



Observed and simulated field-aligned currents during northward IMF

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Here we present a study of field-aligned currents (FAC) in the northern polar cap region during northward IMF (the so-called NBZ current system).

For a series of cases where there is a systematic change of the ratio between the IMF B_y and B_z components we derive patterns of the evolution of the current systems and the electric potential over the polar cap using the Assimilative Mapping of Ionospheric Electrodynamics (AMIE) procedure, including both ground based magnetometer data and magnetic field data from the CHAMP and Ørsted satellites.

The current patterns are compared with global MHD simulations of solar wind magnetosphere interaction during similar IMF conditions recently published by Vennerstroem et al. We discuss to what extent the observations are consistent with the conclusions drawn in the MHD simulations.