

Generation Mechanism of the Day-Night Net Field-Aligned Current System Deduced From the DMSP satellites

Satoru Yamashita[1]; Genta Ueno[2]; Tomoyuki Higuchi[3]; Shin-ichi Ohtani[4]; Toshihiko Iyemori[5]

[1] Dept. of Geophysics, Kyoto Univ.; [2] ISM; [3] Inst. Stat. Math.; [4] JHU/APL; [5] WDC-C2 for Geomag., Kyoto Univ.

We clarify field aligned current (FAC) distribution in the polar region and show the existence and the statistical characteristics of the day-night net FACs with the data obtained by the DMSP satellites. Location and current density of FACs are investigated under several geomagnetically quiet and disturbed conditions. Under the condition that the ASY-H index is large, downward FACs are more often observed than upward FACs around the noon. On the other hand upward FACs are more often observed than downward FACs around the midnight under such a condition. Net FACs flow into the ionosphere around 1100MLT and flow out around 2300MLT. The current intensity of the day-night net FACs are studied with the DMSP satellites data. The current intensity of the day-night net FACs are found to increase in main phase of geomagnetic storms.