
Cusp Dynamics During a Storm-Time IMF By Reversal

Brandon Burkolder*¹, Li-Jen Chen¹, and Kevin Pham²

¹NASA Goddard Space Flight Center – United States

²High Altitude Observatory of the National Center for Atmospheric Research – United States

Abstract

The May 2024 Mother's Day storm reached levels of geomagnetic disturbance not seen in 35 years, and sparked aurora visible from locations as extreme as the Florida Keys. The coronal mass ejection impact that caused the storm contained a very dense (~ 120 1/cc) current sheet with magnetic field B_y reversal of 120 nT. A fully coupled Multiscale Atmosphere Geospace Environment (MAGE) simulation is employed to examine the response of the day-side magnetopause and cusp under these intense variations. This study helps connect the storm-time magnetopause which can be probed with MMS to the cusp ionosphere soon to be explored by Tandem Reconnection and Cusp Reconnaissance Satellites (TRACERS).

*Speaker