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

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Sudden commencements (SC) are caused by a rapid increase of the dynamic pressure of the solar wind. To understand loss processes of energetic electrons during SC, we have examined VLF data at 750 Hz, 1.2kHz, and 2.0kHz 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 277 SC in 1999-2009 show that enhanced energetic electron precipitating region occurs at the noon side with time evolution of SC. VLF variations at 750Hz, and 1.2kHz are consistent with the CNA variations although those at 2.0kHz are not consistent with those. In addition to these characteristics of the VLF emissions and energetic electron precipitation during SC, solar wind parameters and electron temperature anisotropy will be discussed in this presentation.

Keywords: Syowa station, energetic electron, VLF emissions, SC, electron precipitation