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B 会場 : 11/27 AM1 (9:15-10:45)

9:45~10:00:00

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Characteristics of the low-frequency magnetic field variations coincided with whistler chorus observed by Arase

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We are investigating the magnetic field variations in association with the relativistic electrons in the inner magnetosphere. It is known that the acceleration and loss of the energetic particles in the radiation belts are deeply related with the energy transfer by electromagnetic waves. The frequencies of whistler chorus waves are generally ranging 0.1 - 0.8 fce (fce is the equatorial electron cyclotron frequency) but often dramatically dropped and became much lower than the commonly observed frequencies of whistler chorus waves.

Our statistical result on the spacial distribution of the low-frequency whistler chorus waves shows that it occurs more frequently near the magnetic equator on the nightside, which is consistent with the mechanism proposed in previous studies, in which whistler chorus waves are excited by energy supplied by high-energy electrons injected from the plasma sheet. Meanwhile, we found that the low-frequency whistler chorus waves were also observed on the dayside, and it would be suggested that those chorus waves are excited by non-thermal electrons that reached the dayside from the nightside plasma sheet. Moreover, the low-frequency whistler chorus waves substantially often occur even at low magnetic activities (Dst < 40nT). Our statistical results show that the low-frequency whistler chorus is more common phenomena than already reported.

In our presentation we focus on the wave activities also at further lower frequencies. In the low-frequency whistler chorus events, the frequencies at which the waves have substantial intensity extends to the frequencies lower than proton cyclotron frequency. We will discuss the characteristics of the low-frequency whistler chorus waves associated with the magnetospheric disturbance phenomena, e.g., dipolarization and bursty bulk flow from the night-side plasma sheet.