

IUGONET

Inter-university Upper atmosphere Global Observation NETwork

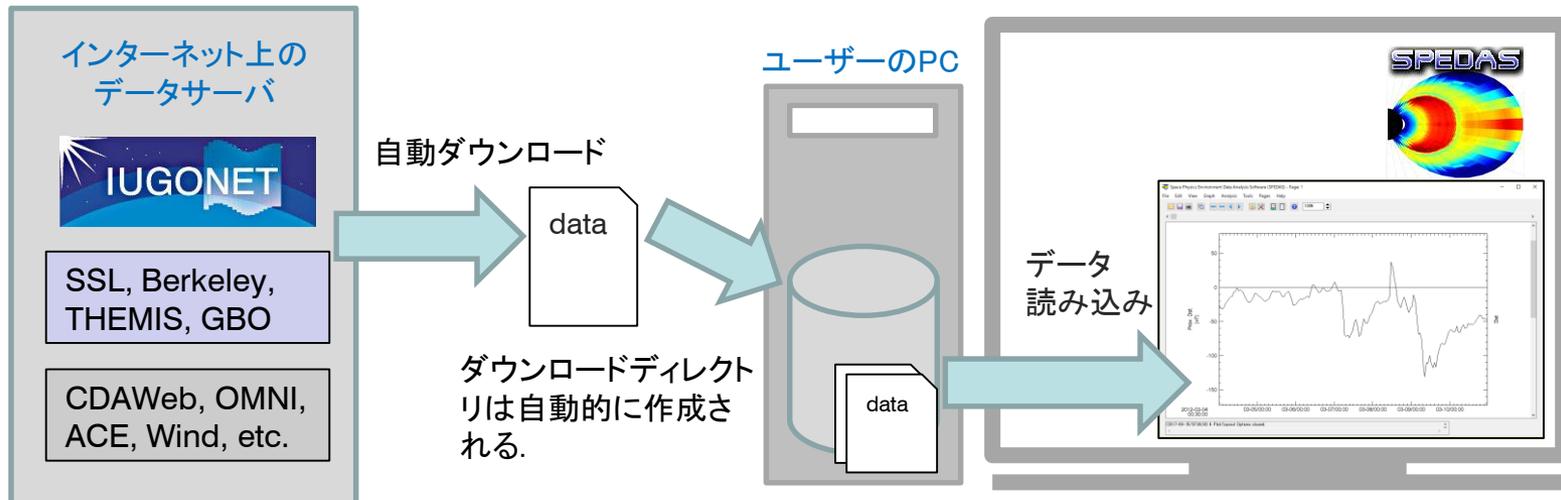
JpGU2022スーパーレッスン

「超高層大気データを解析してみよう ～地球大気から宇宙天気まで～」

- *SPEDAS(GUI) Virtual Machine*
- *超高層大気データの解析演習*

*Published by IUGONET Project Team, May. 2022.
<http://www.iugonet.org/>*

- Space Physics Environment Data Analysis System (SPEDAS)は、米国のUCLA、UCBを中心に開発された宇宙・超高層大気データの統合解析ソフトウェア。
- 様々な地上観測・衛星観測ミッションのデータを可視化、解析可能。
- Iterative Data Language (IDL)をベースに開発。CUIとGUIの両方が利用可能。
- データはインターネット経由で自動的にダウンロード、読み込まれる。
- IDL Virtual Machineを利用した実行形式ファイル(GUI版)が公開されており、誰でも利用可能。



1. SPEDASのウェブサイトアクセスする。

http://spedas.org/wiki/index.php?title=Downloads_and_Installation



SPEDAS

Page Discussion

Downloads and Installation

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 - 2.3.1 IDL Geopack library
 - 2.3.2 IDL CDF library
 - 2.3.3 IDL SPICE library
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- 4 Troubleshooting and special considerations

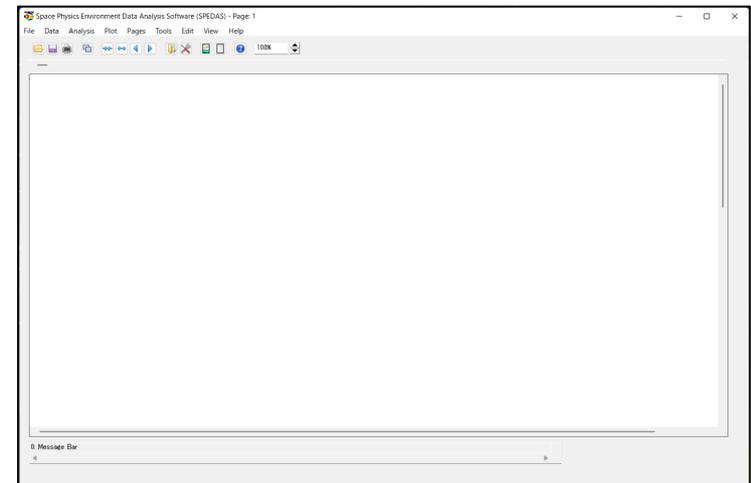


Download the SPEDAS executables, Version 5.0 (April 2022)

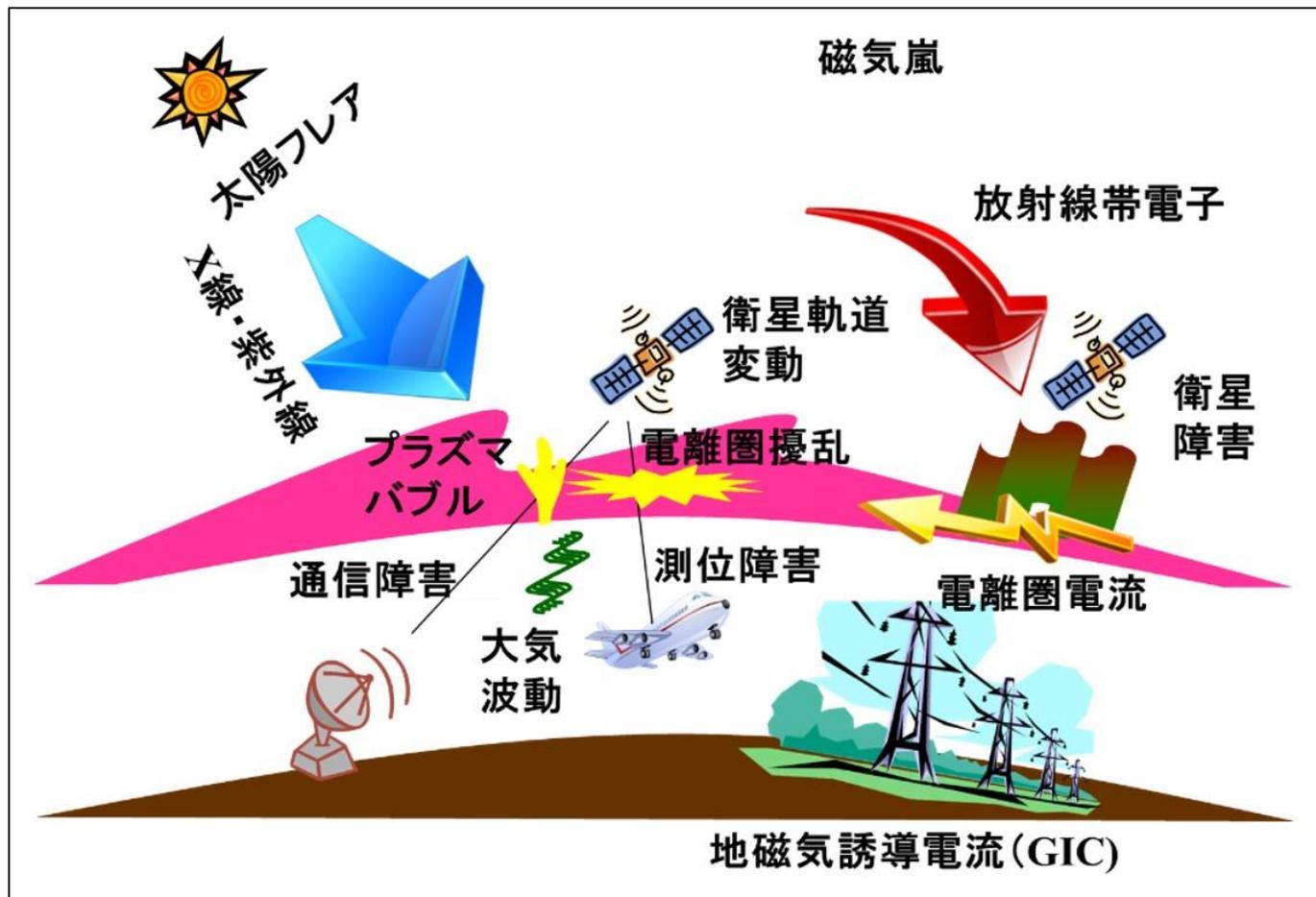
For users without IDL licenses, you can use the SPEDAS 5.0 executable files for Linux, Windows, and MacOS, which allow access to the Graphical User Interface capabilities of SPEDAS, with no additional IDL license required.

