

Effects of different estimation techniques of GPS-TEC on the prediction of TEC and comparison with values from IRI-2016, NeQuick-2 and IRI-Plas 2015 models

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Abstract

The experimental values of vertical total electron content (VTEC) from different estimation techniques were analysed and compared with the model prediction of the IRI2016 model (using three different options: IRI2001, IRI01cor, and NeQuick), NeQuick-2 model and IRI-Plas. The data were analysed for different stations, seasons and years; and the estimated values of VTEC were compared with the predicted values; with their root-mean-square error (RMSE) used to quantify the predictability of the models. The result shows that IRI-2001 has the best prediction for both estimation methods. However, NeQuick and IRI-Plas have the worst predictions for VTEC from the estimation techniques. The estimation technique employed in any comparison study will most likely determine the level of performance of VTEC models.

Keywords: Vertical total electron content; NeQuick; IRI-Plas; Geomagnetic Storm; IRI2016