3. Temperature Variations in the TTL

3.1 The Regional Characteristics of Tropopause Temperature Variation

3.2 Equatorial Kelvin Waves and MJO

3.3 Tropical Cyclone

Summary

We investigate the role of the deep convection in the TTL using the Nonhydrostatic Atmospheric Model NICAM. 

- General characteristics such as the zonal mean fields, average profiles, and large-scale convective patterns (including the MJO activity) were found to be reasonably well with the atmospheric observations. (For reference, [1, 2, 3])
- Over land, deep convective clouds show clear diurnal variations and are most often observed in the local evening. Over the ocean, deep convective clouds are found over the ITCZ, SPCZ, and in the vicinity of large islands in Indonesia, and are mainly associated with transient disturbances such as tropical cyclones and the MJO (For reference, [4, 5, 6]).
- Tropical cyclones (with a center around 13.6 K, 6 m s⁻¹) were well simulated. NICAM well simulates the eastward propagating signals in UTLS. The zonal and meridional wind components were all as observed in the real atmosphere. (For reference, [7, 8, 9])
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