

Transverse and Compressional Pc 5 Waves observed by Coordinated Observations in the High Latitudes

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GEOTAIL observed two interesting events of successive excitation of transverse and compressional Pc 5 waves in the dusk side LLBL on Jan. 25 and 30, 1999. In both cases, transverse waves were observed simultaneously in the ionosphere and on the ground. Latitudinal polarization characteristics shown in the IMAGE magnetometers suggest that the transverse waves are resonating with the field lines around 70° magnetic latitude. On the other hand, the compressional waves that are propagating westward were simultaneously observed only in the ionosphere, not on the ground. This result suggests a screening effect by the ionosphere for the compressional waves. However, the phase analysis of longitude shows that the m number is about 13. Therefore, we need another explanation.

We have carried out coordinated observations of GEOTAIL, SuperDARN, and the IMAGE magnetometers in order to investigate energy flow of ULF waves from the outer magnetosphere to the ground through the ionosphere. During GEOTAIL was skimming the dayside magnetopause, the ionosphere near the magnetic footprints of the satellite was observed by SuperDARN radars with high time resolution mode. This kind of special operation of SuperDARN has been carried out several times in 1998 and 1999.

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