IUGONET

Inter-university Upper atmosphere Global Observation NETwork

Instructions for data analysis software:

- *Preparation*
- *The IUGONET project and its products for space weather study*
- *Installation*
- *How to Use SPEDAS, part1*
- *How to Use SPEDAS, part2*

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http://www.iugonet.org/?lang=en

IUGONET System: MetaData System for Space Weather and Earth Observation Data Analysis

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Outline

Today's Outline:

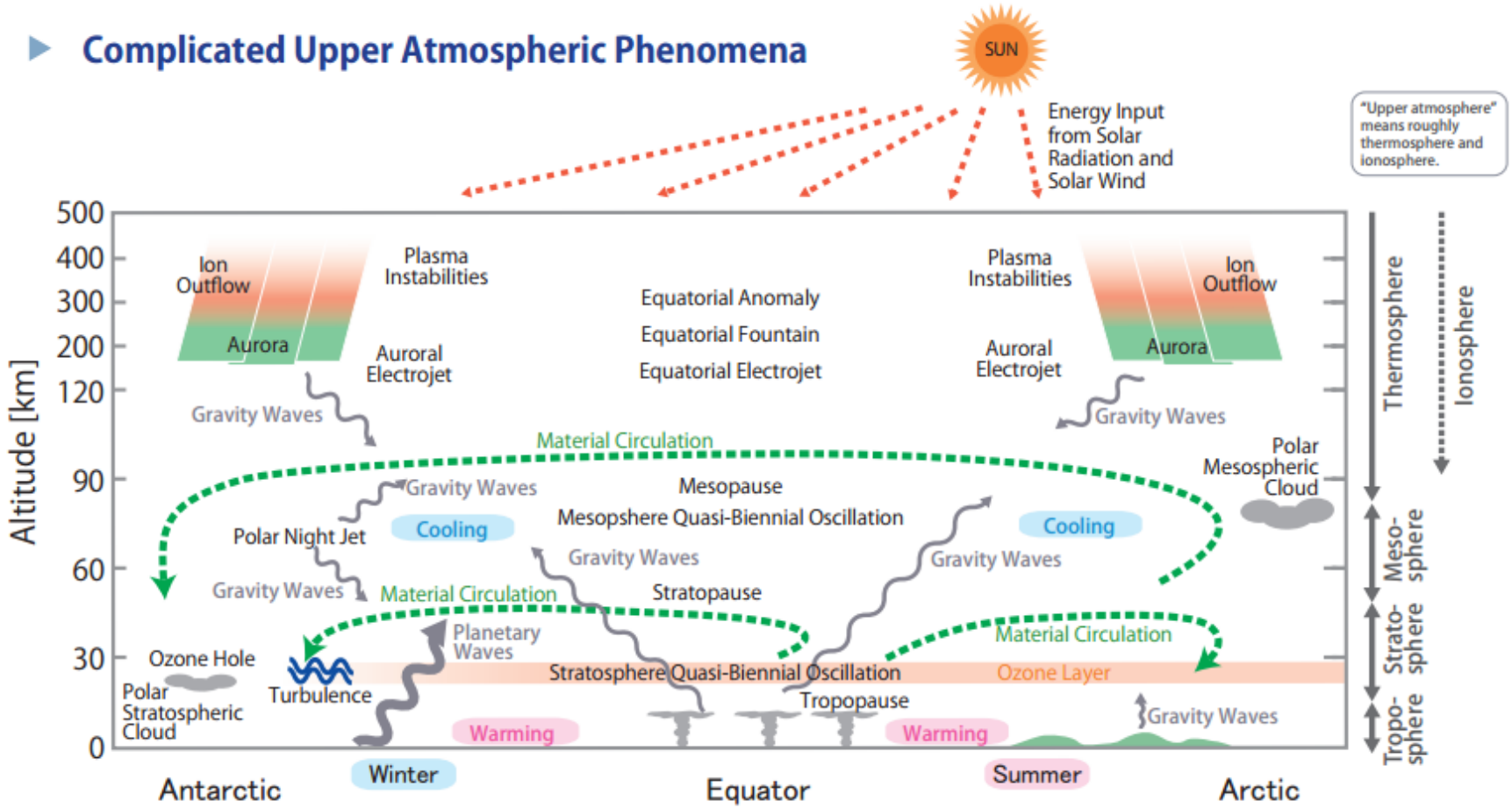
This hands-on have 4 topics

1. Introduction to the IUGONET
2. Analysis software(SPEDAS) hands-on 1
   loading and plotting built-in data

   break
3. Analysis software(SPEDAS) hands-on 2
   figure reformation and data processing
4. Analysis software(SPEDAS) hands-on 3
   loading and plotting external data

Characteristics of Upper Atmosphere

Complicated Upper Atmospheric Phenomena



1. Affected by various phenomena from the earth surface to the space
2. Many physical parameters
3. Various variations including solar activity are overlapped

Ground Observations for Upper Atmosphere

● Optical Observation ▲ Radar Observation ◆ Magnetometer Observation

■ Tohoku Univ. ■ NIPR ■ Nagoya Univ. ■ Kyoto Univ. ■ Kyushu Univ.

Svalbard
IS radar (EISCAT)
meteor radar
aurora imager

Tromso
IS radar (EISCAT)
meteor radar
MF radar

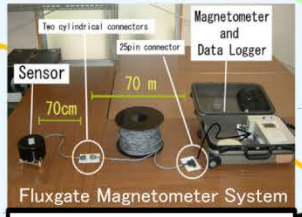
Iceland
aurora imager x2
magnetometer x3
ELF/VLF receiver
riometer

Iitate and Onagawa Observatories

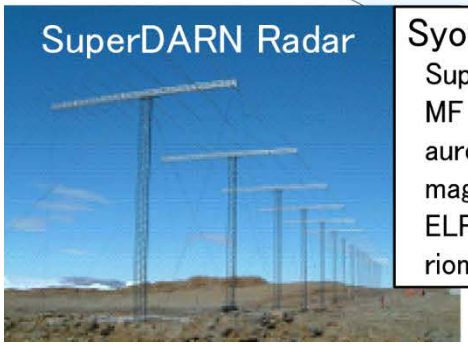
SuperDARN
Hokkaido HF radar

Hida Observatory
Solar Magnetic Activity
Research Telescope

Equatorial Atmosphere Observatory



MAGDAS Observation Point



Syowa Station
SuperDARN radar x2
MF radar
aurora imagers
magnetometer
ELF/VLF receiver
riometer

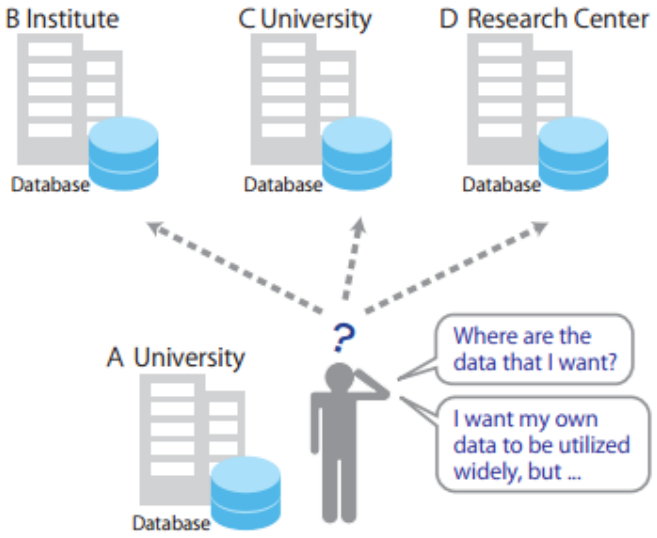
Peru Ica University

▲ MST radar
MF/meteor radar
◆ MAGDAS magnetometer
▲ FM – CW radar
● OMTI imager
◆ WDC magnetometer
— Magnetic Equator
(IGRF2005, Height 100km)

JpGU 2014

Objectives of the IUGONET

Problem

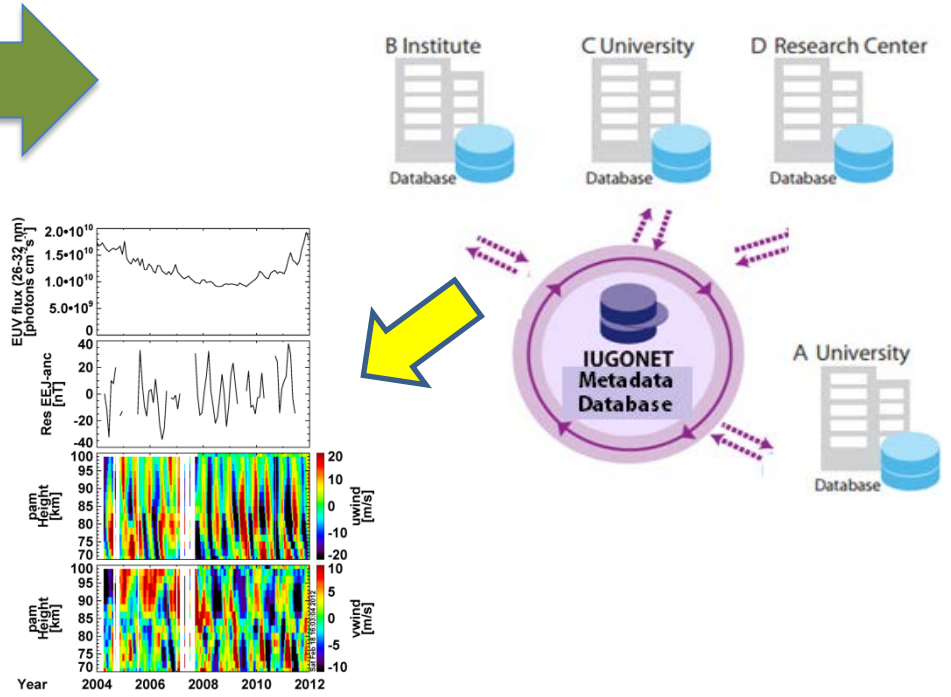


Observational data should be quality controlled and managed by the specialists who know the observations.

For users….It was not easy to reach a necessary information, since databases are distributed in various universities and institutes.

Solution

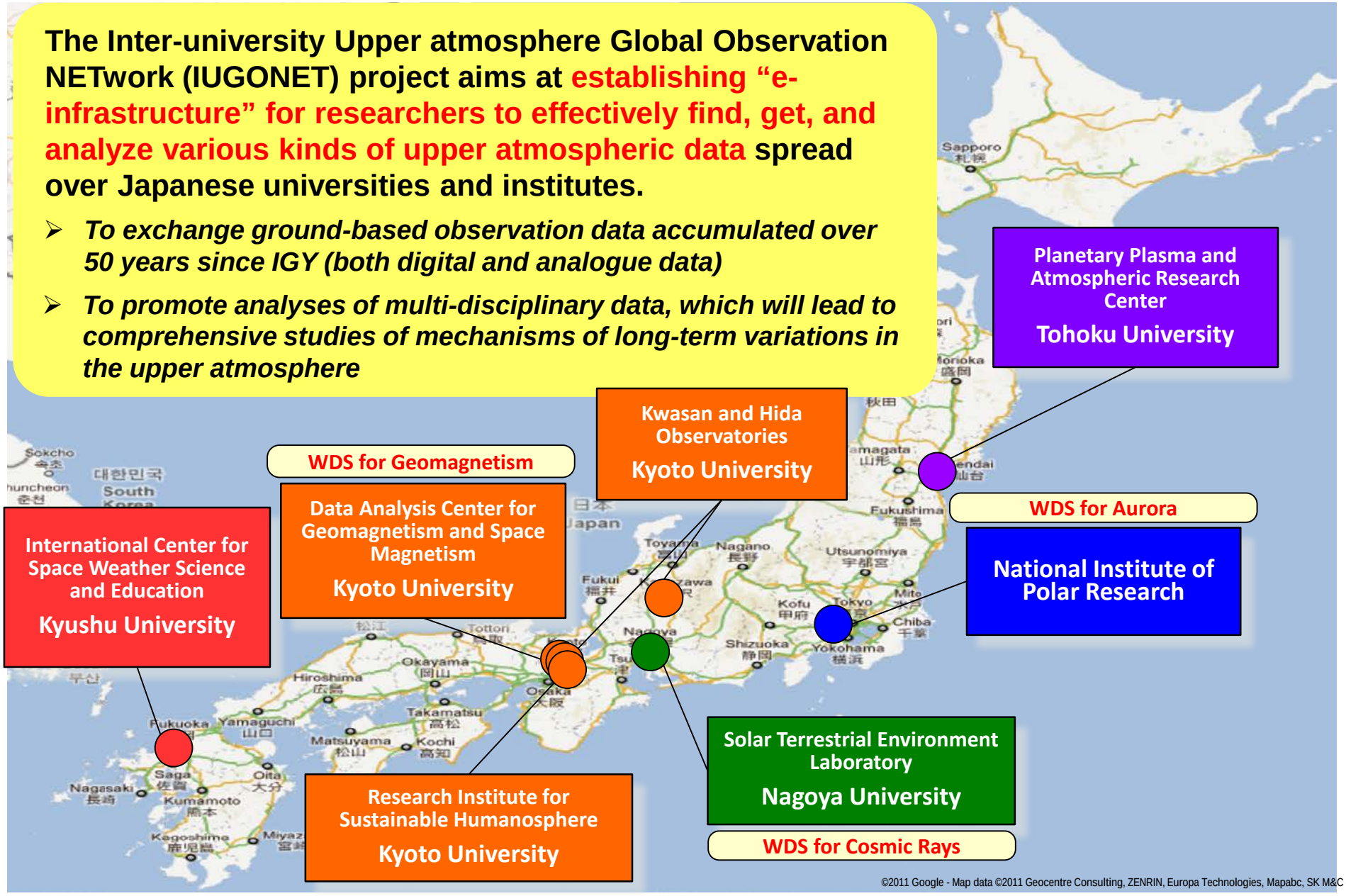
IUGONET provides a new research platform that enables metadata extracted from ground-based observation data to be shared.
In addition, IUGONET developed analysis software to access and analyze data in an integrated fashion.



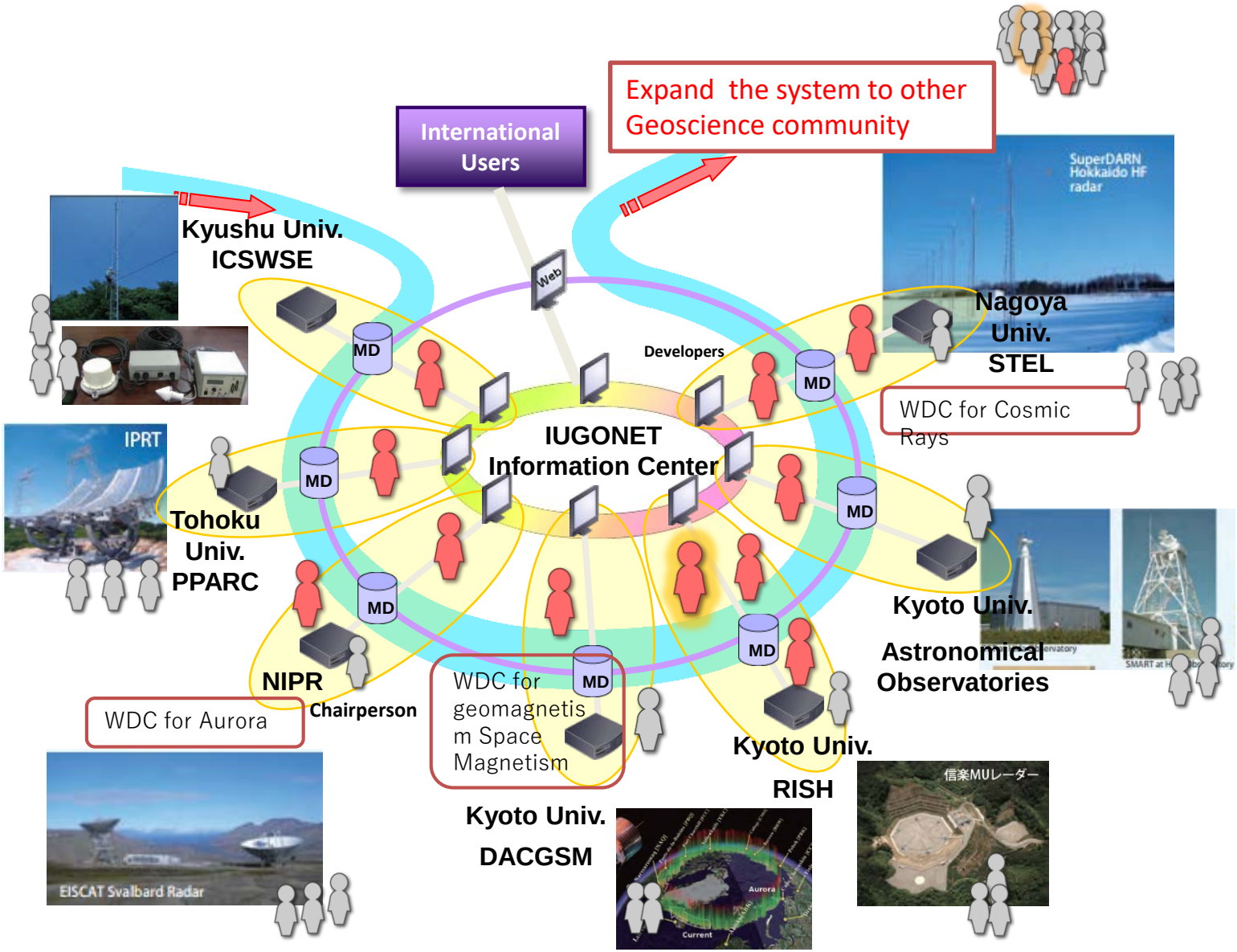
Overview of the project

The Inter-university Upper atmosphere Global Observation NETwork (IUGONET) project aims at establishing "e-infrastructure" for researchers to effectively find, get, and analyze various kinds of upper atmospheric data spread over Japanese universities and institutes.

- ***To exchange ground-based observation data accumulated over 50 years since IGY (both digital and analogue data)***
- ***To promote analyses of multi-disciplinary data, which will lead to comprehensive studies of mechanisms of long-term variations in the upper atmosphere***



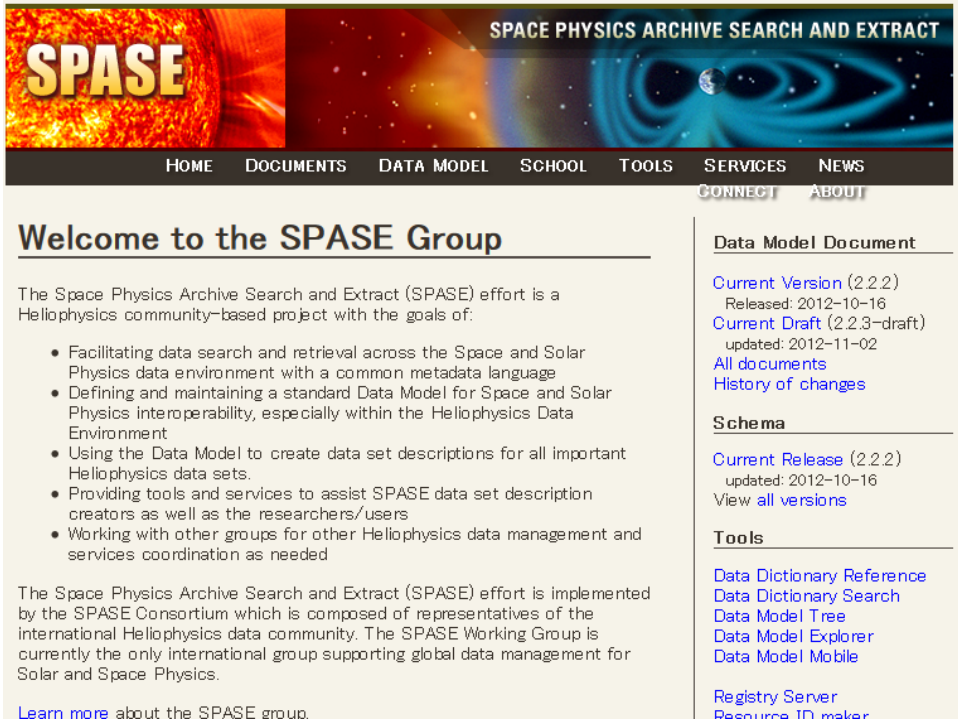
Schematics of the project



IUGONET Metadata Format/Structure

IUGONET metadata format = SPASE + modifications

(http://www.spase-group.org)



What's SPASE?

