

## **SPATIAL AND TEMPORAL DEPENDENCE OF STORM-TIME TEC GRADIENTS AND L-BAND SCINTILLATIONS**

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Global Positioning System (GPS) amplitude scintillations at the L1 frequency (1.575 GHz) and integral data of total electron content (TEC) obtained from measurements of the Brazilian ground-based GPS network are used to study the specific relationships between TEC and Fresnel-scale irregularities at near the crests of the Equatorial Ionization Anomaly (EIA). Using a time-dependent inversion algorithm, 2-dimensional images are created to couple the geophysical quantities measured by the GPS receivers during the storm time period of 18-23 November 2003. We have found that the scintillation events are strongly correlated with the regions in the ionosphere where the steepest TEC gradients are observed. In order to study such relation, we also carried out SAMI2 model runs of equatorial plasma bubbles that include the dynamics parallel and perpendicular to the magnetic field. The simulations show that the large ionospheric density gradients at the boundaries of the EIA are probably responsible for the observed large TEC fluctuations and the L-band amplitude scintillations. However, during storm-time periods, the large variations in the temporal and spatial evolution of the electron density affect the behavior and dynamics of the scintillation-producing irregularities.

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