

## Large-scale FAC pattern and SW-M-I coupling 2

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The motivation for this study arises from a question: While it is observationally known that the Field-Aligned Current (FAC) patterns change depending on factors such as the IMF orientation, can they also be influenced by ionospheric conductance? Here note that we are targeting the FAC pattern, not the electric potential pattern for which we have reported on various types of deformation and its causes in our past research.

Since FAC is driven by the SW-M-I dynamics, we investigate this issue using a global MHD model. We performed the simulations with various combinations of conductance distributions and IMF orientations:

- (1) Uniform conductance distribution
- (2) Distribution including only the increase due to solar illumination
- (3) Distribution including an increase in the auroral zone

IMF-By values were considered as zero, positive, and negative.

As an initial result, we found that when there is auroral enhancement in the conductance distribution, the FAC patterns exhibit dawn-dusk asymmetry.

We will show further details, including other results and discussions related to SW-M-I coupling.

Keywords: M-I coupling, Field aligned current, Magnetosphere simulation