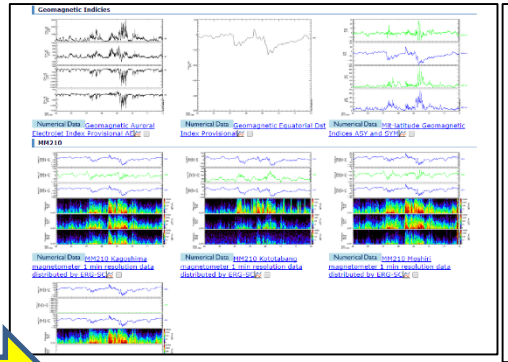
metadata format developed by international consortium to comprehensively describe research resources regarding heliospheric and magnetospheric satellite observations

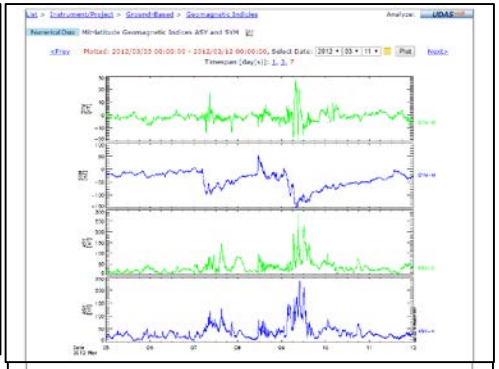
- closely related to STP and upper atmosphere researches (➔ easy to use as a base format)
- new metadata elements & words appendable (➔ customizable according to our data)
- widely-used in VxOs (➔ possible metadata exchange in the future)

IUGONET's modifications

- ➢ additional words to represent non-digital archives
- ➢ additional words to represent heliospheric coordinates
- ➢ new metadata elements to describe observation location & range

IUGONET Metadata Database



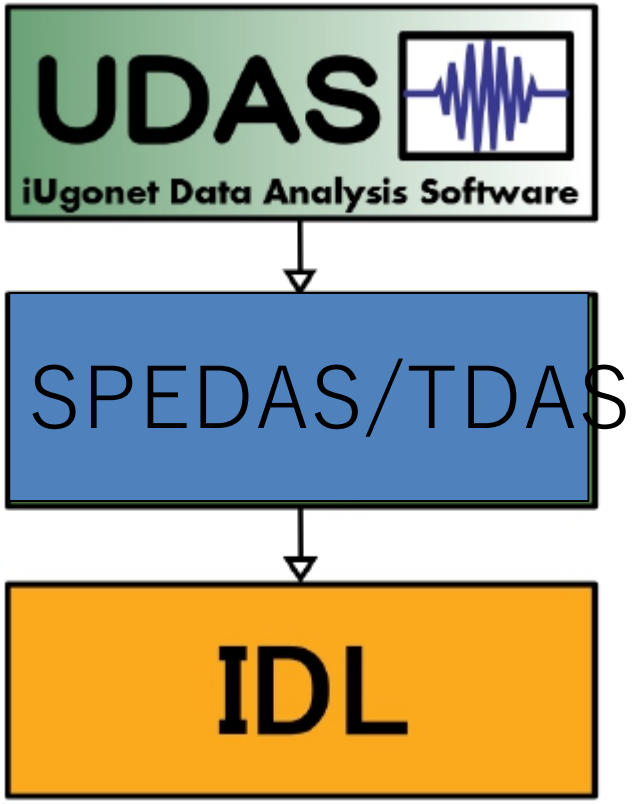


http://search.iugonet.org/

- IUGONET MDB (called IUGONET Type-A) is capable of cross-searching observational data distributed across the IUGONET institutions.
- IUGONET Type-A brings a remarkable advancement in accessibility to the observational data and accelerate the interdisciplinary study.
- IUGONET Type-A provides a one-stop web services such as
  searching data, finding interesting events, interactively plotting the data, and leading users to more detailed analysis.

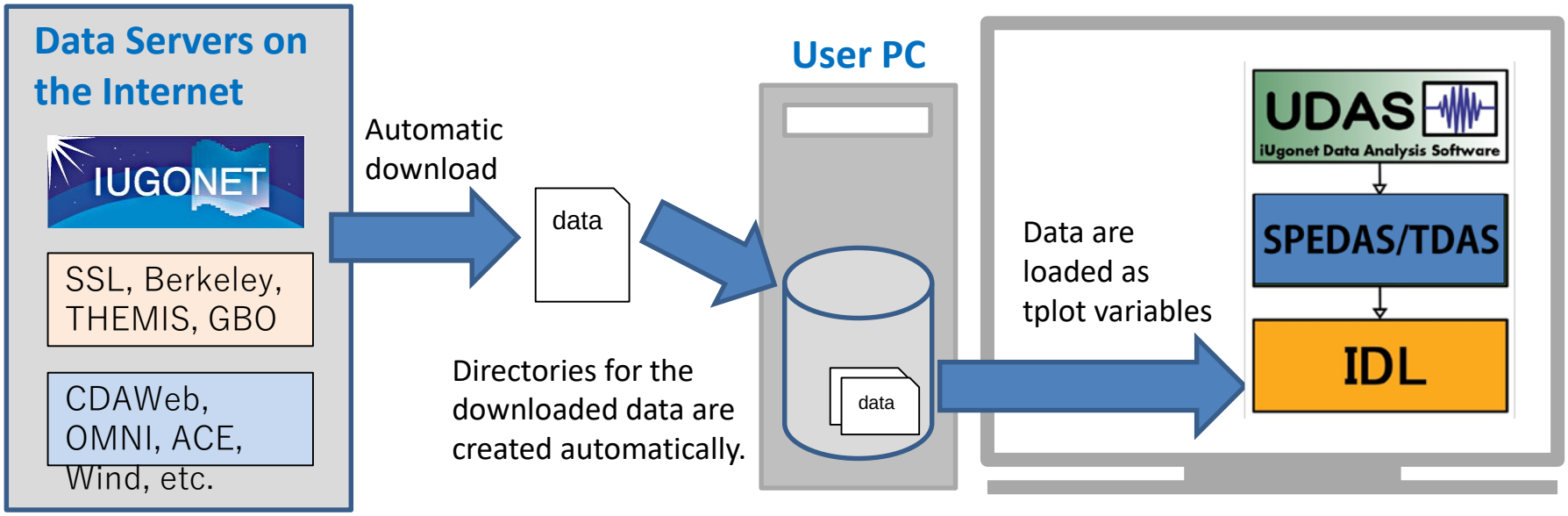
Analysis Software SPEDAS

- The IUGONET Data Analysis Software (UDAS) is the plug-in software for Space Physics Environment Data Analysis System(SPEDAS), formerly known as THEMIS Data Analysis Software suite (TDAS)
- The IUGONET data (e.g., geomagnetic data, aurora data, radar data, and so forth) and many satellite mission data (THEMIS, GOES, WIND, and ACE) can be handled.
- It is possible to use many routines to visualize and analyze time series data.
- It accesses the IUGONET data through the Internet, and then the data are automatically downloaded onto the user's computer



Relationship between UDAS, SPEDAS, and IDL

Outline of Loading/Plotting Data Using SPEDAS



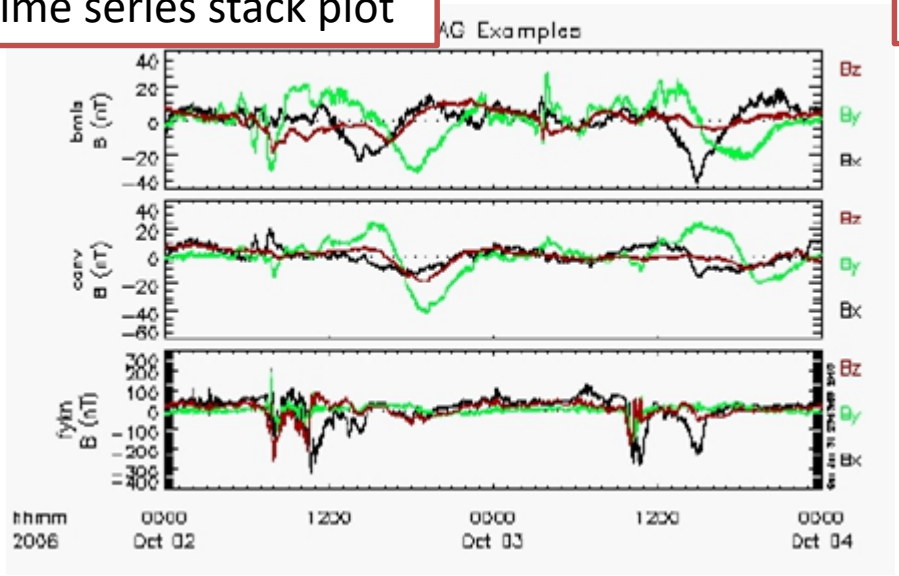
Data can be easily plotted, for example, by only three basis commands with the SPEDAS-CUI tool.

1. Set a time period	timespan, 'yyyy-mm-dd'
2. Load *** data	iug_load_***
3. Plot the loaded data	tplot, +++

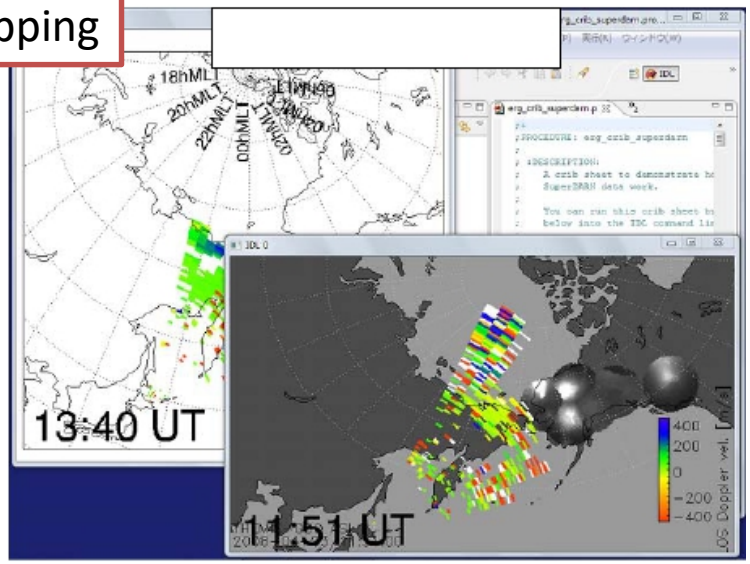
If using the GUI tool, only a few simple clicks of your mouse are required to make the same plot as that created by the above command with the CUI tool

Examples of SPEDAS visualization

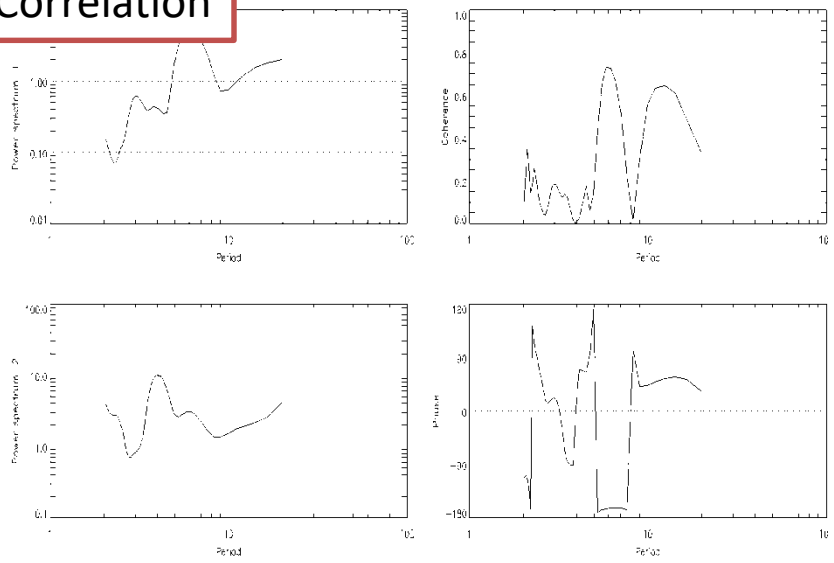
Time series stack plot



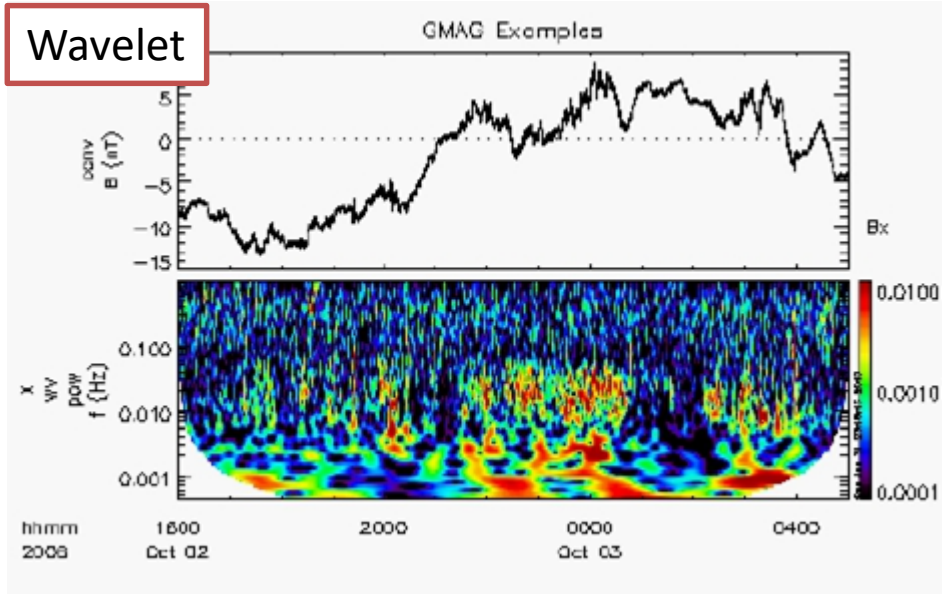
Mapping



Correlation



Wavelet



Contributions for Space weather study

Data supported by SPEDAS

Satellite data

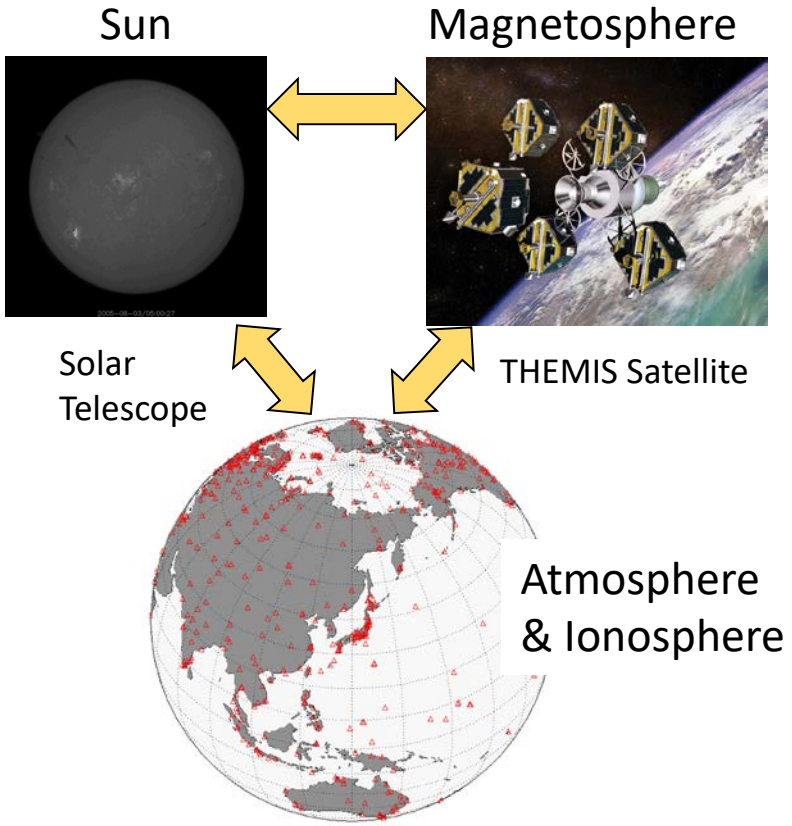
Stereo	SOHO	Wind	ACE	IMP-8	VAP Satellite EFW RBSPICE
THEMIS Satellite	GOES	LANL	NASA OMNI	ERG	

Ground-based observational data

THEMIS Geomag.	THEMIS Camera
CARISMA Geomag.	GIMA Geomag.
Greenland Geomag.	MACCS Geomag.
USGS Geomag.	

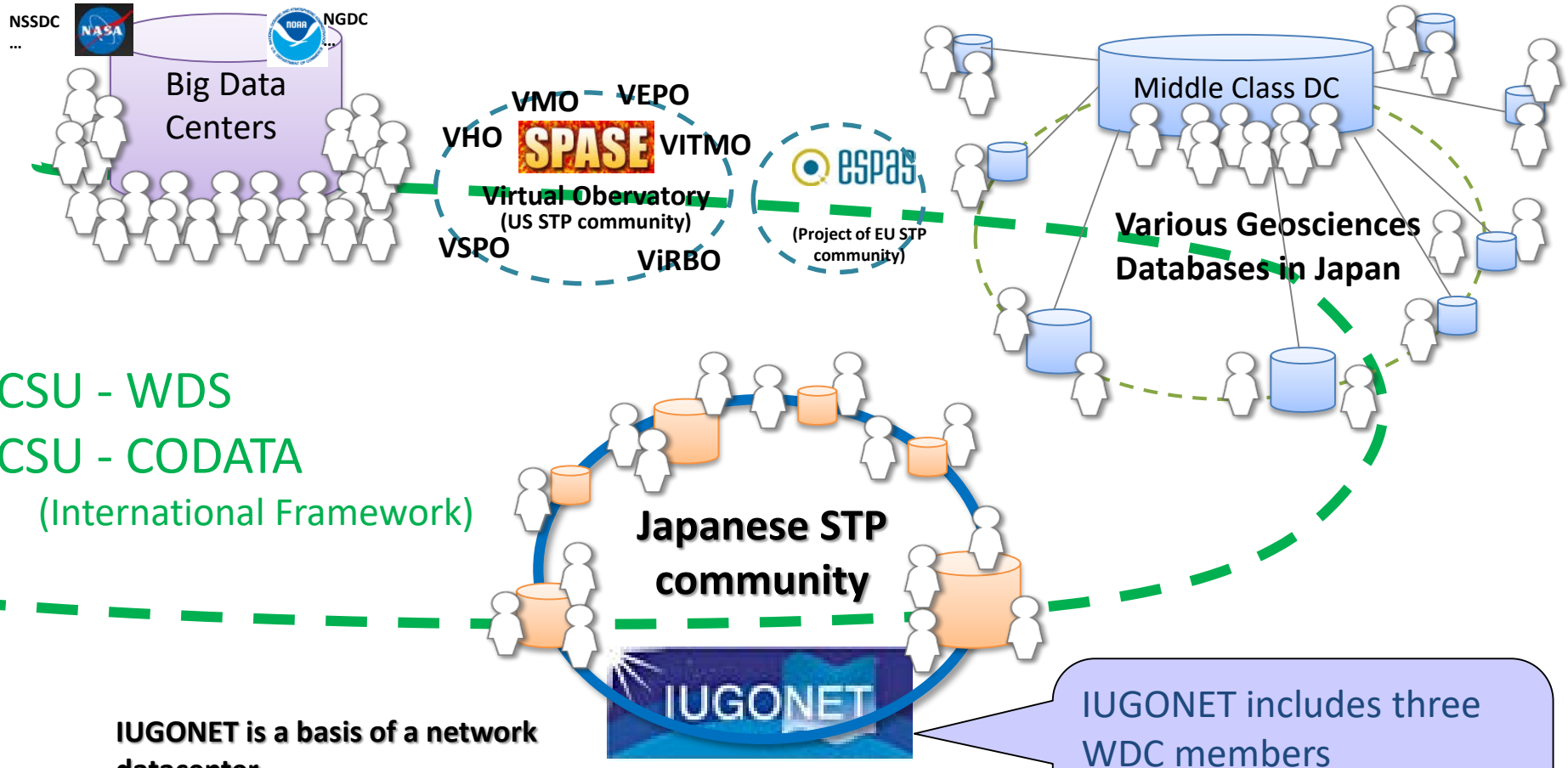
IUGONET, ERG

Solar Telescope, Solar and planetary radio telescope, Ionosphere radar (SuperDARN, EISCAT, etc.), Atmosphere radar (MU, EAR, etc.), Meteorological observation data, Geomag. network（WDC, MAGDAS, 210MM, Antarctica・Iceland, etc.）



- ✓ Many missions have provided plugins for SPEDAS.
- ✓ IUGONET has also provided a plugin for SPEDAS, which includes many routines for loading various ground-based observation data.
- ✓ SPEDAS is suitable for Space Weather study.

