IDL/SPEDAS tutorial for BC/MMO data in the Mercury workshop @ISEE on Jan. 14, 2026

Last updated: Jan. 8, 2026, by T. Hori (CHS, ISEE)

This notebook showcases some basic commands of the Mio-SC plug-in for IDL/SPEDAS to demonstrates how users can download, read, and plot Mio satellite data. For details of Mio data, please refer to the Mio-SC website at https://miosc.isee.nagoya-u.ac.jp/data/mio.php.

Contents of this notebook:

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1. General information on the Mio-SC plug-in for IDL/SPEDAS

- The Mio-SC plug-in has been developed by the Mio Science Center (Mio-SC) and works as a plug-in allowing the Space Physics Environment Data Analysis System (SPEDAS) [Angelopoulos et al., SSR, 2019] to handle BepiColombo/MMO satellite data. With Mio-SC plug-in, MMO data users can make the most use of a countless number of useful tools and scripts in SPEDAS to analyze the MMO data.
- Mio Science Center (Mio-SC), part of the Center for Heliospheric Science (CHS) in the Center for Integrated Data Science (CIDAS) of ISEE, has been working on development of scientific data products and data analysis tools for BepiColombo/MMO satellite data.
- SPEDAS was originally developed in Interactive Data Language (IDL) and recently has been ported to its Python implementation, PySPEDAS.
- This tutorial is to briefly demonstrate how the users can use the IDL version of SPEDAS (IDL/SPEDAS) to handle MMO data.

Some useful information on installation of the necessary set of software

- IDL (commercial software)
    - The website of the NV5 Geospatial: https://nv5geospatialsoftware.co.jp
- Dynamically loadable module for SPICE toolkit
    - The website of the NAIF in NASA/JPL: https://naif.jpl.nasa.gov/naif/index.html
- SPEDAS
    - SPEDAS wiki at https://spedas.org/wiki/index.php?title=Main_Page
- Mio-SC plug-in for IDL/SPEDAS
    - The Github repository: https://github.com/ergsc-devel/miospedas

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2. Some basic commands of Mio-SC plug-in to handle MMO data

2.1 Load SPICE kernels and plot trajectories of the MMO satellite

```
; Download and load BEPI SPICE kernels

del_data, '*'  ;Remove all tplot variables
timespan, '2021-09-15', 30, /day   ;Set a time span for 30 days from Sept 15, 2021
knls = bepi_spice_kernels( /last, /no_ck, /load ) ;Download/update SPICE kernels, skipping CK files to
speed up
; knls = bepi_spice_kernels( /last, /load ) ;Downnload/load all latest available kernels
```

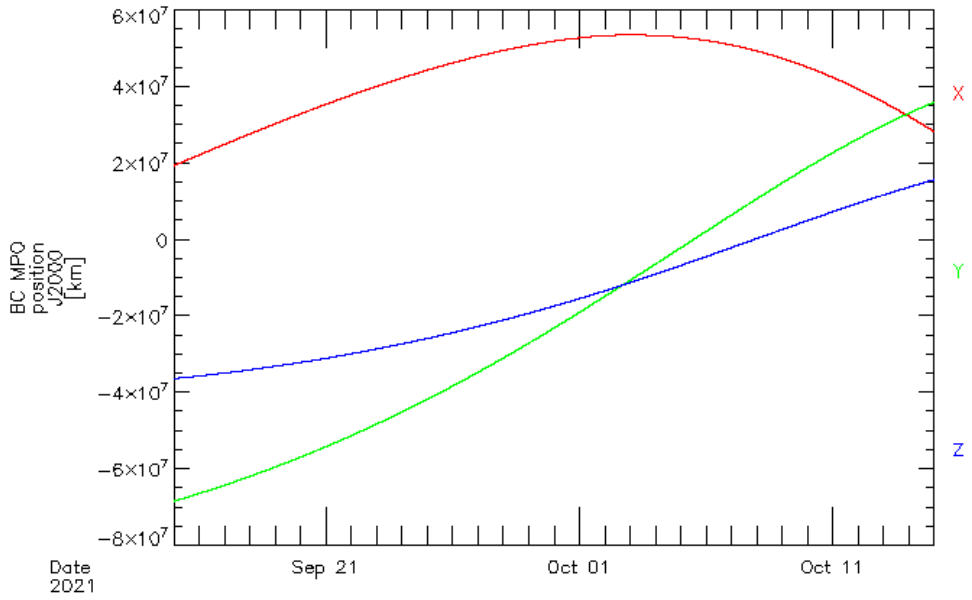
```
; Initialize some environment variables for downloading/loading MMO data
mmo_init

; Create tplot variables containing MPO and MMO positions for the designated time span.
mmo_load_pos, /no_kernel_load   ; W/o no_kernel_load, it would internally call bepi_spice_kernels() again
tplot_names  ; List all tplot variables that have been loaded so far
```

