

Spatial and temporal relation among magnetic ripples, wavy structure of electron density fluctuation and GPS TEC variations

*Toshihiko Iyemori¹, Tadashi Aoyama¹, Yoshihiro Yokoyama¹, Akiyasu Yamada¹

1. Kyoto University

Wavy structures of electron density (Ne) and magnetic ripples observed along the orbit of Swarm satellites in low-latitude on the dayside, and GPS-TEC variation under the orbit are analyzed to see their correlation. Their apparent periods are typically 20-30 seconds, 10-20 seconds and a few minutes, respectively. Near the equatorial region, the APEX latitudes of the region where wavy Ne structure appears and the region traced down from magnetic ripples to 120km altitude, i.e., ionospheric current layer, often coincide suggesting acoustic mode waves as a common source of their generation. Assuming the GPS-TEC variation with a period around a few minutes is temporal variation, we try to check the correlation in the location among the three quantities to check the validity of our idea that the acoustic mode waves are the common source of the variations.

Keywords: Magnetic Ripples, Wavy structure in electron density, GPS-TEC variation, Acoustic gravity waves