

Predictability of tropical rainfall in the ECMWF seasonal forecast systems

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In most tropical regions, seasonal rainfall anomalies are strongly influenced by variations in sea-surface temperature on both regional and global scale. While the local relationship between SST and rainfall variability is reasonably well captured by the current generation of coupled models used for operational seasonal forecasting, the remote influences of SST variability on eg the main monsoon systems are often simulated and predicted with much reduced accuracy. In this study, potential and actual predictive skill for some of the main modes of tropical rainfall variability are evaluated from two 28-year sets of seasonal ensemble hindcasts. The first hindcast set is made with the current ECMWF seasonal forecast system (System-3), the second one has been produced to calibrate the next seasonal forecast system (System-4), which is planned to become operational in autumn 2011. The new version of the ECMWF coupled model displays a larger, and generally more realistic, tropical rainfall variability than the one used in System-3. The effects of this change on estimates of the potential predictability of regional rainfall anomalies will be discussed, as well as actual predictive skill for the 1981-2008 period.