

The First Result on Ionospheric Space Weather of FORMOSAT-5/AIP Ion Density

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The science payload of Advantage Ionosphere Probe (AIP) onboard FORMOSAT-5 (F5) launched on 24 August 2017 has being operated in a Sun synchronous orbit at 720km altitude with an inclination angle of 98.28 degrees and the revisit period every 2-day. The global distribution of F5/AIP ion density (Ni) in nighttime of 2200LT during November 2017-October 2018 is examined and reported. F5/AIP ion densities show that equatorial plasma depletions frequently appear over South America, Africa, and Asia sectors; four-peaked EIA (non-migrating tide) structures prominently occur in September-March; and plasma depletion bays (PDBs) at low-latitudes in April-August. It is found that prominent locations of the plasma depletions slightly differ from those of equatorial irregularities, while non-migrating tide and PDBs result from different physical mechanisms.

Keywords: topside ionosphere, equatorial plasma depletion bay, plasma drift