Statistical analysis of energetic electron precipitation and VLF emissions at Syowa station

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Radiation belt electrons show dynamic variations during magnetic storms. Wave-particle interactions by whistler mode waves, especially chorus waves, are important to understand acceleration and loss processes of the energetic electrons.

To understand wave-particle interactions during the magnetic storms, we have analyzed VLF data at 750 Hz from the VLF receiver and Cosmic Noise Absorption (CNA) data from the riometer, which reflects variations of energetic electron precipitation, at Syowa station (L=6.1). Statistical variations of CNA distributions as a function of magnetic local time (MLT) during 9 storms in 2005, with minimum Dst greater than -100 nT, show that enhanced energetic electron precipitating region changes from the night- to noon- via morning-sides with time evolution of these storms. This would be related to drift path of the energetic electrons in magnetosphere. To examine the characteristics of precipitating electrons, we have analyzed VLF data at 750Hz. Strong VLF emissions are observed at the morning side during the storm recovery phase. This is almost correlated with the strong energetic electron precipitating region. We have further investigated CNA and VLF data for the other storms except for 2005. The characteristics of the VLF emissions and energetic electron precipitation during the storms will be discussed in this poster.