

R006-P02

ポスター 1 : 11/25 AM1/AM2 (9:15-12:35)

OCTAVE VLF/LF 帯標準電波で観測された高エネルギー電子降下の兆候

#吉井 駆¹⁾, 大矢 浩代¹⁾, 土屋 史紀²⁾, MARTIN Conner³⁾, 西谷 望⁴⁾

⁽¹⁾ 千葉大学大学院融合理工学府, ⁽²⁾ 東北大学惑星プラズマ・大気研究センター (PPARC), ⁽³⁾ アサバスカ大学科学センター,

⁽⁴⁾ 名古屋大学宇宙地球環境研究所 (ISEE)

Signatures of energetic electron precipitation observed with OCTAVE VLF/LF transmitter signals

#Kakeru YOSHII¹⁾, Hiroyo OHYA¹⁾, Fuminori TSUCHIYA²⁾, Conner MARTIN³⁾, Nozomu NISHITANI⁴⁾

⁽¹⁾Graduate School of Science and Engineering, Chiba University, Japan, ⁽²⁾Planetary Plasma and Atmospheric Research Center (PPARC), Tohoku University, Japan, ⁽³⁾Center for Science, Athabasca University, Canada, ⁽⁴⁾Institute for Space-Earth Environmental Research (ISEE), Nagoya University, Japan

Ultra low frequency (ULF, <5 Hz) -modulated energetic electron precipitation (EEP, 100 keV to 1 MeV) occurs during substorms in the Athabasca sub-auroral zone (Miyashita et al., 2018), and that ULF-modulated EEP also occurred by lowering of mirror point during geomagnetically quiet time (Brito et al., 2012; Tanaka et al., 2022). However, the underlying mechanism remains unclear. In this study, we investigate oscillations in amplitude and phase of very low frequency (VLF, 3 – 30 kHz) and low frequency (LF, 30 – 300 kHz) transmitter signals due to EEPs. The aim is to elucidate their generation mechanisms by comparing with ground-based magnetic field data and ionospheric plasma dynamics observed by the Super Dual Auroral Radar Network (SuperDARN) HF radar. We investigated an EEP event that occurred during the recovery phase of a geomagnetic storm on May 29, 2017. VLF/LF amplitude oscillations with periods of 3 – 4 minutes were observed on multiple propagation paths over North America. In particular, anti-phase variations were found between the NDK (the frequency of transmitter: 25.2 kHz) – Athabasca (ATH) and WWVB (60.0 kHz) – ATH paths. Furthermore, SuperDARN observations showed significant Doppler velocity perturbations to the east of ATH, accompanied by moving echoes detected across multiple beams. Further details will be discussed in the session.