

## **DAYSIDE MAGNETOPAUSE BOUNDARY LAYERS UNDER NORTHWARD IMF: RESULTS FROM THEMIS AND MHD SIMULATIONS**

Wenhui Li 1, JOACHIM RAEDER 1, Marit Øieroset 2, Tai Phan 2

University of New Hampshire, Durham, New Hampshire, USA, e-mail: [wenhuil@unh.edu](mailto:wenhuil@unh.edu),  
[J.Raeder@unh.edu](mailto:J.Raeder@unh.edu)

University of California, Berkeley, California, USA, e-mail: [oieroset@ssl.berkeley.edu](mailto:oieroset@ssl.berkeley.edu),  
[phan@ssl.berkeley.edu](mailto:phan@ssl.berkeley.edu)

During a period of northward IMF conditions, THEMIS spacecraft observed a layer of nearly stagnant cold dense plasma in a closed field region immediately inside the dayside magnetopause near the low latitude boundary layer on 3 June 2007. Using the OpenGGCM global MHD magnetosphere numerical model, we successfully reproduce this observed cold dense plasma layer in the simulation. Both the observation and the simulation results show that reconnection first occurs poleward of the cusp in the northern hemisphere, creating new open field lines extending southward and forming an open field layer; then subsequently occurs in the other hemisphere, creating new closed field lines that capture the magnetosheath plasma and form the dayside cold dense plasma layer. The simulation shows that there is also a layer of plasma with open field above this closed field layer. In this event, the simulation shows that the open layer and the skin of the cold dense plasma layer have a southward tangential flow while the inner part of the cold dense plasma layer has a more stagnant and more turbulent flow.

boundary layer, magnetopause, magnetosphere

Wenhui Li, University of New Hampshire, Durham NH 03824, USA, email: [wenhuil@unh.edu](mailto:wenhuil@unh.edu)