AOGS 2005

Equatorial waves /Tidal Oscillations in the MLT region as observed from SKiYMET Meteor Wind Radar and the Long period wind Oscillations in the Stratosphere from Rocket data at TERLS (8.5° N, 77°E)

GEETHA RAMKUMAR[1], APPU K S[2], GURUBARAN[3], KISHORE KUMAR[1] and DEEPA V.[1]

[1]*Space Physics Laboratory,*
[2]*MET Facility, Vikram sarabhai Space Centre, ISRO*
[3]***EGRL, IIG, Tirunelveli***

The equatorial waves and tidal oscillations generated in the lower atmospheric region propagate in to the stratospheric, mesospheric and lower thermospheric regions of the atmosphere. In this process, they grow in amplitude, interact with the background wind and thus leading into other processes and thus coupling between different regions of the atmosphere. To study in detail, the propagation characteristics of these equatorial waves and tidal oscillations, their seasonal variation and the influence of the background mean flow on these waves etc., the unique site of Space physics Laboratory, TERLS, Trivandrum, where various experimental facilities are co-located, is an ideal one. As part of the on-going MIDAS (2002-2005) program, RH 200 rocket flights are carried out fortnightly, measuring winds in the 0-65 km altitude region. An indigenously developed Partial Reflection (PR) Radar (2.5 MHz) at SPL provide wind measurements in the 60-100 Km altitude region above the rocket limit. Wind measurements (80-98Km) from PR radar at Tirunelveli are also used in this study. A very powerful SKiYMET Meteor Wind Radar (35.25 MHz) is operational round the clock, at SPL, TERLS from June 2004 onwards. This radar gives wind information in the 80-100 Km region and temperature measurement around the mesopause height. Thus at this unique location, we have the continuous wind measurements from ground upto 100 km.

Data Results: Taking the average horizontal winds during morning hours (00-03 hrs GMT), time series of horizontal winds are derived for 20 days continuously, during each month from June2004—January 2005. The presence of 6-9 day Kelvin waves and 4.5 day MRG waves are seen in the MLT region. From the daily hourly wind values, the tidal characteristics are also derived in this region. The information on the background mean flow could be obtained from the monthly mean of each rocket flight wind data. The waves seen in the upper region of the atmosphere are filtered through the middle regions of the atmosphere. During different season, the strength of these waves is found to be different depending on the background wind condition through which they propagate. Detailed study is in progress and the results will be presented at the conference.