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MONITORING OF THE LOW LATITUDE IONOSPHERIC IRREGULARITIES CLIMATOLOGY  
USING SWARM SATELLITE

**Abstract**

Ionospheric scintillation occurs when radio signals propagate through an irregular ionosphere (e.g., plasma bubbles). Since plasma bubbles are regions of depleted ion and electron densities, a plasma bubble located on the satellite-to-ground signal path will cause radio signals to fluctuate in phase and amplitude. The seasonal, annual and solar cycle variation of scintillation occurrence is investigated together with the Electron Density (Ne), Equatorial Plasma Bubbles (EPB), and Total Electron Content (TEC), to put in evidence the relation between the electron density gradients and the ionospheric irregularities causing scintillation. Emphasis will be placed on the characterization of the relevant phenomena under geomagnetic quiet and disturbed conditions due to space weather phenomena's, which are the main cause of increased ionospheric variability, and their associated consequences which will enable the mitigation of the deleterious ionospheric propagation effects on practical terrestrial, Earth-space communication and navigation systems. In addition, that can influence the performance and reliability of space-borne and ground-based technological systems which can endanger human life or health. This is of considerable interest for space programs. This study aims to evaluate and improve ionospheric models for the region to facilitate better ionospheric predictions.

Keywords:

Ne, EPB, TEC, SWARM, Plasma Bubbles...