

R006-15

Zoom meeting B : 11/1 PM1 (13:45-15:30)

15:00~15:15

A statistical survey of Pc5 waves observed in the dusk and night sectors

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Storm-time Pc5 waves are one of the candidate processes that cause the radial diffusion into the inner magnetosphere. They are thought to be excited by ion-injections from magnetotail to the ring current. Recently, Yamakawa et al. (2019) demonstrate that Pc5 waves can be excited by ion injections through the drift resonance by a numerical simulation. In this paper, we intend to address the Pc5 excitation process based on recent satellite observations.

According to the results of Yamakawa et al. (2019), a pattern of frequency evolution at an observation point is a characteristic feature of Pc5 waves excited by the drift resonance. We have statistically studied Pc5 wave events that show the same frequency evolution pattern observed in the numerical simulation, using the magnetic field observation of Arase (ERG).

We have surveyed data obtained from 24 March 2017 to 31 December 2020. As a result, the number of events observed in the dusk and midnight sectors tends to be larger than in other sectors, compared with the past Pc5 statistics (e.g., Liu et al. 2009). However, since there are still possibilities that our events are contaminated by the other phenomena, such as the wider broadband magnetic field fluctuations like Pi2, we are still checking the detailed properties of selected waves. The present result is obtained by the survey of only the poloidal component of the magnetic fields. We are doing an extend-study of all the three magnetic field components, not only poloidal but also toroidal and compressional components. Moreover, by introducing an additional restriction based on FWHM, we also examine how waveforms of the selected events are far from the sinusoidal wave. We are also investigating the relationship between ion injections and the selected Pc5 events to check the consistency of the drift resonance theory. We will discuss the excitation mechanisms of the observed Pc5 events based on the above analysis results.