Geophysical Research Abstracts, Vol. 8, 08730, 2006
SRef-ID: 1607-7962/gra/EGU06-A-08730

Vertical profiles of the electron density in the topside ionosphere - an application of Chapman function with variable scale height

V. Truhlik (1), I. Galkin (2) and L. Triskova (1)

(1) Institute of Atmospheric Physics, Bocni II., 141 31 Praha 4, Czech Republic (vtr@ufa.cas.cz), (2) University of Massachusetts, 600 Suffolk Street, Lowell, MA 01854, U.S.A. (Ivan_Galkin@uml.edu)

Our recently developed topside empirical models of electron density, ion composition and electron and ion temperature for IRI (International Reference Ionosphere - some of them were already included) are constructed for four resp. three constant altitude levels depending on solar activity, and for three seasons (summer, winter, equinox). The main coordinates are latitude and local time. An interpolation scheme for intermediate altitudes, days of year, and solar activities has been used. To construct vertical profiles, the Booker formalism has been applied so far, which can sometimes yield a non physical behavior. In the firts step we propose an application of the Chapman function with variable scale height H(h) for topside electron density and to add further anchor points. These are the maximum value of Ne at the F2 layer taken from IRI and the value of the upper transition height Ht taken from the empirical model of (Triskova et al., 2001). This method has been tested and the results have been compared with measured data from the new established database (topside sounder, mass spectrometers, RPA, Langmuir probe).