**Dynamics of the proton aurora during a magnetic storm on December 1, 2023. Ground-based and satellite observations**

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The proton aurorae in the emissions of atomic hydrogen arise as a result of the energetic protons precipitation and their charge exchange at the heights of ionosphere E layer. The proton precipitation occurs from of the magnetosphere region with an isotropic distribution of charged particle fluxes. The isotropization arises due to the pitch-angle scattering at the magnetic equator with a large curvature of field lines in the current sheet [Sergeev and Malkov, 1988; 1992]. The low-latitude boundary of particle isotropic fluxes is registered by the low-altitude satellites with a polar orbit. Equatorward of this boundary, the precipitation of energetic protons is sometimes observed as a result of scattering during interaction with EMIC waves [Yahnin\_and Yahnina, 2007].

This report presents the results of our observations at the Maimaga st. (CGMC: 58°, 202°) of the proton aurora dynamics in the MLT evening sector during a magnetic storm with a minimum SYM-H ~ -130 nT on December 01, 2023. The storm began after a sharp increase of the electric field dawn-dusk Ey of the solar wind (-**V**x×**B**z) up to ~11 mV/m at ~1010 UT. In 10-20 minutes, the rapid motion equatorward of a diffuse arc in the atomic hydrogen 486.1 nm (Hb) emission from the northern horizon of station was registered. The arc passed the station zenith at a speed of ~ 200 m/s and in ~ 1 hour it was observed at geomagnetic latitudes 55-57°. Next, short (~10 minutes) activizations of aurorae occurred throughout the all sky in the geomagnetic latitude interval 54-62° with the maximum Hb emission intensity of ~200 R after subtraction of the continuum intensity. Narrow forms of electronic aurorae were sometimes detected in the 470.9 nm N2+ emission.

At ~1115 UT, the NOAA19 satellite registered the isotropic boundary of energetic proton and electron fluxes at the optical observation meridian. The maximum proton isotropic flux at the boundary ~2° wide coincided with the arc position in the Hb emission. The mid-latitude magnetograms indicate the development of disturbances during a storm as the result of increased magnetospheric convection without substorms. We believe that the observed dynamics of the proton aurora in this event mapped the rapid motion of the isotropic fluxes boundary of energetic protons and, accordingly, the current sheet into the inner magnetosphere as a consequence of the sharp increase of convection.

The work was performed as part of State Task no. 122011700172-2. It was supported by the Russian Foundation for Basic Research, project no. 21-55-50013.