[1]:
```
MMO_INIT(85):
CDF_VERSION = STRING   = '3.9.00'
!mmo = RETRIEVE_STRUCT --(23 Tags/136 Bytes)-->
   INIT            = 1
   LOCAL_DATA_DIR  = '/Users/horit/work/data/chs/satellite/mmo/cdf/'
   REMOTE_DATA_DIR = 'https://chs.isee.nagoya-u.ac.jp/data/chs/satellite/mmo/cdf/'
   PROGRESS        = 1
   USER_AGENT      = ''
   FILE_MODE       = 438
   DIR_MODE        = 511
   PRESERVE_MTIME  = 0
   PROGOBJ         = <DATA            OBJREF    = <NullObject>>
   MIN_AGE_LIMIT   = 300
   NO_SERVER       = 0
   NO_DOWNLOAD     = 0
   NO_UPDATE       = 0
   NO_CLOBBER      = 0
   ARCHIVE_EXT     = ''
   ARCHIVE_DIR     = ''
   IGNORE_FILESIZE = 0
   IGNORE_FILEDATE = 0
   DOWNLOADONLY    = 0
   USE_WGET        = 0
   NOWAIT          = 0
   VERBOSE         = 2
   FORCE_DOWNLOAD  = 0
% Loading table SD-Special
% Loading table SD-Special
MMO_INIT(139):
 316 Days, 16 Hours, 22 Minutes, 52 Seconds to go before the final arrival at Mercury
STORE_DATA(325): Creating tplot variable: 1 bc_mpo_fcp_orb_j2000
SPICE_VALID_TIMES(34): BC_MSO Not found. (Ignoring)
SPICE_BODY_POS(29):        43202 Valid times from: MMO MERCURY BC_MSO
STORE_DATA(325): Creating tplot variable: 2 bc_mmo_pos_mso
   1 bc_mpo_fcp_orb_j2000
   2 bc_mmo_pos_mso
% Program caused arithmetic error: Floating illegal operand
```

```
loadct_sd, 48 ; Set the color table to "turbo"
!p.charsize = 1.3 & !p.font = -1  ; Set plot character size and IDL's default font
tplot, 'bc_mpo_fcp_orb_j2000' ; Plot MPO orbit in J2000 coordinates
```

[1]:
```
% Loading the Turbo color table
TPLOT(357):    1 bc_mpo_fcp_orb_j2000
```

[2]:

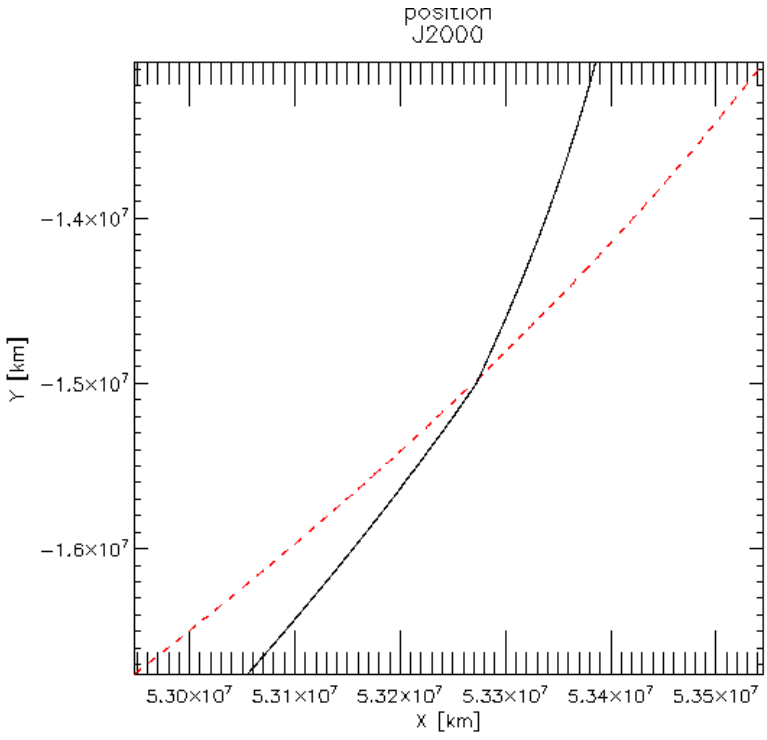



```
; Load the position data of MPO and Mercury for a more limited time range around the 1st Mercury flyby
timespan, '2021-10-01/12:00', 1, /day
mmo_load_pos, /no_kernel_load, /mercury  ; The "mercury" keyword loads Mercury position data as well
; Then plot them on a 2-D X-Y plane in J2000
tplotxy, 'bc_mpo_mercury_orb_j2000', /noiso, colors=6, linestyle=2
tplotxy, 'bc_mpo_fcp_orb_j2000', /over
```

