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Prediction of foF2 from GPS TEC over AFRICA

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Abstract content
 (Max 300 words)

The International Reference Ionospheric (IRI) model has been one of the most consistent in predicting ionospheric parameters over most of the geographical locations around the world. However, the model fails to predict accurately in regions where data was not available during its development, hence the use of data from Global Positioning System (GPS) receivers and other models. This paper describes a method (TEC2F2) of extracting foF2 values from GPS Total Electron Content (TEC). The method was first developed over the region of South Africa using the available Ionosondes stations; Grahamstown (33.20 S, 26.30 E), Hermanus (34.40 S, 19.20 E), Louisvale (28.50 S, 21.20 E) and Madimbo (-30.90 S, 22.20 E), to verify the results. The analysis of the results showed that the TEC2F2 method was more accurate at predicting the foF2 parameter over South Africa than the IRI-2007 model. The application of this method over the rest of Africa is proposed in order to more accurately predict the foF2 parameter in regions where Ionosondes do not exist.

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