

Supplementary Information for “Global-scale Magnetosphere Convection Driven by Dayside Magnetic Reconnection”

Lei Dai^{1*}, Minghui Zhu¹, Yong Ren¹, Walter Gonzalez^{1,2},
Chi Wang¹, David Sibeck³, Andrey Samsonov⁴,
Philippe Escoubet⁵, Binbin Tang¹, Jiaojiao Zhang¹,
Graziella Branduardi-Raymont^{†4}

^{1*}National Space Science Center, Chinese Academy of Sciences, Beijing, 100190, China.

²National Institute for Space Research (INPE), São José dos Campos, São Paulo, Brazil.

³Goddard Space Flight Center, NASA, Greenbelt, United States.

⁴Mullard Space Science Laboratory, University College London, Dorking, UK.

⁵European Space Research and Technology Centre, European Space Agency (ESA), Noordwijk, Netherlands.

*Corresponding author(s). E-mail(s): ldai@spaceweather.ac.cn;

†

[†]Deceased: Graziella Branduardi-Raymont

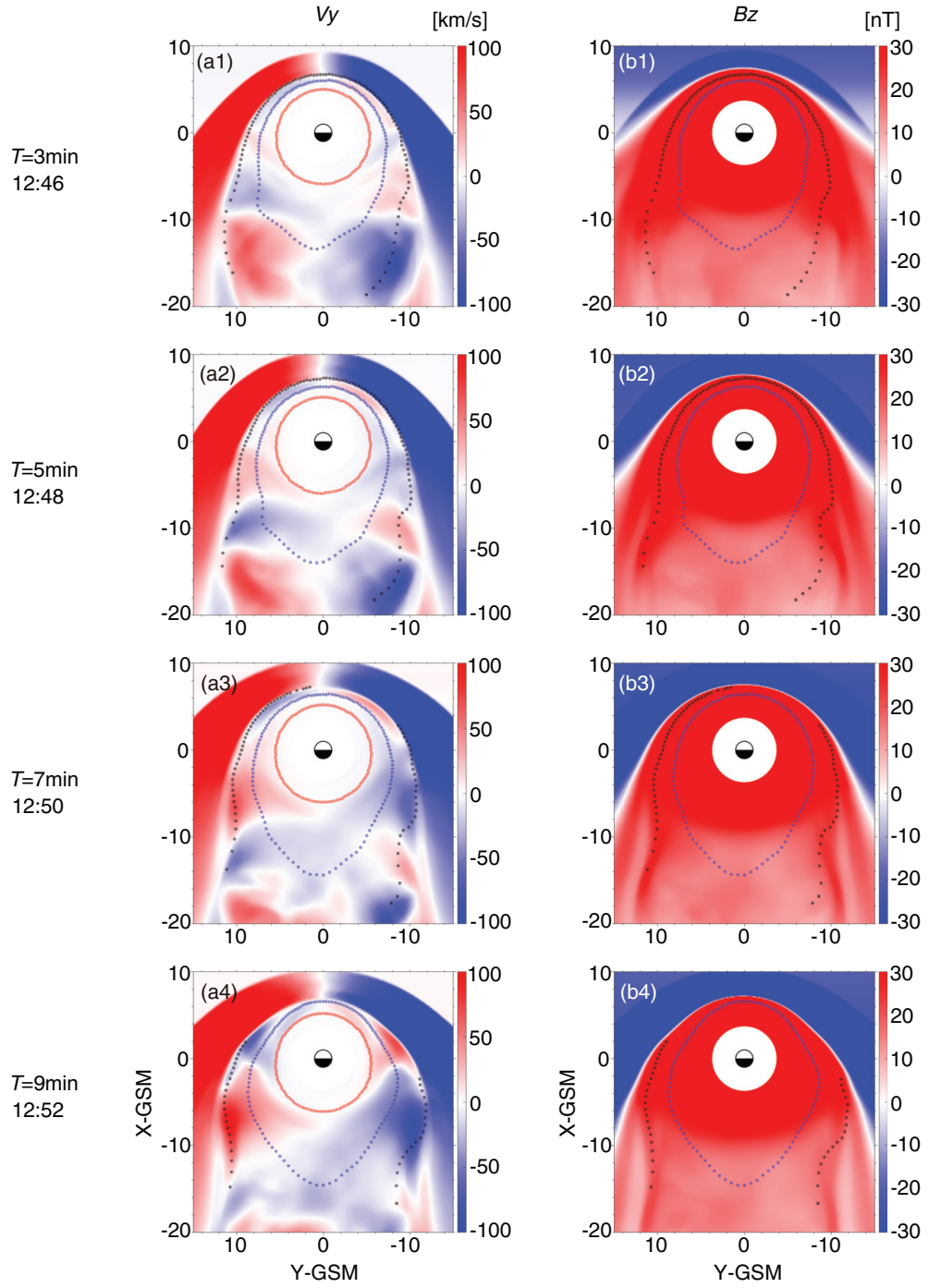


Fig. S1 Temporal evolution of V_y and B_z in the XY-GSM plane in the global MHD simulations during $T=3\text{--}9$ minute.

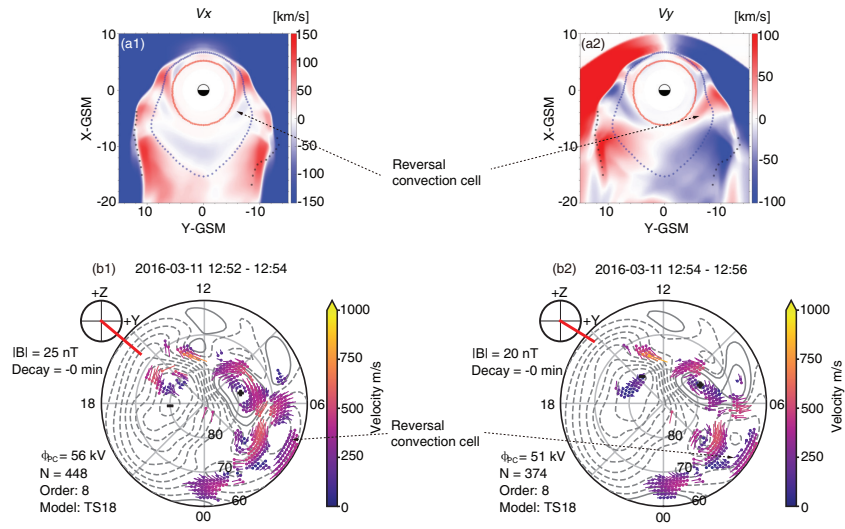


Fig. S2 Up panel: The distribution of V_x , V_y in the XY-GSM plane at 12:54 UT. Bottom panel: ionospheric convection maps from SuperDARN during 12:52 UT-12:56 UT.

