Quiet Time Variability of Daytime Vertical ExB Drift in the Indian Sector

A K PATRA

National Atmospheric Research Laboratory, Gadanki, India.

Although significant progress has been made in the recent past in modeling low-latitude vertical **E**x**B** drift and its longitudinal variations using satellite based observations, studies on local time variation of **E**x**B** drift could not be made so far using satellite observations. Studies on the local time variations, however, are important to study the future state of the ionosphere over a given location. Traditionally the **E**x**B** measurements on continuous basis are made using incoherent scatter radar and much of the low latitude information on the local time variations of **E**x**B** drift is thus confined to Jicamarca. In the recent past, it has been successfully demonstrated using the Jicamarca radar observations of 150-km echoes that the Doppler shift of such echo represents **E**x**B** drift. This paper deals with the quiet time variation of daytime vertical **E**x**B** drift in the Indian sector based on systematic observations of 150-km echoes made using the Gadanki MST radar. These observations are significant considering that during geomagnetically quiet time, the equatorial plasma drift results essentially from the combined effect of E and F region wind and thus are important to account for the quiet time ionospheric behavior owing to the neutral dynamical forcing. The neutral dynamical forcing in question is closely related to the vertical coupling through the tidal, planetary and gravity waves and associated mutual coupling. The observations to be presented are first of its kind from India and the quiet time variabilities are discussed in the light of current understanding on the role of planetary scale, tidal, and gravity waves on the ionospheric variability.