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# NMME-based Assessment of Prediction Skills of US Summertime Droughts and Pluvials: Role of Near-surface Temperature Prediction Skill

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This study used the North American Multi-Model Ensemble (NMME) system to understand the role of near surface temperature in the prediction skill for US climate extremes. In this study, the forecasting skill was measured by anomaly correlation coefficient (ACC) between the observed and forecasted precipitation (PREC) or 2-meter air temperature (T2m) over the contiguous United States (CONUS) during 1982–2012. The strength of the PREC-T2m coupling was measured by ACC between observed PREC and T2m or forecasted PREC and T2m over the CONUS. This study also assessed the NMME forecasting skill for the summers of 2004 (spatial anomaly correlation between PREC and T2m: 0.05), 2011 (-0.65), and 2012 (-0.60) when the PREC-T2m coupling is weaker or stronger than the 1982–2012 climatology (ACC:-0.34). This study found that most of the NMME models show stronger (negative) PREC-T2m coupling than the observed coupling, indicating that they fail to reproduce interannual variability of the observed PREC-T2m coupling. Some NMME models with skillful prediction for T2m show the skillful prediction of the precipitation anomalies and US droughts in 2011 and 2012 via strong PREC-T2m coupling despite the fact that the forecasting skill is year-dependent and model-dependent. Lastly, we explored how the forecasting skill for SSTs over north Pacific and Atlantic Oceans affects the forecasting skill for T2m and PREC over the US. The findings of this study suggest a need for the selective use of the current NMME seasonal forecasts for US droughts and pluvials.