Summary and Future Vision



IUGONET

Metadata DB for Upper Atmosphere

超高層大気長期変動の全地球上ネットワーク観測・研究

Inter-university Upper atmosphere Global Observation NETwork

Hand on of SPEDAS

Preparation for hands on

Prepare 64 bit Operating System.

1. Access the following URL

https://archive.iii.kyushu-u.ac.jp/public/PW4ogAoJc0AApxsBi0tkoyj6RAoFJuLftBc5j4JDfbsO

2. Download SPEDAS 3.1 zip file for your operating system(Win or Mac), and then unzip it to your desktop.

spedas_3_1_win64_85_105_beta.zip or spedas_3_1_mac64_85_105_beta.zip

3. Download data.zip file including data for this hands-on, and then extract it to the following directory.

- **Windows: C:/data**
- **MAC: /Users/(username)/data**

Troubleshooting.pdf and SPEDAS wiki(http://spedas.org/wiki/index.php?title=Downloads_and_Installation) will help you against some installation problems.

Preparation for hands on

4. In section 3, you can load and plot your own data on SPEDAS. Please prepare it with the following format.

Supprted format:
1. CDF（Common Data Format）

2. Ascii
In this hands-on two format types shown are supported:
0) Time series data arranged in the following order (i.e., date, time, and data);

```
-------------------------------------------------
date[0] time[0]  ydata1[0]  ydata2[0]  ydata3[0]  …
date[0] time[1]  ydata1[1]  ydata2[1]  ydata3[1]  …
date[0] time[2]  ydata1[2]  ydata2[2]  ydata3[2]  …
date[0] time[3]  ydata1[3]  ydata2[3]  ydata3[3]  …
date[0] time[4]  ydata1[4]  ydata2[4]  ydata3[4]  …
-------------------------------------------------
```

where, ydata1, ydata2, ydata3, … are the column data.
As for the date[] and time[] format string, various formats are acceptable, for example,
YYYY-MM-DD/hh:mm:ss
yy MM DD hh mm ss
hh mm ss

See example “data/testfile_format0.txt”

Preparation for hands on

1) Time series data that includes more than one row data at the same time

---

date[0] time[0] vdata[0] ydata1[0] ydata2[0] ydata3[0] …
date[0] time[0] vdata[1] ydata1[1] ydata2[1] ydata3[1] …
:
date[0] time[0] vdata[99] ydata1[99] ydata2[99] ydata3[99] …
date[0] time[1] vdata[0] ydata1[100] ydata2[100] ydata3[100] …
date[0] time[1] vdata[1] ydata1[101] ydata2[101] ydata3[101] …
:
date[0] time[1] vdata[99] ydata1[199] ydata2[199] ydata3[199]

where vdata repeats every time, for example, altitude for the atmosphere data,frequency for the spectral data, and range for the radar data.

See example “data/testfile_format1.txt”

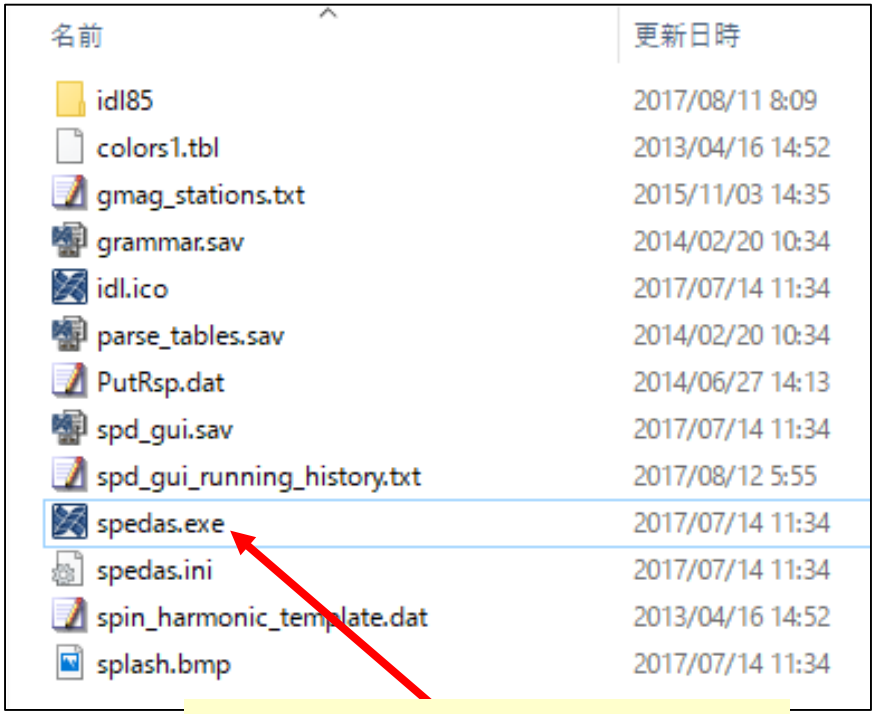
For more details, let’s see

http://www.iugonet.org/data/udas/How2_use_egg_en.pdf

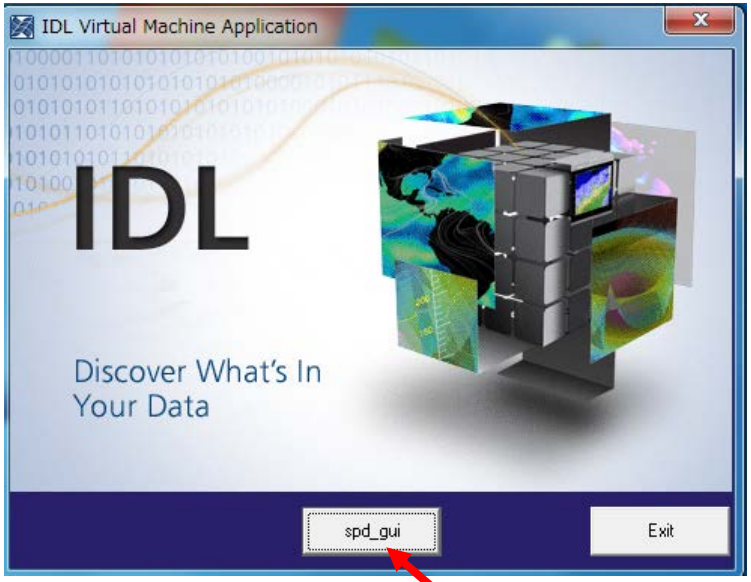
Start of IDL-VM(GUI) tool

[1] Unzip the zipped SPEDAS file.

[2] Double-click the executable file named ‘spedas’ in the directory ‘spedas_v_3/spd_gui’.



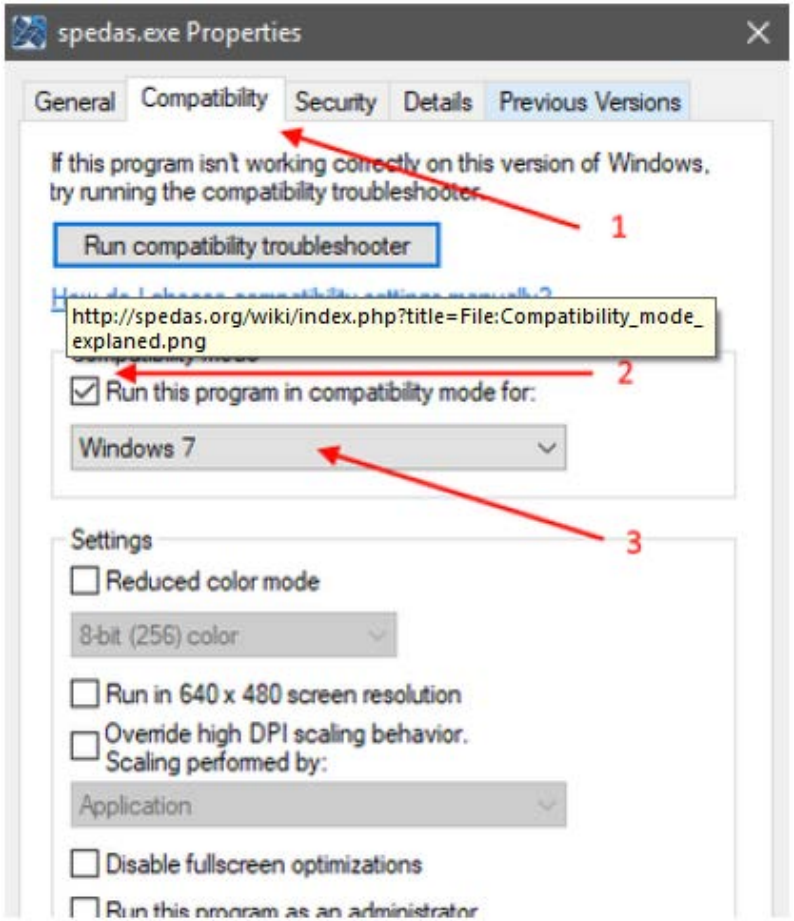
Doule-click the executable file named ‘spedas’



Click the icon ‘spd_gui’.

[3] IDL Virtual Machine window opens on your PC, so please **click the ‘spd_gui’ button.**

For Windows 10 users



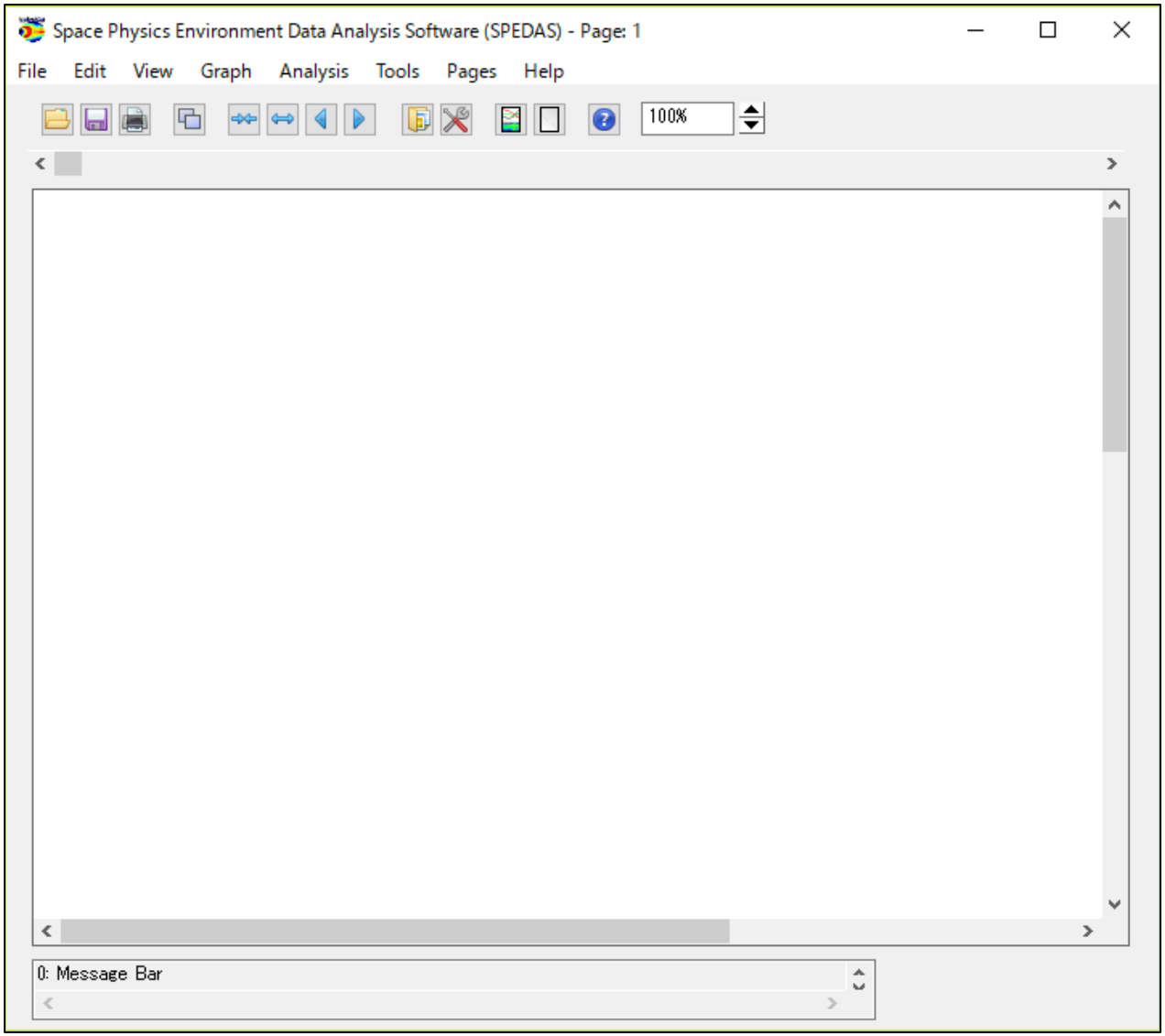
If you encountered any graphics problem on Windows 10, try launching IDL in "Windows 8 Compatibility Mode" or something similar. To do that:

0. Right click on the IDL or SPEDAS executable file and select "Properties".
1. Select "Compatibility" tab
2. Check "Run the program in compatibility mode for:"
3. Select "Windows 8" or "Windows 7".

Click ok the apply the changes.

Restart the program and then try your plot over again.

Start of IDL-VM(GUI) tool



Ready?

IUGONET

超高層大気長期変動の全地球上ネットワーク観測・研究

Inter-university Upper atmospher Global Observation NETwork

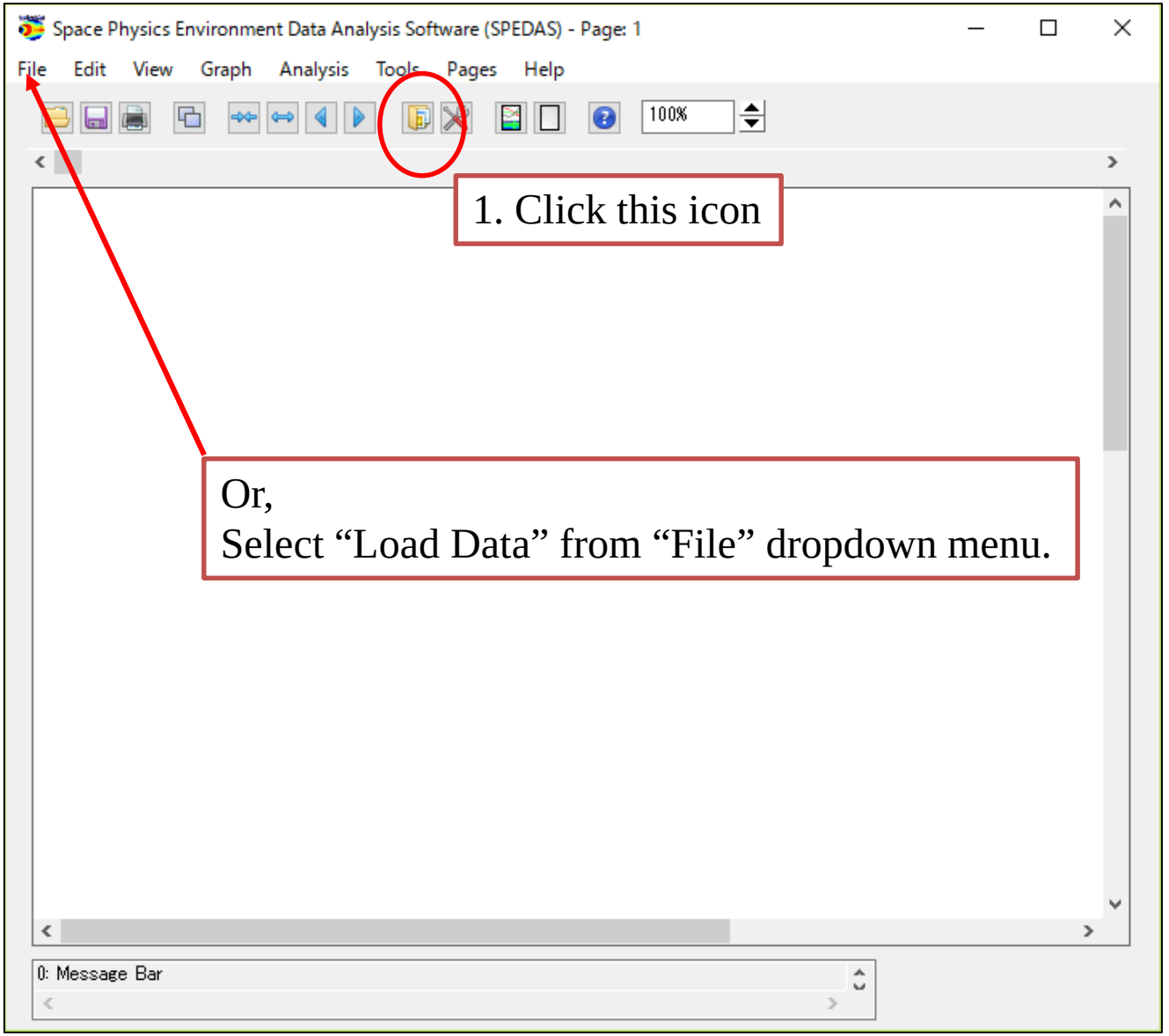
Metadata DB for Upper Atmosphere

How to Use SPEDAS part1

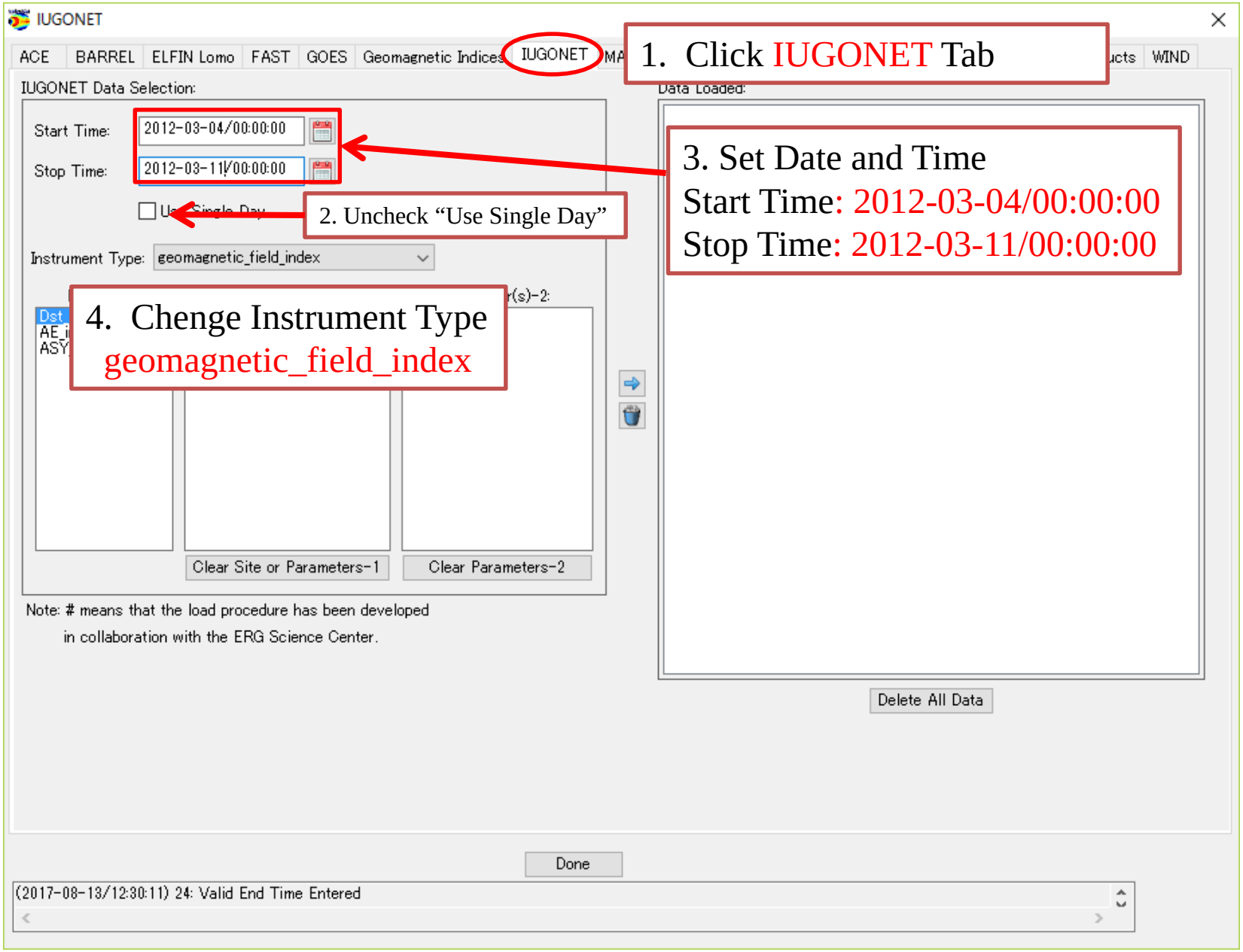
- **Load data**
- **Plot data**
- **Save figure, data, and your work**

