

R005-12

Zoom meeting C : 11/1 PM1 (13:45-15:30)

13:45~14:00

Statistical analysis of nighttime MSTIDs characteristics using the mid-latitude SuperDARN radars

#Wataru Hazeyama¹, Nozomu Nishitani¹, Tomoaki Hori¹, Takuji Nakamura², SEPTI PERWITASARI³)

(¹ISEE, Nagoya Univ., ²NIPR, ³NICT

We analyze the characteristics of nighttime medium-scale traveling ionospheric disturbances (MSTIDs) using the mid-latitude Super Dual Auroral Radar Network (SuperDARN) radars installed in Japan and the United States. We examine the longitudinal difference of the relationship between MSTID and solar activity by analyzing long-term data for 11 years, corresponding to one solar cycle. We find that the propagation direction is mainly southwestward and rotates clockwise with progressing local time in Japan and North America. This tendency can be explained by the Perkins instability, which is considered to be associated with the growth of nighttime MSTIDs and the change in the direction of nighttime mid-latitude neutral winds. In addition, we reveal a negative correlation between the nighttime MSTIDs amplitude and the solar F10.7 index. This negative correlation can also be explained by the linear growth rate of the Perkins instability, which is inversely proportional to $(H_n, \nu_{in}, \text{ and then to the})$ solar activity. This study is the first to show the global solar activity dependence of the nighttime mid-latitude MSTIDs using the SuperDARN data.