[1]:

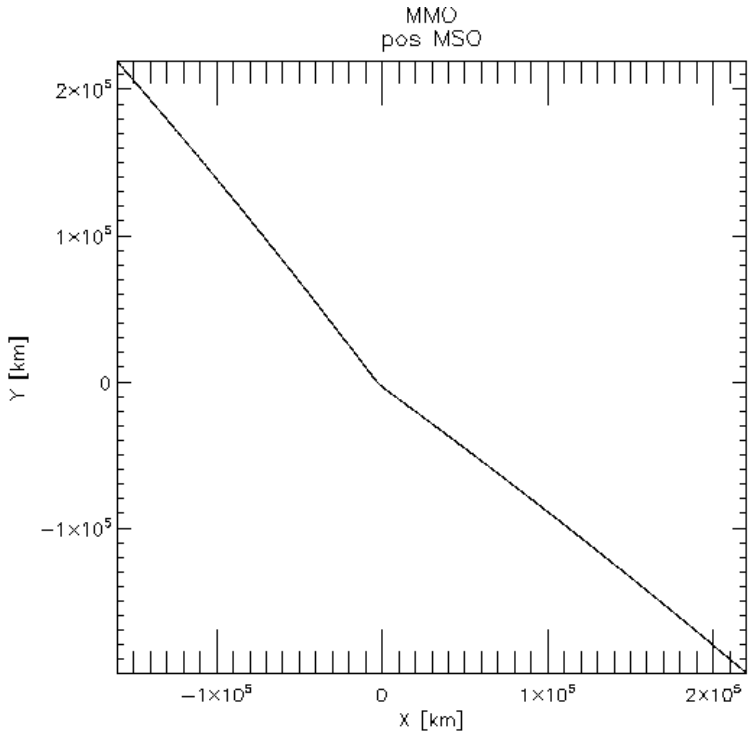
```
TIMESPAN(53): Time range set from 2021-10-01/12:00:00 to 2021-10-02/12:00:00
STORE_DATA(325): Altering tplot variable: 1 bc_mpo_fcp_orb_j2000
SPICE_VALID_TIMES(34): BC_MSO Not found. (Ignoring)
SPICE_BODY_POS(29):         1442 Valid times from: MMO MERCURY BC_MSO
STORE_DATA(325): Altering tplot variable: 2 bc_mmo_pos_mso
STORE_DATA(325): Creating tplot variable: 3 bc_mpo_mercury_orb_j2000
% Program caused arithmetic error: Floating illegal operand
```

[2]:



```
; Plot the MMO trajectory in MSO coordinates
tplotxy, 'bc_mmo_pos_mso', /noiso
```

[1]:



2.2 Load and plot Solar Particle Monitor (SPM) data

The solar pariticle monitor (SPM) onboard MMO consist of a pair of particle detectors (SPM1 and SPM2), belonging to the housekeeping sensors of MMO, not scientific instruments. As of Jan. 2026, the raw counts and estimated proton fluxes [Kinoshita+2025, JGR, 10.1029/2024JA033147] are provided as Lv.2pre data in a password-locked online repository on the Mio-SC website. For accessing the data, you have to get permission through the sign-up form available online. Please contact the instrument team at mio_spm_info *at* isee.nagoya-u.ac.jp. Some useful information is also available on the Mio-SC website at https://miosc.isee.nagoya-u.ac.jp/about/satellite/spm.php.

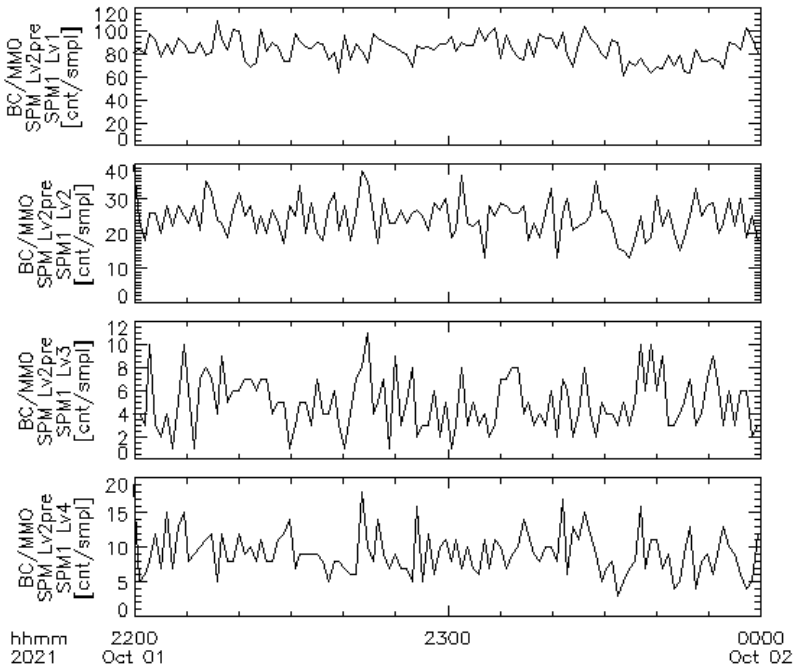
```
timespan, '2021-10-01/22:00', 2, /hour  ; Set time span for 2 hours around the 1st Mercury flyby
mmo_load_spm    ; Load the SPM Lv.2pre data for the designated time span
tplot_names

tplot, 'mmo_spm_l2p_spm1_lv?_cnt'  ; Plot the count rates measured by SPM1
```

