Seasonal Variations of the Electron Density and Temperature in the Low-latitude Topside Ionosphere Observed by KOMPSAT-1

Ensang Lee, Jae-Jin Lee, Kyoung-Wook Min,
Dae-Young Lee
Dept. of Physics, KAIST

Observations made by the Ionospheric Measurement Sensor (IMS) on board the KOMPSAT-1 have been analyzed to determine the seasonal variations of the electron density and temperature in the low-latitude topside ionosphere. Only the nighttime (22:50 LT) behavior on magnetically quiet days (Kp < 4) has been examined. Observations show strong seasonal variations. Significant density increases occur in the Northern hemisphere in summer, but in the Southern hemisphere in winter. In spring and fall the hemispheric dependence almost disappears. The latitudinal variation of the electron temperature has negative correlation with the variation of the electron density, but the degree of the correlation varies with the longitude. The observations have been compared with the IRI95 model. The observed data are significantly different from those predicted by the IRI95 model, suggesting the possibility of improving the descriptions of the electron temperature and density in the IRI95 model.