

Characteristic of Pc 3 ULF waves in the dayside magnetosheath

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Wave characteristics (Wave modes, Poynting fluxes) of Pc 3 in the magnetosheath were investigated using the magnetic field, electric field and plasmas simultaneously measured by the GEOTAIL. The results showed that Pc 3 waves in the magnetosheath had the mixed wave modes including fast, intermediate and slow magnetosonic waves. The Poynting fluxes of the Pc 3 waves in the magnetosheath were found to be 100 - 1000 times bigger than those of the Pc 3 waves observed in the magnetosphere (10 - 50 nJ/m²s), suggesting that the transmission efficiency of Pc 3 signals across the magnetopause is the order of 1% or 0.1% only. These observed facts suggest that Pc 3 ULF wave in the magnetosheath should be the sufficient energy source for the Pc 3 observed both in the magnetosphere and on the ground.

Wave characteristics (Wave modes and Poynting fluxes) of hydromagnetic ULF signals, Pc 3 (periods = 10 - 40 sec) in the magnetosheath were investigated using the magnetic field, electric field and plasmas simultaneously measured by the scientific satellite, GEOTAIL. The results showed that Pc 3 ULF signals in the magnetosheath had the mixed wave modes including fast, intermediate and slow magnetosonic waves. The poynting fluxes of the Pc 3 ULF signals in the magnetosheath were found to be 100 - 1000 times bigger than those of the Pc 3 signals observed in the magnetosphere (10 - 50 nJ/m²s), suggesting that the transmission efficiency of Pc 3 signals across the magnetopause is the order of 1% or 0.1% only. These observed facts suggest that Pc 3 ULF wave in the magnetosheath should be the sufficient energy source for the Pc 3 observed both in the magnetosphere and on the ground.