

Global-mode Pc 5 pulsations: Ground distribution and correlation with energetic particles in the inner magnetosphere

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A sound history has been well known for decades concerning the studies of the correlations between high energetic electrons in the radiation belts and ULF magnetic pulsations, especially in the Pc 5 range in recent papers. Still, there remain open questions on which many researches are currently working. One of such questions is: Is there some kind of global-mode Pc 5 pulsations which enhances the density of high energetic particles in the inner magnetosphere? This question has motivated this study on the existence of such a global mode of Pc 5 pulsations at mid-latitudes. In this study we have identified global-mode Pc 5 geomagnetic pulsations as those simultaneously observed at three mid-latitude MAGDAS/CPMN ground stations separated by $\sim 120^\circ$ in longitude from each other, and studied their features and their correlations with solar wind parameters and high energetic particles in the radiation belts. The specific selection criteria of the global-mode Pc 5 pulsation is as follows: Each Pc 5 event at each station must have large amplitudes (larger than 0.4nT at $L < 2$, larger than 1.0nT at $L > 3$) and long life periods (at least two hours). (Such criteria are relatively strict comparing with past studies but suitable for continuous monitoring of Pc 5 pulsations.) Furthermore, each event must be simultaneously observed at all the three ground stations. Detailed nature of thus identified global Pc 5 pulsations will be discussed in the presentation.