GUI Basic Operation

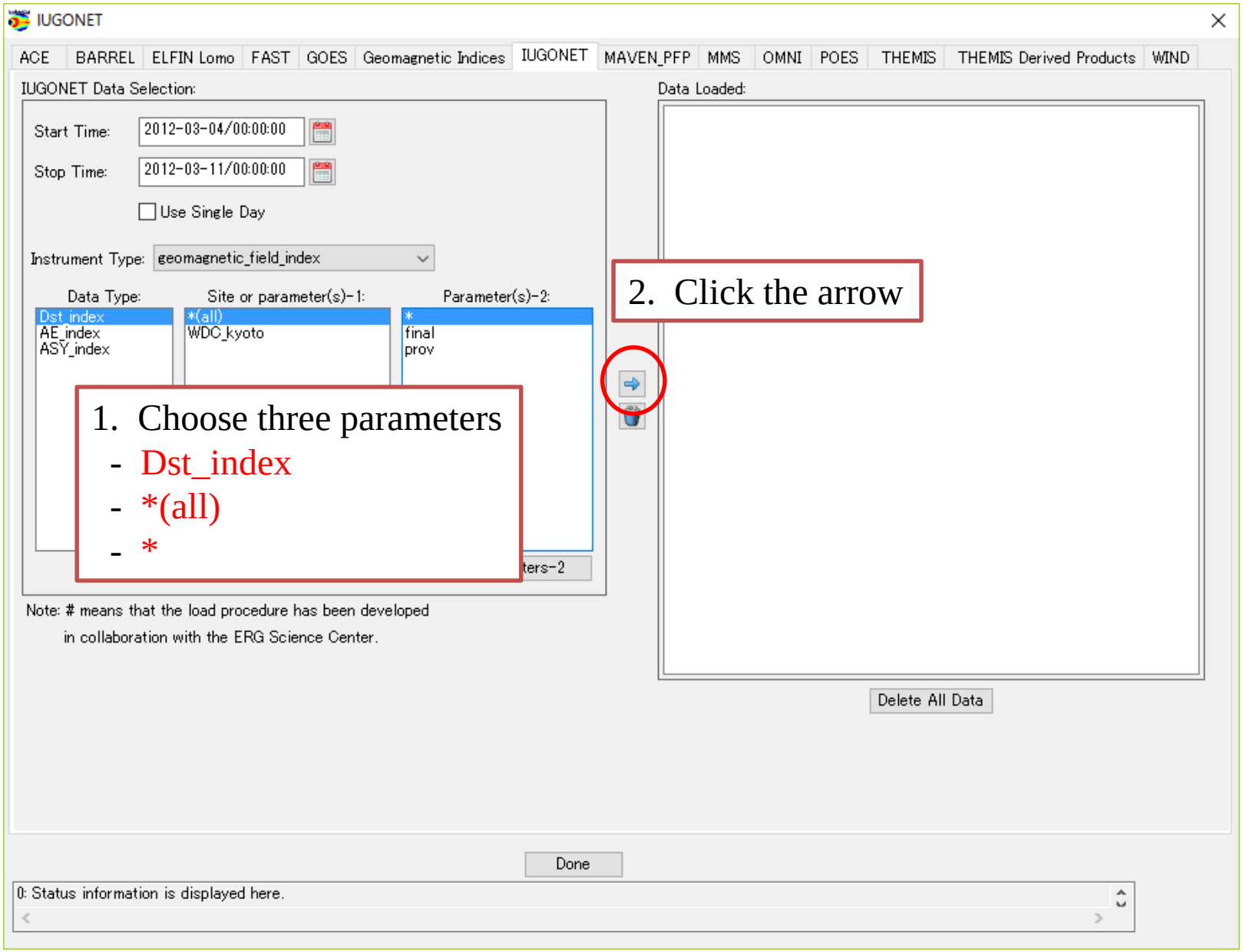
Lesson:
Load Dst index



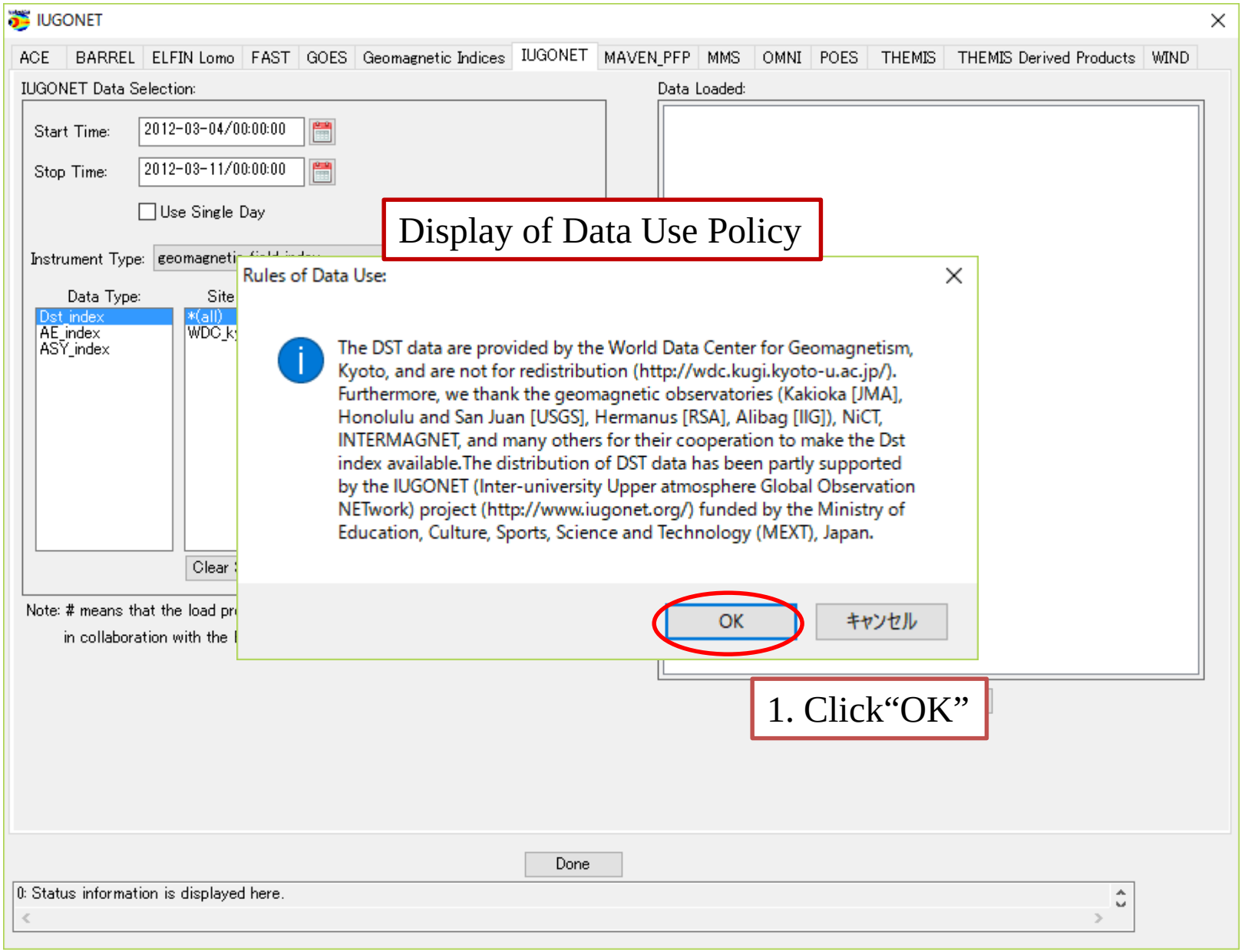
GUI Basic Operation



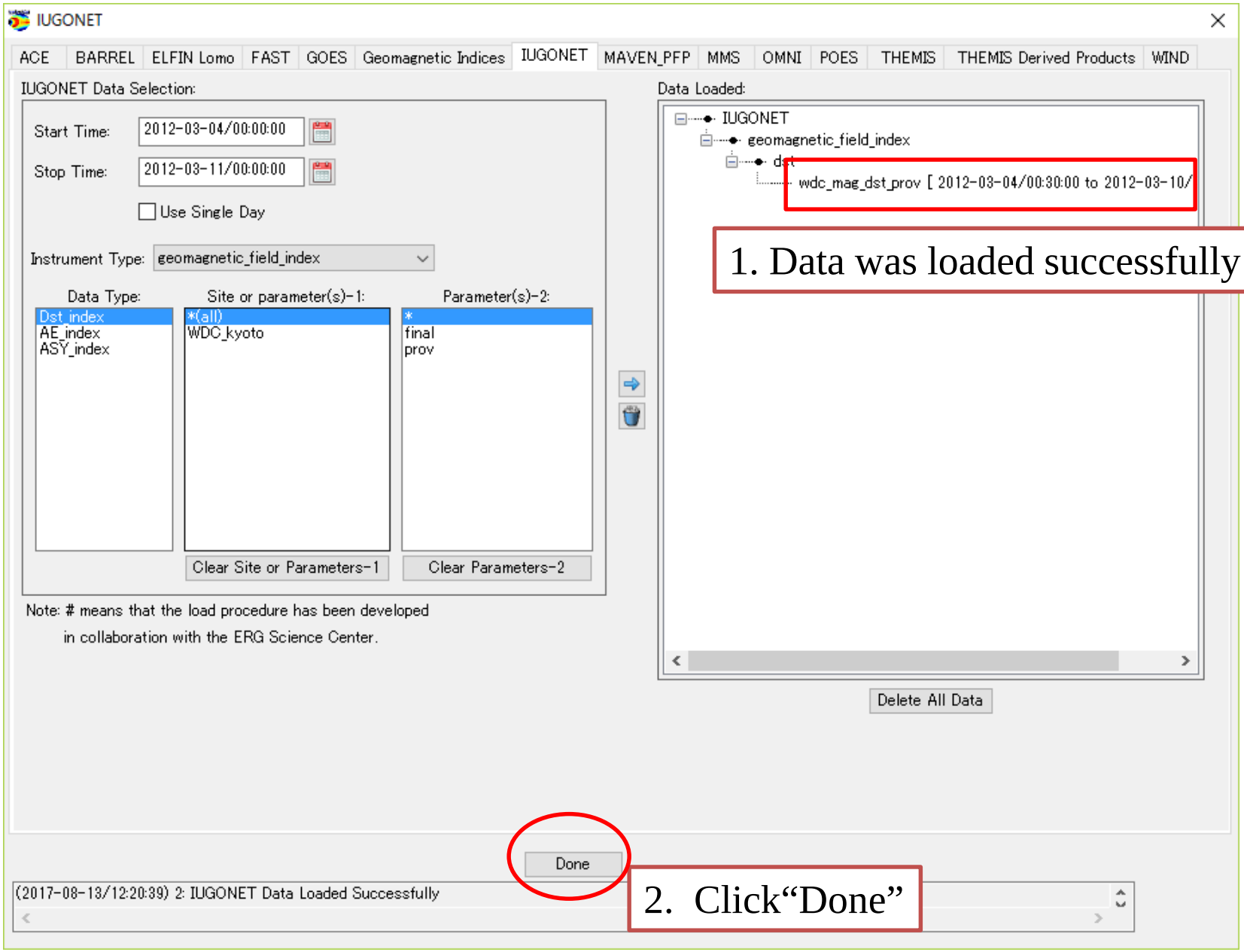
GUI Basic Operation



GUI Basic Operation



GUI Basic Operation

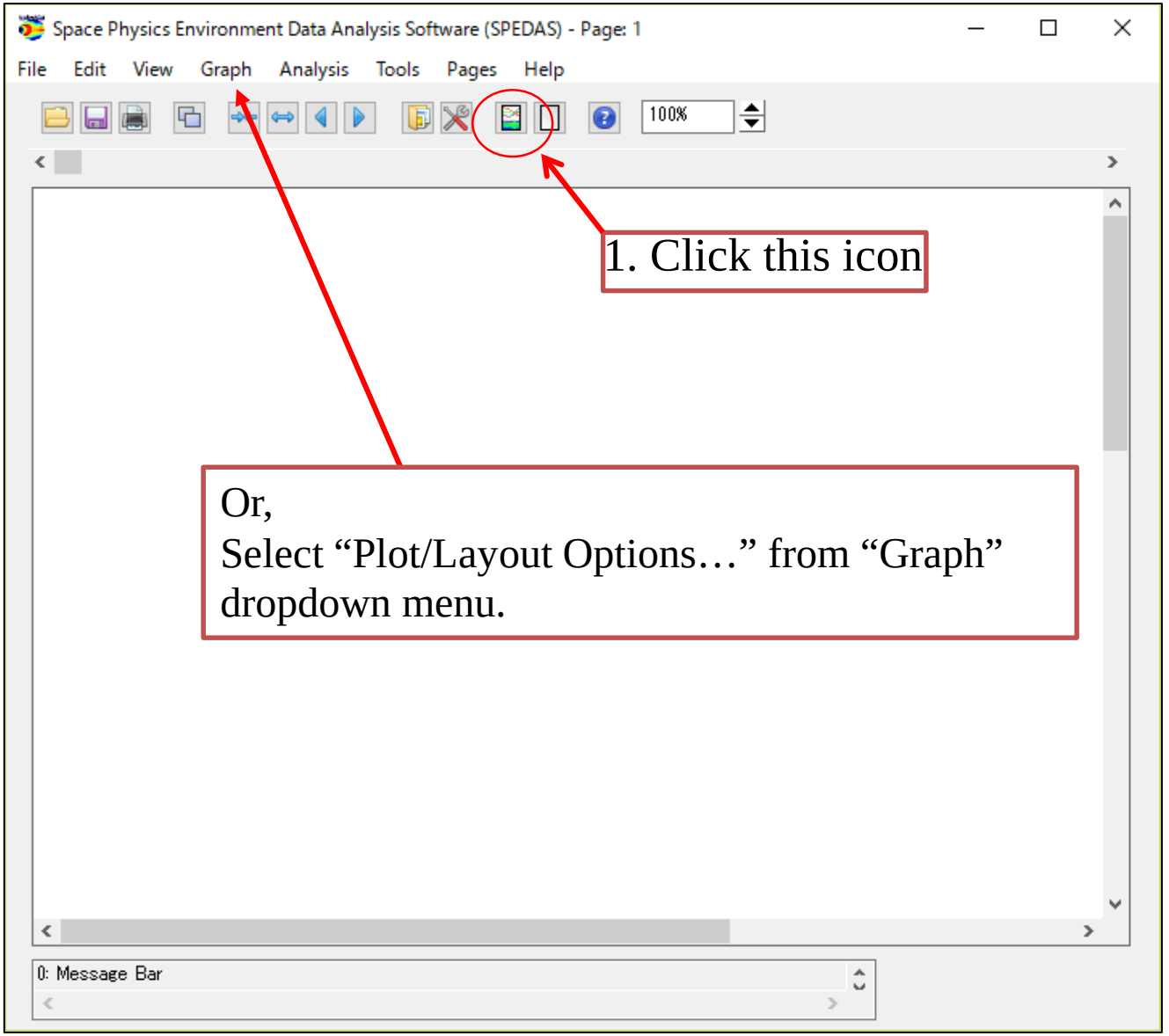


1. Data was loaded successfully!

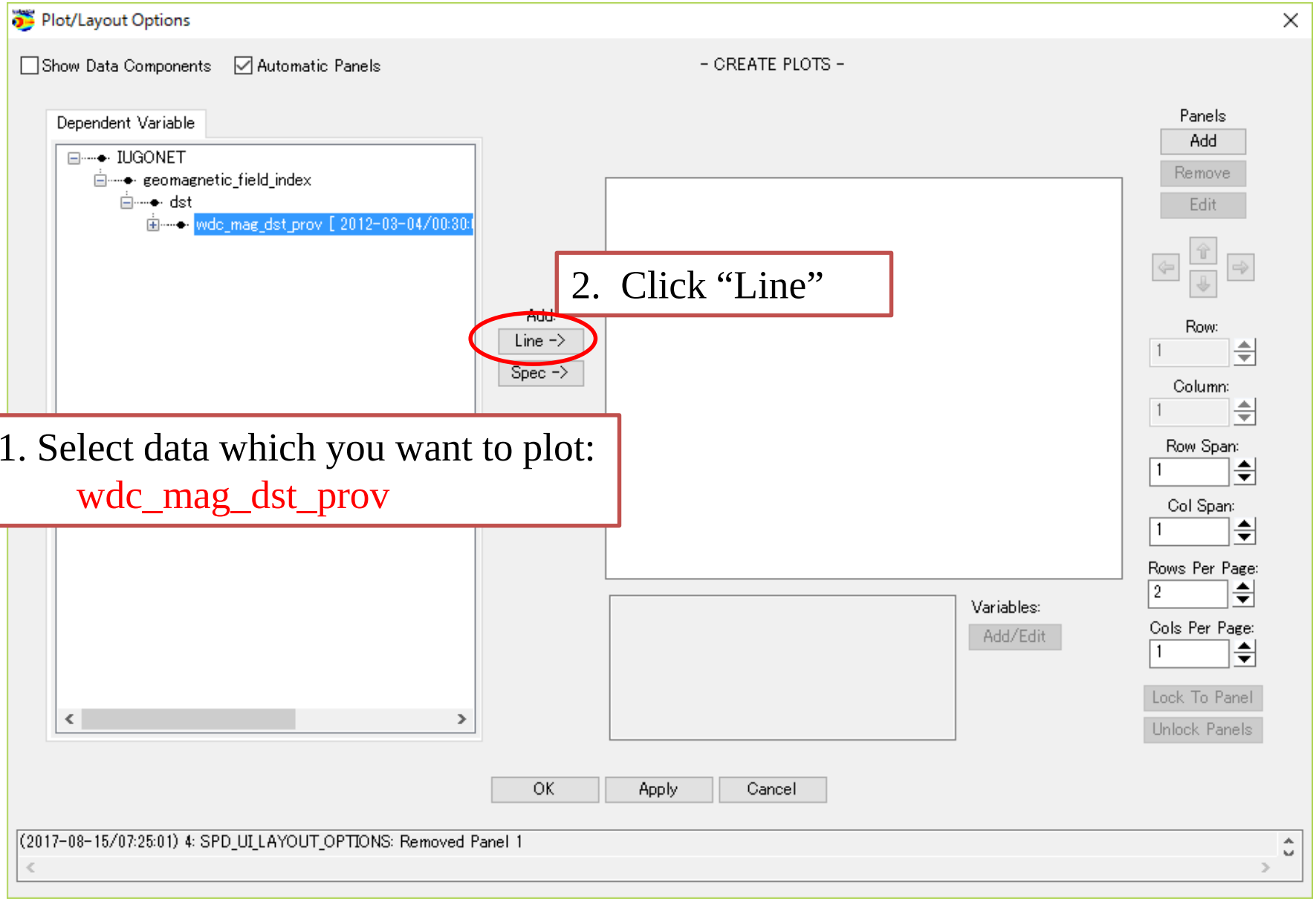
2. Click“Done”

