

Supplementary Information to "Restructuring of the Entire Dayside Magnetosheath by Shock-Discontinuity Interaction"

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SUPPLEMENTARY FIGURES

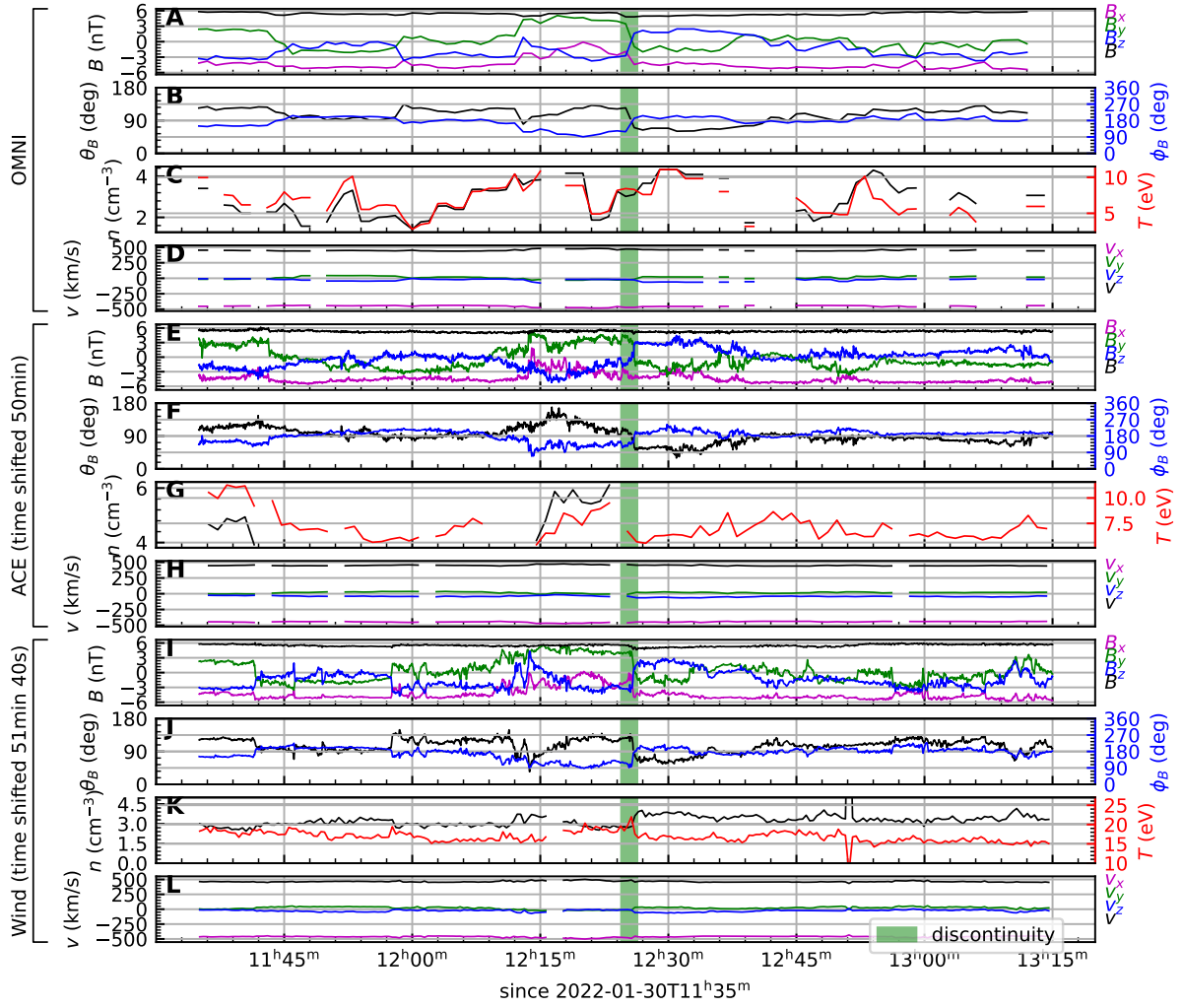


FIG. 1. Time shift comparison across OMNI, ACE and Wind data. The first four panels show OMNI data, including magnetic field in GSE (A) Cartesian coordinates and (B) spherical coordinates, (C) ion density and temperature, and (D) ion bulk velocity. The next four panels show ACE data with time shifted by 50min. The last four panels show Wind data with time shifted by 51min and 40s. Compare the magnetic fields from the three data sources.

