Diurnal tide and planetary wave interactions at low latitude MLT region

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Using meteor radar observations during 2001-2014 in the mesosphere and lower thermosphere (MLT) over low latitude Brazilian station, Cachoeira Paulista (22.7^{o}N, 45^{o}W), the characteristics of the diurnal tide and planetary wave interactions are investigated. The tidal amplitude exhibits clear seasonal pattern with largest amplitude in fall equinox. The dominant periods of modulation of the diurnal tide are found to be greater than 10 days in the MLT. The diurnal tide, as detected in the power spectra of the horizontal winds, shows a spread in period around the central period (24 h) which is an indication of nonlinear interactions between the diurnal tide and planetary waves. A bispectral analysis reveals prominent triplets (two primary waves and a secondary wave) confirming the interaction of the diurnal tide with planetary waves persistent over a broad spectral range. There is a signature of interaction of the diurnal tide with the extra-long period planetary waves (intra-seasonal scale).