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Impact of atmospheric resolution and atmospheric/land initial conditions on subseasonal forecasting with the NCEP coupled forecasting system.

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Subseasonal forecasting is defined as prediction of weather statistics in the lead time zone between weather prediction (day 0 to 14) and seasonal forecasting (month 3 and beyond). For skillful subseasonal forecasting all components of the coupled system i.e., land surface, ocean and atmosphere, must be initialized as suitable as possible. Forecasting at these lead times i.e., at the interface between weather and climate, still presents a significant number of open questions among which: What is the best resolution for useful subseasonal forecasts? Is it better to use initial conditions from a frozen reanalysis system (which is preferable when bias correction is crucial) rather than the best initial conditions available at the time and an estimate for bias correction? In this talk we address the above questions using a series of retrospective forecasts with the NCEP subseasonal-to-seasonal forecasting system (CFS) at truncations of T62, T126 and T254 initialized in boreal summer months by both the NCEP/DOE/NCAR Reanalysis-2 and by the NCEP operational analysis. In this investigation our metrics are the boreal summer Tropical Intraseasonal Oscillation, the North American and West African Monsoons and the Atlantic Tropical Storm activity. Preliminary results show that for at least the Western African Monsoon region for which the CFS has been show to have skill at subseasonal time scales (Vintzileos and Thiaw, 2006), atmospheric resolutions of T62 and T126 are quite similar in regard to distribution of precipitation and that there is a significant improvement of this distribution when we increase the resolution to T254. Implications of these improvements to forecast skill are presented.