Supplementary Material for "Lower hybrid drift waves driving electron nongyrotropic heating and vortical flows in a magnetic reconnection layer"

L.-J. Chen[1], S. Wang[1,2], O. Le Contel[3], A. Rager[1], M. Hesse[4], J. Drake[2], J. Dorelli[1], J. Ng[1,2], N. Bessho[1,2], D. Graham[5], Lynn III Wilson[1], T. Moore[1], B. Giles[1], W. Paterson[1], B. Lavraud[6], K. Genestreti[7], R. Nakamura[8], Yu. V. Khotyaintsev[5], R. E. Ergun[9], R. B. Torbert[7], J. Burch[10], C. Pollock[11], C. Russell[12], P.-A. Lindqvist[13], L. Avanov[1,2]

[1]NASA Goddard Space Flight Center, Greenbelt, Maryland, USA
[2]University of Maryland, College Park, Maryland, USA
[3]CNRS/Ecole Polytechnique/Sorbonne Université/Univ. Paris Sud/Observatoire de Paris, Paris, France
[4]University of Bergen, Bergen, Norway
[5]Swedish Institute of Space Physics, Uppsala, Sweden
[6]Institut de Recherche en Astrophysique et Planétologie, Université de Toulouse (UPS), CNRS, CNES, Toulouse, France
[7]University of New Hampshire, Durham, New Hampshire, USA
[8]Space Research Institute, Austrian Academy of Sciences, Graz, Austria.
[9]University of Colorado, Boulder, Colorado, USA
[10]Southwest Research Institute, San Antonio, TX, USA
[11]Denali Scientific, Healy, AK, USA
[12]University of California, Los Angeles, Los Angeles, California, USA
[13]KTH Royal Institute of Technology, Stockholm, Sweden
(Dated: May 25, 2020)

The figure in this file provides the magnetic field and density profiles from the upstream (before 052700 UT) to the electron-scale reconnection layer discussed in the main text. Specifically, we note the following information: 1) the asymptotic magnetic field of 22 nT; 2) the average guide field $|B_M|$ of ~ 7 nT in the electron-scale reconnection layer, approximately 30% of the asymptotic magnetic field; 3) asymptotic number density of 0.3 cm^{-3}. The magnetic field components are plotted in the *LMN* coordinates obtained by a hybrid method where *L* is determined from the Minimum Variance Analysis of magnetic fields [1], *N* is determined using Minimum Faraday Residue [2] and the timing analysis of magnetic fields [3], and *M* completes the third orthonormal coordinate with its direction given by $N \times L$. The transformation matrix to Geocentric Solar Magnetic coordinates is given by [*L, M, N*] = [[0.9910, -0.0513, -0.1240], [0.0331, 0.9889, -0.1445], [0.1300, 0.1391, 0.9817]].
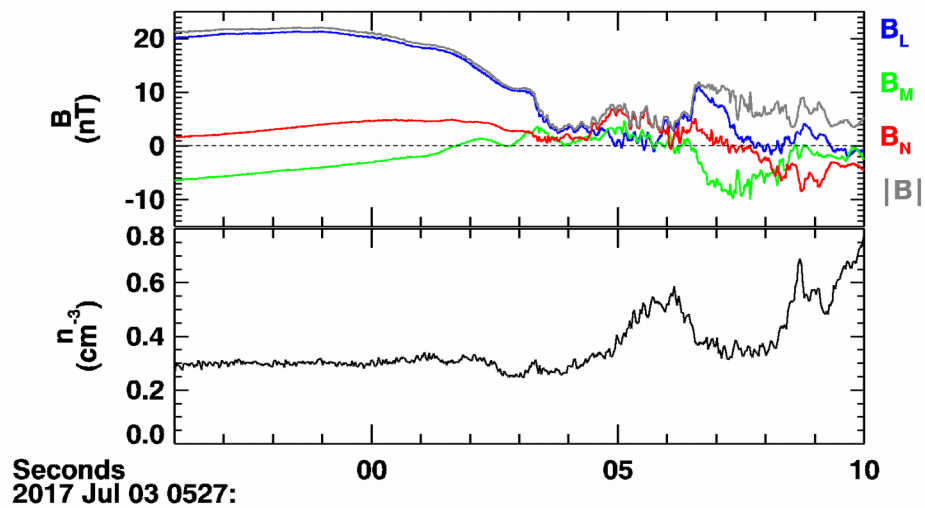
Figure S1: Magnetic field and density measured by the MMS1 spacecraft in the terrestrial magnetotail.

References
[1] B. U. Ö. Sonnerup, and L. J. Cahill Jr., J. Geophys. Res., 72, 1, (1967).
[2] A. V. Khrabrov, and B. U.Ö. Sonnerup, Geophys. Res. Lett., 25, 13, (1998).
[3] C. C. Harvey, Spatial gradients and the volumetric tensor, G. Paschmann & P. W. Daly (Eds.), (ISSI/ESA, Noordwijk, Netherlands, 1998).