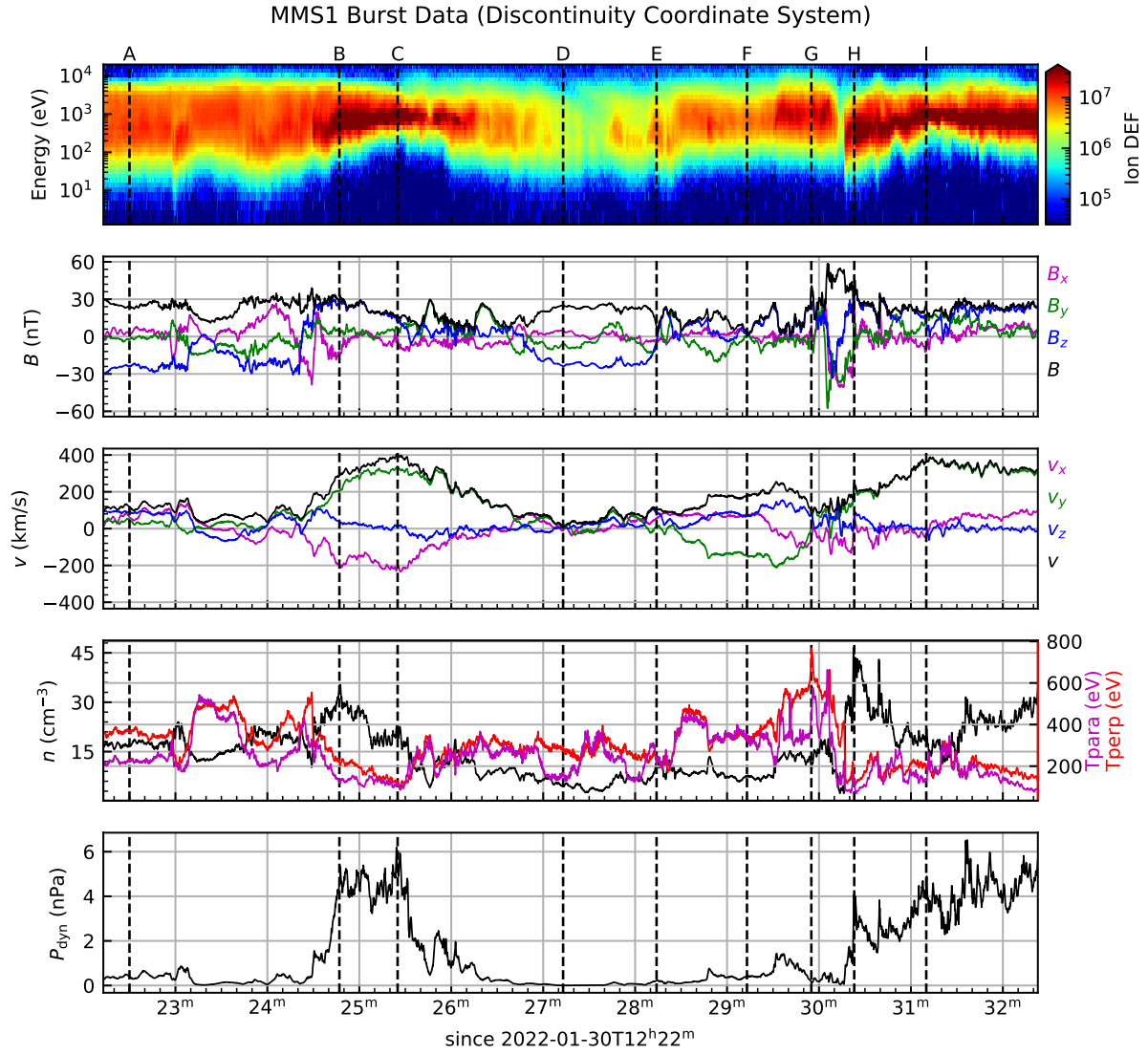


FIG. 2. MMS1 burst data covering part of the reconfigured magnetosheath. With the same format for Fig. 1 and Fig. 3, displayed quantities from top to bottom are ion differential energy flux, magnetic field and ion bulk velocity in discontinuity coordinate system, ion density and temperature, dynamic pressure. Vertical dashed lines and capital letters above the first panel mark the time selected to show ion distribution function in Supplementary Fig. 3

