the atmosphere over the WAM area is also a significant factor affecting precipitation. We discuss the importance of the land surface initial conditions by repeating the above hindcast experiments initialized from the NCEP Reanalysis-2 and from the operational NCEP analysis (GDAS).