

PEM022-P07

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## On the plasma sheet dynamics and substorm-FAC system: Observations and MHD simulations

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The magnetospheric substorm is the fundamental but the unsolved problem in the solar-terrestrial physics. In particular, the generation process of substorm-FAC, the heart of the substorm dynamics, is not fully discussed and understood in the context of the momentum/energy balance in the Magnetosphere-Ionosphere coupling system.

In our previous study, we proposed a substorm scenario based on the slow mode interpretation. However, we have not fully explained details, including the momentum/energy conversion at the site of plasma sheet and the stress/energy matching between the magnetosphere and ionosphere. In this study, we examine the scenario by comparing satellite observations and MHD simulations. The MHD simulation and the analysis of its results are performed on a web-based operation system and an advanced visualization system that are introduced in NICT recently.

Also, we will report the progress of our MHD eigen-mode decomposition method, one of the new ideas that will be applied in global MHD simulations toward the understanding of the mechanics and energetics of substorm processes.

Keywords: substorm, plasma sheet, FACs, MHD simulation