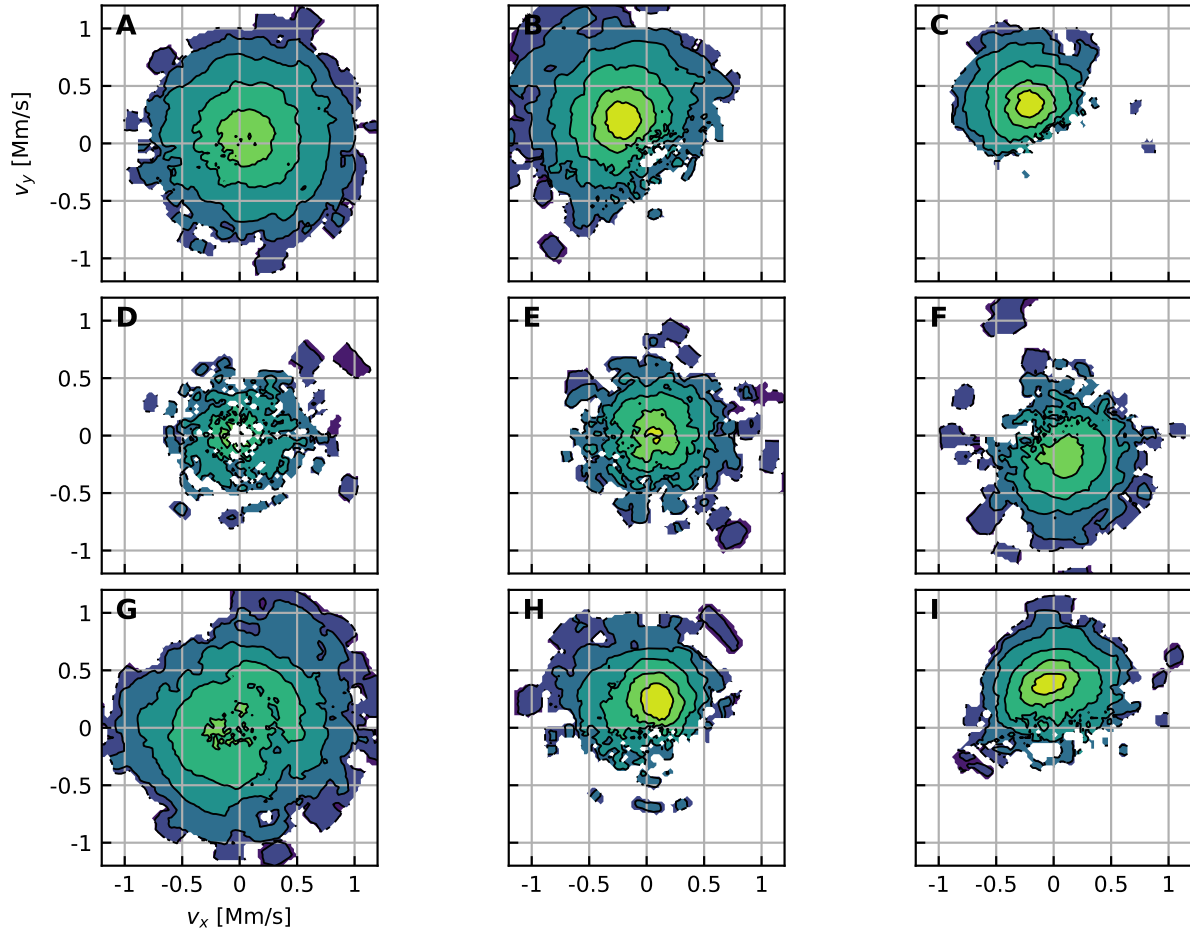


FIG. 3. Ion distribution functions reduced by integration along the v_z -axis in discontinuity coordinate system. Letters correspond to times of each distribution indicated above the first panel in Supplementary Fig. 2

