

Sea Surface Temperature - Precipitation Relationship in Different Reanalyses

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ABSTRACT

The focus of this investigation is how the relationship at intraseasonal time scales between sea surface temperature (SST) and precipitation (SST-P) varies among different reanalyses. The SST-P relationship in observation is much better reproduced in CFSR, the Modern Era-Retrospective-analysis for Research and Applications (MERRA) and the ECMWF Re-Analysis Interim (ERA-Interim) (ERA-I) compared to that in the NCEP/NCAR reanalysis (R1) and the NCEP/DOE reanalysis (R2) (Fig. 1, top panel). The differences in SST-P relationship at intraseasonal time scales across different reanalyses are not due to whether the reanalysis system is coupled or atmosphere alone, but are due to the specification of different SSTs. The SST-P relationship in different reanalyses, when computed against a single SST for the benchmark, demonstrates a relationship that is common across all the reanalyses and observations (Fig. 1, bottom panel). The results also demonstrate that the MERRA and ERA-I overestimate the intraseasonal variability in precipitation compared to the observation.

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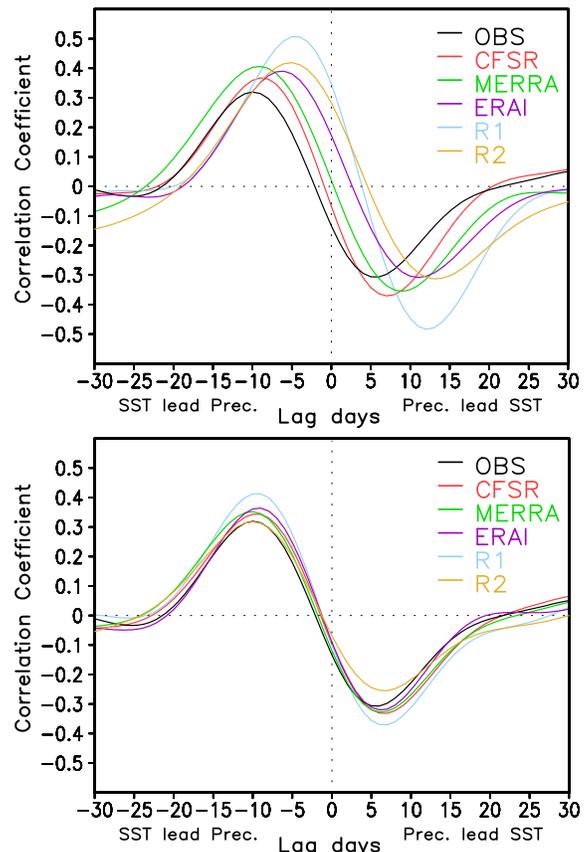


Fig. 1 Lead-lag SST-precipitation correlation for various reanalyses and for observations over the tropical western Pacific (averaged over 10°S–10°N, 130°–150°E) for respective SSTs were used (top panel), and for NCDC SST as the benchmark (bottom panel). Negative (positive) lag in days on the x axis indicates days by which the SST leads (lags) the precipitation.