- * SPEDAS 5.0, Windows 64bit executable with IDL 8.5.1, CDF 3.8, Geopack 10.7 (~55 MB) [🔗](#)
- * SPEDAS 5.0, MacOS 64bit executable with IDL 8.5.1, CDF 3.8, Geopack 10.7 (~70 MB) [🔗](#)
- * SPEDAS 5.0, Linux 64bit executable with IDL 8.5.1, CDF 3.8, Geopack 10.7 (~70 MB) [🔗](#)
- * SPEDAS 5.0, Linux 64bit executable with IDL 8.5.1, CDF 3.8, Geopack 7.6 (~70 MB) - includes Geopack 7.6, for older Linux machines that may not work with Geopack 10.7 [🔗](#)

1. Download the SPEDAS executablesの欄から、SPEDASのそれぞれの環境に対応する実行ファイルをダウンロードする。
2. 適当なディレクトリにコピーして、解凍する。
3. 実行ファイルをダブルクリックして、SPEDASを起動する。



太陽起源のフレアやコロナ質量放出等の現象は、惑星間空間や地球周辺の宇宙空間、地球大気、人間活動等へ影響を与える可能性がある。



新学術領域「太陽地球圏環境予測」ホームページから

https://www.isee.nagoya-u.ac.jp/pstep/research/research_contents.html

Space Weather Events of 4-10 September 2017

Special Issues | First published: 19 September 2017 | Last updated: 19 March 2021

An X8.2 class solar flare flashes in the edge of the Sun on Sept. 10, 2017. Credit: NASA/GSFC/SDO

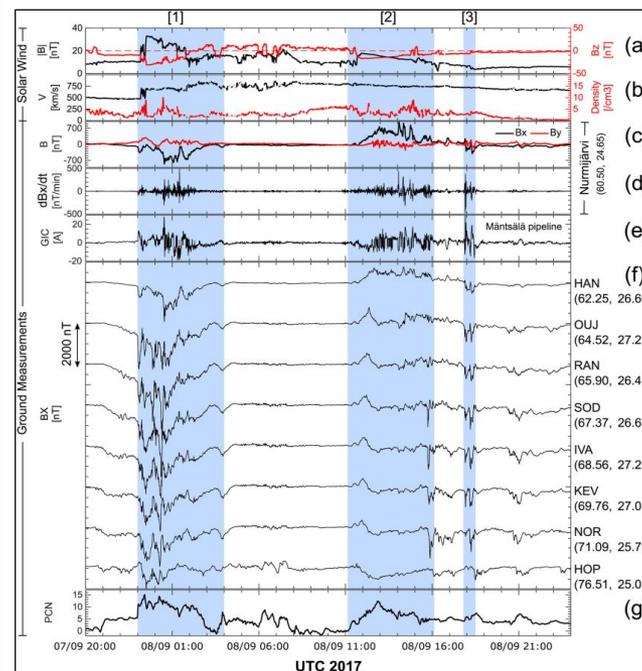
This collection addresses the heliospheric and geospace disturbances, and highlights how ground- and space-based instrumentation, combined with improved models allow us to understand the origin, dynamics and consequences of these storms. In particular, it focuses on "effects and impacts" papers, as there have been a number of media reports that HF radio blackouts caused by the X-flares disrupted emergency communications vital to recovery efforts following Hurricane Irma. It also welcomed papers that assess the importance of these impacts and any other practical impacts arising from the space weather events in early September 2017, as well as papers that address the direction, propagation and arrival time of the heliospheric structures (shock, sheath and/or core) that led to periods of forecast and/or observed strong southward Bz.

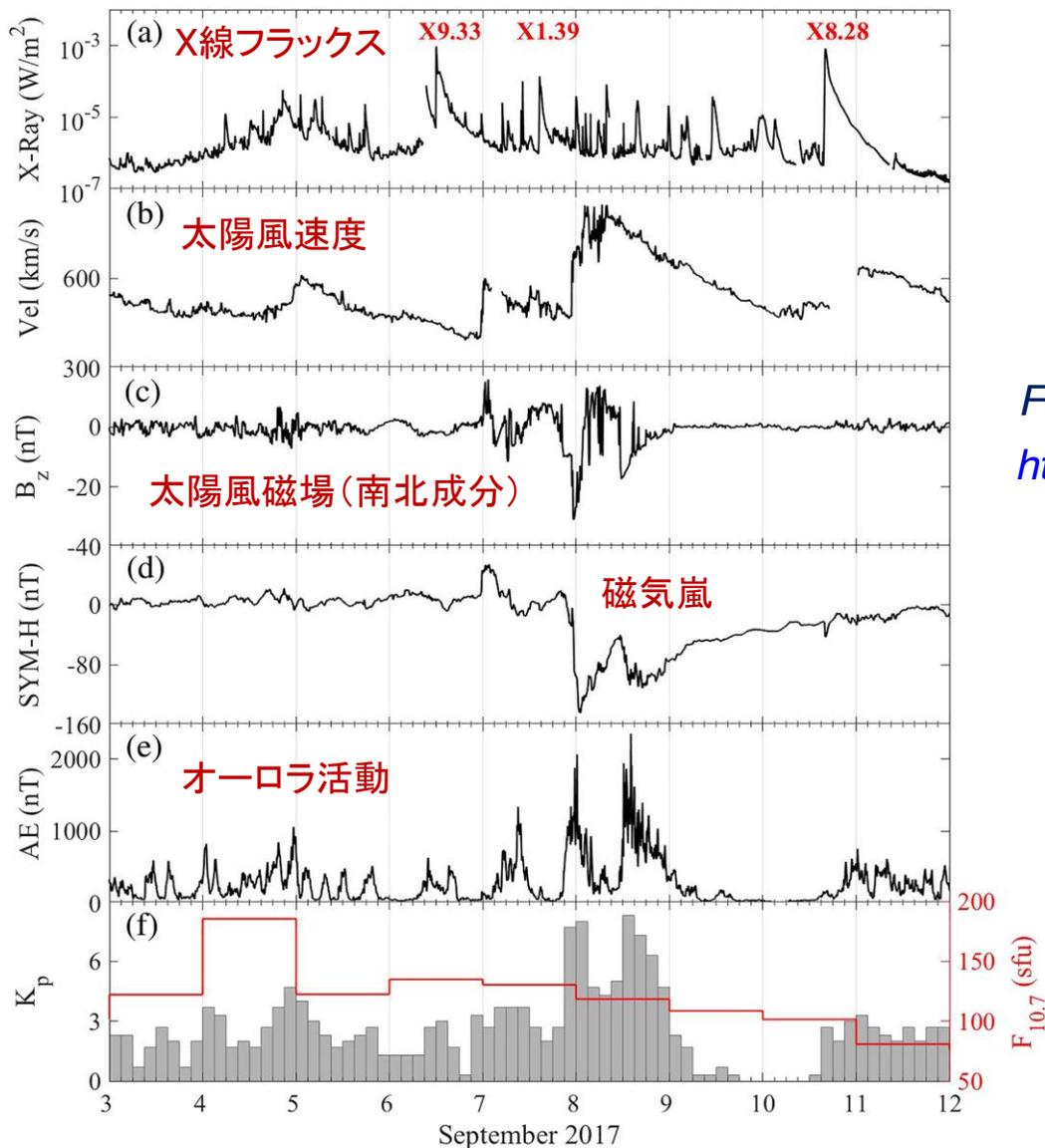
This interval was one of the most flare-productive periods of now-waning solar cycle 24. Solar active regions (AR) 2673 and 2674 both matured to complex magnetic configurations as they transited the disk. AR2673 transformed from a simple sunspot on 2 September to a complex region with order-of-magnitude growth on 4 September, rapidly reaching beta-gamma-delta configuration. In subsequent days the region issued three X-class flares and multiple partial halo ejecta. Combined, the two active regions produced more than a dozen M-class flares. As a parting shot AR2673 produced: 1) an X-9 level flare; 2) an associated moderate solar energetic particle event ;and 3) a ground level event, as it arrived at the solar west limb on 10 September. From 4 -16 September the radiation environment at geosynchronous orbit was at minor storm level and 100 MeV protons were episodically present in geostationary orbit during that time frame. The early arrival of the coronal mass ejection associated with the 6 September X-9 flare produced severe geomagnetic storming on 7 and 8 September. The full set of events was bracketed by high speed streams that produced their own minor-to-moderate geomagnetic storming.



X9クラスのフレアが発生した2017年
9月4～10日の宇宙天気イベント

このSpace Weatherジャーナル特集号の論
文中に出てくるデータを読み込み、プロットし
てみる。

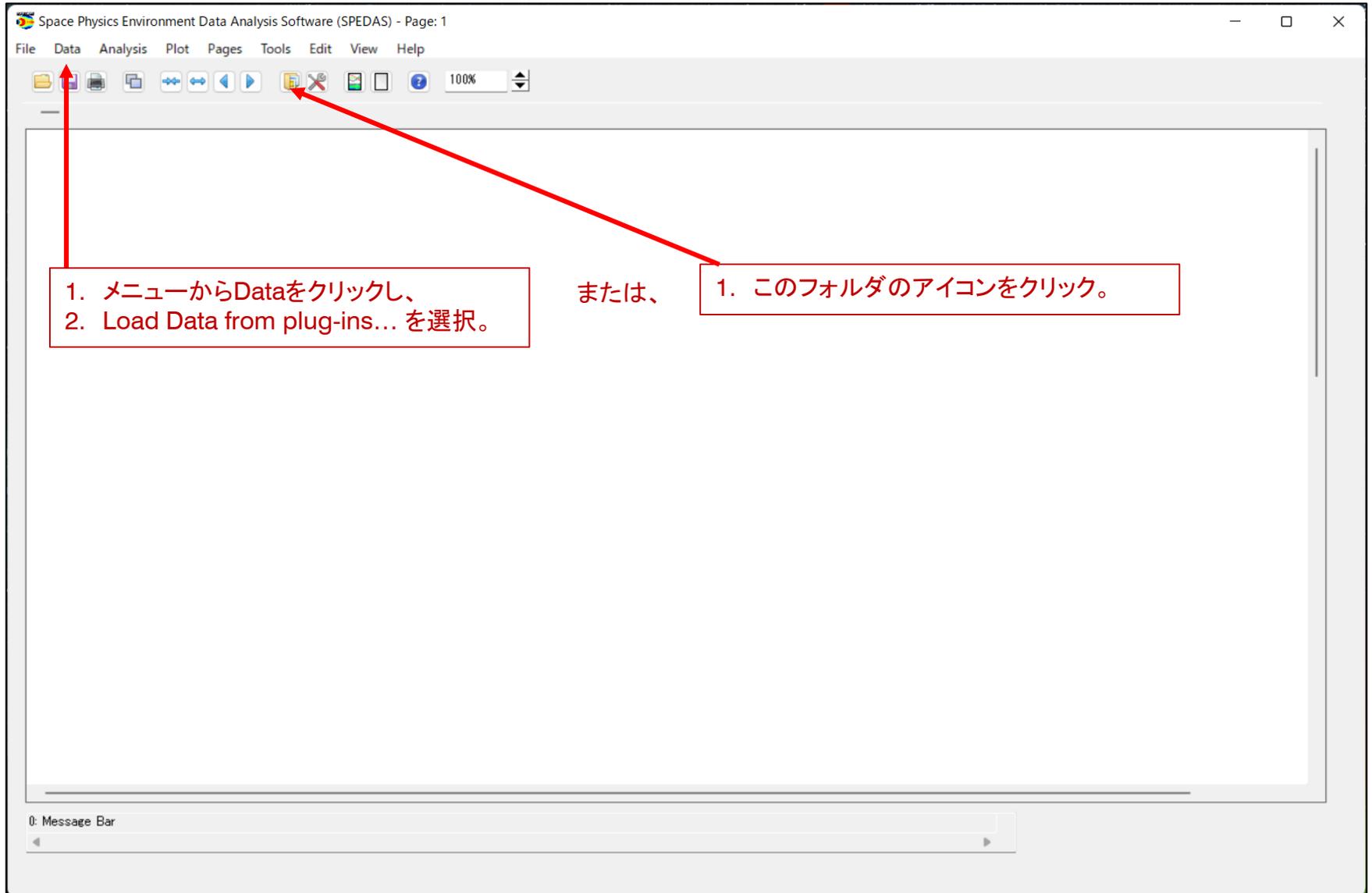




💡 X線フラックス、太陽風パラメータ、地磁気指数をプロットしてみよう。

Figure 2 of Owolabi et al., 2017
<https://doi.org/10.1029/2020SW002608>

1. データをロードする



Space Physics Environment Data Analysis Software (SPEDAS) - Page: 1

File Data Analysis Plot Pages Tools Edit View Help

100%

1. メニューからDataをクリックし、
2. Load Data from plug-ins... を選択。

または、

1. このフォルダのアイコンをクリック。

0: Message Bar

2. OMNIデータをロードする

2. 開始日時、終了日時を入力。
※Use Single Dayの☑を外す。

4. 矢印(→)をクリック。

1. OMNIタブをクリック。

5. ここに、ロードされたデータ
の変数名が表示される。

3. パラメータを設定。
Resolution: 5min
Data Type: *(all)