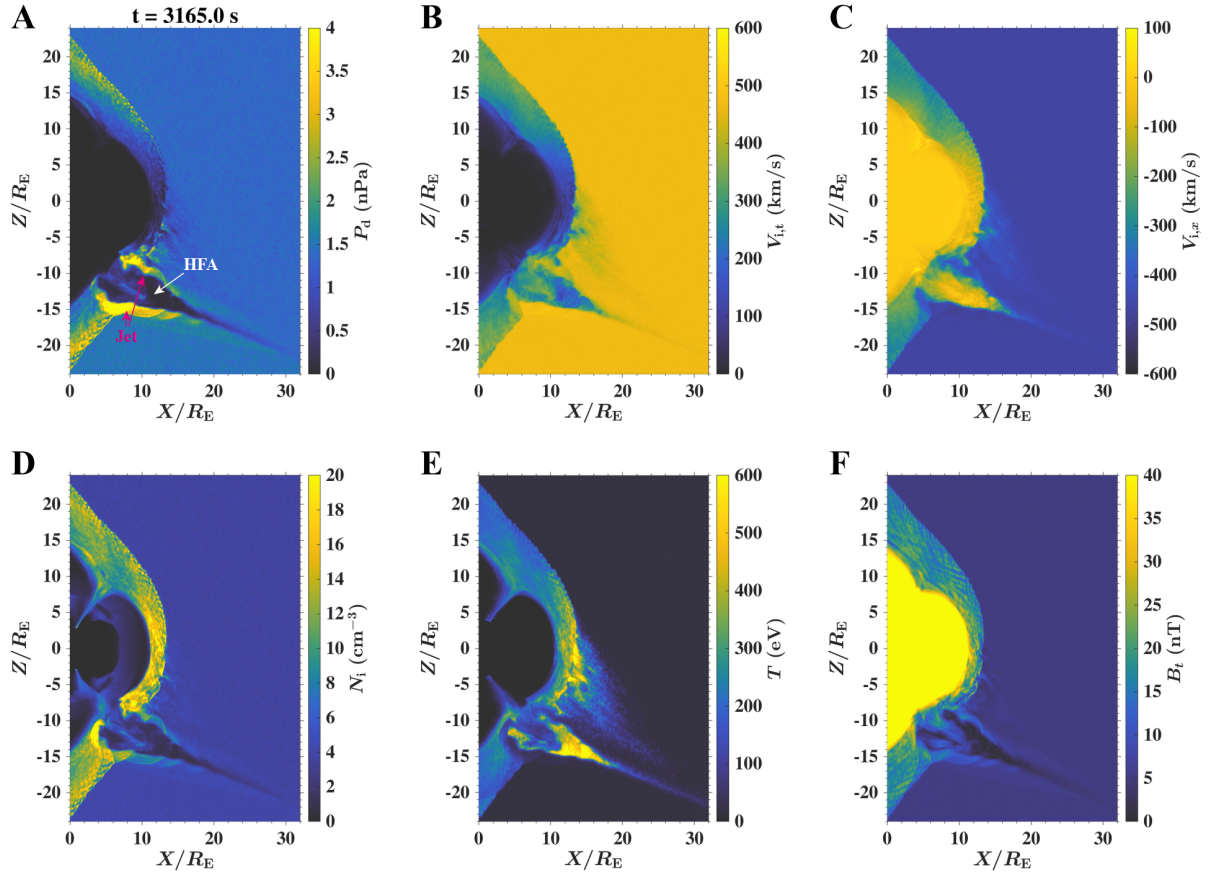


FIG. 4. Characteristics of HFA and magnetosheath jets in global hybrid simulation. (A) Dynamic pressure, (B) total ion velocity, (C) x component of ion velocity, (D) ion number density, (E) ion temperature, and (F) total magnetic field in the noon-midnight meridian plane at $t = 3165$ s.

