The plasma density simultaneous observation by CPMN chain and Cluster satellite

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From the ground magnetometer data we can estimate the frequency of the field line resonance (FLR). In more detail, by applying the 'phase difference method' and the 'amplitude ratio method' to the magnetometer data from two ground stations closely located along a meridian, we can identify the FLR frequency at the midpoint of the two stations. This FLR frequency depends on the plasma mass density in magnetosphere and the length of the field line, and is thus useful in monitoring temporal and spatial changes in the magnetosphere from ground.

In this paper we compare magnetometer data at two stations in the CPMN (Circum-pan Pacific Magnetometer Network) chain, Tixie (TIK: magnetic latitude 65.81 deg. , magnetic longitude 197.23 deg.) and Chokurdakh (CHD: magnetic latitude 64.81 , magnetic longitude 212.53 deg.), with plasma density observed by the WHISPER (Waves of HIgh frequency Sounder for Probing the Electron density by Relaxation) instrument onboard the Cluster satellite (launched in 2000). In more detail, for the interval of Jan. 1, 2001 - Oct. 1, 2005, we identify events for which Cluster was located on the field line running through the midpoint of TIK and CHD, and statistically compare simultaneously observed FLR frequency and Cluster plasma density. The analysis is in progress, and so far we have an indication that there is a negative correlation between these two quantities. More details will be reported at the presentation.

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