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B 会場 ：11/5　PM2 （15:45-18:15）
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DW1 Tidal Enhancements in the Equatorial MLT During 2015 El Nino: The Relative Role of Tidal Heating and Propagation

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Ground-based and satellite observations have shown that the tidal component DW1 in
the equatorial mesosphere and lower thermosphere (MLT) was enhanced in July − October 2015, which was an intense El Nino year. This enhancement is reproduced in the 21 years reanalysis-driven model simulation by the Ground-to-topside model of Atmosphere and Ionosphere for Aeronomy (GAIA). Our analysis shows the (1,1) Hough mode dominates this tidal enhancement, and its peak amplitude was 74% higher than that under neutral (non-ENSO) conditions at 90 km. The corresponding tidal heating was found to increase by 5%, which can explain 7% of the (1,1) enhancement. To explain the remaining enhancement, we quantitively examined the upward propagation condition by calculating the vertical wavenumber and the latitudinal shear of the zonal wind. The analysis reveals that the vertical wavenumber between 18 and 60 km was one standard deviation smaller than that under neutral conditions. The latitudinal zonal wind shear also decreased in 18 − 30 km. These results suggest smaller dissipation and damping of the (1,1) mode during its upward propagation, which dominantly contributed to the tidal enhancement at 90 km altitude. This decrease in the vertical wavenumber and the wind shear can be reasonably explained by the eastward phase of the quasi-biennial oscillation (QBO) in the lower stratosphere. This study suggests that the overlapping of the 2015 El Nino with the eastward phase of the QBO induced the large enhancement of the DW1.