

Kodera, K., T. Nasuno, S-W. Son, N. Eguchi, and Y. Harada, 2023: Influence of the stratospheric QBO on seasonal migration of the convective center across the Maritime Continent. *J. Meteor. Soc. Japan*, **101**.

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Plain Language Summary: A marked impact of the stratospheric quasi-biennial oscillation (QBO) on the Madden–Julian Oscillation (MJO) has become evident in recent studies. In this study, we show that the QBO affects the annually phase-locked seasonal migration of the tropical convection from the equatorial Indian Ocean to the Western Pacific in the Austral summer: large-scale convection strengthens and moves eastward more effectively during easterly phase of the QBO (QBO–E) in austral summers than that during westerly phase of the (QBO–W).

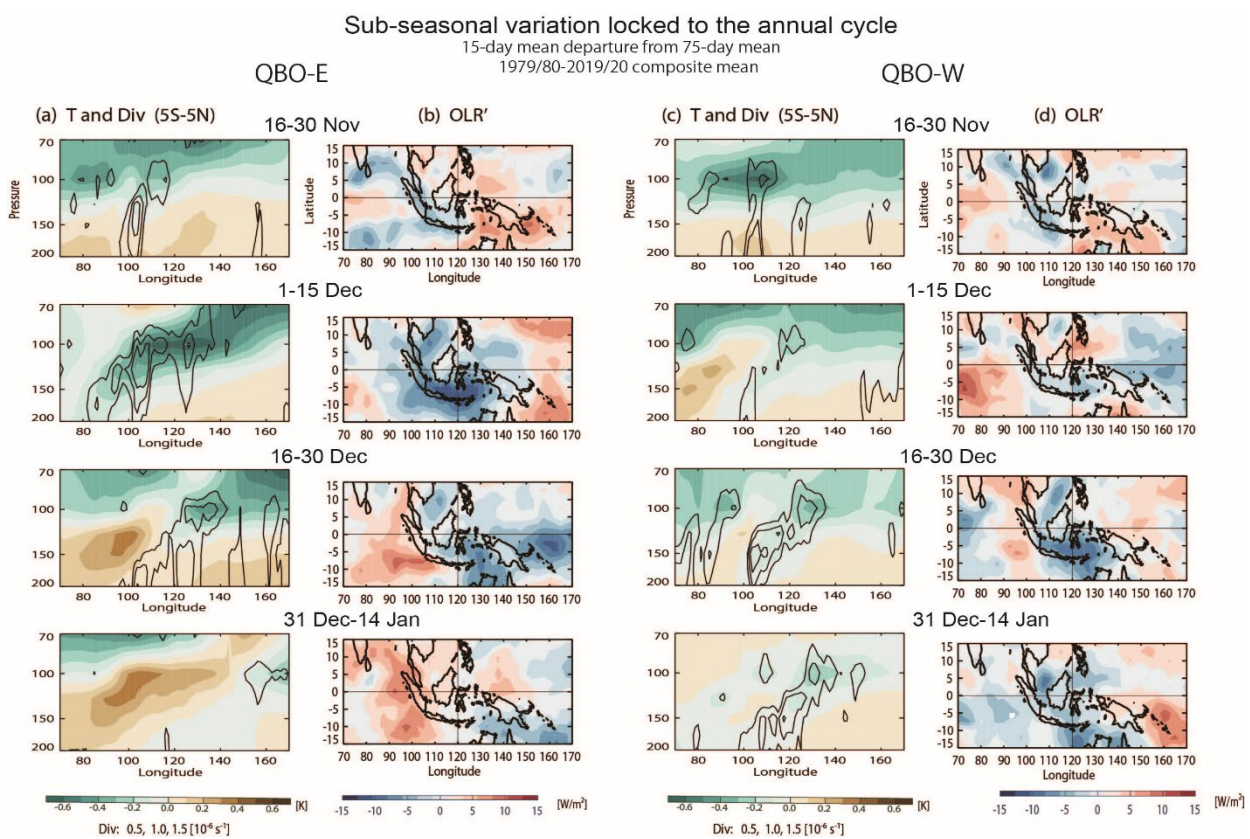


Figure 1. Composite means of intra-seasonal variation locked to the annual cycle for QBO–E, (a and b) and QBO–W (c and d). (a) and (c) show anomalous temperature (color shadings) and horizontal divergence >0 (contours: 0.5, 1, $1.5 \times 10^{-6} \text{ s}^{-1}$), respectively. (b) and (d) shows anomalous OLR.

- We propose a hypothesis on the sub-seasonal process: the anomalous cooling around the tropopause associated with Kelvin wave-like response under QBO–E produces a favorable condition for a development of penetrating convection into the tropical tropopause layer over the eastern MC compare to that under QBO–W, which promotes the seasonal migration of convection.
- The implication of this process for the QBO modulation of the MJO crossing the MC is also discussed.