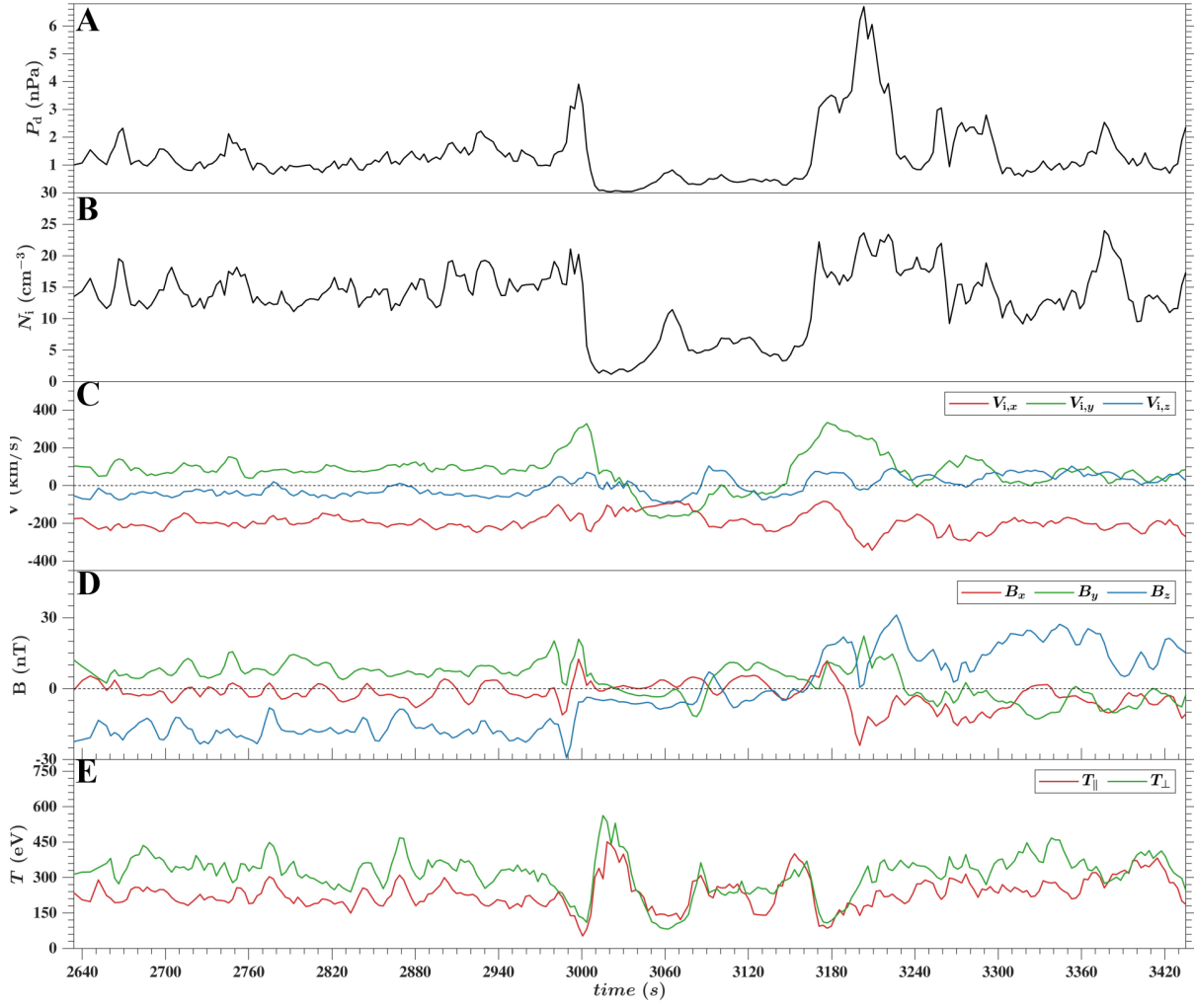


FIG. 5. Plasma and magnetic field parameters observed by a virtual satellite at $(10.6, -4.4, -6) R_E$. (A) dynamic pressure, (B) Ion number density, (C) ion velocity and (F) magnetic field in the discontinuity coordinate system, and (E) ion temperature observed by the virtual satellite.