SECS

THEMIS

THEMIS Derived Products

WIND

ACE BARREL Cluster (via CSA) Cluster DISCOVR ELFIN FAST GOES GOESR Geomagnetic Indices IUGONET MAVEN_PFP MMS OMNI POES

OMNI Data Selection:

Start Time: 2017-09-06/00:00:00.00

Stop Time: 2017-09-09/00:00:00.00

Use Single Day

Resolution: Data Type:

Resolution:	Data Type:
1min	*(All)
5min	

Clear Resolution Clear Data Type

Data Loaded:

```

omni
-----
OMNI_HRO_5min_IMF [ 2017-09-06/00:00:00.000 to 201
OMNI_HRO_5min_PLS [ 2017-09-06/00:00:00.000 to 20
OMNI_HRO_5min_IMF_PTS [ 2017-09-06/00:00:00.000 t
OMNI_HRO_5min_PLS_PTS [ 2017-09-06/00:00:00.000 t
OMNI_HRO_5min_percent_interp [ 2017-09-06/00:00:00.
OMNI_HRO_5min_Timeshift [ 2017-09-06/00:00:00.000
OMNI_HRO_5min_RMS_Timeshift [ 2017-09-06/00:00:00
OMNI_HRO_5min_Time_btwn_obs [ 2017-09-06/00:00:00
OMNI_HRO_5min_F [ 2017-09-06/00:00:00.000 to 2017-
OMNI_HRO_5min_BX_GSE [ 2017-09-06/00:00:00.000 tc
OMNI_HRO_5min_BY_GSE [ 2017-09-06/00:00:00.000 tc
OMNI_HRO_5min_BZ_GSE [ 2017-09-06/00:00:00.000 tc
OMNI_HRO_5min_BY_GSM [ 2017-09-06/00:00:00.000 tc
OMNI_HRO_5min_BZ_GSM [ 2017-09-06/00:00:00.000 tc
OMNI_HRO_5min_RMS_SD_B [ 2017-09-06/00:00:00.000
OMNI_HRO_5min_RMS_SD fld_yec [ 2017-09-06/00:00:0
OMNI_HRO_5min_flow_speed [ 2017-09-06/00:00:00.000
OMNI_HRO_5min_Vx [ 2017-09-06/00:00:00.000 to 201;
OMNI_HRO_5min_Vy [ 2017-09-06/00:00:00.000 to 201;
OMNI_HRO_5min_Vz [ 2017-09-06/00:00:00.000 to 2017
OMNI_HRO_5min_proton_density [ 2017-09-06/00:00:00
OMNI_HRO_5min_T [ 2017-09-06/00:00:00.000 to 2017-
OMNI_HRO_5min_Pressure [ 2017-09-06/00:00:00.000 t
OMNI_HRO_5min_E [ 2017-09-06/00:00:00.000 to 2017-

```

Delete All Data

Done

(2022-05-14/18:46:38) 26: OMNI Data Loaded Successfully

3. GOES衛星データをロードする

1. GOESタブをクリック。

**2. パラメータを設定。
Probe: GOES 15
Data Type: xrs
Resolution: 1-m**

3. 矢印(→)をクリック。

4. ここに、ロードされたデータの変数名が表示される。

5. Doneをクリック。

GOES Data Selection:

Start Time: 2017-09-06/00:00:00.00
Stop Time: 2017-09-09/00:00:00.00
 Use Single Day

Probe:	Data Type:	Resolution:
GOES 8	xrs	full
GOES 9	fgm	
GOES 10	eps	1-m
GOES 11	maged	5-m
GOES 12	magpd	
GOES 13	epead	
GOES 14	hepad	
GOES 15		

Buttons: Clear Probe, Clear Data Type, Clear Resolution, Check data availability, Rules of the Road

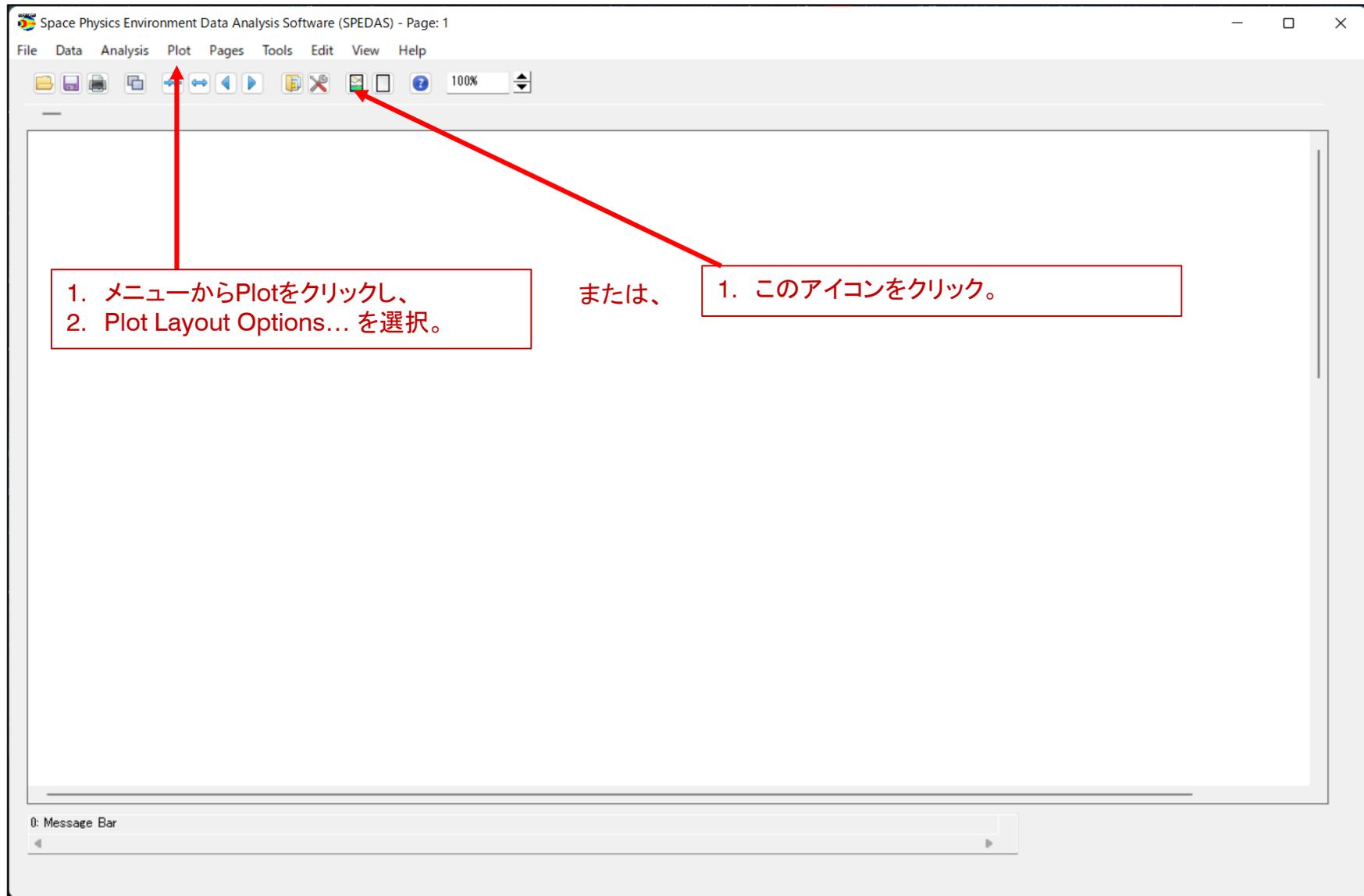
Data Loaded:

- omni
 - omni
 - omni
- GOES
 - G15
 - XRS
 - g15_time_tag_orbit [2017-09-06/00:00:00.000 to 2017-09-09/00:00:00.000]
 - g15_west_longitude [2017-09-06/00:00:00.000 to 2017-09-09/00:00:00.000]
 - g15_inclination [2017-09-06/00:00:00.000 to 2017-09-09/00:00:00.000]
 - g15_time_tag [2017-09-06/00:00:00.000 to 2017-09-09/00:00:00.000]
 - g15_pos_gei [2017-09-06/00:00:04.023 to 2017-09-09/00:00:00.000]
 - g15_xrs_avg [2017-09-06/00:00:00.000 to 2017-09-09/00:00:00.000]

Buttons: Delete All Data, Done

Log: (2022-05-14/18:48:13) 28: GOES Data Loaded Successfully

4. データをプロットする



5. プロットするデータ(GOES X線)を選ぶ

Plot/Layout Options

Show Data Components Automatic Panels

Dependent Variable

- omni
 - omni
 - omni
- GOES
 - G15
 - XRS
 - g15_time_tag_orbit [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - g15_west_longitude [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - g15_inclination [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - g15_time_tag [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - g15_pos_gei [2017-09-06/00:00:04.023 to 2017-09-06/00:00:04.023]
 - g15_xrs_avg [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]

2. Lineをクリック。

Line ->

Spec ->

(L) Panel 1 (1, 1) -
- g15_xrs_avg_time -vs- g15_xrs_avg_0
- g15_xrs_avg_time -vs- g15_xrs_avg_1

3. ここに、プロットする変数名が表示される。

1. プロットする変数を選択。
g15_xrs_avg

Variables:
Add/Edit

Rows Per Page: 2
Cols Per Page: 1

OK Apply Cancel

(2022-05-14/18:51:57) 3: Add Finished.