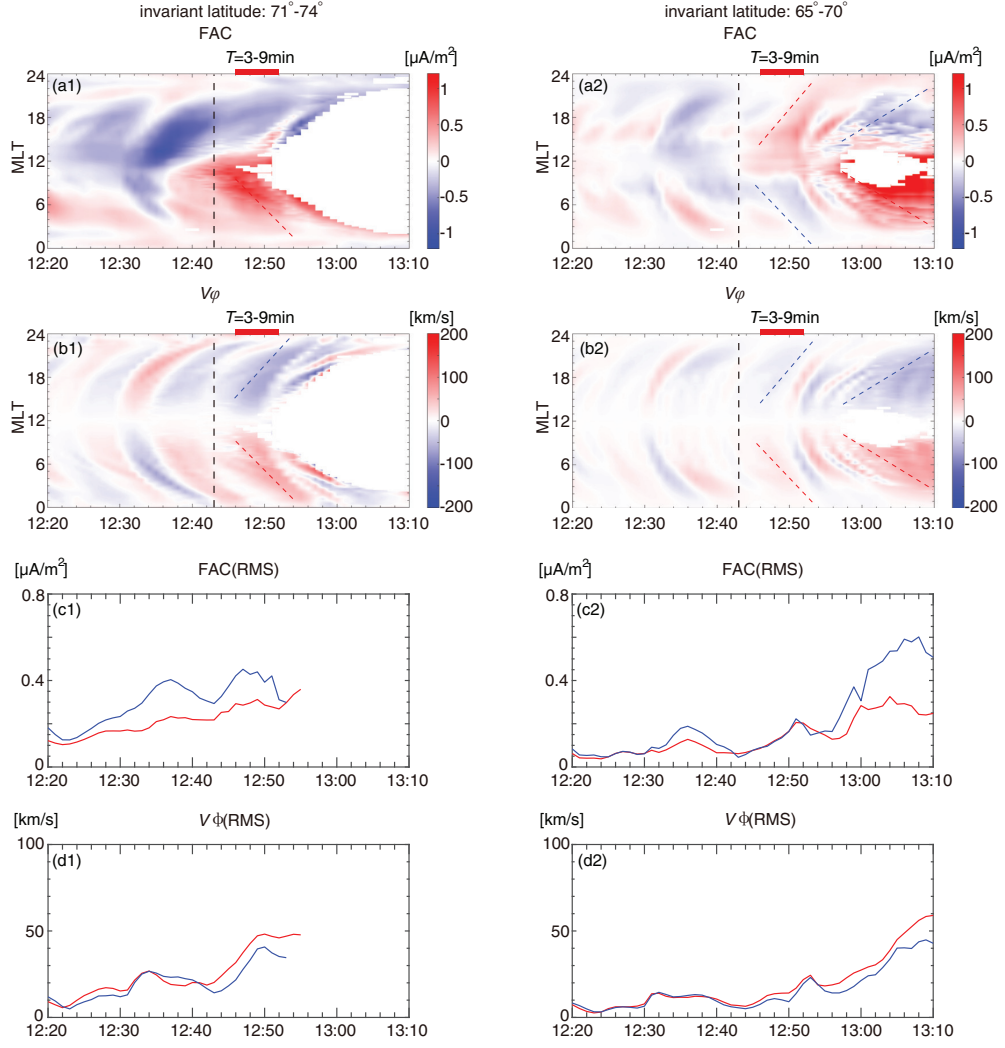


Fig. S3 Global simulation results of FAC and V_ϕ with an infinite $10^8 S$ ionosphere conductivity in a test run. a1-d1) EWOgram of FAC and V_ϕ , the root mean square of FAC and V_ϕ in the invariant latitude 71° - 74° . a2-d2) EWOgram of FAC and V_ϕ , the root mean square of FAC and V_ϕ in the invariant latitude 65° - 70° .

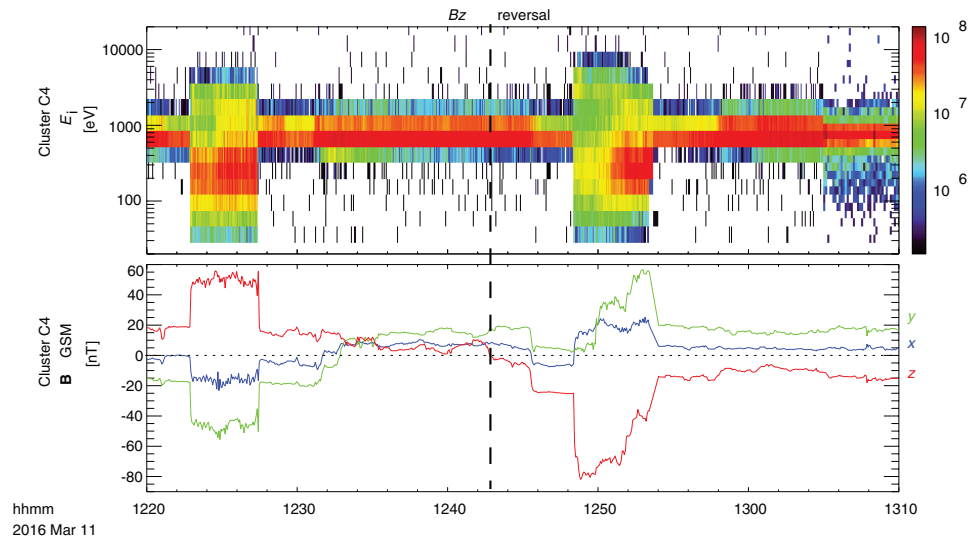


Fig. S4 Observations from Cluster 4 near the bow shock for the event