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Poster

Since the launch of FORMOSAT-7/COSMIC-2 constellation in the mid- 2019, there have been about 185 days with geomagnetic disturbances, ranging from minor to extreme events. The disturbances triggered intense positive variations in the low- and mid-latitude ionosphere on several occasions and long-lasting negative storm effects over a wide range of longitudes. The Global Ionosphere Specification (GIS) 3D electron density profiles constructed by assimilating slant total electron content measurements by FORMOSAT-7/COSMIC-2 constellation and ground-based global navigation satellite system receiver network are used to examine the ionospheric response during these events. A superposed epoch analysis is carried out to investigate the onset and impact of the positive response, with the time of maximum interplanetary electric field as the zero-epoch time, and the local-time and latitude variations of the GIS electron density are investigated by using previous 5-day average as the quiet-time reference. The results reveal ~200% enhancement in the average electron density over low latitudes over the longitude that falls at local-noon sector at the zero-epoch time. Maximum electron density response occurs within about 3.5-4 hours after the zero-epoch. In the night sector, the enhancement occurs after 5-12 hours of the zero-epoch. The latitude variation reveals classic storm-time behavior in solar maximum, with stronger response occurring earlier over mid- and low-latitudes and propagating to equatorial region. The storm effect lasts for about 3-days over the mid- and low-latitudes. The results are further compared with the corresponding variations of IMF parameters and the possible factors that contribute to the observed response are examined.

Poster session day

Thursday, April 30, 2026

Poster location

45

Meeting homepage

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