

Hindcasts of the 2016 Disruption of the Stratospheric Quasi-biennial Oscillation

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In early 2016 the quasi-biennial oscillation in tropical stratospheric winds was disrupted by an anomalous easterly jet centered at ~40 hPa, a development that was completely missed by all operational extended range weather forecast systems. This event and its predictability are investigated through ensemble hindcasts using a global model notable for its sophisticated representation of the upper atmosphere. Key to prediction of this event is simulating the slowly evolving mean winds in the winter subtropics that provide a waveguide for Rossby waves propagating from the winter hemisphere. Its association to the strong El Nino condition in 2015 is also investigated by changing sea surface temperatures.

Key words: quasi-biennial oscillation, Rossby wave, extended range hindcast