



Assessment of NeQuick and IRI models using TEC from satellite altimeters

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Total Electron Content (TEC) measured over the sea surface by TOPEX/Poseidon and JASON-1 satellites has been used as experimental data to assess the capability of different versions of the empirical ionospheric electron density models: NeQuick (versions 2 and 1) and the International Reference Ionosphere (version 2007) with the NeQuick and the corrected topside options. The data used correspond to the years 2000, 2003 and 2004. Therefore they are related to high and moderate to low solar activity.

To compare the ability to predict the TEC parameter, the models were adapted to work under the same conditions: they are driven by the daily solar flux at 10.7 cm wavelength.

The data analysis has been based on the statistical comparison of the differences between experimental and modeled vertical TEC data. Besides a global evaluation, different statistical analyses have been carried out in order to evaluate the performance of the models according to several factors, like solar activity, season, geographic location and local time.

The results indicate that the models are essentially equivalent under the conditions analysed. At higher solar activity for all the models the TEC mis-modelling is more remarkable between -30° and $+30^\circ$ of modip (where it reaches about 10 to 12 TEC units in average). Nevertheless at low solar activity this behaviour is not so evident as long as the low latitudes are concerned. The small differences among the models will be discussed in detail.