

# **MAGNETOSPHERIC CONVECTION MANIFESTATIONS AT SUBAURORAL LATITUDES BY OBSERVATIONS OF THE DIFFUSE AURORA, SAR ARC AND IONOSPHERIC DRIFT**

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Until recently the attention of researchers has been focused to the phenomenon, which is termed as a polarization jet (PJ) (Galperin et al., 1974) or subauroral ion drift (SAID) (Spiro et al., 1979). These are polar orbiting satellite observations of a narrow strip of westward plasma drift at a height of F2 region with a velocity up to 2 km/s in the vicinity of plasmapause projection during substorms. As a result of the last classification of data from the Millstone Hill incoherent scatter radar (Foster and Vo, 2002) it has been found that during geomagnetic disturbances at  $K_p \geq 4$  a region of the westward plasma drift equatorward of auroral precipitations in the MLT night sector has a latitudinal extent which is much more than in SAID. Therein this phenomenon is termed as a subauroral polarization stream (SAPS).

Our investigations (Ievenko et al, Adv. Space Res., 2008) testify about the development the wide ionospheric drift at subauroral latitudes (SAPS) since the beginning of convection intensification in the magnetosphere after a turn of IMF Bz to the south. We suppose that the generation of polarization field both in the diffuse aurora region and much equatorward of it can be associated with the development of Region 2 FAC during the intensification of magnetospheric convection. Here we present new results studies of the penetration of the convection electric field to the plasmasphere latitudes based on photometric observations of subauroral luminosity dynamics in 557,7 and 630,0 nm emission and measurements of the ionospheric drift in the F2 region at the Yakutsk meridian (CGMC: 55-60° N, 200° E). The comparison of ground-based observations with measurements of the plasma drift aboard the DMSP-F satellites is carried out.

Plasma sheet, diffuse aurora, Region 2 FAC, plasmapause, SAR arc, ionospheric drift

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