



Characteristics of the low latitude ionospheric storm in the East-Asian region

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First, an classification of ionospheric storm effects in the sub-equatorial ionization anomaly(SEIA) region at 120°E has been performed through the analysis of ionogram data at two ionosonde stations, Wuhan (114.4°, 30.5°) and Chung-Li (121.2°, 25°), and total electron content (TEC) derived from GPS network distributed around 120°E during the year 1999-2004. Three types of negative phase are identified. One is shown to be varied in phase of F-layer height variation and the other two out of phase. Two types of positive phase are also found. The mechanisms to cause these types of ionospheric effects has been considered to be related with storm meridional thermospheric wind including traveling atmosphere disturbance(TAD), electric fields and composition changes. Then based on the 50 years of ionosonde and 8 years of global ionospheric maps (GIMs) data, features of low latitude ionospheric storm were obtained. Results shows that positive phases during 18:00-2400 LT with its center near the 21:00 LT and 24:00-08:00 LT with its center near the sunrise time have predomination in controlling the storm behavior at low latitudes. It is shown that the distortion of EIA under the effects of the above factors have significant influence on the behavior of SEIA ionogram parameters.