GUI Basic Operation

Lesson:
Plot data



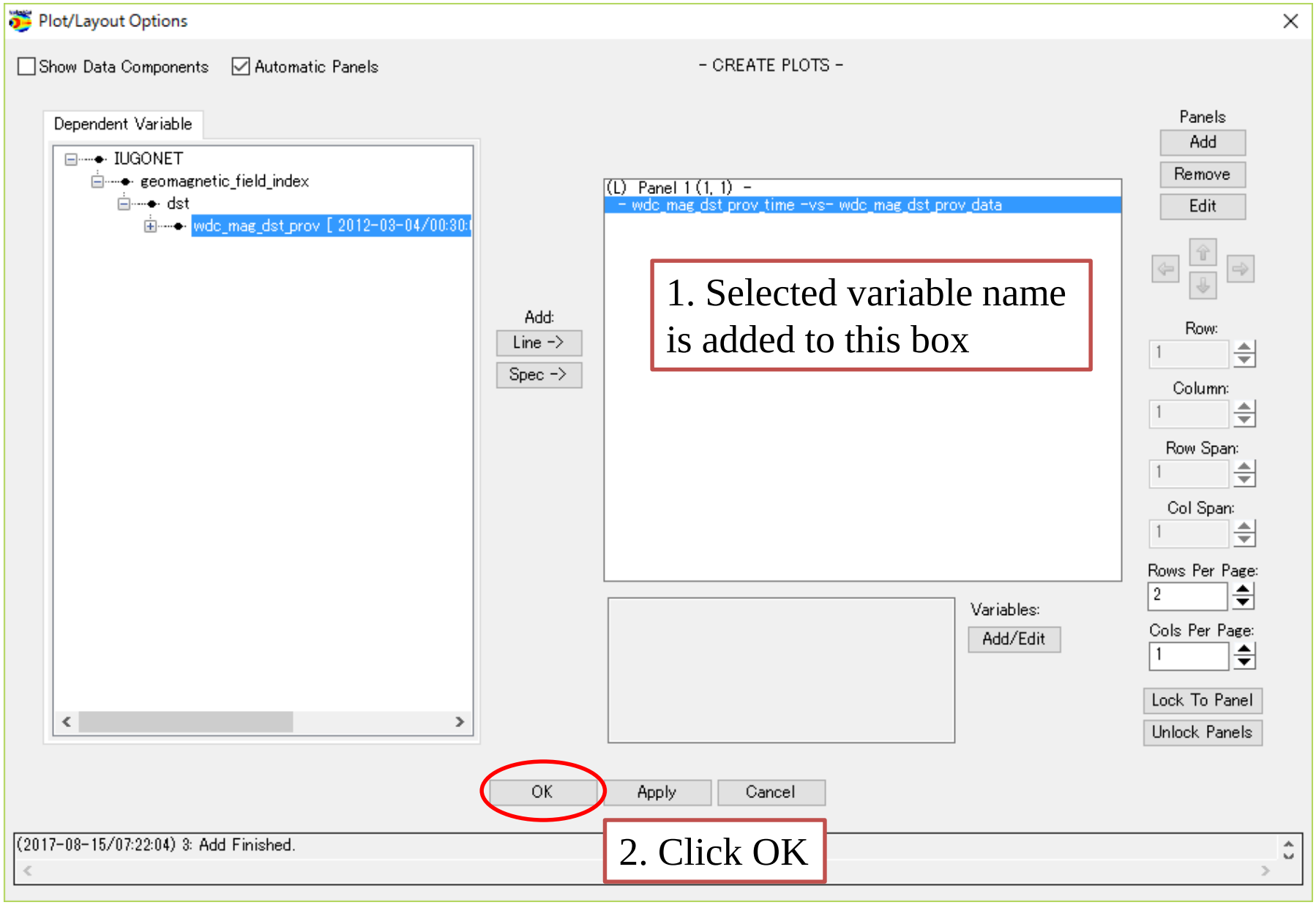
GUI Basic Operation



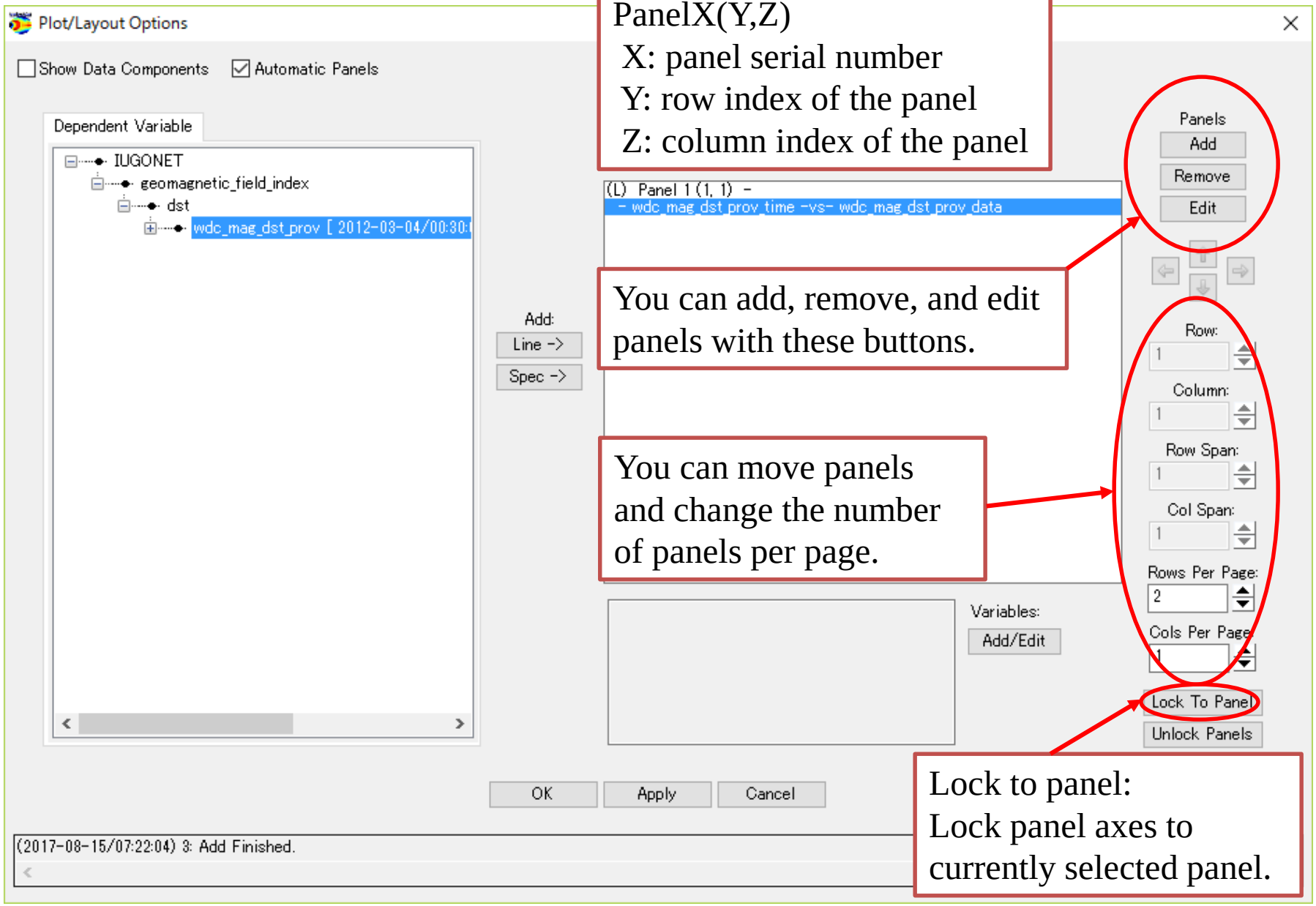
1. Select data which you want to plot:
   wdc_mag_dst_prov

2. Click “Line”

GUI Basic Operation



GUI Basic Operation



PanelX(Y,Z)
X: panel serial number
Y: row index of the panel
Z: column index of the panel

You can add, remove, and edit panels with these buttons.

You can move panels and change the number of panels per page.

Lock to panel:
Lock panel axes to currently selected panel.

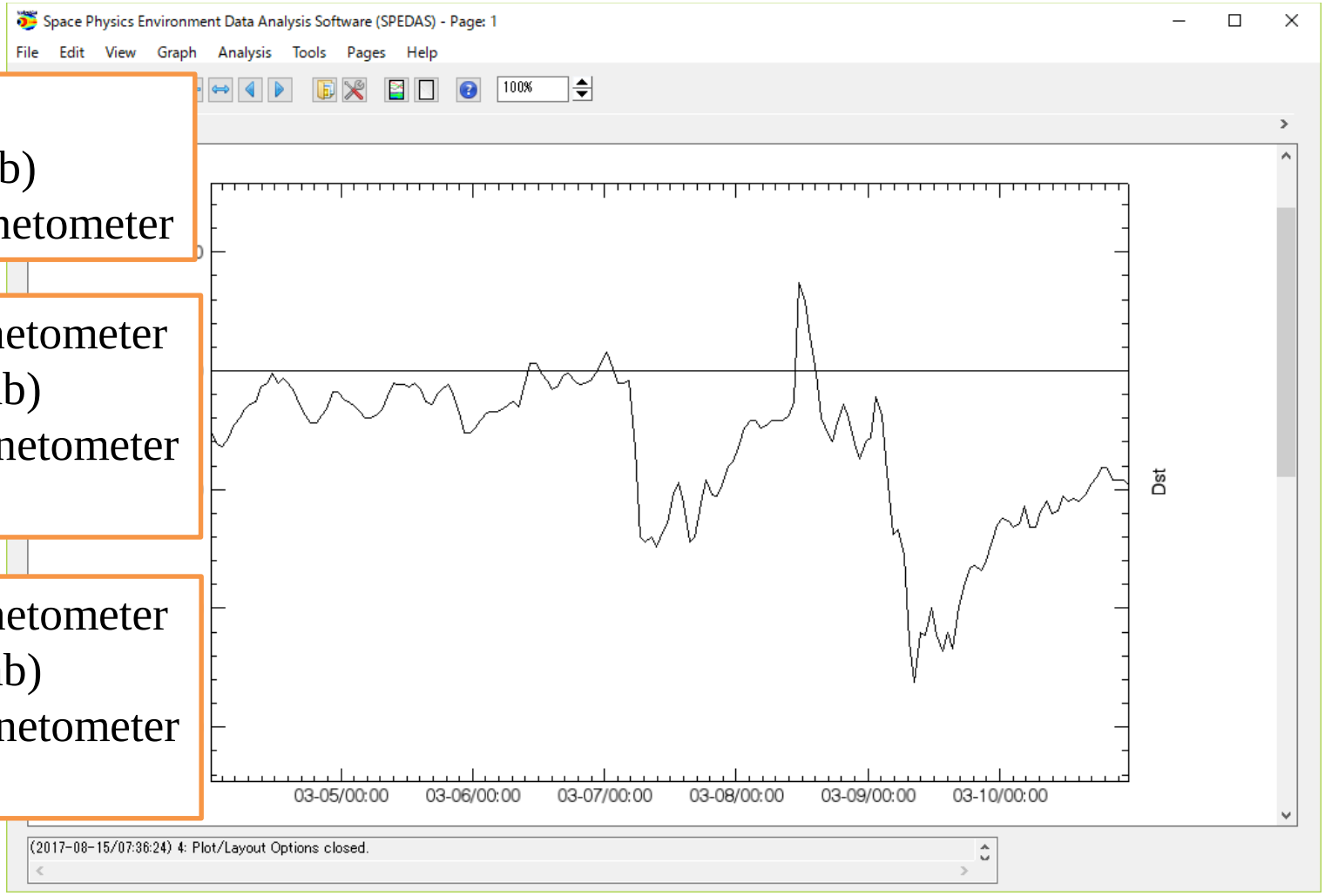
GUI Basic Operation

Try:
Load other three data

AE index
(in IUGONET tab)
Instrument: magnetometer

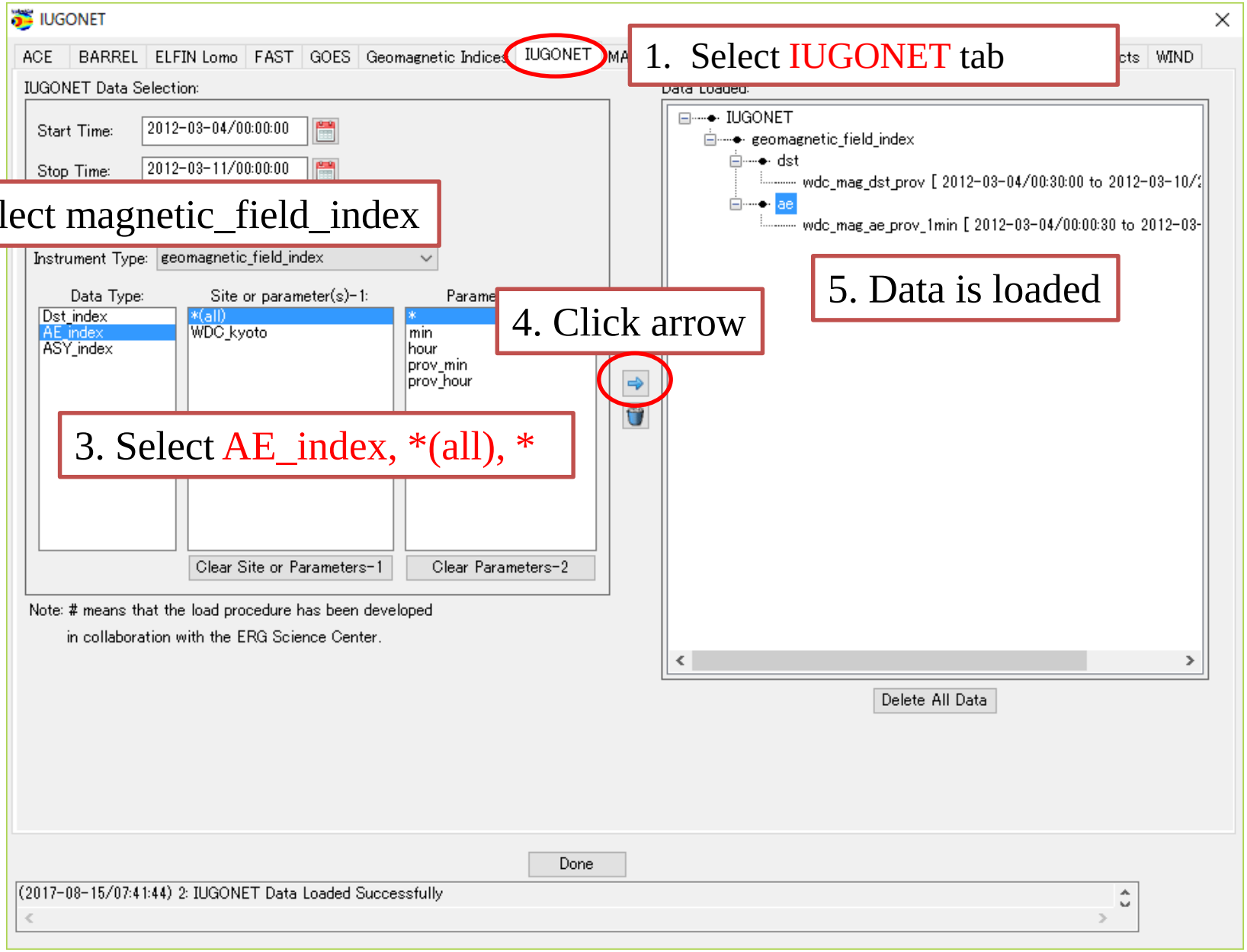
MAGDAS magnetometer
(in IUGONET tab)
Instrument: magnetometer
Station: HER

