Seasonal dependence of the plasmaspheric density along the 210MM: Continuous observations by ground magnetometers

KAWANO, Hideaki
1; YAMADA, Tetsuro
2; KITAGAWA, Yuichiro
3; SHEVTSOV, Boris
4; KHOMUTOV, Sergey
4; PODDELSKIY, Igor
4; YOSHIKAWA, Akimasa
1; MAGDAS/CPMN, Group
5

1Department of Earth and Planetary Sciences, Kyushu University, 2Department of Earth and Planetary Sciences, Kyushu University, 3Department of Earth and Planetary Sciences, Kyushu University, 4IKIR FEB RAS, Russia, 5International Center for Space Weather Science and Education, Kyushu University

In this paper we have applied the cross-phase method and the amplitude-ratio method to the MAGDAS/CPMN ground magnetometers MGD (Magadan) and PTK (Paratunka, Kamchatka), located in the Russian Far East 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. We have identified the FLR events by using both visual inspection and an automatic-identification computer code.

Although the two magnetometers are separated by about seven degrees in magnetic latitudes, which is larger than the typical separation (about 1-2 degrees) for which the cross-phase and amplitude-ratio methods are efficient, but we could identify more than a hundred FLR events a year from the MGD/PTK-pair data, and the FLR events had a fairly continuous coverage from January to December.

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. More details will be discussed at the presentation.