

## Equatorial Anomaly and Plasma Bubbles over South America observed by TEC Mapping and Optical Imaging

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Evening Equatorial Ionization Anomaly (E-EIA) and plasma bubble (PB) activities over South America have been monitored by ground-based GNSS TEC mapping since November 2012. The TEC mapping could cover the PB activity with a large longitudinal and latitudinal area. Simultaneous observation of the plasma bubbles by airglow OI 630.0 nm all sky imager made it possible to map the plasma bubbles with a higher spatial resolution, too. New observational evidences are (1) large day to day variability of E-EIA, (2) latitudinal extension and longitudinal movement of the plasma bubbles, and (3) E-EIA and PB behaviors during the geomagnetic storms.