

# Global Pc 5 Pulsations During an Interval of Northward IMF and High-speed Solar Wind on 31 October 2003

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Global Pc 5 magnetic pulsations having huge amplitude (approx. 200 nT) and monochromatic frequency (2mHz) were observed during the interval from 0740 to 1000 UT on October 31, 2003, in the recovery phase of a super magnetic storm. The super Pc 5 pulsations primarily took place at the same time as a strong enhancement of the solar wind (the IMF magnitude was 40 nT, there was no solar wind plasma data, but its speed is estimated to have been over 1000km/s) at 1630 UT on October 30. The solar wind became stable with a almost completely northward magnetic field ( $B_z$  was approx. 16 nT), a high velocity (approx. 1000km/s), and approx. 2 /cc of the proton density during the interval 0700-0920 UT on October 31. In particular, sinusoidal Pc 5 pulsations were globally detected during the stable solar wind.

We analyzed latitudinal profiles of the amplitude and polarization of the super Pc 5 pulsations observed at 210 degrees magnetic meridian chain of the Circum-pan Pacific Magnetometer Network (CPMN), which was in the dusk sector. The amplitudes showed a maximum of 200nT around  $L=4.0-6.0$ . At higher latitudes ( $L=8.6$ ) and lower latitudes ( $L=1.0-2.1$ ), the amplitudes were 10-50 nT. In the northern hemisphere, the polarizations were counter-clockwise (clockwise) in the higher (lower) latitudes. The polarization reversal took place at  $L=2.1-4.0$  ( $L=4.0-5.6$ ) before (after) 0840 UT. At  $L=5.6-6.0$ , the azimuthal wave number of the D-component Pc 5 pulsations was 3-5 while there was no phase delay in the H-component pulsations. In the southern region from the dip equator to the mid latitude, the polarizations were counter-clockwise.

We also analyzed Pc 5 pulsations observed by the CPMN South-American chain in the dawn sector. The Pc 5 pulsations showed several - 20 nT amplitude and linear polarization.

It is also detected by the GOES and LANL satellites in the several local time bins of the magnetosphere that magnetic field and flux of energetic particles fluctuated in the corresponding frequency to the super Pc 5's.

In the present paper, we will discuss the generation and propagation mechanisms of the super Pc 5 pulsations, which are consistent with these suggestive observations.