## STUDY OF EQUATORIAL IONIZATION ANOMALY OVER INDIAN SECTOR USING IONOSPHERIC TOMOGRAPHIC TECHNIQUE

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Abstract: The highly dynamic equatorial and low latitude ionosphere affects the performance of trans-Ionospheric communications and navigations systems, which needs to realize it on real time basis. The monitoring of day to day variation of equatorial and low latitude ionospheric phenomenon like equatorial ionization anomaly (EIA) will help to improvise the performance of communication/navigation system over this region. For this purpose a chain of five ITS-20 coherent radio beacon receivers under the Indian tomography program initiated by Indian Space Research Organization (ISRO), for ionospheric tomography, are installed over the Indian sector along a common meridian (77–78°E longitudes). The receivers at these stations measure the relative phase of the 150 MHz beacon with respect to that at 400 MHz, which is proportional to the slant total electron content (STEC) along the line of sight. These simultaneously measured related slant TECs are converted into absolute TEC using Lietinger two station methods which in turn are used to obtain the latitude- altitude distribution of electron densities (tomograms) in the meridian plane. The tomograms are generated using the Algebraic Reconstruction Technique (ART), a standard inversion algorithm. The tomograms as well as the TEC profiles are used to study the growth and decay of EIA including the nighttime enhancements over low latitude region. The observed vertical TEC latitudinal profiles are also compared with corresponding values derived from ionospheric models like PIM and IRI-2007 and it is found that models are over estimating the observed one both during the day and night times. Also, the model derived EIA crest magnitude and location are different from the observed one.