MAGDAS magnetometer
(in IUGONET tab)
Instrument: magnetometer
Station: ASB



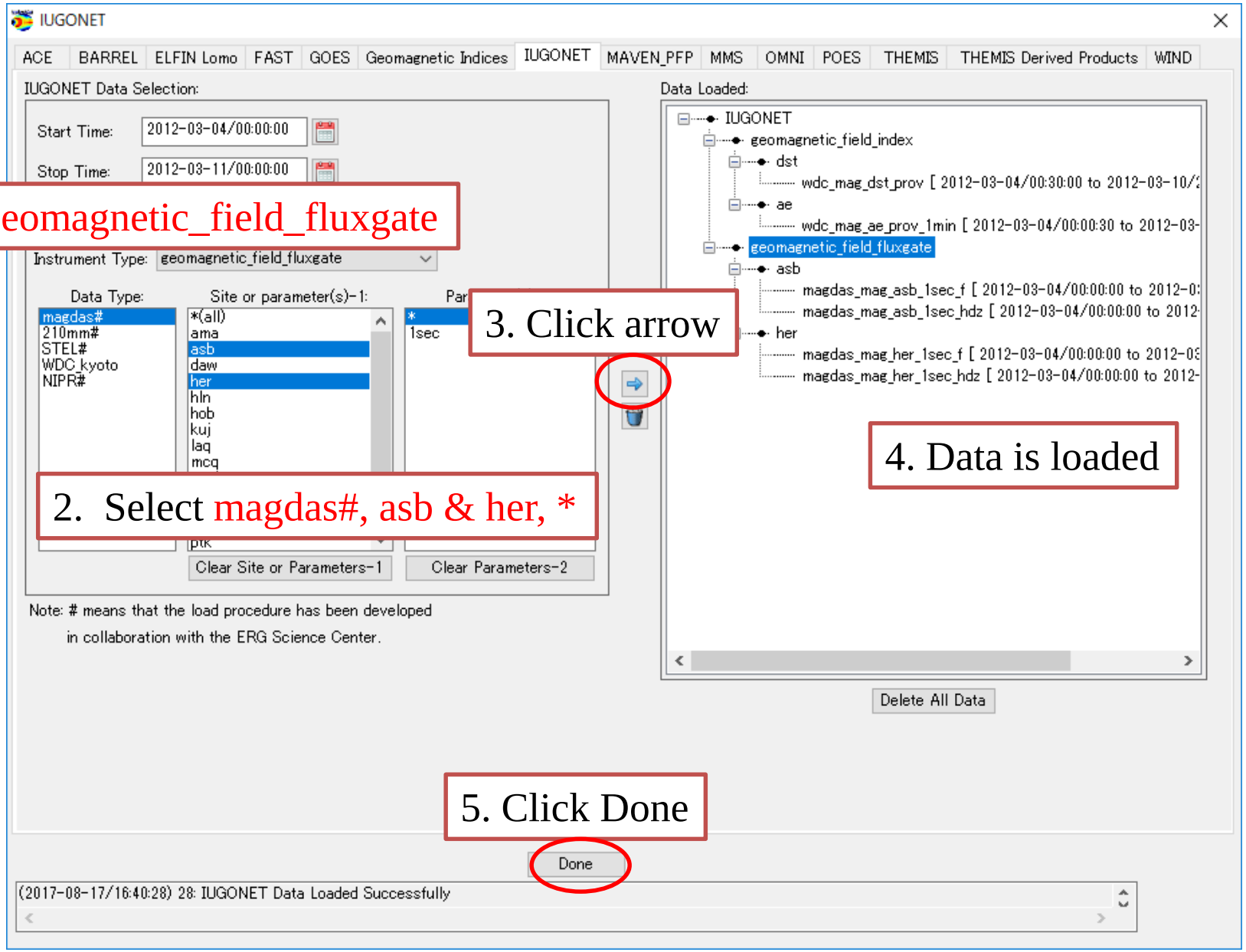
GUI Basic Operation

Answer



GUI Basic Operation

Answer



1. Select geomagnetic_field_fluxgate

2. Select magdas#, asb & her, *

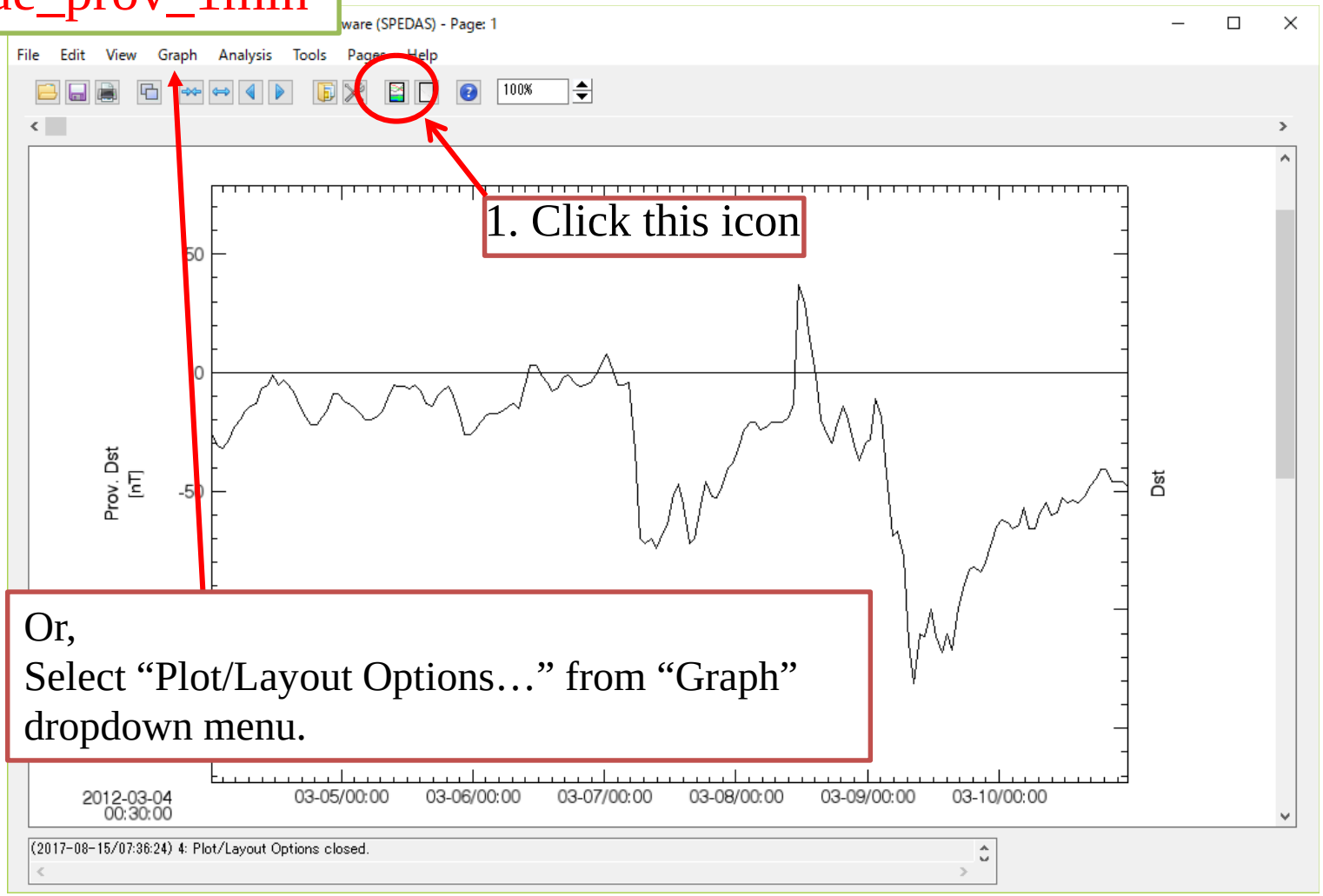
3. Click arrow

4. Data is loaded

5. Click Done

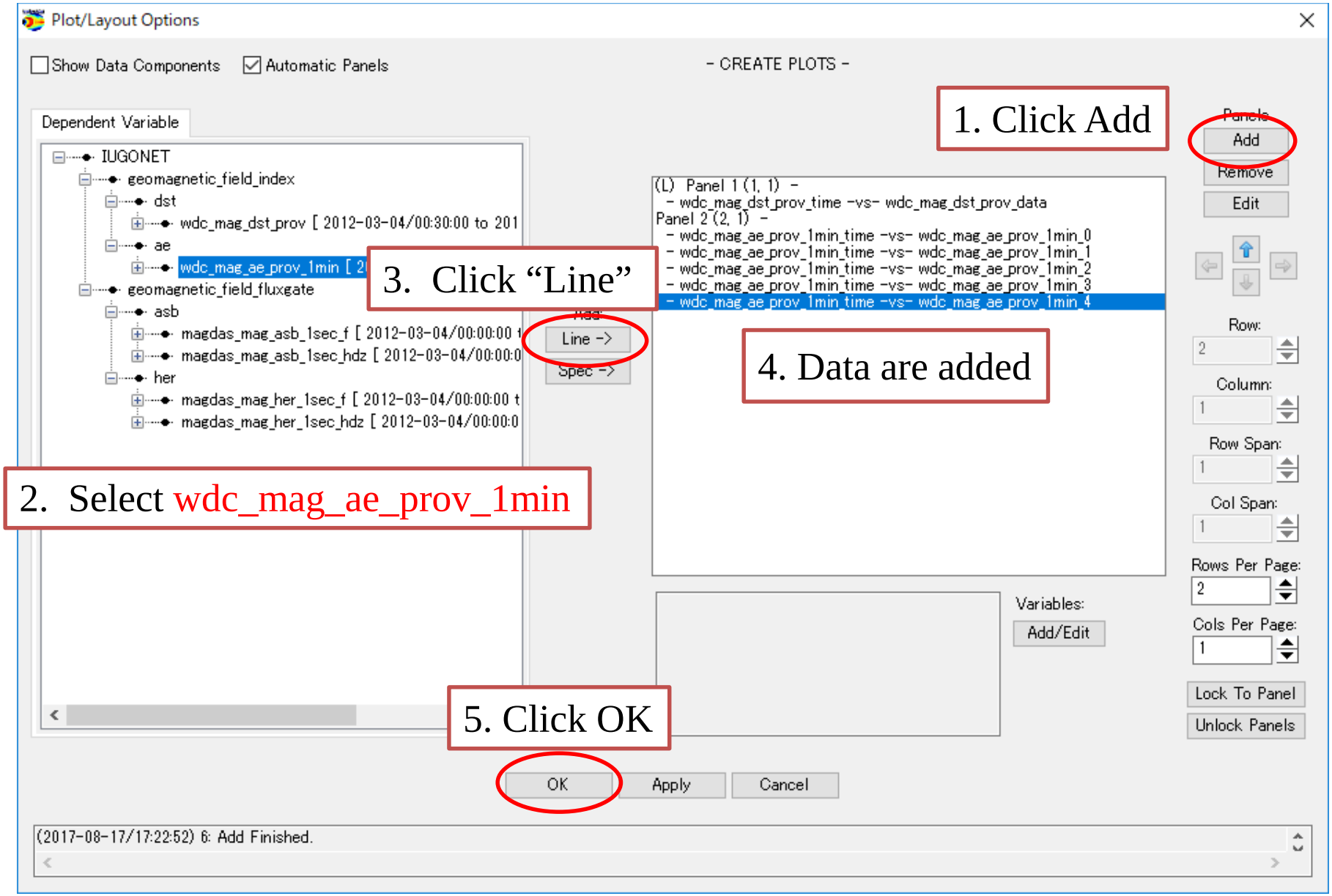
GUI Basic Operation

Lesson:
Add Plot
wdc_mag_ae_prov_1min



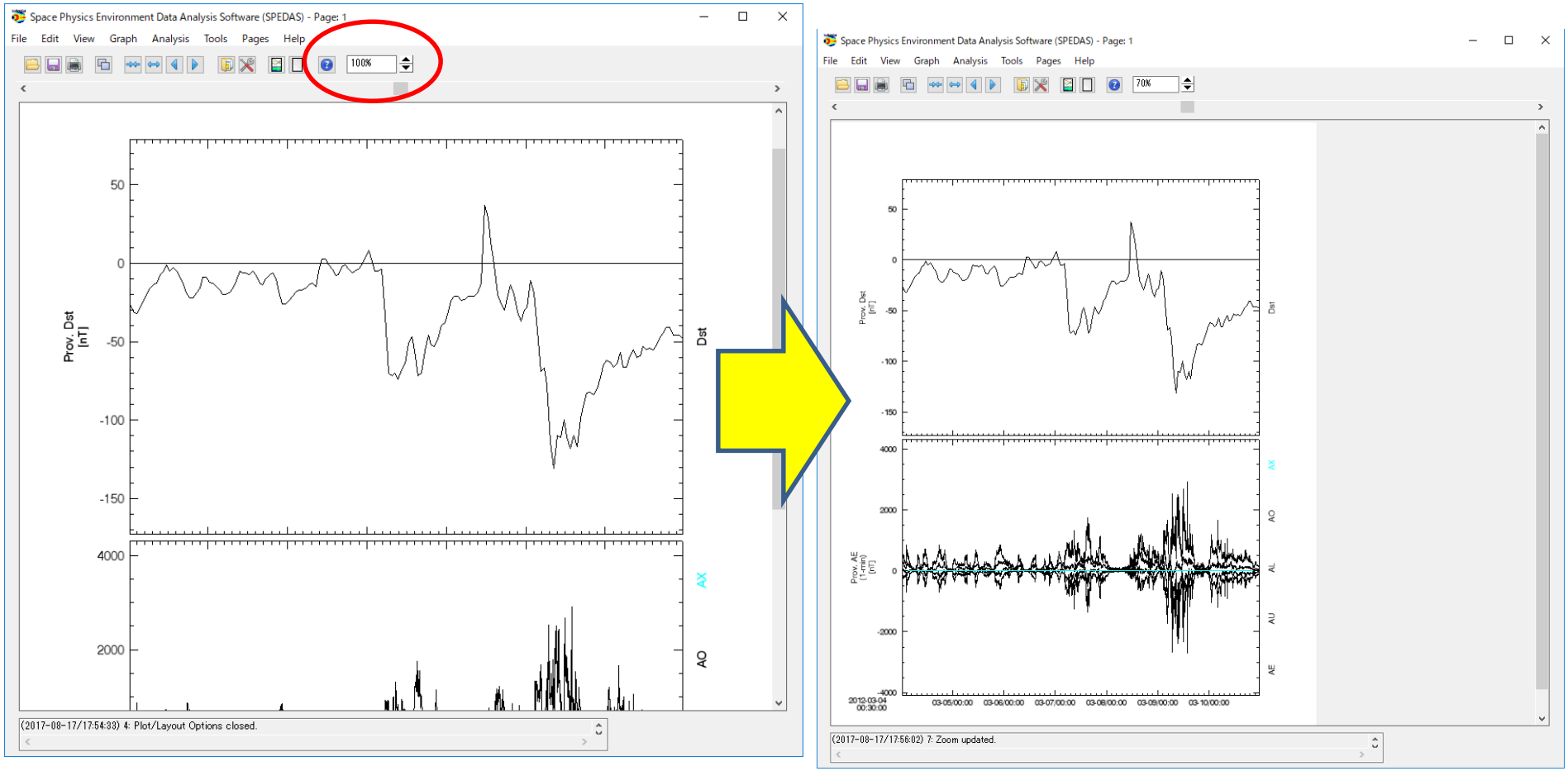
Or,
Select “Plot/Layout Options…” from “Graph” dropdown menu.

