

# Asymmetry in Subseasonal Surface Air Temperature Forecast Error with Respect to Soil Moisture Initialization

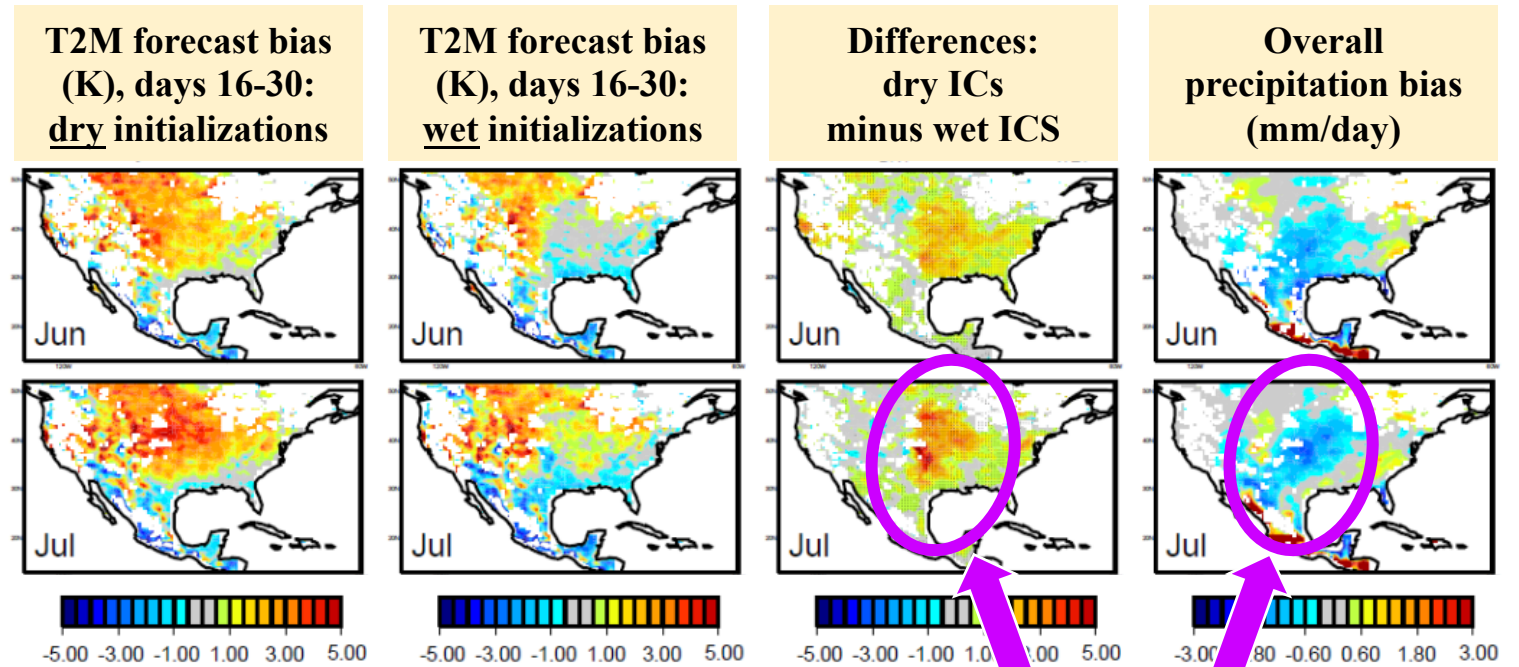
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NASA MAP funding has allowed an analysis of error in subseasonal air temperature (T2M) forecasts. Newly elucidated, straightforward mechanisms suggest that when the initial local soil moisture in a forecast is drier than usual:

- ❑ Random error in the T2M forecast should be larger, and
- ❑ Bias error in the T2M forecast (as induced by a model's overall precipitation bias) should be larger.

Extensive analyses of GEOS S2S forecast system outputs show that this behavior is indeed inherent in the system. The bias-related mechanism's signature is particularly clear (see figure).

Naturally, knowing ahead of time when to put more trust into a forecast should be of substantial benefit to forecast end-users.



Relatively dry soil moisture initializations amplify T2M forecast biases associated with precipitation biases