6. プロットするデータ(太陽風)を選ぶ

Plot/Layout Options

Show Data Components Automatic Panels - CREATE PLOTS -

Dependent Variable

Lineをクリック。

2. ここに、ロードされたデータの変数名が表示される。

1. 以下の変数を選択し、その都度Lineをクリック。

- OMNI_HRO_5min_flow_speed
- OMNI_HRO_5min_proton_density
- OMNI_HRO_5min_F と OMNI_HRO_5min_BZ_GSM は、Ctrlを押しながらクリックして2つをまとめて選択。

OMNI_HRO_5min_IMF [2017-09-06/00:00:00
 OMNI_HRO_5min_PLS [2017-09-06/00:00:00
 OMNI_HRO_5min_IMF_PTS [2017-09-06/00:00:00
 OMNI_HRO_5min_PLS_PTS [2017-09-06/00:00:00
 OMNI_HRO_5min_percent_interp [2017-09-06/00:00:00
 OMNI_HRO_5min_Timeshift [2017-09-06/00:00:00
 OMNI_HRO_5min_RMS_Timeshift [2017-09-06/00:00:00
 OMNI_HRO_5min_Time_btwn_obs [2017-09-06/00:00:00
 OMNI_HRO_5min_F [2017-09-06/00:00:00
 OMNI_HRO_5min_BX_GSE [2017-09-06/00:00:00
 OMNI_HRO_5min_BY_GSE [2017-09-06/00:00:00
 OMNI_HRO_5min_BZ_GSE [2017-09-06/00:00:00
 OMNI_HRO_5min_BY_GSM [2017-09-06/00:00:00
 OMNI_HRO_5min_BZ_GSM [2017-09-06/00:00:00
 OMNI_HRO_5min_RMS_SD_B [2017-09-06/00:00:00
 OMNI_HRO_5min_RMS_SD fld_vec [2017-09-06/00:00:00
 OMNI_HRO_5min_flow_speed [2017-09-06/00:00:00
 OMNI_HRO_5min_Vx [2017-09-06/00:00:00
 OMNI_HRO_5min_Vy [2017-09-06/00:00:00
 OMNI_HRO_5min_Vz [2017-09-06/00:00:00
 OMNI_HRO_5min_proton_density [2017-09-06/00:00:00
 OMNI_HRO_5min_T [2017-09-06/00:00:00
 OMNI_HRO_5min_Pressure [2017-09-06/00:00:00
 OMNI_HRO_5min_E [2017-09-06/00:00:00
 OMNI_HRO_5min_Beta [2017-09-06/00:00:00

Line ->
Spec ->

(L) Panel 1 (1, 1) -
 - g15_xrs_avg_time -vs- g15_xrs_avg_0
 - g15_xrs_avg_time -vs- g15_xrs_avg_1
 Panel 2 (2, 1) -
 - OMNI_HRO_5min_flow_speed_time -vs- OMNI_HRO_5min_flow_speed_data
 Panel 3 (3, 1) -
 - OMNI_HRO_5min_proton_density_time -vs- OMNI_HRO_5min_proton_density_data
 Panel 4 (4, 1) -
 - OMNI_HRO_5min_F_time -vs- OMNI_HRO_5min_F_data
 - OMNI_HRO_5min_BZ_GSM_time -vs- OMNI_HRO_5min_BZ_GSM_data

Variables:

Rows Per Page: 6
Cols Per Page: 1

Lock To Panel
Unlock Panels

(2022-05-15/18:53:18) 9: Add Finished.

Plot/Layout Options

Show Data Components Automatic Panels

- CREATE PLOTS -

Dependent Variable

- OMNI_HRO_5min_Beta [2017-09-06/00:00:00.0
- OMNI_HRO_5min_Mach_num [2017-09-06/00:00:00.0
- OMNI_HRO_5min_Mgs_mach_num [2017-09-06/00:00:00.0
- OMNI_HRO_5min_x [2017-09-06/00:00:00.0
- OMNI_HRO_5min_y [2017-09-06/00:00:00.0
- OMNI_HRO_5min_z [2017-09-06/00:00:00.0
- OMNI_HRO_5min_BSN_x [2017-09-06/00:00:00.0
- OMNI_HRO_5min_BSN_y [2017-09-06/00:00:00.0
- OMNI_HRO_5min_BSN_z [2017-09-06/00:00:00.0
- OMNI_HRO_5min_AE_INDEX [2017-09-06/00:00:00.0
- OMNI_HRO_5min_AL_INDEX [2017-09-06/00:00:00.0
- OMNI_HRO_5min_AU_INDEX [2017-09-06/00:00:00.0
- OMNI_HRO_5min_SYM_D [2017-09-06/00:00:00.0
- OMNI_HRO_5min_SYM_H [2017-09-06/00:00:00.0
- OMNI_HRO_5min_ASY_D [2017-09-06/00:00:00.0
- OMNI_HRO_5min_ASY_H [2017-09-06/00:00:00.0
- OMNI_HRO_5min_PC_N_INDEX [2017-09-06/00:00:00.0
- OMNI_HRO_5min_PR-FLX_10 [2017-09-06/00:00:00.0
- OMNI_HRO_5min_PR-FLX_30 [2017-09-06/00:00:00.0
- OMNI_HRO_5min_PR-FLX_60 [2017-09-06/00:00:00.0

GOES

- G15
 - XRS
 - g15_time_tag_orbit [2017-09-06/00:00:00.0
 - g15_west_longitude [2017-09-06/00:00:00.0

Line ->

Spec ->

Add

(L) Panel 1 (1, 1) -
- g15_xrs_avg_time -vs- g15_xrs_avg_0
- g15_xrs_avg_time -vs- g15_xrs_avg_1
Panel 2 (2, 1) -
- OMNI_HRO_5min_flow_speed_time -vs- OMNI_HRO_5min_flow_speed_data
Panel 3 (3, 1) -
- OMNI_HRO_5min_proton_density_time -vs- OMNI_HRO_5min_proton_density_data
Panel 4 (4, 1) -
- OMNI_HRO_5min_F_time -vs- OMNI_HRO_5min_F_data
- OMNI_HRO_5min_BZ_GSM_time -vs- OMNI_HRO_5min_BZ_GSM_data
Panel 5 (5, 1) -
- OMNI_HRO_5min_SYM_H_time -vs- OMNI_HRO_5min_SYM_H_data
Panel 6 (6, 1) -
- OMNI_HRO_5min_AE_INDEX_time -vs- OMNI_HRO_5min_AE_INDEX_data

Variables:

- OMNI_HRO_5min_SYM_H
- OMNI_HRO_5min_AE_INDEX

1. 以下の変数を選択し、その都度Lineをクリック。
- OMNI_HRO_5min_SYM_H
- OMNI_HRO_5min_AE_INDEX

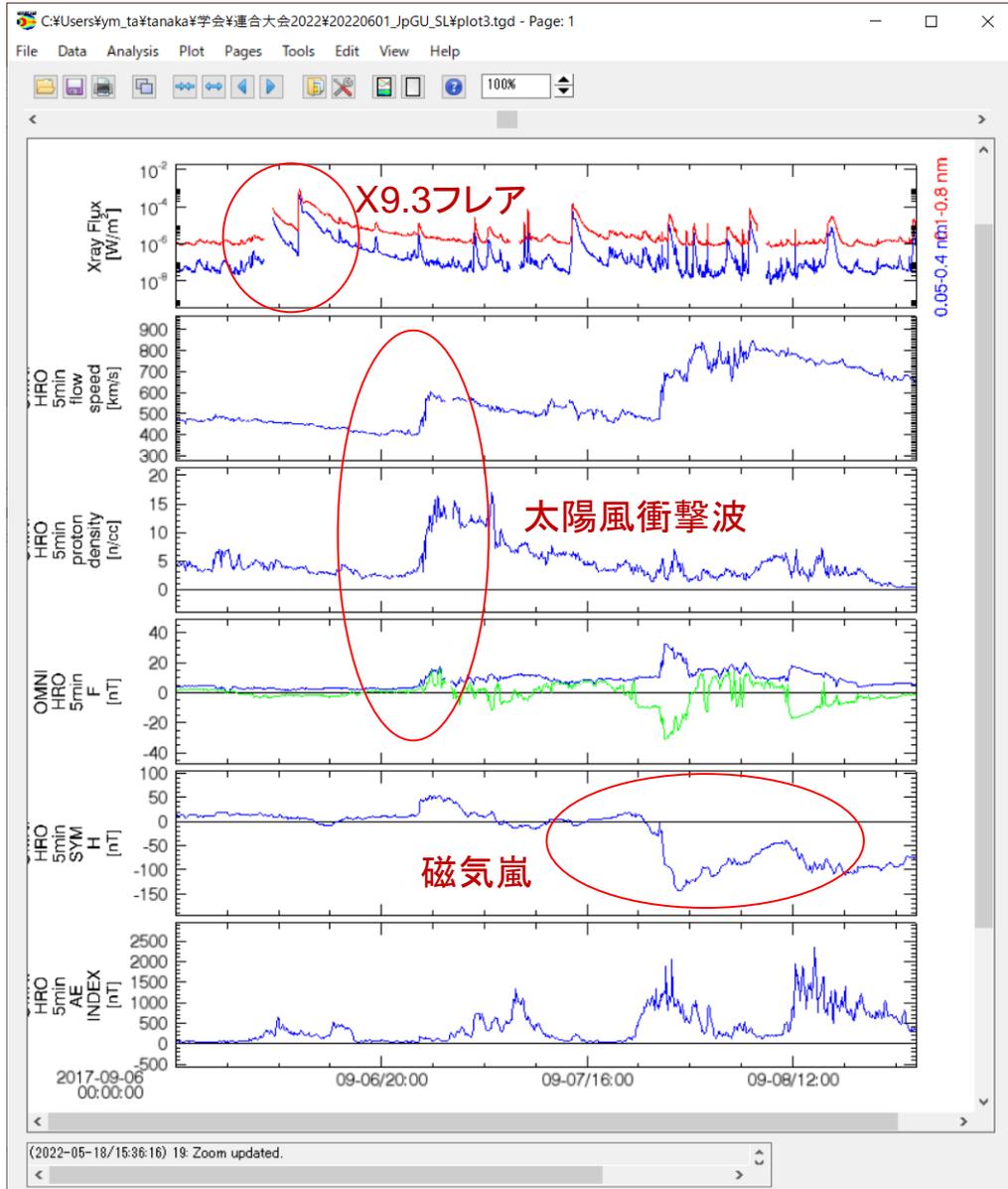
2. ここに、ロードされたデータの変数名が表示される。

3. OKをクリック。

OK Apply Cancel

(2022-05-15/19:02:20) 15: Add Finished.

