

R006-32

A 会場 : 11/7 AM2 (10:45-12:30)

12:00~12:15

SuperDARN レーダーで観測された Pc5 帯 ULF 波動のモードおよび m-number 解析

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Mode and m-number analysis of ULF waves in the Pc5 frequency range with SuperDARN radars

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Ultralow frequency (ULF) waves can be observed by satellites, Super Dual Auroral Radar Network (SuperDARN) and ground-based magnetometers. ULF waves observed in the ionosphere with SuperDARN contain poloidal and toroidal modes with respect to their oscillation direction. Previous studies on ULF waves with SuperDARN analyzed ULF waves with single-beam line-of-sight plasma velocity data, and no study identified the primary mode of ULF waves with SuperDARN. In this study, we have identified the modes and m-number (azimuthal wave number) by comparing the amplitude and phase of ULF waves in the Pc5 frequency range (1.7-6.7 mHz) on the basis of multiple-beam line-of-sight ionospheric plasma velocity data obtained by the Hokkaido East/West and other SuperDARN radars. Next, we conducted a statistical analysis of the resultant wave properties to reveal the magnetic latitude (MLAT) and magnetic local time (MLT) dependence of the primary modes and m-number. The statistical results show that in the mid-latitude region, the occurrence rate of both poloidal and toroidal Pc5 waves was high at premidnight and postmidnight, and toroidal mode Pc5 waves occurred more frequently than poloidal ones. Furthermore, we checked the geomagnetic and solar activity dependence of the occurrence rates of both modes. We discussed possible driving mechanisms for generating these Pc5 waves other than the field line resonance (FLR) as the FLR at these latitudes should yield much higher eigenfrequencies than the frequencies observed in this study.