

Simulations and Comparison with Pc1-2 Pulsations and narrow-band Wave Events observed in the Plasma Mantle

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Using Pc1-2 electromagnetic measurements obtained by the Magion-4 satellite of the Interball-1 spacecraft, we study the ULF wave activity in the plasma mantle. The observed Pc1-2 wave activity is characterized by two types of spectra: a) intense narrow-band waves of frequency ~ 0.33 Hz observed near the magnetopause and b) broad-band spectrum of turbulent nature having discrete bursts of \sim minute duration. These narrow-band waves occur occasionally, mostly under northward IMF conditions. Their frequency seems stable while their intensity is modulated. The characteristics of the narrow-band Pc1-2 events have 3 seconds period that is close to those observed by ISEE spacecraft in the foreshock environment. The waves discussed in this paper are observed inside the magnetosphere and in the plasma mantle. Possible generation mechanisms of observed Pc1-2 waves are proposed. A comparison with experimental evidence of narrow-band Pc1-2 events in the magnetopause region at a frequency below the ion cyclotron frequency suggests that Pc1-2 events may be associated with anisotropic ion fluxes flowing just inside the plasma mantle. Particularly, a mechanism based on particle distribution anisotropy is thoroughly simulated.