8. プロットを確認する



X線フラックス。

太陽風速度

太陽風プロトン密度

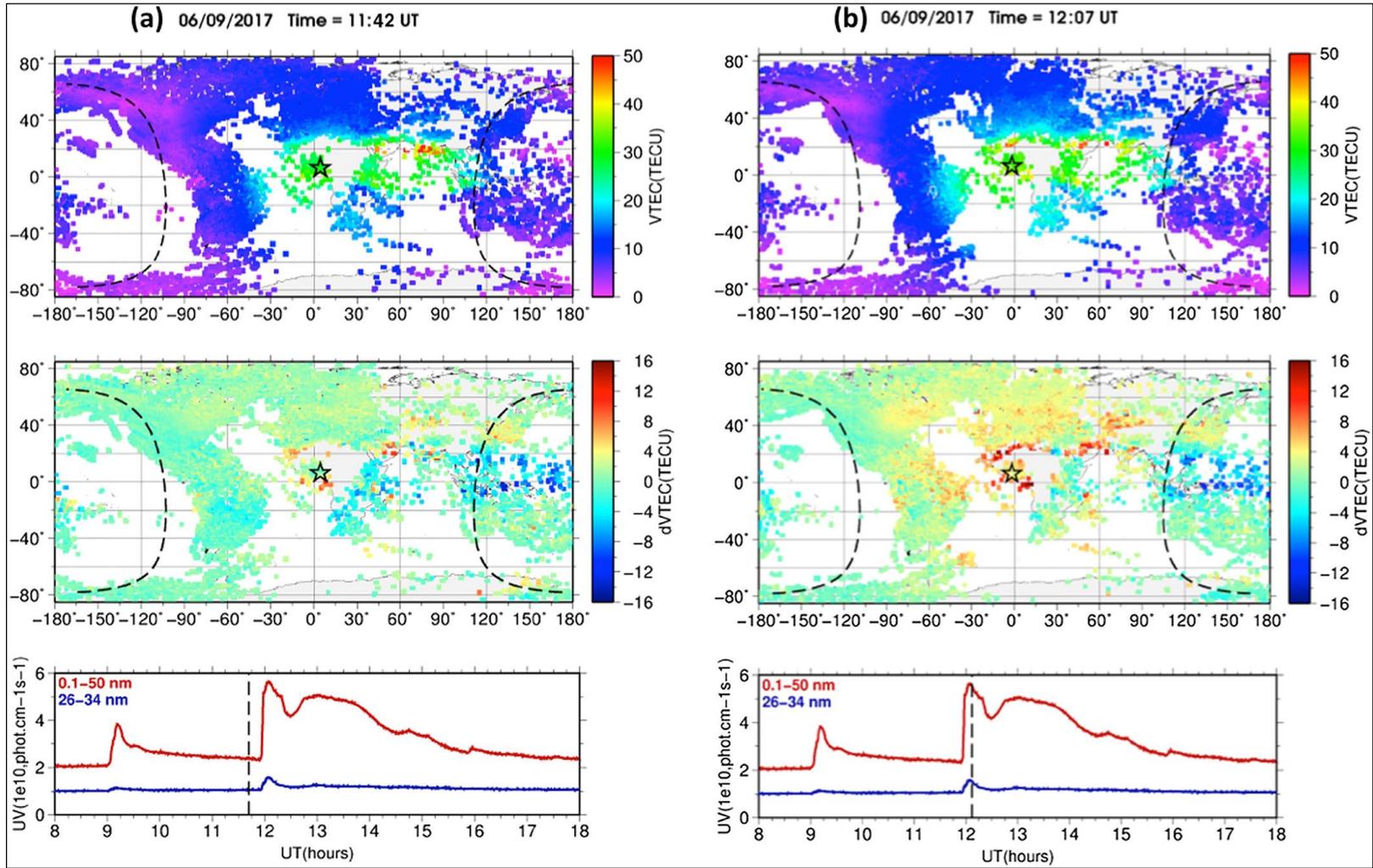
太陽風磁場(青:磁場の大きさ、緑:南北成分)

地磁気SYM-H指数(磁気嵐の指標)

地磁気AE指数(オーロラ活動の指標)

💡 Xフレアに伴う電離圏の全電子数 (GPS-TEC)をプロットしてみよう。

Figure 4 of Yasyukevich et al., 2018
<http://dx.doi.org/10.1029/2018SW001932>



9. GPS-TECデータをロードする

1. p.7と同様にロードデータウィンドウを開く。

5. 矢印(→)をクリック。

2. IUGONETタブをクリック。

3. 観測装置を選択。
Instrument Type:
GPS_TEC

Data Type:	Site or parameter(s)-1:	Parameter(s)-2:
atec	*(all)	*
		0.0
		30.0
		60.0
		90.0
		120.0
		150.0
		180.0
		210.0
		240.0
		270.0
		300.0
		330.0

Note: # means that the load procedure has been developed
in collaboration with the ERG Science Center.

4. パラメータを設定。

Data Type: atec

Site or parameter(s)-1: *(all)

Parameter(s)-2: *

6. ここに、ロードされたデータ
の変数名が表示される。

7. Doneをクリック。

Done

(2022-05-14/19:25:04) 2: IUGONET Data Loaded Successfully

10. プロットするデータ(GPS-TEC)を選ぶ

1. メニューからPagesをクリックし、Newを選択。

2. p.10と同様にPlot/Layout Optionsウィンドウを開く。

Show Data Components Automatic Panels

Line or Specをクリック。

CREATE PLOTS -

Dependent Variable

- omni
 - omni
 - omni
- GOES
 - G15
 - XRS
 - g15_time_tag_orbit [2017-09-06/00:00:00.00 to 2017-09-06/00:00:00.00]
 - g15_west_longitude [2017-09-06/00:00:00.00 to 2017-09-06/00:00:00.00]
 - g15_inclination [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - g15_time_tag [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - g15_pos_gei [2017-09-06/00:00:04.023 to 2017-09-06/00:00:04.023]
 - g15_xrs_avg [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
- IUGONET
 - GPS_TEC
 - geocoord
 - atec_keogram_geocoord_0.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_120.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_150.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_180.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_210.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_240.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_270.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_30.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_300.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]
 - atec_keogram_geocoord_330.0 [2017-09-06/00:00:00.000 to 2017-09-06/00:00:00.000]

Add:

Line ->

Spec ->

```
(L) Panel 1 (1, 1) -
- g15_xrs_avg_time -vs- g15_xrs_avg_0
- g15_xrs_avg_time -vs- g15_xrs_avg_1
Panel 2 (2, 1) -
- OMNI_HRO_5min_SYM_H_time -vs- OMNI_HRO_5min_SYM_H_data
Panel 3 (3, 1) -
- atec_keogram_geocoord_0.0_time -vs- atec_keogram_geocoord_0.0
Panel 4 (4, 1) -
- atec_keogram_geocoord_150.0_time -vs- atec_keogram_geocoord_150.0
```

5. ここに、ロードされたデータの変数名が表示される。

3. 以下の変数を選択し、その都度Lineをクリック。

- g15_xrs_avg
- OMNI_HRO_5min_SYM_H

4. 以下の変数を選択し、その都度Specをクリック。

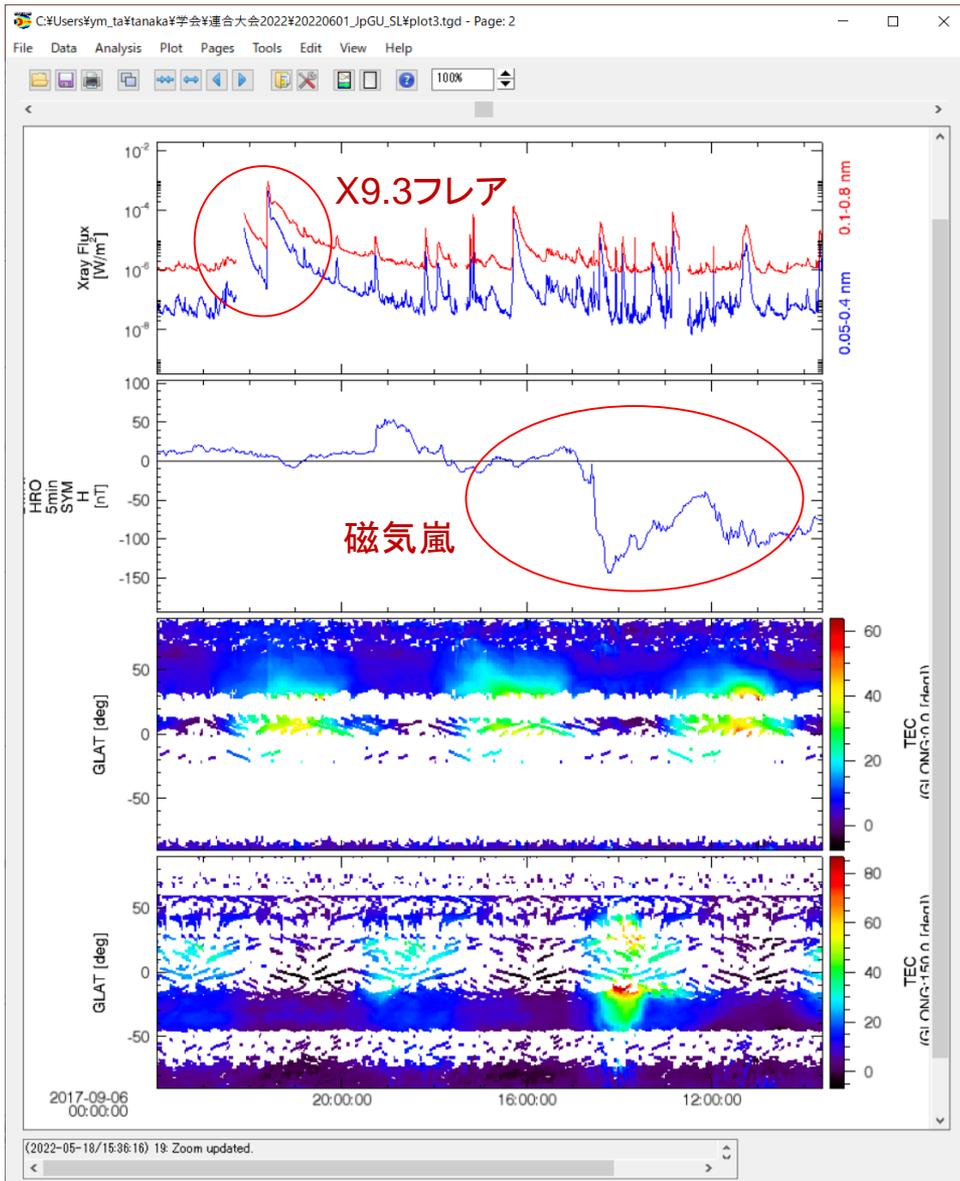
- atec_keogram_geocoord_0.0
- atec_keogram_geocoord_150.0

OK Apply Cancel

6. OKをクリック。

0: Status information is displayed here.

