

Improving the IRI model representation of solar cycle variations of topside electron temperature

V. Truhlik (1), D. Bilitza (2), P. Richards (3), L. Triskova (1)

(1) Institute of Atmospheric Physics, Praha, Czech Republic, (2) Raytheon IIS, GSFC, SPDF, Greenbelt, Maryland, USA, (3) NASA, Earth-Sun Systems Division, Science Mission Directorate, Washington DC, USA

Over the past three decades a large volume of electron temperature (T_e) and density (N_e) measurements has been accumulated by satellite insitu instruments as well as ground-based incoherent scatter radars. We have established a database with the most important of the satellite measurements reaching from the early Explorers to the more recent Akebono and DMSP satellites and including close to 7 million data points. Using this database we have studied the variation of T_e with solar activity at different local times, altitudes, latitudes, and seasons. We have compared these observed trends with the trends predicted by the FLIP model and by the current IRI model, and based on these comparisons we have established an improved representation of the solar cycle variation of electron temperature in the topside ionosphere for inclusion in the IRI model.