

Tropo-Stratospheric Wave Activity near Western Maritime-Continent Coast during MJO Landing and QBO Modification

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"Pre-Years of the Maritime Continent" 3-hourly radiosonde and weather radar observations were carried out both at and off Bengkulu in the southwestern coast of Sumatera in November-December 2015. The station on the sea side was the R/V *Mirai* staying at a 50 km distance from the coastline. Frequency and vertical wavenumber spectra of radiosonde wind and temperature showed generally-known red noise-like features. There were four types of disturbances categorized as the gravity-wave class: (i) lower-tropospheric sea-land breeze circulations (land- and sea-ward propagating cells composed of up- and down-ward waves); (ii) taller circulations with middle/upper-tropospheric nodes; (iii) few-day-period tropopausal Kelvin waves (only in zonal wind and temperature); and (iv) thinner lower-stratospheric inertio-gravity waves (with elliptic polarizations of horizontal winds). When an MJO landed around December 13, radar-observed diurnal-cycle rainfall associated with (i) was modified, and amplifications of (iii) and (iv) produced a strong vertical shear between the upper-tropospheric easterly and the whole lower-to -middle stratospheric westerly. The middle-stratospheric zonal wind remains westerly since early 2015 even now (January 2017) with a modification of QBO. Subsequent observations might be discussed, upon the budgetary situation in after Japanese FY2017.

Keywords: Indonesian maritime continent, tropo-stratosphere, atmospheric gravity-wave class , convective clouds