

## **On the Occurrence and Variability of Terdiurnal Tide in the MLT Region over Equator**

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In this paper we study the occurrence characteristics and variability of terdiurnal tide in the MLT region over equator using Koto Tabang ( $0.2^{\circ}$  S,  $100.3^{\circ}$  E) meteor radar observations of zonal and meridional winds. This study is first of its kind from equatorial locations. The striking feature of this study is that the instantaneous amplitudes of terdiurnal tide over equator are as high as  $15 \text{ m s}^{-1}$  and monthly mean values lie between  $2$  and  $10 \text{ m s}^{-1}$ . Further, the amplitude of terdiurnal tide in the zonal wind is greater than that of meridional wind. The amplitude of terdiurnal tide shows a clear seasonal variation in both zonal and meridional winds with maximum amplitudes being in spring and early summer (February-May). Further, a correlative analysis has been carried out between terdiurnal tidal amplitude with that of diurnal and semidiurnal tides to see the role of the nonlinear interaction in the generation/amplitude enhancement of terdiurnal tide. Also the possibility of diurnal tide interaction with that of gravity waves to generate terdiurnal tide is discussed. The observed features and variabilities are compared with that of higher latitude (low-, middle-, and high- latitudes) observations and discussed in terms of possible sources for the generation of terdiurnal tide.

**Keywords:** Atmospheric tides, MLT region, Meteor radar

**Note:** Koto Tabang meteor radar is operated as a collaborative project between RISH and LAPAN.