

MADDEN-JULIAN OSCILLATION OBSERVED IN COSMIC-2 RADIO OCCULTATION DATA

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With the launch of an equatorial constellation of six satellites called COSMIC-2 (Formosa Satellite-7/Constellation Observing System for Meteorology, Ionosphere, and Climate-2), on average there are more than 4,000 high quality radio occultation (RO) measurements per day over 40S-40N. Such unprecedented dense measurements of the tropical atmosphere enables investigating the full cycle of individual Madden-Julian Oscillation (MJO) events. In this study, a MJO event is selected based on the daily averaged outgoing longwave radiation (OLR), a proxy of deep convection associated with MJO, over the eastern equatorial Indian Ocean (10S to 10N and 75E to 95E). Temperature and specific humidity profiles from COSMIC-2 RO are used to depict both the propagation and three-dimensional thermodynamic structures of all MJO cases during three boreal winters from 2019/2020 to 2021/2022. MJO impacts on tropopause and tides are also investigated.