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Two Flavors of ENSO and Its Predictability

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Abstract:

The predictability of El Niño and associated teleconnection is investigated on the premise of different flavors of El Niño: Warm-pool El Niño and cold-tongue El Niño, which have different center of action, spatial pattern of tropical SST anomalies, atmospheric response, etc. The ensemble forecasts of two CGCMs staring from 12 calendar months in the 24 years from 1981 to 2005 are compared.

Even though two CGCMs have independent model physics and initialization process, the structure of error evolving with respect to lead month shows substantial similarities suggesting CGCM has one oscillatory scenario to generate the El Niño inconsistent with observed. Different from SST anomalies, the predictability of teleconnetion associated with two flavors of El Niño show clear model dependency. The slow coupled dynamics of model induces the systematic error with respect to lead month and it has a significant role on the forecast errors of rainfall and circulation anomalies.