AOGS 2005


# Investigation of the response of equatorial mesosphere-thermosphere-ionosphere (MTI) processes to direct and indirect forcings through coordinated daytime airglow and radar measurements.

TARUN KUMAR PANT[1], C. VINEETH[1], R. SRIDHARAN[1], C. V. DEVASIA[1], and R. SEKAR[2]

[1]*Space Physics Laboratory, VSSC, Kerala, India 695 022*
[2]*Physical Research Laboratory, Ahmedabad, Gujarat, India 398 005*

Investigations based on the daytime thermospheric ($O^1D$ 630 nm) and mesospheric airglow (OH (8-3) Meinel Band) intensity measurements from India have brought out some new aspects of the coupling processes of the mesosphere, thermosphere and ionosphere (MTI) over the equatorial latitudes. It has been shown through coordinated airglow and radar studies that the planetary waves have a significant impact on the wind and temperature in the mesopause region. On occasions significant short-term variabilities (10min–2hours) are also seen in the dayglow intensities that owe their existence to both locally and remotely generated gravity waves. While the interaction of these long and short period waves with mean atmospheric flow at mesopause altitude alters the dynamics, the modulations in the energetics can also be caused by solar insolation directly/indirectly in addition to the waves. The variations in mesopause energetics are manifested through neutral temperature changes having far reaching consequences higher above.

In this context, this paper discusses the role of various insitu and remote processes coupling the MTI region using coordinated measurements of various neutral and plasma parameters from Trivandrum, a dip equatorial station in India.