

Seasonal dependence of the plasmaspheric density along the 210MM: Observations in the northern and southern hemispheres

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In this paper we have applied the cross-phase method and the amplitude-ratio method to the MAGDAS/CPMN ground-magnetometer pairs MGD-PTK (Magadan and Paratunka, located in the Russian Far East) and CAN-HOB (Canberra and Hobart, located in eastern Australia), both along the 210MM (Magnetic Meridian), and identified FLR (field-line resonance) events.

MGD is located at (53.6, 219.1) magnetic latitude and longitude [deg], and PTK is located at (46.2, 226.2). Their L values are 2.9 and 2.1. CAN is located at (-45.7, 226.6), and HOB is located at (-54.2, 226.5). Their L values are 2.1 and 2.9. We have identified the FLR events by using both visual inspection and an automatic-identification computer code.

Although the MGD and PTK (CAN and HOB) are separated by about seven (nine) degrees in magnetic latitudes, which is larger than the typical separation (about 1-2 degrees) to which the cross-phase and amplitude-ratio methods are efficient, but we could identify more than a hundred FLR events a year from the both station pairs, and the FLR events had a fairly continuous coverage.

In this paper we estimate the plasmaspheric density from thus obtained FLR frequencies, and examine their seasonal dependence. The result suggests a weak, but marginally significant seasonal dependence with maxima in winter and minima in summer for the both hemispheres. More details will be discussed at the presentation.