Article Title:

Comparison of MMS Observations of Foreshock Bubbles with a Global Hybrid Simulation

Authors:

S. H. Lee, D. G. Sibeck, N. Omidi, M. V. D. Silveira, B. L. Giles, R. B. Torbert, C. T. Russell, H. Wei, J. L. Burch

Citation:

Lee, S. H.; D. G. Sibeck, N. Omidi, M. V. D. Silveira, B. L. Giles, R. B. Torbert, C. T. Russell, H. Wei, J. L. Burch (2020), Comparison of MMS Observations of Foreshock Bubbles with a Global Hybrid Simulation *Journal of Geophysical Research: Space Physics*, doi:10.1029/2020JA028848.

Total Data Size: 113 Mb

Data Description:

Data for Figures 6, 7, 8 and 9 in the paper is provided in separate locations. Both the 2-D and 1-D data are in "Direct Access" (.gda) format (readable by visualization packages such as IDL). The dimensions of 2-D and 1-D files provided for each Figure is specified in "Note on Dimensions" file provided in that folder.

Information on Units:

The units for the data correspond to those indicated for each Figure. Note that in the Figures in the published journal the maximum limits for the color bar may have been set at numbers below the actual limit for the purpose of clarity.

Generic Code for Reading 2-D Data (e.g. dns.gda):

```
RecordLength (in bytes) = 4 x (size_in_X x size_in_Y)

OPEN (10,file='dns.gda',form='unformatted',access='direct',status= &
        'unknown',recl= RecordLength)
```

Note: 10 is arbitrary I/O unit ID number chosen here for example. This number is used when reading 'dns.gda' file as shown below.

```
READ (10,rec=1)  (((dns(i,j),i=1, size_in_X),j=1, size_in_Y))
```

Note: Here rec=1 since 2-D data is shown at 1 time.

Generic Code for Reading 1-D Data (e.g. bx.gda):

```
RecordLength (in bytes) = 4 x (size_in_X)

OPEN (20,file='bx.gda',form='unformatted',access='direct',status= &
        'unknown',recl= RecordLength)

READ (20,rec=1)  (bx(i),i=1, size_in_X)
```

Note: Here rec=1 since 1-D data is shown at 1 location as a function of time. Also, 1-D data is identified in "Note on Dimension" file by setting Y = 1.