

Subseasonal Forecasting of the Madden-Julian Oscillation with Stochastic Climate Models

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We investigate the skill of linear stochastic climate models in subseasonal MJO forecasts with lead times up to one month. Stochastic climate models have been shown to be competitive with coupled ocean-atmosphere global climate models (CGCMs) at 2-3 week lead times. They also are computationally inexpensive compared to CGCMs, allowing for the production of larger ensembles for probabilistic prediction relative to their counterparts. The linear inverse model (LIM) and extensions of LIM with non-Gaussian correlated additive and multiplicative noise (CAM) are examined. The correlation of the Real-time Multivariate MJO index of the forecast ensemble means against reanalysis observations are calculated and compared to those of a stationary climate. The probabilistic forecast skill of ensemble distributions for each model are similarly determined with a Brier score, and the results are compared. Special consideration is given to the predictability of DYNAMO events, and thought is given to identifying predictands in DYNAMO observations.