[1]:

```
TIMESPAN(53): Time range set from 2021-10-01/22:00:00 to 2021-10-02/00:00:00
SPD_DOWNLOAD_FILE(289): Downloading: https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/spm/l2pre/cnt/2021/10/
SPD_DOWNLOAD_FILE(312): Download failed. Trying a second time.
SPD_DOWNLOAD_FILE(391): Unauthorized to access:  https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/spm/l2pre/cnt/2021/10/
SPD_DOWNLOAD(238): No matching remote files found. Searching for local files.
SPD_MMS_CDF_LOAD_VARS(233): Loading file:
"/Users/horit/work/data/chs/satellite/mmo/cdf/spm/l2pre/cnt/2021/10/bc_mmo_spm_l2p_cnt_20211001_r01-
v00-00.cdf"
STORE_DATA(325): Creating tplot variable: 4 mmo_spm_l2p_spm1_lv1_cnt
STORE_DATA(325): Creating tplot variable: 5 mmo_spm_l2p_spm1_lv2_cnt
STORE_DATA(325): Creating tplot variable: 6 mmo_spm_l2p_spm1_lv3_cnt
STORE_DATA(325): Creating tplot variable: 7 mmo_spm_l2p_spm1_lv4_cnt
STORE_DATA(325): Creating tplot variable: 8 mmo_spm_l2p_spm2_lv1_cnt
STORE_DATA(325): Creating tplot variable: 9 mmo_spm_l2p_spm2_lv2_cnt
STORE_DATA(325): Creating tplot variable: 10 mmo_spm_l2p_spm2_lv3_cnt
STORE_DATA(325): Creating tplot variable: 11 mmo_spm_l2p_spm2_lv4_cnt
   1 bc_mpo_fcp_orb_j2000
   2 bc_mmo_pos_mso
```

```
   3 bc_mpo_mercury_orb_j2000
   4 mmo_spm_l2p_spm1_lv1_cnt
   5 mmo_spm_l2p_spm1_lv2_cnt
   6 mmo_spm_l2p_spm1_lv3_cnt
   7 mmo_spm_l2p_spm1_lv4_cnt
   8 mmo_spm_l2p_spm2_lv1_cnt
   9 mmo_spm_l2p_spm2_lv2_cnt
  10 mmo_spm_l2p_spm2_lv3_cnt
  11 mmo_spm_l2p_spm2_lv4_cnt
TPLOT(357):    4 mmo_spm_l2p_spm1_lv1_cnt
TPLOT(357):    5 mmo_spm_l2p_spm1_lv2_cnt
TPLOT(357):    6 mmo_spm_l2p_spm1_lv3_cnt
TPLOT(357):    7 mmo_spm_l2p_spm1_lv4_cnt
```

[2]:



2.3 Load and plot Lv.2pre data of the Mercury ion analyzer (MIA) of Mercury plasma particle experiment (MPPE) instrument

MIA measures the 3-D distribution function of low energy (~25 eV to ~26 keV) ions in both the solar wind and Mercury's magnetosphere to investigate plasma dynamics of Mercury's magnetosphere. As of Jan. 2026, Lv.2pre data containing ion fluxes for several groups of directional channels are being developed for future release. Show below is an example based on sample Lv.2pre data files and an experimental version of data-read routine for Mio-SC plug-in.

Details of the instrument can be found in the MPPE instrument papers [Saito+2010, PSS, 10.1016/j.pss.2008.06.003; Saito+2021, SSR, 10.1007/s11214-021-00839-2] and the Mio-SC website (https://miosc.isee.nagoya-u.ac.jp/about/satellite/mppe_mia.php).

