

Winds, temperatures, and tides in the MLT region at low latitudes during the 1st CAWSES Tidal Campaign 2005 from meteor radar and satellite observations

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Winds at mesospheric/lower thermospheric altitudes between 80 and 100 km and temperatures around 90 km are derived from all-sky meteor radar observations at latitudes between 9° N and 22° S and longitudes between 77° E and 315° E. The data are acquired with identical radar systems and detection software. The six SKiYMET radars are located at Trivandrum (9° N, 77° E), Kototabang (0.2° S, 100° E), Cariri (7° S, 323° E), Learmonth (22° S, 114° E), Rarotonga (21° S, 200° E), and Cachoeira Paulista (22° S, 315° E). Using 4-d, 10-d, and 60-d composite days, wind tides are determined for the year 2005 when the 1st CAWSES Tidal Campaign took place. The results provide information about the variability of the diurnal, semi-diurnal, and ter-diurnal tide at low latitudes. The seasonal variability of mean winds, temperatures, and tides is discussed. For the latitude 22° S the seasonal variation of the migrating tides is estimated using the observations at three sites well separated in longitude. The radar results obtained from 60-d composite days agree well with diurnal tides derived from TIDI observations on the TIMED satellite. The tidal results obtained for the 1st CAWSES Tidal Campaign in September/October 2005 at low latitudes are discussed in relation to observations at middle and high northern latitudes.

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