

Supporting Information for

**Dissecting Earth's Magnetosphere: 3D Energy Transport in a Simulation of a Real Storm Event**

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Video S1

**Additional Supporting Information (Files uploaded separately)**

Captions for Movie S1

**Introduction**

This supplemental video shows the magnetopause surface from two camera angles for the duration of the simulated storm event. The contour on the magnetopause surface shows the topology (see caption for details) and the green isosurface shows four field junctions. The results are from the BATS-R-US 3D MHD solution output on the block tree dual grid (cell-centered finite volume scheme solution plotted as connected points). The visualization is done using Paraview open-source visualization software version 5.12 with custom filters for magnetopause detection.

**Data Set S1.** This video shows the magnetopause surface from two camera angles for the majority of the simulation run starting at 2022-03-00:00:00 with contours showing the magnetic topology (Beige- closed/closed, Orange- closed/open, Red- open/closed).

Green isosurface cubes show four field junction points where four magnetic topologies are adjacent (open-open, open-closed, closed-open, closed-closed). Key points are shown in static images in the paper, this video demonstrates the explosiveness of the end of main phase (around 2022-03-11:54:00) and shows the configuration of the four field junction positions at other times of the event.