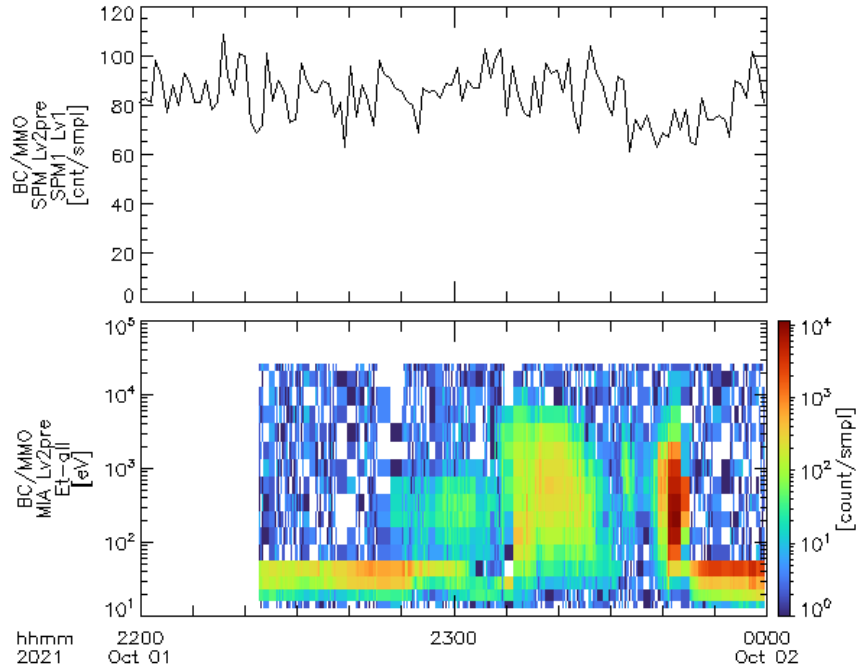
```
mmo_load_mia, level='l2pre', data_mode='l', datatype='et-all'  ;Download and load MMO MIA Lv.2pre data for
the 1st Mercury flyby
tplot_names, 'mmo_mia_*et-all*'  ;Show a list of tplot variables related to MIA Lv.2pre Et-All data
tplot, ['mmo_spm_l2p_spm1_lv1_cnt', 'mmo_mia_l2p_l-et-all_count_d1']  ; Them plot it together with the
previously-loaded SPM data
```

[1]:

```
SPD_DOWNLOAD_FILE(289): Downloading: https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/
SPD_DOWNLOAD_FILE(312): Download failed. Trying a second time.
SPD_DOWNLOAD_FILE(391): Unauthorized to access:  https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/
SPD_DOWNLOAD(238): No matching remote files found. Searching for local files.
SPD_MMS_CDF_LOAD_VARS(233): Loading file:
"/Users/horit/work/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/bc_mmo_mppe-mia_l2p_l-
```

```
et-all_20211001_r00-v00-00.cdf"
SPD_MMS_CDF_LOAD_VARS(233): Loading file:
"/Users/horit/work/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/bc_mmo_mppe-mia_l2p_l-
et-all_20211001_r01-v00-00.cdf"
STORE_DATA(325): Creating tplot variable: 12 mmo_mia_l2p_l-et-all_count_d1
STORE_DATA(325): Creating tplot variable: 13 mmo_mia_l2p_l-et-all_count_d2
STORE_DATA(325): Creating tplot variable: 14 mmo_mia_l2p_l-et-all_count_d3
STORE_DATA(325): Creating tplot variable: 15 mmo_mia_l2p_l-et-all_count_d4
STORE_DATA(325): Creating tplot variable: 16 mmo_mia_l2p_l-et-all_deflux_d1
STORE_DATA(325): Creating tplot variable: 17 mmo_mia_l2p_l-et-all_deflux_d2
STORE_DATA(325): Creating tplot variable: 18 mmo_mia_l2p_l-et-all_deflux_d3
STORE_DATA(325): Creating tplot variable: 19 mmo_mia_l2p_l-et-all_deflux_d4
SPD_DOWNLOAD_FILE(289): Downloading: https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/
SPD_DOWNLOAD_FILE(312): Download failed. Trying a second time.
SPD_DOWNLOAD_FILE(391): Unauthorized to access:  https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/
SPD_DOWNLOAD(238): No matching remote files found. Searching for local files.
SPD_MMS_CDF_LOAD_VARS(233): Loading file:
"/Users/horit/work/data/chs/satellite/mmo/cdf/mppe/mia/l2pre/et-all/2021/10/bc_mmo_mppe-mia_l2p_l-
et-swall_20211001_r01-v00-00.cdf"
STORE_DATA(325): Creating tplot variable: 20 mmo_mia_l2p_l-et-swall_count_d1
STORE_DATA(325): Creating tplot variable: 21 mmo_mia_l2p_l-et-swall_count_d2
STORE_DATA(325): Creating tplot variable: 22 mmo_mia_l2p_l-et-swall_count_d3
STORE_DATA(325): Creating tplot variable: 23 mmo_mia_l2p_l-et-swall_count_d4
STORE_DATA(325): Creating tplot variable: 24 mmo_mia_l2p_l-et-swall_count_sw
STORE_DATA(325): Creating tplot variable: 25 mmo_mia_l2p_l-et-swall_deflux_d1
STORE_DATA(325): Creating tplot variable: 26 mmo_mia_l2p_l-et-swall_deflux_d2
STORE_DATA(325): Creating tplot variable: 27 mmo_mia_l2p_l-et-swall_deflux_d3
STORE_DATA(325): Creating tplot variable: 28 mmo_mia_l2p_l-et-swall_deflux_d4
  12 mmo_mia_l2p_l-et-all_count_d1
  13 mmo_mia_l2p_l-et-all_count_d2
  14 mmo_mia_l2p_l-et-all_count_d3
  15 mmo_mia_l2p_l-et-all_count_d4
  16 mmo_mia_l2p_l-et-all_deflux_d1
  17 mmo_mia_l2p_l-et-all_deflux_d2
  18 mmo_mia_l2p_l-et-all_deflux_d3
  19 mmo_mia_l2p_l-et-all_deflux_d4
TPLOT(357):    4 mmo_spm_l2p_spm1_lv1_cnt
TPLOT(357):   12 mmo_mia_l2p_l-et-all_count_d1
% Program caused arithmetic error: Floating divide by 0
% Program caused arithmetic error: Floating illegal operand
```

