

INTER-HEMISPHERE ASYMMETRY OF HIGH-LATITUDE ULF GEOMAGNETIC PULSATION IN THE INITIAL PHASE OF MAGNETIC STORM

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The ground-based geomagnetic ULF (1-6 mHz) data collected from high-latitude Arctic and Antarctic stations have been analyzed during the initial phase of three magnetic storms (Jan. 10, 1997, Apr. 21, 1997 and Apr. 16, 1999). We used data from 9 pairs of quasi-conjugated stations at two meridian profiles: along Greenland (6 pairs of stations) and along Scandinavia (3 pairs of stations). The Fourier and dynamic spectra of ULF pulsations as well as the ULF amplitude distribution maps in the coordinates of the geomagnetic corrected latitude (Φ) – magnetic local time (MLT) have been calculated. First at all we have to mention that principally there no symmetric stations at the polar caps especially at Greenland meridian because the polar cap stations at similar geomagnetic coordinates are located at Northern and Southern hemisphere at different geographic latitudes and longitudes, providing the occurrence of a strong North-South asymmetry in the ionosphere conductivity. The inter-hemisphere local time (LT) difference increases with the latitude increasing from ~ 13 h near the polar cap to ~ 5 h near the dayside polar cusp. It was established that even in equinox period under IMF B_z and $B_y \sim 0$, at 8-14 MLT the ULF pulsations were observed only in the Northern (sunlight) polar cap and were absent in the Southern (nocturnal) one. However, close to dayside polar cusp the intense ULF pulsations were found to be highly correlated with similar dynamic spectra. In the solstice (January) period the amplitude of cusp ULF activity also demonstrated a good inter-hemisphere similarity, but in the winter hemisphere the area of the intense cusp ULF waves was located at lower latitudes than in the summer one. In the storm initial phase on Jan.10, 1997 a strong substorm accompanied by Pi3 range ULF pulsations was observed at polar latitudes at 20-07 MLT only in Northern (winter) hemisphere (under IMF $B_z \sim 0$, $B_y \sim +3$ nT, $B_x \sim -10$ nT). One hour later the ULF activity was recorded close to dayside polar cusp simultaneously in both hemispheres.

polar caps, dayside polar cusp, ULF pulsations

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