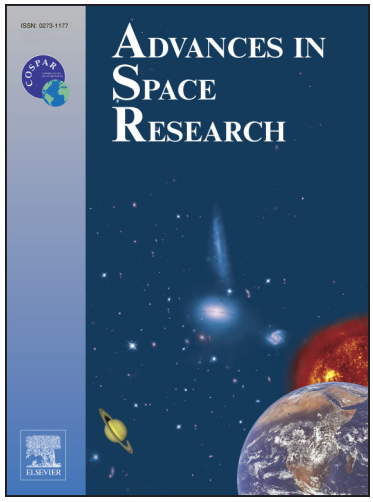

A comparison of TEC predicted by IRI-2012 with that measured at three different stations in low latitude Indian region for the years (2010-2012)

S.P. Karia, N.C. Patel, K.N. Pathak

PII: S0273-1177(16)30600-7
DOI: http://dx.doi.org/10.1016/j.asr.2016.10.022
Reference: JASR 12947

To appear in: *Advances in Space Research*

Received Date: 15 May 2016
Revised Date: 14 October 2016
Accepted Date: 21 October 2016

Please cite this article as: Karia, S.P., Patel, N.C., Pathak, K.N., A comparison of TEC predicted by IRI-2012 with that measured at three different stations in low latitude Indian region for the years (2010-2012), *Advances in Space Research* (2016), doi: http://dx.doi.org/10.1016/j.asr.2016.10.022

A comparison of TEC predicted by IRI-2012 with that measured at three different stations in low latitude Indian region for the years (2010-2012)

S. P. Karia[1*], N.C. Patel[1], K. N. Pathak[1]

[1]Department of Applied Physics, S.V. National Institute of Technology, Surat, India 395007

Abstract

The present study reports the comparison of GPS measured Total Electron Content (TEC) with that predicted by the latest IRI-2012 model at three different stations located within the Equatorial Ionization Anomaly region (EIA) in the Indian sector. The data used for the study are retrieved from three different stations, namely, Surat (geographic latitude 21.16° N, geographic longitude 72.78° E; geomagnetic latitude 12.90° N), Hyderabad (geographic latitude 17.25° N, geographic longitude 78.30° E; geomagnetic latitude 8.65° N) and Bangalore (geographic latitude 13.02° N, geographic longitude 77.57° E; geomagnetic latitude 4.58° N). The period of comparison is three years for rising solar activity from 2010-2012. Here it is to note that both Hyderabad and Bangalore are IGS station with the station code (HYDE and IISC respectively). The results for the comparison of seasonal variation shows a good agreement between the measured and modeled TEC for all seasons with deviation of (±15TECU) for all three years at Surat and Bangalore and with a deviation of (±25 TECU) at Hyderabad. Both topside options NeQuick and IRI01-Corr derived nearly equal TEC at all three stations. It is observed that the GPS TEC data shows the EIA crest at (23.5° N) where as the IRI TEC predicts the EIA crest at (19.7° N) on an average for all the years 2010-2012.

Keywords: total electron content; international reference ionosphere (IRI) model; low latitude ionosphere

*Corresponding author. Tel.:+91 9825905904

E-mail addresses: *kariasheetal@yahoo.co.in , sheetalkaria1@gmail.com