Understanding Magnetotail Current Sheet Meso-Scale Structures Using MHD Simulations

M. El-Alaoui(1), **M. Ashour-Abdalla**(1,2), and R. L. Richard(1)

(1) Institute of Geophysics and Planetary Physics, University of California , Los Angeles, Los Angeles, CA 90095-1567, United States, (2) Department of Physics and Astronomy, University of California, Los Angeles (mostafa@igpp.ucla.edu, 310-206-3051)

Cluster observations have confirmed the existence of widespread meso-scale structure in the magnetotail current sheet. These structures include bifurcated current sheets as well as wave like structures along and across the magnetotail. Global magnetohydrodynamic (MHD) simulations provide a reasonable description of the large-scale structure of the Earth's magnetosphere as it responds to changes to solar wind and interplanetary magnetic field (IMF) direction. High-resolution MHD simulations have shown similar structuring. These simulations were driven by observed solar wind conditions from the ACE or GEOTAIL spacecraft, for intervals selected from the Cluster satellite data. Detailed analysis of the simulation results, including comparison to Cluster data, will be used to understand whether the observed structure can be attributed to external driving, local instabilities, or the distribution of localized reconnection sites.