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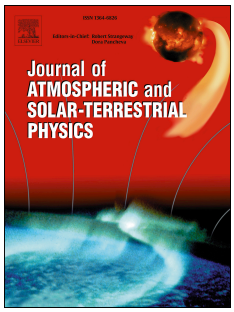

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Observations of substorm auroras by MAIN cameras system in Apatity during two winter seasons: 2014/2015 and 2015/2016

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Abstract

Data of the MAIN cameras (Multiscale Aurora Imaging Network) obtained at Apatity (Kola Peninsula, Russia) during two winter seasons (2014/2015 and 2015/2016) have been used to study the substorms during different solar wind conditions. Solar wind parameters were taken from the 1-min sampled OMNI data base (http://cdaweb.gsfc.nasa.gov/cdaweb/ istp_public/). Auroral disturbances were verified by the data of IMAGE magnetometers and by data of the all-sky camera at Apatity. All substorms were divided into different groups depending on the geomagnetic activity. First, the substorms were separated into two groups: substorms observed during storms and substorms under non-storm conditions. The substorms during storms were divided in sub-groups according to observations during different phases of the storm: initial, main and recovery phases, and the recovery phase was divided in near and late recovery phase. We considered also substorms during "structured recovery phase", when the SYM/H index behavior was highly irregular. The substorms during non-storm conditions were classified as substorms under quiet conditions, when no structures in the solar wind were observed, and as