[2]:



2.4 Load and plot Lv.2pre data of Onboard Frequency Analyzer (OFA) of Plasma wave investigation (PWI) instrument.

The Plasma Wave Investigation (PWI) aboard the MMO enables the first observations of electric fields, plasma waves, and radio waves in and around the Hermean magnetosphere and exosphere. Onboard Frequency Analyzer (OFA) observes waveforms and spectra in the frequency range from DC (very low frequency) to 120 kHz for the electric field and from 0.3 Hz to 20 kHz for the magnetic field.

- In this demonstration, we load PWI/OFA l2pre data that contains the magnetic field data in the frequency range of 20 Hz to 20 kHz.
- PWI/OFA (B) l2pre data is calibrated.
- Data structures:
  - l-mode: only one component
  - m-mode: two components
- Component information
  - X and Y components: spin-plan
  - Z component: spin-axis
- The detailed information is described in Mio SC webpage and the instrument reference:
  - PWI information: [https://miosc.isee.nagoya-u.ac.jp/about/satellite/pwi.php]
  - PWI-EWO information: [https://miosc.isee.nagoya-u.ac.jp/about/satellite/pwi_ewo.php]
  - Instrument reference: Plasma Wave Investigation (PWI) Aboard BepiColombo Mio on the Trip to the First Measurement of Electric Fields, Electromagnetic Waves, and Radio Waves Around Mercury (Kasaba et al., 2020) [https://link.springer.com/article/10.1007/s11214-020-00692-9]
- tplot variable name:
  - Magnetic field (B): mmo_pwi_ofa_'level'*'data mode'*"observatiion mode'_B_spectra_merged
  - Electric field (E): mmo_pwi_ofa_'level'*'data mode'*"observatiion mode'_E_spectra_merged (included after Mercury orbit insertion)

```
mmo_load_pwi_ofa, level='l2pre', data_mode='l', datatype='spec' ; Load PWI/OFA Lv.2pre L-mode spectra data
tplot_names, 'mmo_pwi_ofa_*'
; Plot it together with the previously-loaded SPM and MIA data
tplot, ['mmo_spm_l2p_spm1_lv1_cnt', 'mmo_mia_l2p_l-et-all_count_d1',
'mmo_pwi_ofa_l2p_l_ms_B_spectra_merged']
```

[1]:

```
SPD_DOWNLOAD_FILE(289): Downloading: https://chs.isee.nagoya-
u.ac.jp/data/chs/satellite/mmo/cdf/pwi/ofa/l2pre/spec/l/2021/10/
SPD_DOWNLOAD_FILE(380): Download complete
SPD_DOWNLOAD(238): No matching remote files found. Searching for local files.
SPD_MMS_CDF_LOAD_VARS(233): Loading file:
"/Users/horit/work/data/chs/satellite/mmo/cdf/pwi/ofa/l2pre/spec/l/2021/10/bc_mmo_pwi-ofa_l2p_l-
spec-ms_20211001_r01-v01-00.cdf"
STORE_DATA(325): Creating tplot variable: 29 mmo_pwi_ofa_l2p_l_ms_spec_B_18
STORE_DATA(325): Creating tplot variable: 30 mmo_pwi_ofa_l2p_l_ms_E_spectra_merged
STORE_DATA(408): Multi- tplot variable: 30 mmo_pwi_ofa_l2p_l_ms_E_spectra_merged :
STORE_DATA(325): Creating tplot variable: 31 mmo_pwi_ofa_l2p_l_ms_B_spectra_merged
STORE_DATA(408): Multi- tplot variable: 31 mmo_pwi_ofa_l2p_l_ms_B_spectra_merged :
                 mmo_pwi_ofa_l2p_l_ms_spec_B_18
```

