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# A role of long period (1-5 mHz) magnetic field fluctuations in substorm development. ULF wave trigger of “non-triggered” substorms

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Our recent study of auroral substorms which develop with no clear trigger in the interplanetary space (Yagova et al, 2017) have shown that specific pulsations in the frequency range 1-4 mHz in the polar cap precede a breakup. Two physical mechanisms for these non-triggered substorms are possible: 1) a steep change of spectral parameters of plasma and magnetic field fluctuations in the interplanetary space, i.e. a wave trigger of a “non-triggered” substorm, and 2) the development of a substorm from the processes inside the magnetosphere. The present study is aimed on the first of these two scenarios. For that, the spectral parameters of the solar wind dynamic pressure and interplanetary magnetic field fluctuations are analyzed before selected “non-triggered” substorms and for the days without substorms under the same set of non-wave parameters.

References

Yagova, N., Nosikova, N., Baddeley, L., Kozyreva, O., Lorentzen, D. A., Pilipenko, V., and Johnsen, M. G.: Non-triggered auroral substorms and long-period (1-4 mHz) geomagnetic and auroral luminosity pulsations in the polar cap, Ann. Geophys., 35, 365-376, https://doi.org/10.5194/angeo-35-365-2017, 2017.