11. プロットを確認する



X線フラックス。

地磁気SYM-H指数(磁気嵐の指標)

経度0° におけるGPS-TEC(電離圏全電子数)

経度150° におけるGPS-TEC(電離圏全電子数)



極域の電離圏パラメータ、地磁気変動、地磁気誘導電流 (GIC) をプロットしてみよう。

Figure 4 of Dimmock et al., 2017
<https://doi.org/10.1029/2018SW002132>

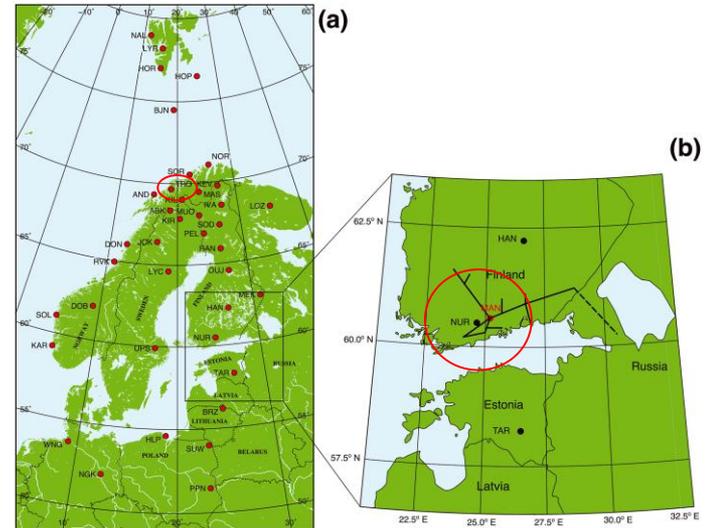
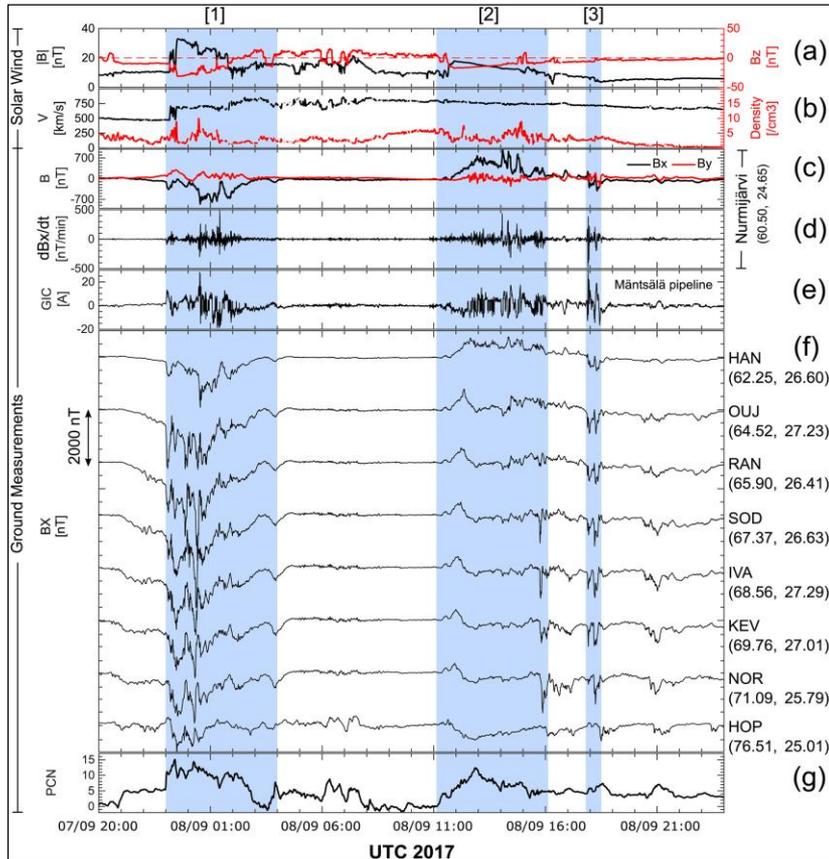
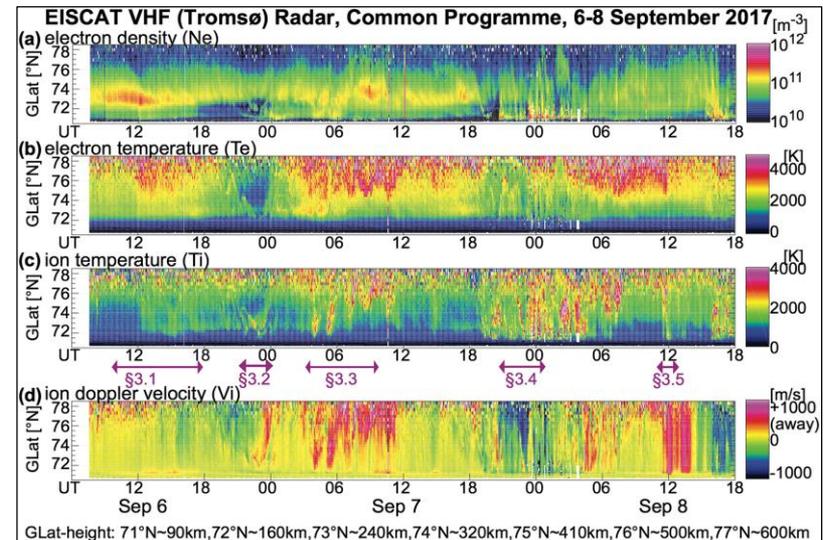


Figure 2 of Yamauchi et al., 2018
<https://doi.org/10.1029/2018SW001937>



12. 極域電離圏データをロードする

1. p.7と同様にロードデータウィンドウを開く。

5. 矢印(→)をクリック。

2. IUGONETタブをクリック。

The screenshot shows the IUGONET software interface with several key components highlighted by red boxes and arrows:

- Top Panel:** Shows various data source tabs including SECS, THEMIS, THEMIS Derived Products, and WIND. The **IUGONET** tab is selected.
- Data Selection Panel (Left):**
 - Start Time: 2017-09-06/00:00:00.00
 - Stop Time: 2017-09-09/00:00:00.00
 - Instrument Type: EISCAT_radar
 - Data Type:** altitude_prof
 - Site or parameter(s)-1:** tro_vhf
 - Parameter(s)-2:** *
- Data Loaded Panel (Right):** A tree view showing the loaded data structure, including IUGONET and various EISCAT_radar parameters like eiscat_trovhf_alt, eiscat_trovhf_colf, etc.
- Status Bar:** Displays the message: "(2022-05-20/12:00:35) 18: IUGONET Data Loaded Successfully".

3. 観測装置を選択。
Instrument Type:
EISCAT_radar

4. パラメータを設定。
Data Type: altitude_prof
Site or parameter(s)-1: tro_vhf
Parameter(s)-2: *

6. ここに、ロードされたデータ
の変数名が表示される。

13. 極域地磁気データをロードする

1. 観測装置を選択。
Instrument Type:
geomagnetic_field_fluxgate

2. パラメータを設定。
Data Type: WDC_kyoto
Site or parameter(s)-1: nur
Parameter(s)-2: *

3. 矢印(→)をクリック。

4. ここに、ロードされたデータの変数名が表示される。

5. Doneをクリック。

THEMIS Derived Products
WIND
MIS
R ELFIN FAST GOES GOESR Geomagnetic Indices IUGONET MAVEN_PFP MMS OMNI POES

IUGONET Data Selection:

Start Time: 2017-09-06/00:00:00.00
Stop Time: 2017-09-09/00:00:00.00
 Use Single Day
Instrument Type: geomagnetic_field_fluxgate

Data Type:	Site or parameter(s)-1:	Parameter(s)-2:
icswse	naq	*
magdas#	nck	min
210mm#	new	hour
ISEE#	ngk	
WDC_kyoto	ngp	
NIPR#	nkk	
	nmp	
	nrd	
	nur	
	nvl	
	nvs	
	nws	
	oas	
	ode	
	ott	

Note: # means that the load procedure has been developed in collaboration with the ERG Science Center.

