Morphology of zonal asymmetry of QBO zonal wind

*Takatoshi Sakazaki[1], Kevin Hamilton[2], Yoshio Kawatani[3]

1. Graduate School of Science, Kyoto University, 2. International Pacific Research Center, University of Hawai'i, 3. Japan Agency for Marine-Earth Science and Technology

Although the QBO primarily shows a zonally symmetric nature, a smaller but significant eddy component is sometimes observed. This study demonstrates the basic morphology of zonal asymmetry in QBO zonal wind in the middle stratosphere based on the statistical analysis of the ERA5 dataset from 1958 to 2019. As pointed out by previous studies, the zonal eddy component is found to be statistically large in the westerly phase of QBO during boreal/austral winter seasons, since the tropical westerly allows a lateral, equatorward propagation of stationary planetary waves from the winter Hemisphere. Moreover, it is found that the QBO eddy component shows a strong inter-annual to decadal variability; the underlying processes (and possibly the uncertainty in QBO wind in reanalyses) will be discussed in the poster.

Keywords: Stratosphere, Quasi-biennial oscillation, Zonal asymmetry

