

電離層赤道異常之月潮效應

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摘要

利用全球電離層圖研究電離層赤道異常強度在 2000–2017 間的月潮效應，研究表明，月潮造成電離層赤道異常 20–40 分鐘領先或落後於 18 年平均，且月潮效應在近日點期間的強度較遠日點期間顯著。

Ionospheric Lunar Tide Signature

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Abstract

The strength, appearance time, and latitudinal location of the equatorial ionization anomaly (EIA) crest response to the lunar phase are examined using the total electron content (TEC) of global ionosphere maps during the 18-year period of 2000–2017. The TEC of the EIA crest reveals semidiurnal tides with 12.42-hour period, while the appearance time and latitude of the EIA crests present prominent semimonthly lunar tides of 14.77-day period. The EIA crests on new/full moon (first/third quarter) lead (lag) those of the overall 18-year average by about 20–40 minutes, while the EIA crests move the furthest poleward and equatorward 2–5 days after new/full moon and first/third quarter, respectively. Amplitudes of the semimonthly lunar tide in the EIA crest appearance times and latitudes yield the greatest value around perihelion and the smallest value around aphelion, which shows that the solar declination and seasonal effects are important.