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Title: Predictability of the Madden-Julian Oscillation in the Intraseasonal Variability Hindcast Experiment (ISVHE)
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Abstract:
The Madden-Julian Oscillation (MJO) represents a primary source of predictability on intraseasonal time scales. With its influence extending from seasonal modulations to weather and extreme events, efforts to predict the MJO have been a focus of intense research for the past two decades. While the last decade has witnessed marked improvement in dynamical MJO prediction, timely assessment of the practical and potential MJO prediction capabilities from dynamic models is crucial for guiding future research and development priorities. In this study, the predictability of the boreal winter MJO is re-visited based on the Intraseasonal Variability Hindcast experiment (ISVHE), a set of dedicated extended range hindcasts from eight different coupled models. MJO predictability is estimated from both the deterministic and ensemble mean hindcasts, giving values of 20-30 days and 35-45 days, respectively, for most of the models examined. The fact that the model's hindcast skill is less than the estimated predictability limits by 1-2 weeks, suggests that more skillful MJO forecasts can be afforded through further improvements of dynamical models. In addition, analysis of the forecast 'spread-error' relationship in the different ensemble prediction systems (EPS) indicates that significant improvements in MJO prediction can also be brought out through improvements in the fidelity of the model, assimilation and structural fidelity of existing EPSs.
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