Data Loaded:

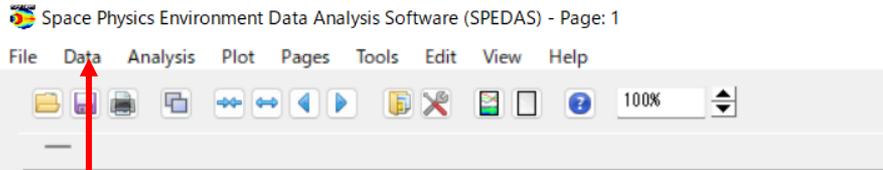
- omni
 - omni
- GOES
 - G15
 - XRS
- IUGONET
 - GPS_TEC
 - geocoord
 - EISCAT_radar
 - trovnhf
 - geomagnetic_field_fluxgate
 - nur
 - wdc_mag_nur_1hr [2017-09-06/00:30:00.000 to 2017-09-09/00:30:00.000]
 - wdc_mag_nur_1min [2017-09-06/00:00:30.000 to 2017-09-09/00:00:30.000]

Delete All Data

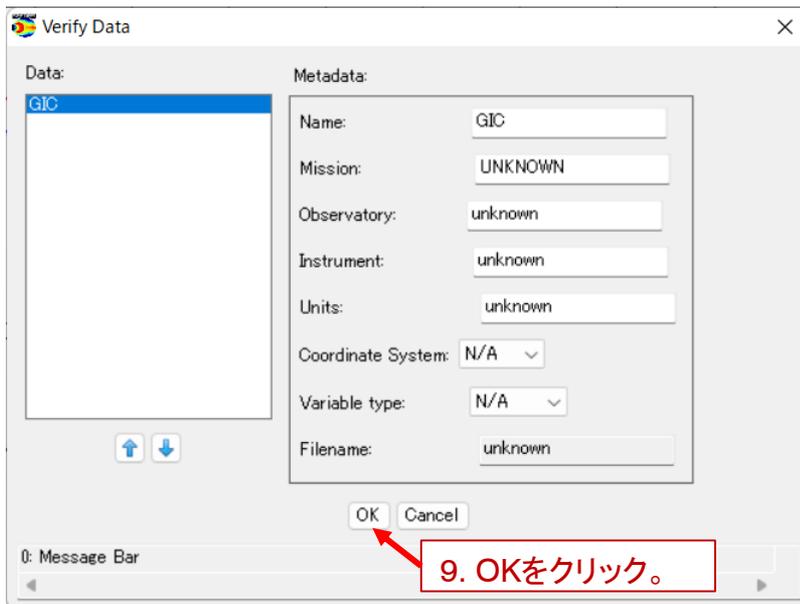
Done

(2022-05-14/19:48:28) 13: IUGONET Data Loaded Successfully

14. 地磁気誘導電流 (GIC) データをロードする



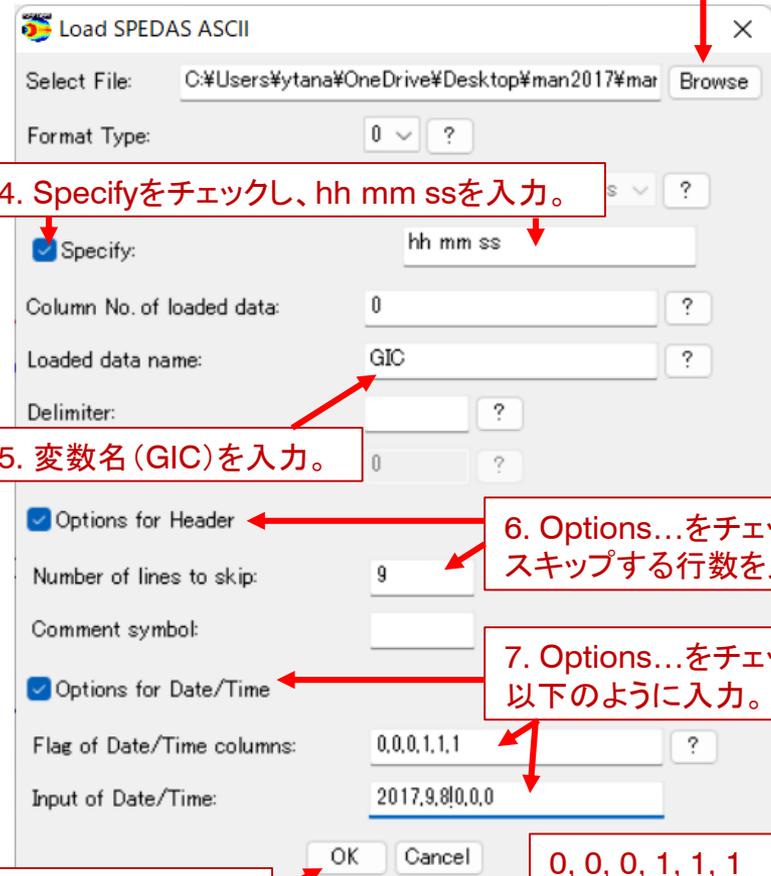
2. メニューからDataをクリックし、
Load Single Fileから
Load ASCII... を選択。



9. OKをクリック。

1. GICデータ(man2017)を
https://space.fmi.fi/gic/man_ascii/man.php
からダウンロードし、解凍する。

3. Browseをクリックし、解凍したman20170908.txtを選択。



4. Specifyをチェックし、hh mm ssを入力。

5. 変数名 (GIC) を入力。

6. Options...をチェックし、
スキップする行数を入力。

7. Options...をチェックし、
以下のように入力。

0, 0, 0, 1, 1, 1
2017, 9, 8, 0, 0, 0

8. OKをクリック。

15. プロットするデータを選ぶ

1. メニューからPagesをクリックし、Newを選択。

2. p.10と同様にPlot/Layout Optionsウィンドウを開く。

Line or Specをクリック。

6. ここに、ロードされたデータの変数名が表示される。

3. 以下の変数を選択し、その都度Lineをクリック。
 - g15_xrs_avg
 - OMNI_HRO_5min_SYM_H
 - OMNI_HRO_5min_AE_INDEX

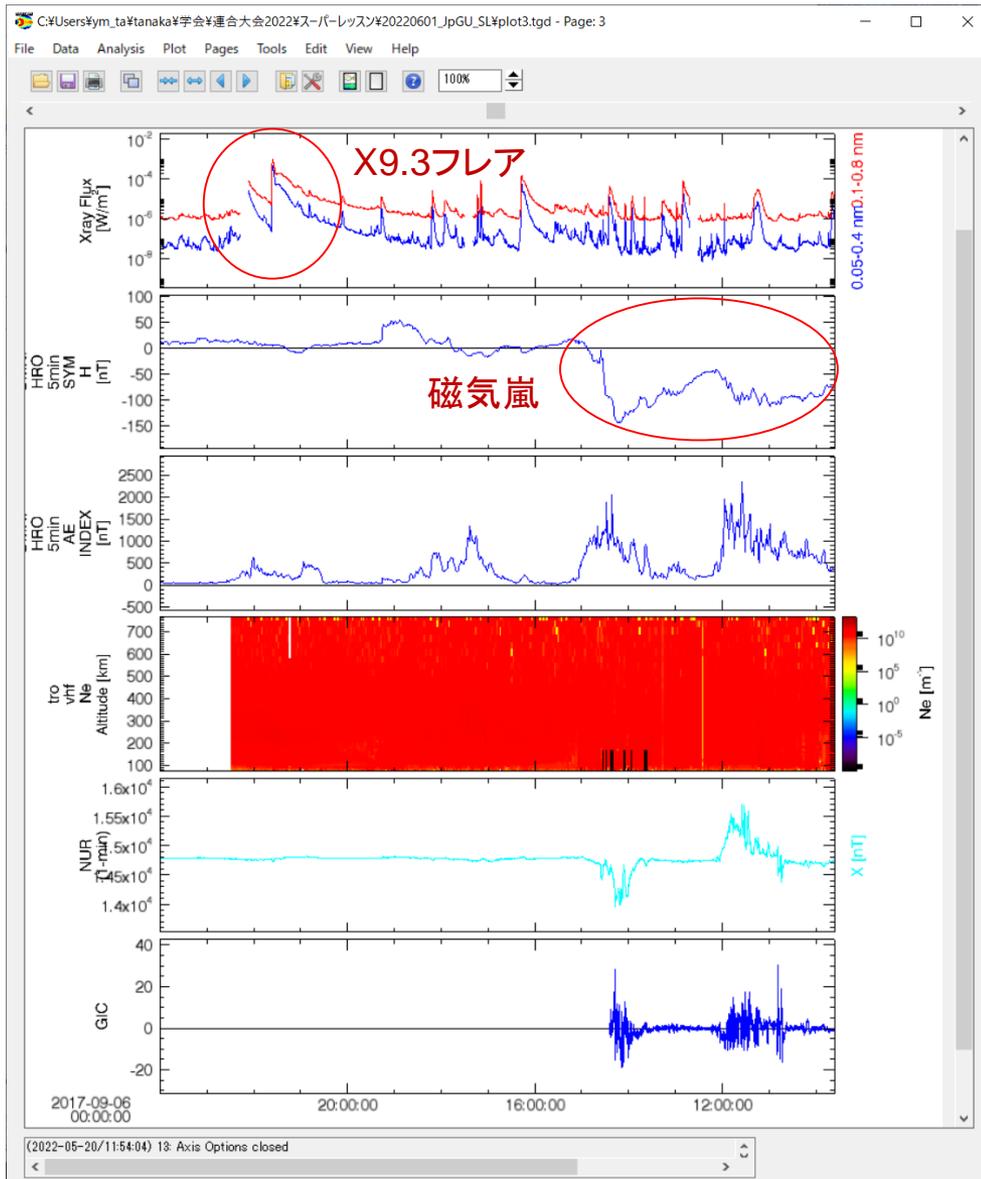
4. 以下の変数を選択し、Specをクリック。
 - eiscat_trovhf_ne

5. 以下の変数を選択し、その都度Lineをクリック。
 - wdc_mag_nur_1min_2
 - GIC

7. OKをクリック。

0: Status information is displayed here.

