R005-27
B 会場 ：11/5　PM1 （13:45-15:30）
13:45〜14:00

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Local time and seasonal variability of the D-region Ionosphere using OCTAVE observations

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Daytime electron density in the D-region ionosphere varies depending on the solar zenith angle, which is a function of local time (LT) and season. In addition to the regular variation, D-region variations associated with various factors have been reported, for example, solar flares, geomagnetic storms, earthquakes, volcanic eruptions, and sudden stratospheric warming (SSW) [Lastovicka, 2006; Pal et al., 2017]. The detailed investigation of these factors is required to understand the D-region characteristics. In this study, we investigate seasonal and LT dependences of the D-region ionosphere using low frequency (LF) transmitter signals. The transmitter and receiver were JJY (60kHz, 33.47N, 130.18E) and RKB (Rikubetsu, Hokkaido, 43.45N, 143.77E), respectively. For removing effects of geomagnetic storms, we used international 5 quietest days (Q-days) for each month based on Kp index determined by GeoForschungsZentrum (GFZ) Potsdam. The daytime (or nighttime) mean value of amplitude and phase for each day (A_{mean} and P_{mean}) was subtracted from instantaneous values (A_i and P_i) to determine the perturbations in amplitude (Δ A) and phase (Δ P), i.e., Δ A=A_i-A_{mean} and Δ P=P_i-P_{mean}. In daytime, both Δ A and Δ P were large during 09:00-15:00 LT. Variations in Δ A and Δ P were large in January. Δ A was large in summer and winter, while Δ P was large in spring and fall. Calculated Δ A based on wave-hop method was larger during sunrise and sunset than that around 09:00-15:00 LT, which is opposite to the observation. The change in Δ P between observed and calculated results was opposite during sunrise/sunset. The calculation results showed that the Δ P was large in summer. In observations, both Δ A and Δ P were larger in January than those in other months, although only Δ A was large in calculation. The increases in the Δ A and Δ P in January 2017 could be associated with sudden stratospheric warming. Mean temperature at 10 hPa in the region where the latitude and longitude were $>$60N and 110E-170E, respectively, based on JRA-55 dataset, and the LF amplitude had two similar periods of 5 and 21 days. In this presentation, we will discuss the differences between the observed and calculated Δ A and Δ P, and cause of disturbances on the observed results for January 2017.