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## **QBO wind influence on MJO-induced temperature anomalies in the upper troposphere and lower stratosphere in an idealized model**

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The dynamical mechanism by which the quasi-biennial oscillation (QBO) might influence the temperature anomaly, associated with the Madden-Julian oscillation (MJO), in the equatorial upper troposphere and lower stratosphere (UTLS) is examined by conducting a series of initial-value experiments using a dry primitive equation model. The observed temperature response to the MJO convection becomes colder and more in-phase with the convection during easterly QBO (EQBO) than westerly QBO (WQBO) phases. This QBO-dependent MJO temperature anomaly in the UTLS is qualitatively reproduced by model experiments in which EQBO or WQBO background state is artificially imposed above 250 hPa while leaving the troposphere unaltered. As in the observations, the cold anomaly in the UTLS becomes strengthened and steepened with EQBO-like background state than WQBO-like one. It turns out that the QBO zonal wind, instead of temperature, plays a major role in determining the UTLS temperature anomaly by modulating wave energy dispersion.