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Seasonal Forecasting of the Quasi-Biennial Oscillation

The ability to seasonally forecast the Quasi-Biennial Oscillation (QBO) was examined using NASA S2S (Sub-seasonal to Seasonal), 9-month, retrospective forecasts. Analysis of these QBO forecasts demonstrated that the S2S model has skill in predicting the QBO amplitude and phase over a simple QBO phase propagation model at forecast lead times of 1 to 3 months. Results from an initial assessment of whether more accurate QBO forecasts can improve Northern Hemisphere winter sea level pressure forecasts showed no significant forecast improvement at a 1-month lead time, indicating the need for improved stratosphere-troposphere QBO coupling metrics and pathway identification. Overall, these results suggest that future improvements in representing the QBO in global models can increase the ensemble fraction of valid 1 to 3 month QBO forecasts and potentially extend useful QBO forecasts beyond 3 months.

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