GUI Basic Operation



GUI Basic Operation

1. Click black triangles

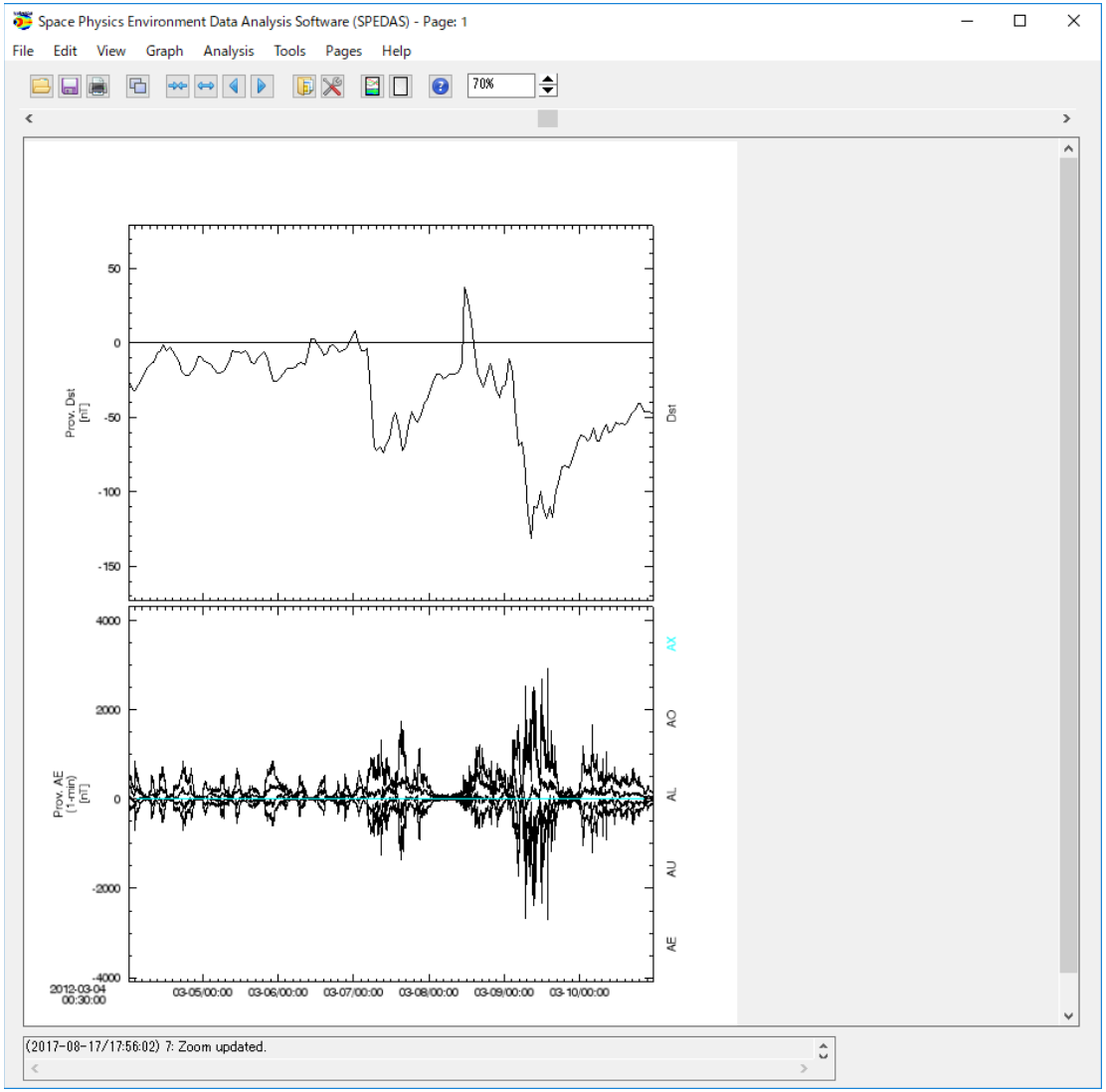


GUI Basic Operation

Try:
Plot other two data

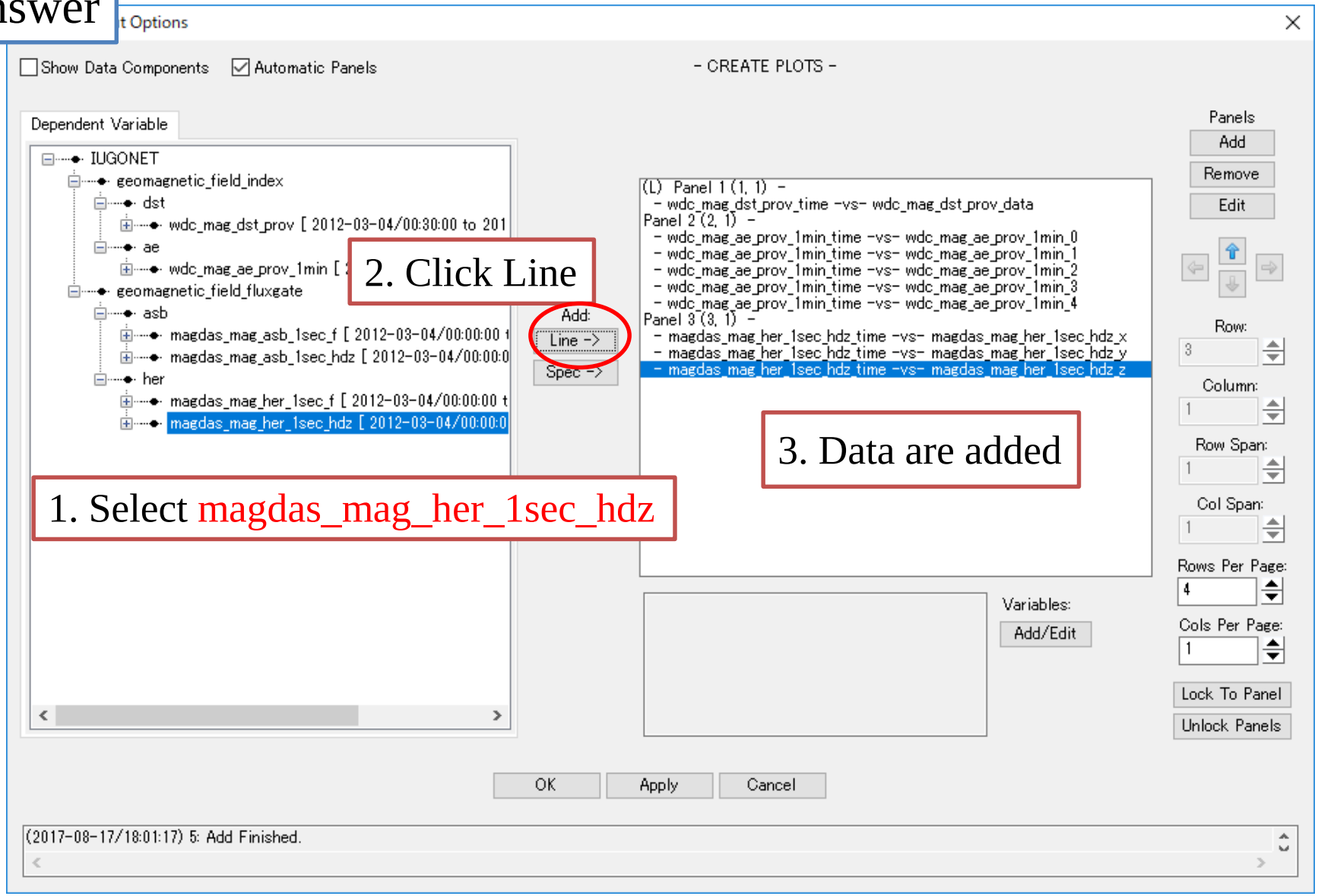
magdas_mag_her_1sec_hdz

magdas_mag_asb_1sec_hdz



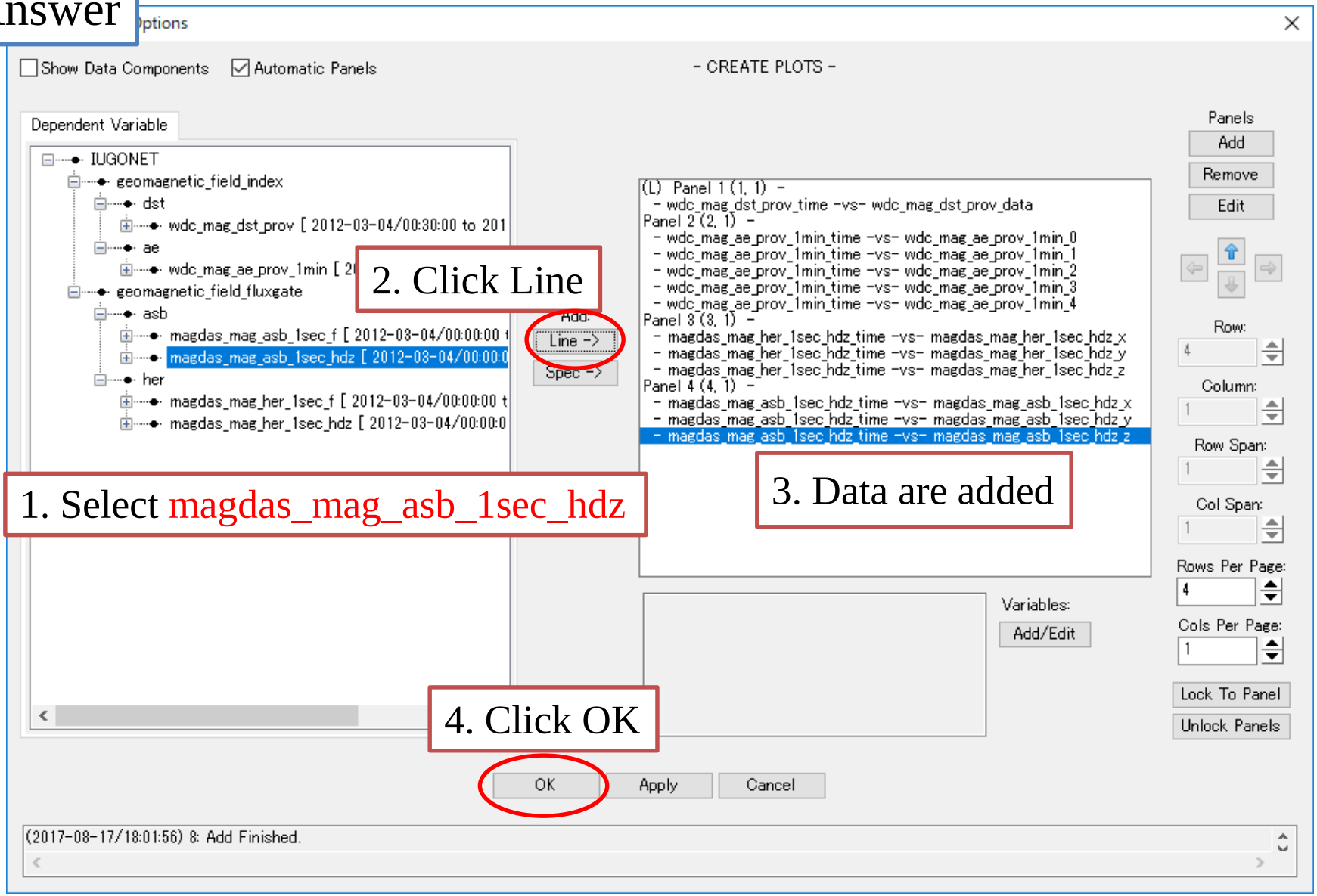
GUI Basic Operation

Answer

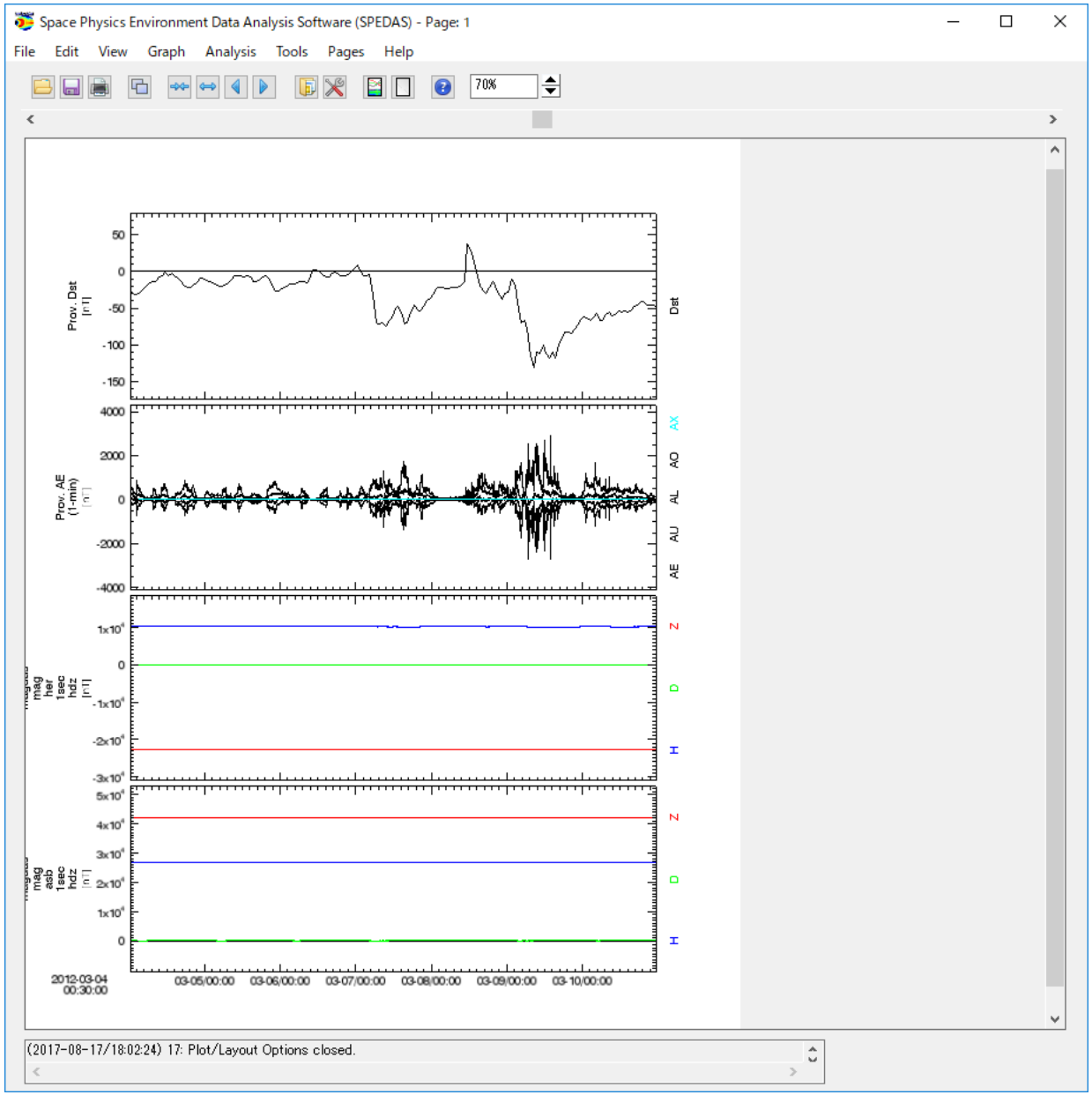


GUI Basic Operation

Answer



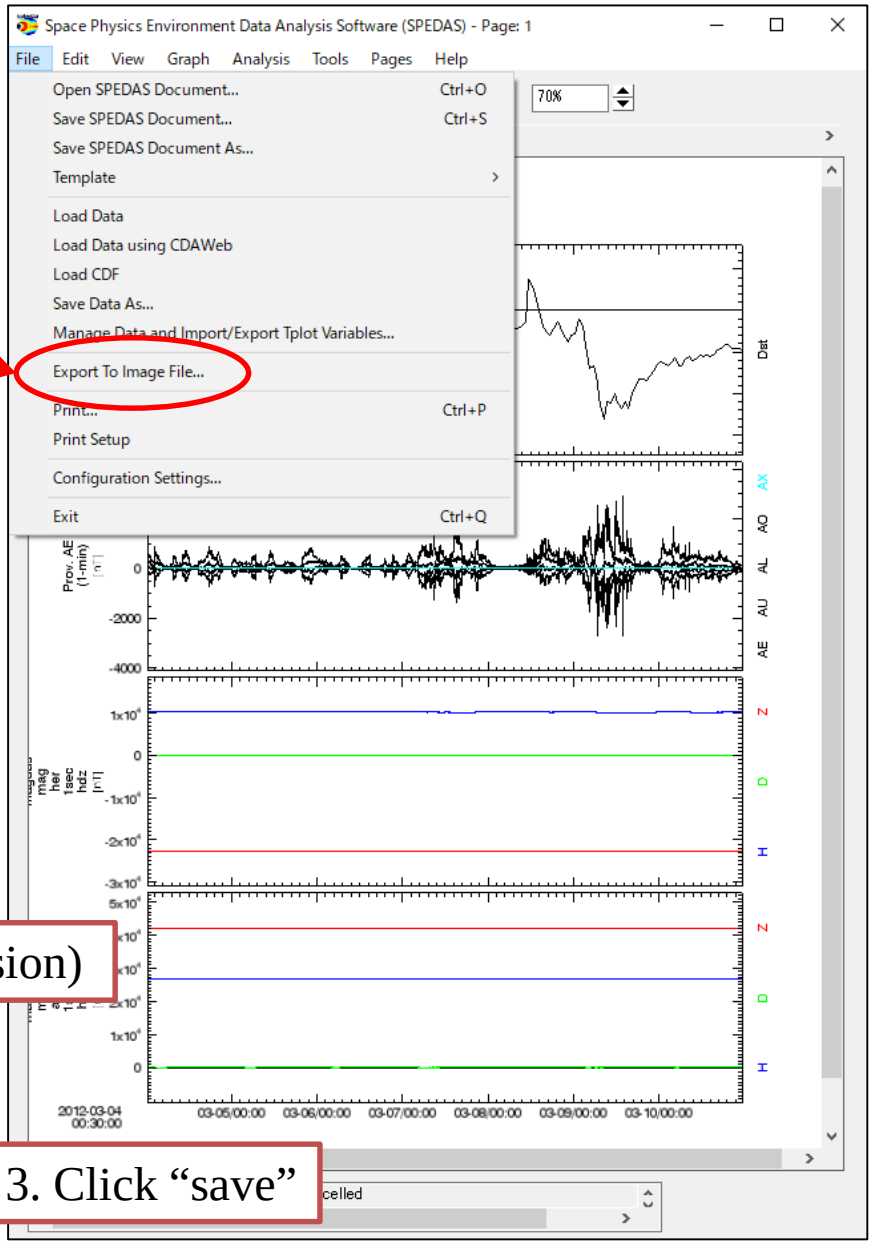
GUI Basic Operation

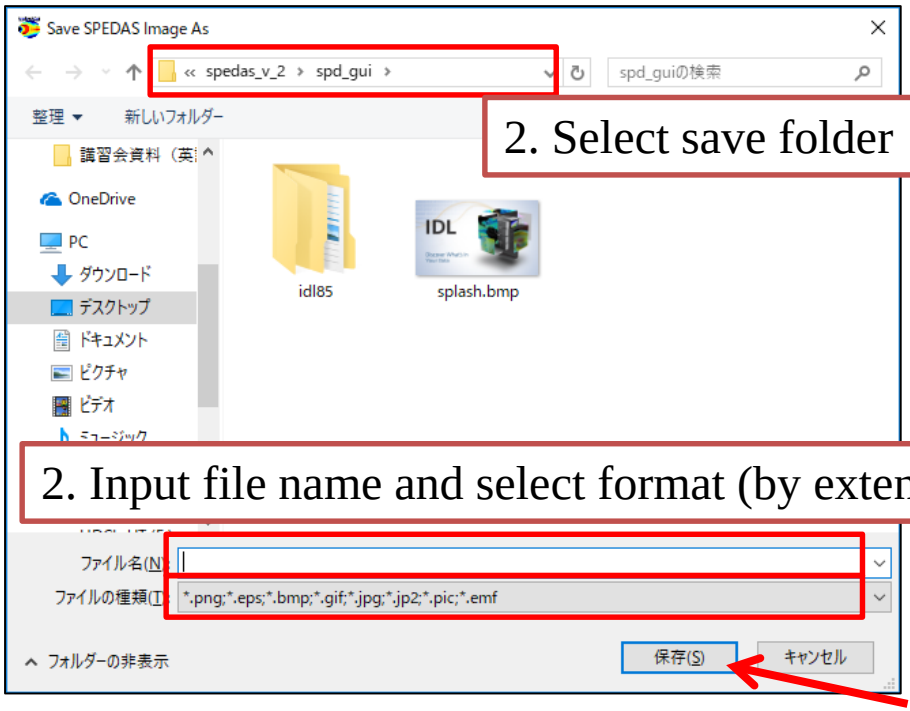


GUI Basic Operation

Lesson:
Save plot as figure

1. Select
File – Export To Image File





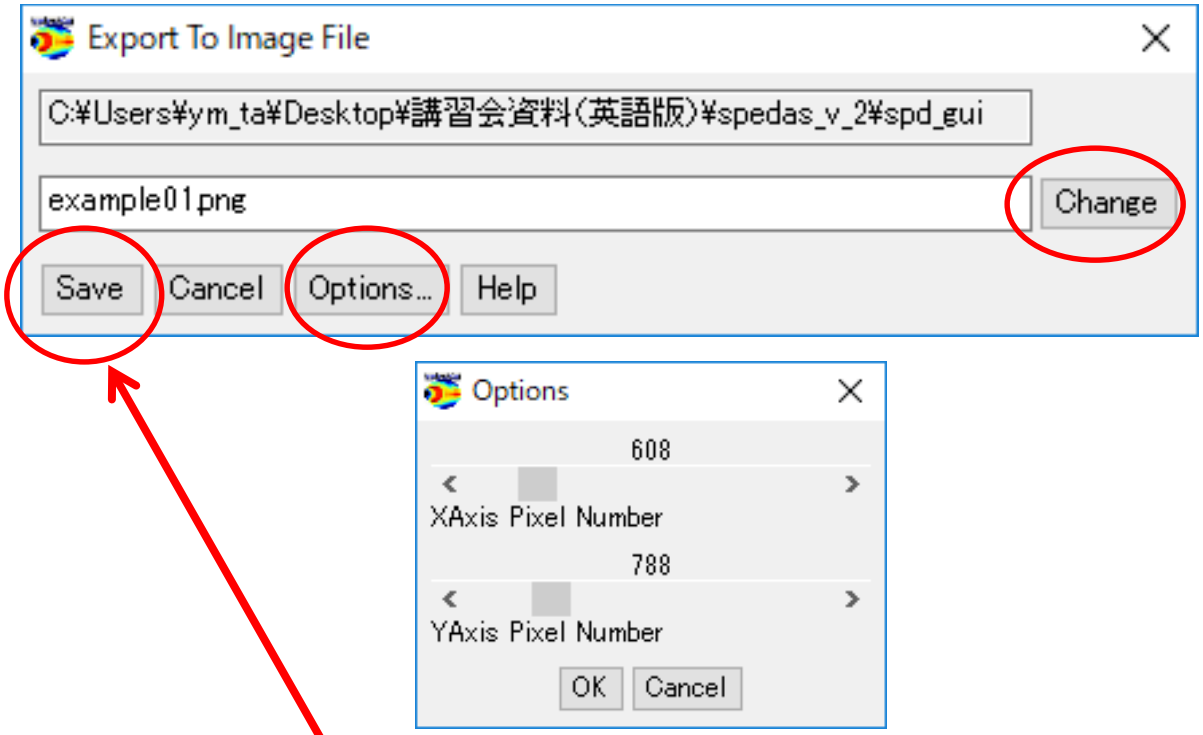
2. Select save folder

2. Input file name and select format (by extension)

3. Click “save”

GUI Basic Operation

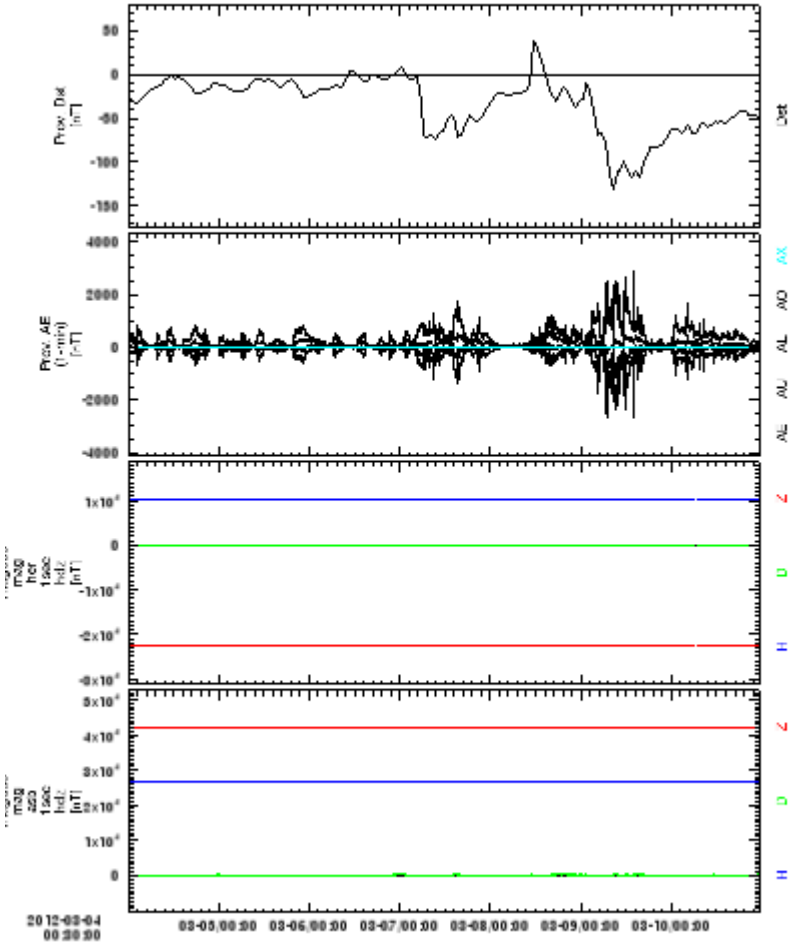
Confirmation



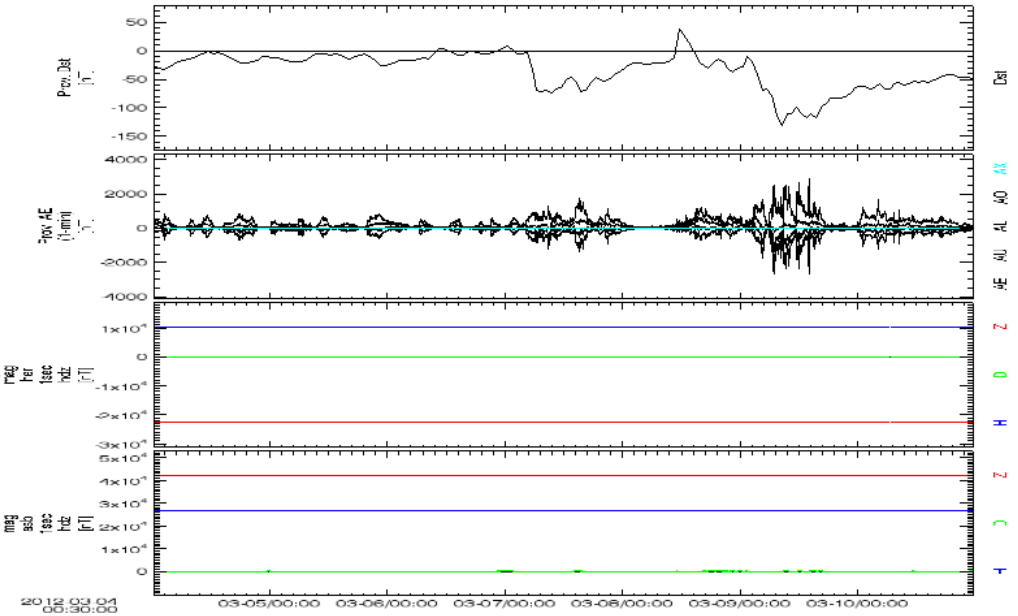
Back to previous

Click “Save”

