

Multi-technique observation of ionospheric irregularities during disturbed period

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During geo-magnetic disturbed conditions, the ionosphere becomes highly turbulent and small scale (from centimeters to a few kilometers) irregularities, typically enhancements or depletions of the electron density embedded in the ambient ionosphere are formed. In order to investigate the dynamics of plasma density irregularities of different scale sizes, a campaign was carried out during 11 to 15 September 2005 at Gadanki (geog.13.45°N, 79.17°E, geomag. 4.44°N, 151.73°E), an off-equatorial Indian station. During the campaign, an equatorial spread F event occurred on the night of 15 September 2005 during geomagnetic disturbed period ($Dst \sim -86$ nT around 1700 UT). The development and dynamics of equatorial ionospheric plasma bubble irregularity on this night are investigated using the data collected by multi-instrument operated at equatorial (Trivandrum, geog. 8.5°N, 77°E, dip angle 0.5°N) and low latitude (Gadanki, 13.45°N, 79.17°E, dip angle 12.5°N and Sriharikota, 14°N, 80°E, dip angle 14°N) stations using GPS receiver, VHF coherent backscatter radar, and Digisonde. The range type spread F on ionograms and radar plume signatures on range-time-intensity maps from the VHF radar on the same day were observed. Using the GPS receiver, association of the fluctuations in the signal intensity ($S_4 \sim 0.36$ and 0.39) with the depletions in total electron content (5 and 12 TECU) is seen on the same day which affect the positional accuracy of the GPS by 0.8m and 1.92m. The results of the campaign will be presented.

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