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Ensemble Hindcasts of SST Anomalies in the Tropical Pacific Using an Intermediate Coupled Model

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Ensemble hindcasts of sea surface temperature (SST) anomalies in the tropical Pacific are studied using an intermediate coupled model (ICM), in which an ensemble Kalman filter (EnKF) data assimilation system is implemented to provide the initial ensemble. A linear, first-order Markov stochastic model is adopted to represent model errors. Parameters in the stochastic model are estimated by comparing observationminus-forecast values over 30 years. Twelve-month, 120 ensemble hindcasts are performed over the period 1995-2004, each with 100 ensemble members. This ensemble technique provides a simple method of extending the standard ICM forecasts to the probabilistic domain. The results show that the prediction skill of the ensemble mean is better than that of one single deterministic forecast using the same ICM. For the probabilistic perspective, those ensemble forecasts have their ensembles following observed SST anomaly variations well.