

Physical Research Laboratory

Ahmedabad

Area Seminar

(Space & Atmospheric Sciences Division)

Title: “Altitudinal Variability of Quiet-time Plasma Drifts in the Equatorial Evening Ionosphere”

Speaker: Debrup Hui

Date: 19 October 2015

Venue: Ground Floor Lecture Hall

Time: 1600 hrs

Highlight of the talk:

In continuation to our discussions on altitudinal variation of plasma drifts we will explore how the vertical drifts change with altitudes during late afternoon and evening hours when the electrodynamic properties in the ionosphere change rapidly. For the first time using drifts up to 2000 km, we have shown the drifts increase and decrease below and above the F-region peak before becoming height independent. These structures arise to satisfy the curl-free condition of electric fields in low latitudes. The altitudinal gradients of vertical drifts are balanced by a time derivative of the zonal drifts to satisfy the curl-free condition of electric fields. We have shown how these structures evolve with local time around the dusk sector and change with solar flux. During solar minimum, the peak region can go well below 200 km. The present-day electric field models do not incorporate these gradients, particularly in the evening sectors when they change very rapidly. Very often their results do not match with the observations. Including these gradients along with proper magnetic field models will improve the model results and accuracy of our navigation, communication, and positioning systems.

All interested are welcome.