Solar wind plasma density control of auroral ion precipitation

V. Vorobjev, O. Yagodkina *(Polar Geophysical Institute, Apatity, Murmansk region, Russia, vorobjev@pgi.kolasc.net.ru)*

The global precipitation features associated with solar wind plasma density changes were examined using DMSP F6 and F7 spacecraft observations of the average ion energy and energy fluxes in different precipitation regions. Under magnetic quietness (AL<100 nT, B_z>0) there was found an enhancement of average ion fluxes in all MLT sectors at least two times along with the solar wind plasma density increase from 2 to 24 cm^{-3}. On the nightside this enhancement generally occurred in *b2i-b4s* and *b4s-b5* regions, which are approximately corresponding to the statistical auroral oval and map to magnetospheric plasma sheet tailward from the isotropy boundary. On the dayside the enhancement occurred in both the soft diffuse precipitation and the auroral oval precipitation that are approximately corresponding to the LLBL and the statistical auroral oval. The average ion energy decrease was registered simultaneously with this ion flux enhancement in all MLT sectors. The global pattern of precipitating ion flux changes associated with the increase in the solar wind plasma density was constructed. Results testify the occurrence of effective solar wind plasma penetration into the magnetospheric tail plasma sheet as well as deep on the closed geomagnetic field lines of the dayside magnetosphere.