16. プロットを確認する



X線フラックス。

地磁気SYM-H指数(磁気嵐の指標)

地磁気AE指数(オーロラ活動の指標)

極域(ノルウェー)の電離圏電子密度。

極域(フィンランド)の地磁気変動(南北成分)。

極域(フィンランド)の地磁気誘導電流(GIC)。

17. X軸, Y軸, Z軸の範囲を変更する

1. メニューからPlotをクリックし、Z Axis Options...を選択。

2. パネル番号を選択。

3. Fixed Min/Max をチェックし、カラーバーの最小値、最大値を入力。

4. Apply→OKをクリック。

5. メニューからPlotをクリックし、X Axis Options...を選択。

6. Fixed Rangeをチェック。

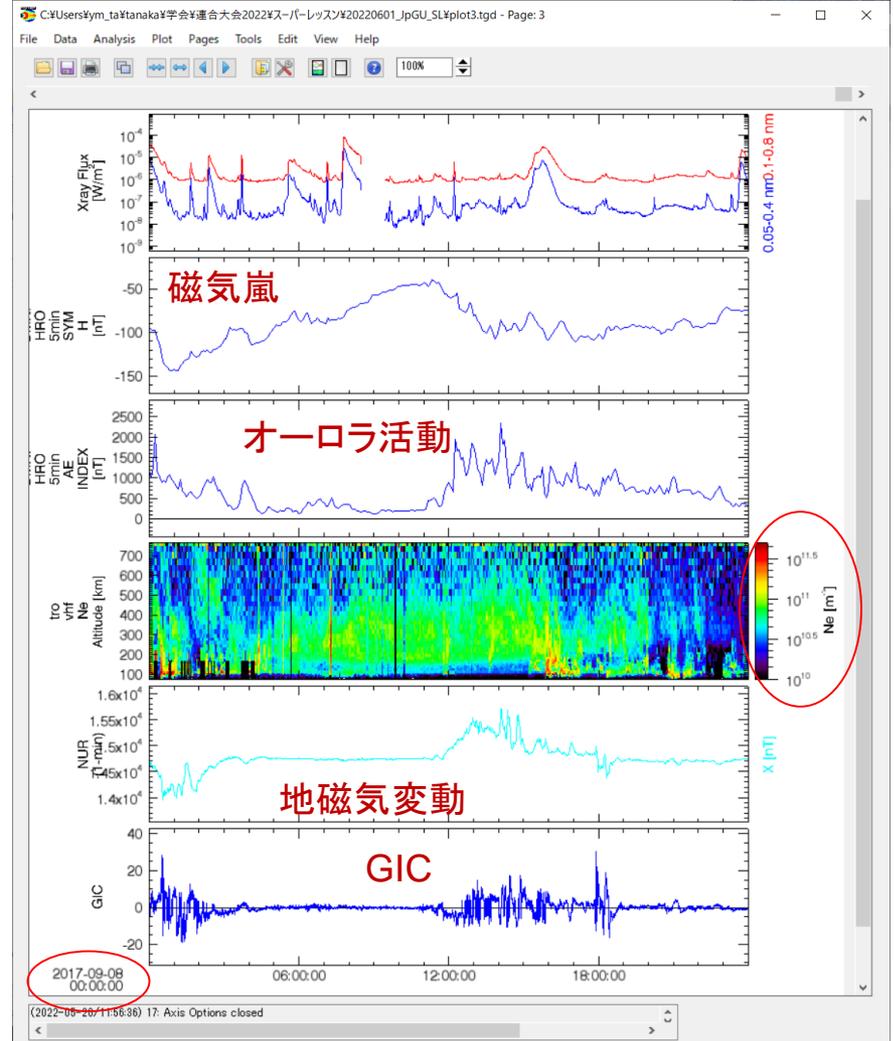
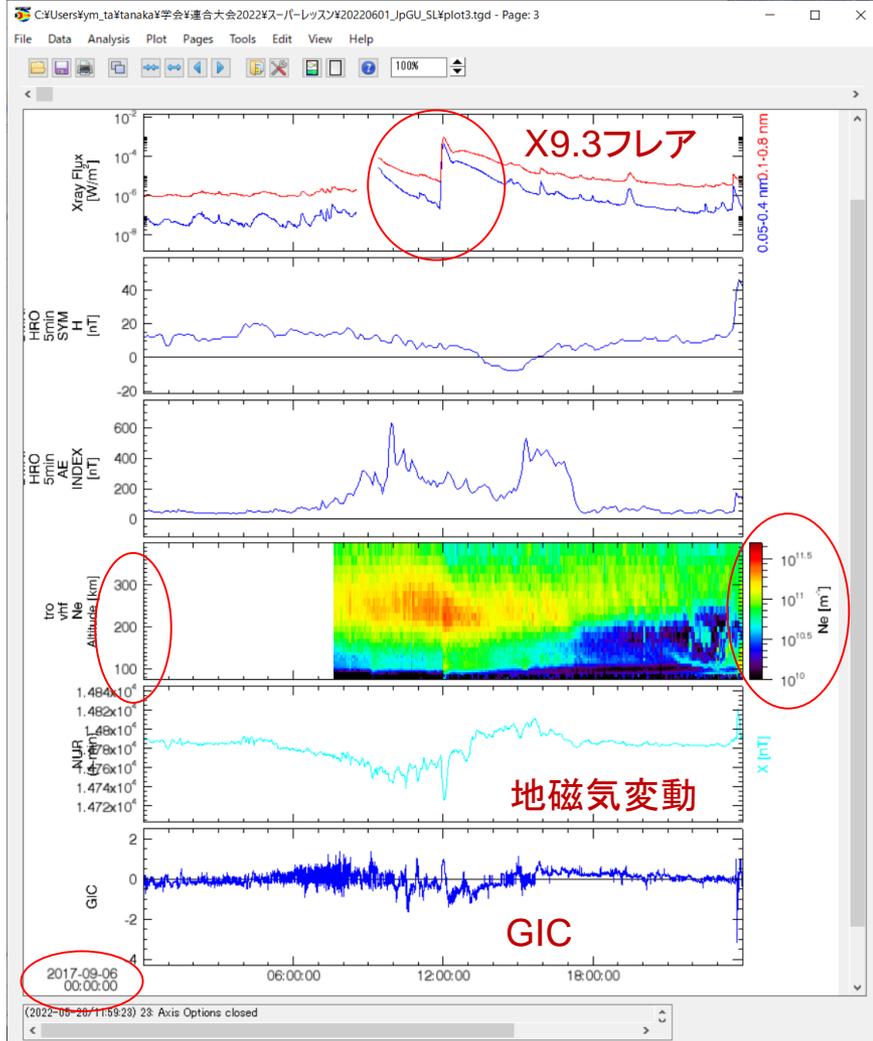
7. 時間軸の最小値、最大値を入力。

8. Apply to All Panels→OKをクリック。

18. プロットを確認する

Sep. 6, 2017

Sep. 8, 2017



1. SPEDASのWiki (英語)

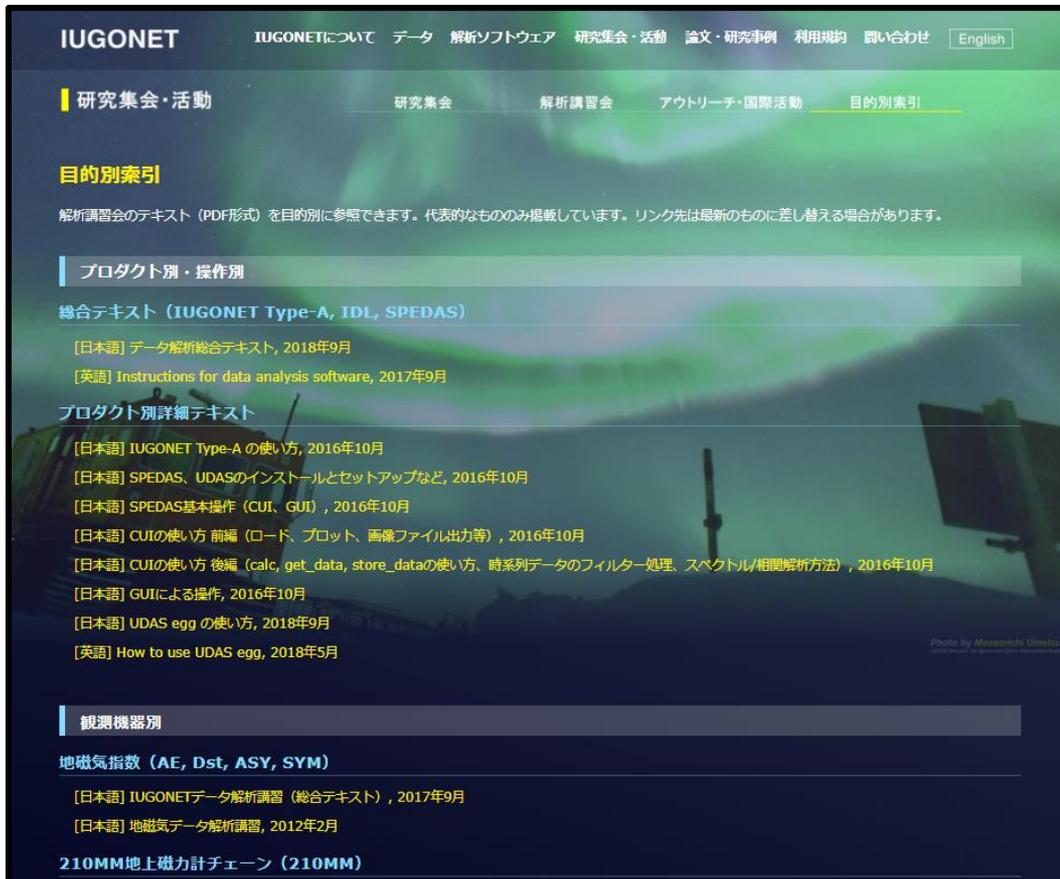
<http://spedas.org/wiki/index.php?title=GUI>

GUI操作方法がまとめられたウェブサイト。

2. IUGONETの過去の講習会資料(日本語 or 英語)

<http://www.iugonet.org/activity/purpose.jsp>

これまでにIUGONETで開催された講習会で使用した資料(GUI操作方法を含む)が置かれている。



The screenshot shows the IUGONET website interface. At the top, there is a navigation bar with the IUGONET logo and a menu with items: IUGONETについて, データ, 解析ソフトウェア, 研究会・活動, 論文・研究事例, 利用規約, 問い合わせ, and an English language toggle. Below the navigation bar, there is a secondary menu with items: 研究会・活動, 研究会, 解析講習会, アウトリーチ・国際活動, and 目的別索引. The main content area is titled "目的別索引" (Index by Purpose) and contains a paragraph: "解析講習会のテキスト (PDF形式) を目的別に参照できます。代表的なもののみ掲載しています。リンク先は最新のものに差し替える場合があります。" Below this, there are two main sections: "プロダクト別・操作別" (By Product/Operation) and "観測機器別" (By Instrument). Under "プロダクト別・操作別", there is a sub-section "総合テキスト (IUGONET Type-A, IDL, SPEDAS)" with links for Japanese and English versions of the data analysis software instructions. Below that is "プロダクト別詳細テキスト" (Detailed Text by Product) with a list of links for various topics like IUGONET Type-A usage, SPEDAS/UDAS installation, SPEDAS basic operations, CUI usage, and UDAS egg usage. Under "観測機器別", there is a sub-section "地磁気指数 (AE, Dst, ASY, SYM)" with links for IUGONET data analysis lectures and magnetic field data analysis lectures. At the bottom, there is a link for "210MM地上磁力計チェーン (210MM)".