

The long-term variations of mid-latitude summer night-time anomaly

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This study presents the long-term variations of Mid-latitude Summer Night-time Anomaly (MSNA) of two hemispheres for the first time by using ground-based ionosonde observations from January 1997 to May 2009. MSNA is characterized by the fact that the electron density in the nighttime is larger than that in the daytime at mid-latitudes around the summer solstice in the both hemispheres. The four ionosonde stations data are used to calculate the amplitude of MSNA. One station is Port Slaney (51.7°S; 57.8°W geographic) in southern hemisphere and the others are Wakkanai (45.4°N; 141.7°E geographic), Kokubunchi (35.7°N; 139.5°E geographic), and Okinawa (26.3°N; 127.8°E geographic) in northern hemisphere. The amplitude of MSNA is measured by the difference between the value of ionospheric F2-peak plasma frequency, foF2, in the nighttime and that in the daytime. In this study, the correlation coefficients between the amplitude of MSNA and the solar activity F10.7 index had also been examined to investigate the solar activity dependence of MSNA. Results show that the amplitude of MSNA decrease with increasing solar activity F10.7 index for two hemispheres. The possible physical mechanism will be discussed in the presentation.