

# **GLOBAL/SEASONAL/LOCAL-TIME VARIATIONS OF ION DENSITY STRUCTURE AT LOW-LATITUDE IONOSPHERE AND THEIR RELATIONSHIP TO THE POST-SUNSET EQUATORIAL IRREGULARITY OCCURRENCES**

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Seasonal and longitudinal (s/l) variations of ion density structure at the 600-km low-latitude ionosphere observed by ROCSAT-1 between two similar high solar activity years of 2000 and 2002 are examined at five different local-time (LT) sectors. The gross feature in the s/l variations of density structure during the daytime is very similar to each other between these two years. A reproducibility of density structure can thus be assumed, including the shape of equatorial ionization anomaly (EIA) structure, for similar solar flux input. It is further noted that the model result from either the 2006 International Reference Ionosphere (IRI) model or the thermosphere ionosphere electrodynamics general circulation model (TIEGCM) cannot reproduce the ROCSAT observed global/seasonal/local-time variations of the low-latitude ionospheric structure. Furthermore, the ROCSAT observed s/l variations of crest-to-trough ratio of the average background EIA structure at 18-19h LT sector fail to correlate with the s/l variations of post-sunset equatorial irregularity occurrences because the magnetic declination effect that changes the ionospheric electrodynamics is not included in such s/l variations of ionospheric background density structure.

Density structure at low-latitude ionosphere, irregularity occurrences

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