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Recurrent Geomagnetic Storms and Equinoctial Ionospheric F-Region in the Low Magnetic Latitude: A Case Study

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This paper analyses a case study of 27-day recurrent geomagnetic storms (RGSs) and the ionospheric F-region over Peruvian, Ascension Island, and Port Stanley during vernal equinox in 2006. The RGSs are categorized into High-Intensity Long-Duration Continuous AE Activity (HILDCAA) and non-HILDCAA cases. The solar wind plasma, Ionosonde, and magnetometer data are used. The results revealed that in both cases prompt penetration electric field and disturbance dynamo electric field (DDEF) control the ionospheric plasma and affect nighttime spread-F that disturbs the HF-radio communications in equatorial and southern crest of equatorial ionization anomaly (EIA). The spread-F at magnetic equator was delayed, more predominant, and last longer than at the southern EIA. DDEFs and thermospheric winds persist in the recovery phase of storm with stronger ones can inhibit the spread-F.

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