



ULF signature and auroral disturbances of the late recovery phase of the strong November 7-8, 2004 magnetic superstorm

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The November 7-8, 2004 superstorm consisted of two very strong magnetic storms: the first on 7-9 November and the second on 9-10 November. The interval of 18-04 UT on 8-9 November, a decay period after the first superstorm could be formally considered as a storm recovery phase featuring in ionospheric data typical signatures for a steady magnetospheric convection period. A prolonged (more than 10 hours) slightly negative and steady IMF Bz and a high solar wind velocity (~600 km/s) involving the previous very strong IMF Bz (reached - 45 nT during the storm main phase) resulted the untypical ground signature of storm recovery phase. Instead of typical morning Pc5 geomagnetic pulsations there were observed very strong (up to 1000 nT) night-side magnetic and CNA disturbances as well as auroral activations including polar boundary intensifications and double-oval configuration. The bursts of Pi2 (10-20 mHz) and Pi3 (2-5 mHz) geomagnetic pulsations were collocating with CNA bursts and featuring similar structure in wavelet analysis. The good temporal and spatial relationship has been found between the peaks in CNA, negative magnetic disturbances, bursts of Pi3 and Pi2 pulsations, and auroral brightenings. This suggests their common wave-like bursty source. The ballooning mode instability might be a plausible energy source.