SESSION: (A1) Mechanisms of S2S predictability

(A1-10)

Predicting the dominant patterns of subseasonal variability of wintertime surface air temperature in extratropical Northern Hemisphere

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Skillfully predicting persistent extreme temperature anomalies more than 10 days in advance remains a challenge although it is of great value to the society. Here the two leading modes of subseasonal variability of surface air temperature over the extratropical Northern Hemisphere in boreal winter are identified with pentad (5-days) averaged data. They are well separated geographically, dominating temperature variability in North America and Eurasia, respectively. There exists a two-pentad lagged correlation between these two modes, implying an inter-continental link of temperature variability. Forecast skill of these two modes is evaluated based on three operational subseasonal prediction models. The results show that useful forecasts of the Eurasian mode (EOF2) can be achieved four pentads in advance, which is more skillful than the North American mode (EOF1). The influence of the Madden-Julian Oscillation (MJO) on the forecast skill of these two temperature modes is also analyzed.