



Spatial distribution of magnetic fluctuation power with period 40 to 600 s in the magnetosphere observed by THEMIS

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Ultralow frequency (ULF) fluctuations are ubiquitous in the magnetosphere and have significant influence on the energetic particle transport. We use Time History of Events and Macroscale Interactions During Substorms (THEMIS) data to give the spatial distribution of the Pi2/Pc4- and Pc5-band magnetic fluctuation amplitude near the magnetic equator in the magnetosphere. Statistical results can be summarized as follows: (1) Strong ULF fluctuations are common in the magnetotail plasma sheet; The amplitude of all three components of magnetic fluctuations decreases with decreasing radial distance; (2) During periods of high AE index, fluctuations can propagate toward the Earth as far as the data cutoff in the nightside of the magnetosphere, and the amplitude of magnetic fluctuations is clearly stronger near the dusk sector of the synchronous orbit than that near the dawn sector, suggesting that the substorm particle injection has significant contribution to these fluctuations; (3) Intense compressional Pc5-band magnetic fluctuations are a persistent feature near two flanks of the magnetosphere. Clear peaks of the compressional Pi2/Pc4-band magnetic fluctuation power near two flanks can be found during periods of fast solar wind, while the power of compressional Pi2/Pc4-band fluctuations is weak when the solar wind is slow. (4) Solar wind dynamic pressure and its variations can globally affect the ULF fluctuation power in the magnetosphere. Magnetic fluctuations near the noon side can penetrate from the magnetopause to the synchronous orbit or inner when solar wind pressure variations are large.