

CGD Seminar Series

The relationship between the Madden-Julian oscillation and the quasi-biennial oscillation: Observations and GCM modeling

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Date: Tuesday 22 September, 2020

Time: 11am – 12pm

For Zoom information, please contact

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For live stream information, visit the

CGD Seminar Webpage

ABSTRACT

Recent observational studies have demonstrated a strong and surprising link between two key modes of tropical variability: the Madden-Julian oscillation (MJO) and the stratospheric quasi-biennial oscillation (QBO). After briefly reviewing these two phenomena, we discuss the main components of the MJO-QBO relationship, including the key takeaway that when QBO winds in the lower stratosphere are easterly, the MJO tends to be stronger and more predictable during boreal winter. We then present results from a series of GCM modeling studies that explore whether the observed MJO-QBO link can be captured. In a variety of different model types and experiments, we find that models struggle to clearly demonstrated the strong observed link. The continuing challenge of realistically capturing the MJO-QBO link for a wide range of models is discussed, as well as the implications for the observed relationship and possible directions for future work on this topic.

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