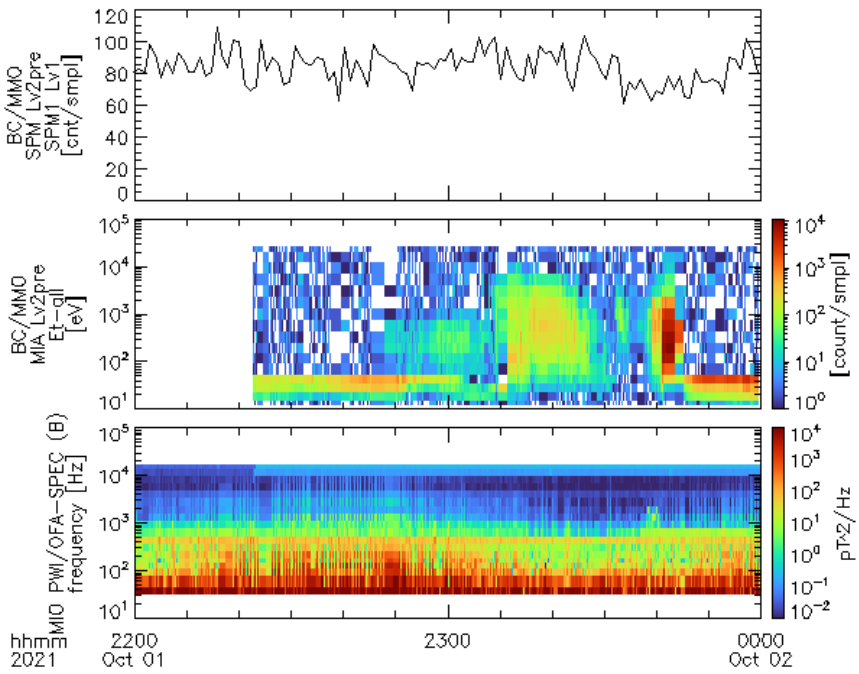
BepiColombo Mercury Magnetosphric Orbiter Plasma Wave Investigation Low- and Magnetosphere mode spectrum data for electric and magnetic field spectra data

Information about MIO PWI OFA

PI: Y. Kasaba Affiliation: Tohoku University

29 mmo_pwi_ofa_l2p_l_ms_spec_B_18
30 mmo_pwi_ofa_l2p_l_ms_E_spectra_merged
31 mmo_pwi_ofa_l2p_l_ms_B_spectra_merged mmo_pwi_ofa_l2p_l_ms_spec_B_18 TPLOT(357): 4 mmo_spm_l2p_spm1_lv1_cnt TPLOT(357): 12 mmo_mia_l2p_l-et-all_count_d1 TPLOT(357): 31 mmo_pwi_ofa_l2p_l_ms_B_spectra_merged TPLOT(407): 29 mmo_pwi_ofa_l2p_l_ms_spec_B_18 % Program caused arithmetic error: Floating divide by 0 % Program caused arithmetic error: Floating illegal operand

[2]:



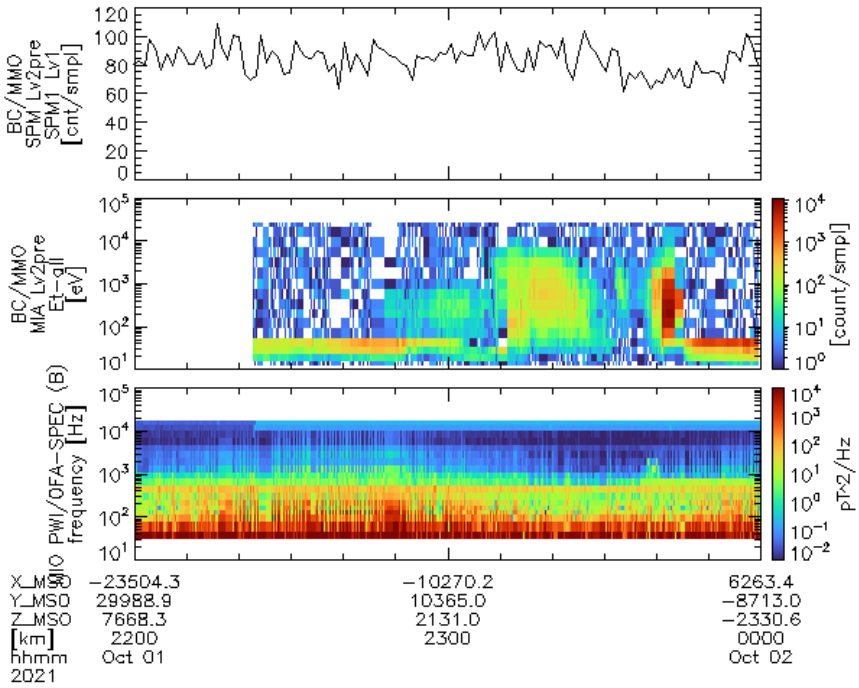
Add the satellite position at the bottom of a plot using the "var_label" attribute

```
split_vec, 'bc_mmo_pos_mso'
options, 'bc_mmo_pos_mso_x', ytitle='X_MSO'
options, 'bc_mmo_pos_mso_y', ytitle='Y_MSO'
options, 'bc_mmo_pos_mso_z', ytitle='Z_MSO!c[km]'
tplot_options, var_label='bc_mmo_pos_mso_'+['z','y','x']
tplot ;; replot the previously displayed variables
```

