

Ultra low frequency waves index in the inner magnetosphere derived from Arase and RBSP satellites

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The ultra low frequency (ULF) wave indices are derived from the amplitude of magnetic field distributions with the 2-8 min periods and determined by the ground measurements at high latitudes or satellites in geosynchronous orbit. This index characterizes the level of the geomagnetic field. Evaluated ULF wave index is correlated with electron flux enhancements in the radiation belt [Kozyeva et al., 2007; Romanova et al., 2007; Romanova and Pilipenko, 2009].

In this study, we derived the ULF wave indices at different L-shell in the inner magnetosphere ($L < 8$), using the magnetic field data from Arase and RBSP satellites, considering both toroidal and poloidal modes. We will compare them with energetic electron flux in the radiation belts, solar wind parameters, and geomagnetic indices and discuss possible applications of this index.