



Variation of the electron temperature in morning time sector of the equatorial topside ionosphere

Vladimir Truhlik (1), Claudia Stolle (2), Dieter Bilitza (3,4), Phil Richards (5), and Ludmila Triskova (6)

(1) Institute of Atmospheric Physics, Department of the Upper Atmosphere, Prague, Czech Republic (vtr@ufa.cas.cz), (2) Helmholtz Centre Potsdam, GFZ German Research Centre for Geosciences, Potsdam, Germany (stolle@gfz-potsdam.de), (3) George Mason University, Fairfax, Virginia, USA (dbilitza@gmu.edu), (4) Goddard Space Flight Center, Heliospheric Physics Laboratory, Code 672, Heliophysics Science Division, Greenbelt, Maryland, United States, (5) George Mason University, 4400 University Drive MSN 3F3, Fairfax, VA 22030, United States (pgrichds@gmail.com), (6) Institute of Atmospheric Physics, Department of the Upper Atmosphere, Prague, Czech Republic (ltr@ufa.cas.cz)

It is well known that the electron temperature exhibits a so called morning peak. The amplitude of the peak is typically a few thousands of Kelvins. We employ satellite electron temperature measurement made by the CHAMP satellite, by the Jicamarca incoherent scatter radar and the multisatellite data base of the IAP (Institute of Atmospheric Physics) and NASA (Bilitza et al., 2007) to investigate this feature. The amount of the accumulated CHAMP and Jicamarca data allowed us to divide the electron temperature observations into 15 min local time intervals. In these intervals we pay attention especially to the influence of the solar and geomagnetic activity and to seasonal differences [1]. We also use the FLIP model to understand relative significance of various physical mechanisms responsible for such a behavior. Especially we show importance of the ExB drift to the formation of the morning peak. The final goal of this study is to find a relation of the electron temperature on the solar and geomagnetic activity in the dawn hours which could be included into the current IRI electron empirical temperature model.

Bilitza D., Truhlik V., Richards P.G., Abe T., and Triskova L. Solar Cycle Variations of Mid-Latitude Electron Density and Temperature: Satellite Measurements and Model Calculations, *Adv. Space Res.*, 9 (5), 779-789, 2007.