[1]:

```
STORE_DATA(325): Creating tplot variable: 32 bc_mmo_pos_mso_x
STORE_DATA(325): Creating tplot variable: 33 bc_mmo_pos_mso_y
STORE_DATA(325): Creating tplot variable: 34 bc_mmo_pos_mso_z
TPLOT(357):    4 mmo_spm_l2p_spm1_lv1_cnt
TPLOT(357):   12 mmo_mia_l2p_l-et-all_count_d1
TPLOT(357):   31 mmo_pwi_ofa_l2p_l_ms_B_spectra_merged
TPLOT(407):  29   mmo_pwi_ofa_l2p_l_ms_spec_B_18
% Program caused arithmetic error: Floating divide by 0
% Program caused arithmetic error: Floating illegal operand
```

[2]:



3. Demonstration of CHS plug-in

We also demonstrate loading and plotting data obtained from the SUSANOO-SW model. SUSANOO (Space-weather-forecast-Usable System Anchored by Numerical Operations and Observations) is a 3D MHD simulation of the heliosphere based on observations of the Sun (Shiota et al., 2014, Space Weather). ISEE SUSANOO-SW data includes the solar wind data simulated by SUSANOO, which are archived in the Common Data Format (CDF).

CHS plug-in for IDL/SPEDAS is available in a github repository at https://github.com/ergsc-devel/chs_spedas.

```
timespan, '2021-10-01/22:00', 2, /hour  ; Set time span for 2 hours around the 1st Mercury flyby

susanoo_sw_load, site='mercury'

tplot, ['mmo_spm_l2p_spm1_lv1_cnt', 'mmo_mia_l2p_l-et-all_count_d1' $
, 'mmo_pwi_ofa_l2p_l_ms_B_spectra_merged' $
, 'susanoo_sw_'+['swvv','imfb']+'_mercury']  ; Plot SPM, MIA, PWI/OFA, and Susanoo solar wind data together
```

[1]
:

```
TIMESPAN(53): Time range set from 2021-10-01/22:00:00 to 2021-10-02/00:00:00
mercury
mercury
mercury
SPD_DOWNLOAD_FILE(289): Downloading: https://chs.isee.nagoya-
u.ac.jp/data/chs/simulation/susanoo/data/cdf/mercury/2021/10/susanoo_sw_mercury_5m_20211001_v01.01.cdf
SPD_DOWNLOAD_FILE(391): File is current:
/Users/horit/work/data/chs/susanoo/data/cdf/mercury/2021/10/susanoo_sw_mercury_5m_20211001_v01.01.cdf
CDF_LOAD_VARS(167): Loading
"/Users/horit/work/data/chs/susanoo/data/cdf/mercury/2021/10/susanoo_sw_mercury_5m_20211001_v01.01.cdf"
Size(kB):53.3260 mtime(UTC):2026-01-09/07:17:34
STORE_DATA(325): Altering tplot variable: 35 susanoo_sw_dens_mercury
STORE_DATA(325): Altering tplot variable: 36 susanoo_sw_pre_mercury
STORE_DATA(325): Altering tplot variable: 37 susanoo_sw_swvv_mercury
STORE_DATA(325): Altering tplot variable: 38 susanoo_sw_imfb_mercury
```

SUSANOO-SW >Space-weather-forecast-Usable System Anchored by Numerical Operations and Observations Solar Wind model

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TPLOT(357): 4 mmo_spm_l2p_spm1_lv1_cnt TPLOT(357): 12 mmo_mia_l2p_l-et-all_count_d1 TPLOT(357): 31 mmo_pwi_ofa_l2p_l_ms_B_spectra_merged TPLOT(407): 29 mmo_pwi_ofa_l2p_l_ms_spec_B_18 TPLOT(357): 37 susanoo_sw_swvv_mercury TPLOT(357): 38 susanoo_sw_imfb_mercury % Program caused arithmetic error: Floating divide by 0 % Program caused arithmetic error: Floating illegal operand

[2]: