ULF response to sudden changes of the solar wind dynamic pressure: two case study

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In August 2001 the high-resolution induction magnetometer was mounted at the observatory of Polar Geophysical Institute near Barentsburg (BAB, 78,05ºN, 14,12ºE) in Spitsbergen archipelago. The combination of BAB magnetometer with two others (at auroral zone and at mid latitude stations) forms a quasi-meridional array suitable for simultaneous registration of magnetic pulsations in Pc1 frequency range, coming along the magnetic field lines from different magnetospheric domains. In this paper we present the results of analysis of two cases of ULF response to sudden changes of the solar wind dynamic pressure (SI). The DMSP data were also examined to define the location of the observatories relative to the domain boundaries during the events. The SIs occurred at similar conditions except for the sign of IMF By component and orientation of the front of solar wind irregularity. In the both cases the response at the station in auroral zone had the form of sequence of bursts with the center frequency near 1 Hz and the repetition period of 10-15 minutes, while the SI induced ULF activity at the poleward and equatorward stations was different. The main features of the response (both similarities and differences) are interpreted in the term of modulation of the ion-cyclotron instability by the specific wave excited by SI inside the large scale resonator, which seems to be the dayside part of central plasma sheet.