GUI Basic Operation



X pixel 428, Y pixel 554

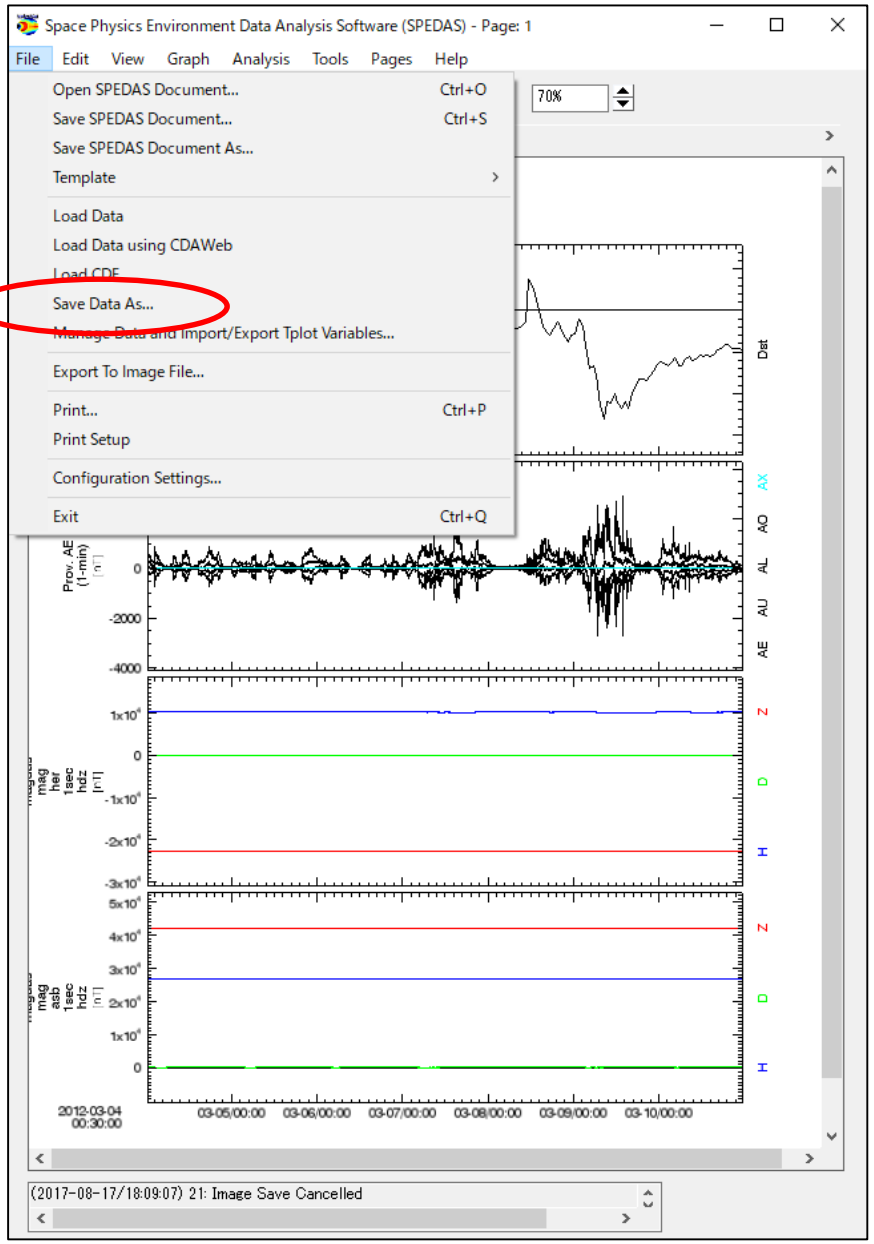


X pixel 856, Y pixel 554 (65%)

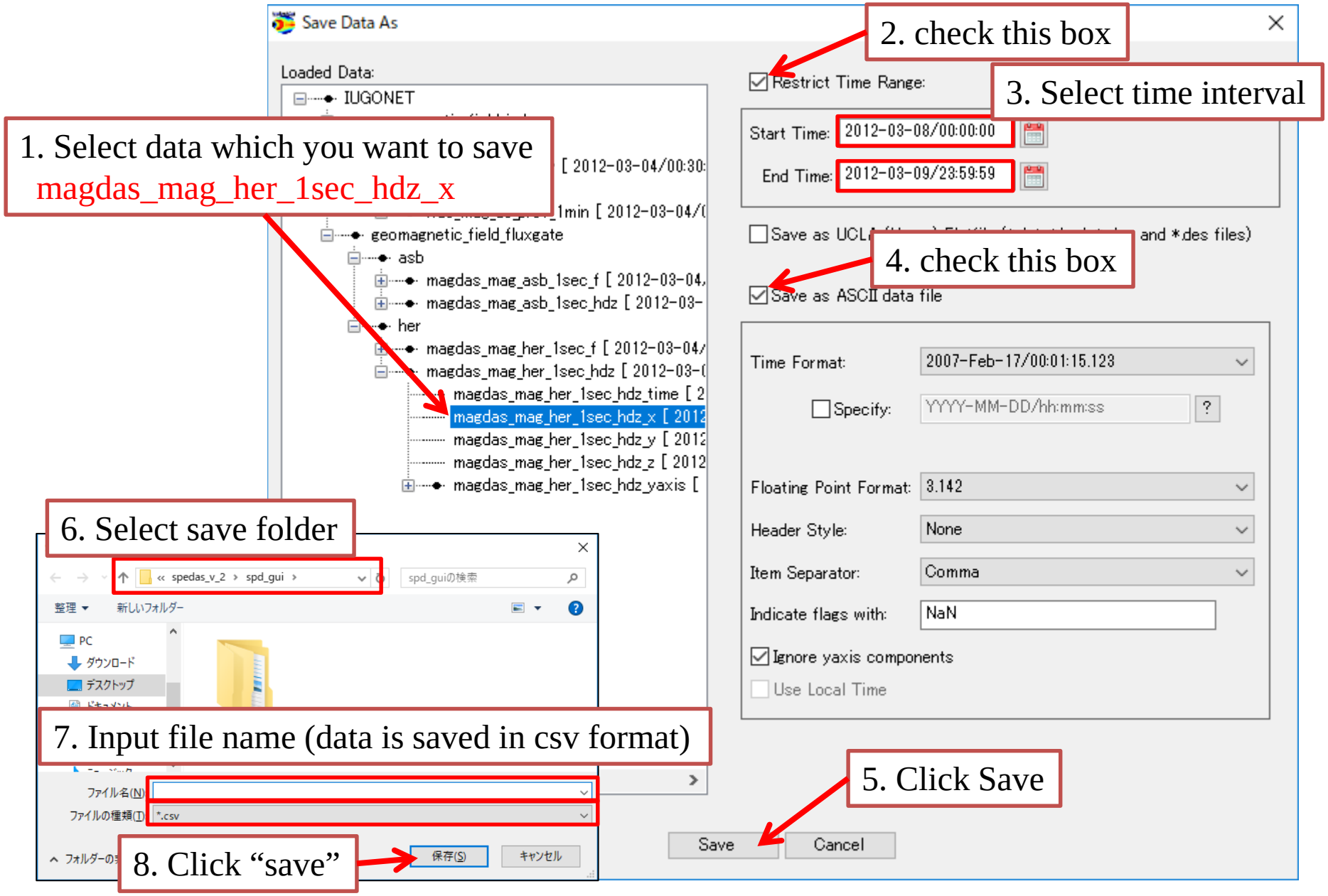
GUI Basic Operation

Lesson:
Save data as ascii

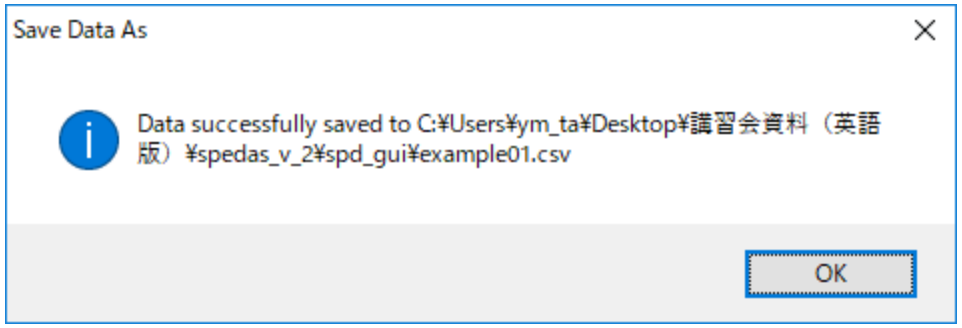
1. Select
File – Save Data As



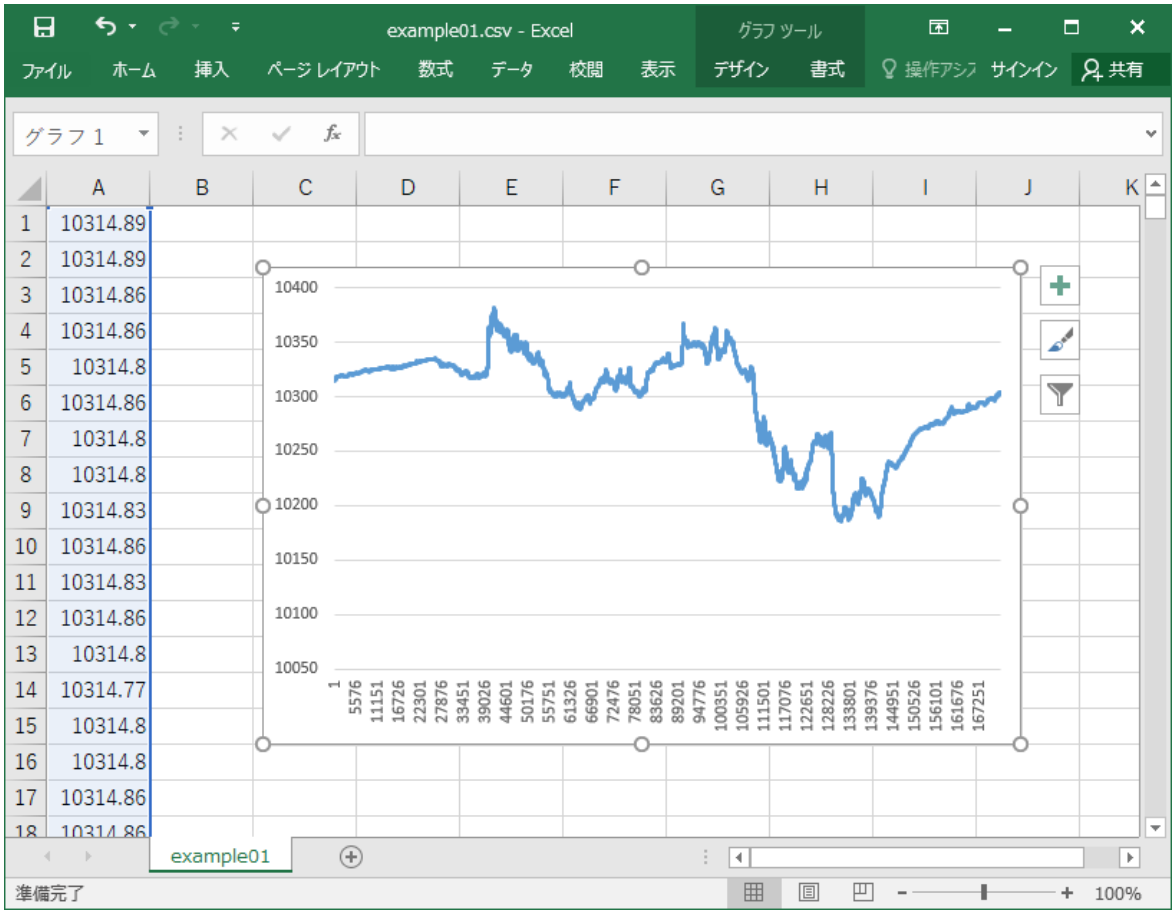
GUI Basic Operation



GUI Basic Operation



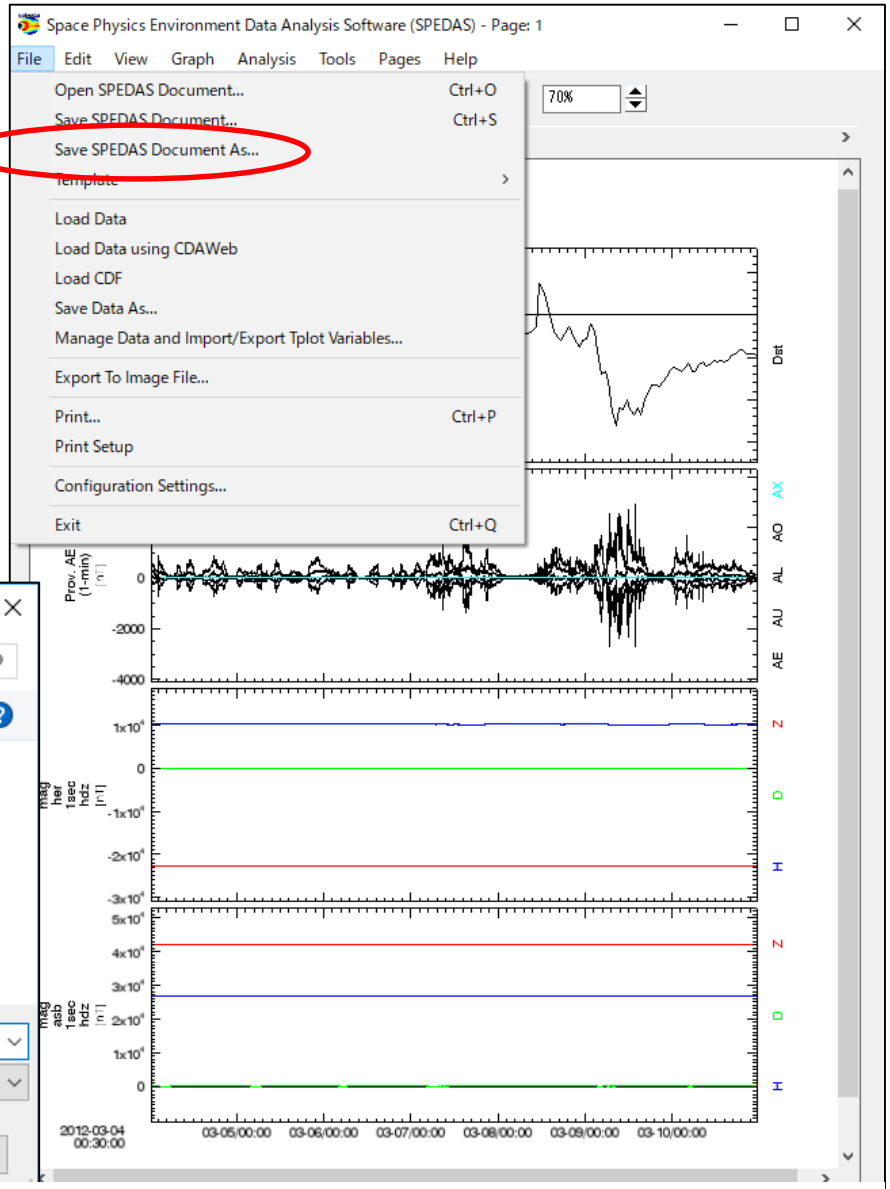
An ascii data file was successfully saved!!!



GUI Basic Operation

Lesson:
Dump your workspace

1. Select
File – Save SPEDAS Document



2. Select save folder

3. Input file name

4. Click “save”

※ SPEDAS Document is written in XML format

Coffee Break…

IUGONET

超高層大気長期変動の全地球上ネットワーク観測・研究

Inter-university Upper atmospher Global Observation NETwork

Metadata DB for Upper Atmosphere

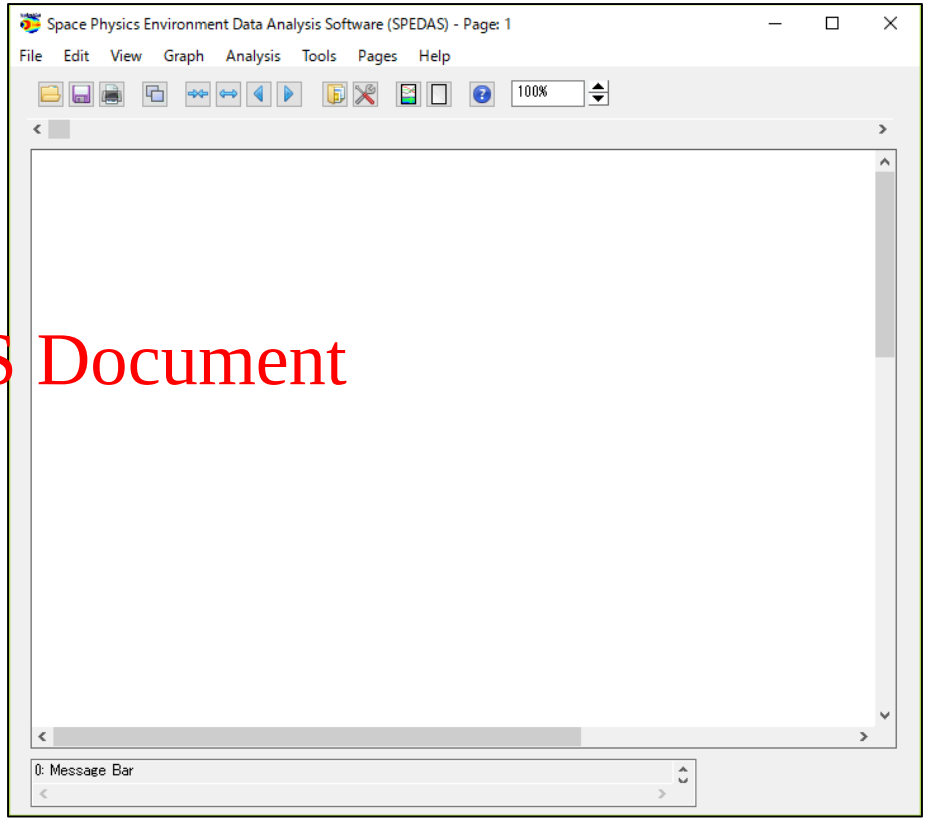
How to Use SPEDAS part2

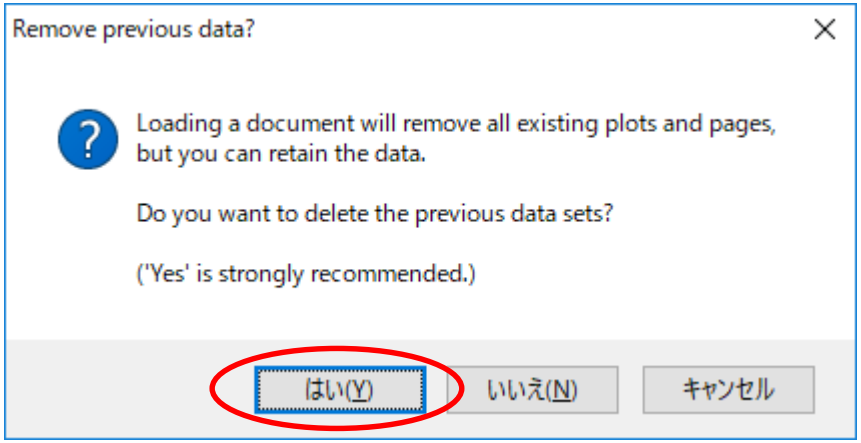
- **Restore your work**
- **Manage axis**
- **Process and data**

GUI Basic Operation

Lesson:
Restore part1 workspace

1. Exit SPEDAS
2. Run SPEDAS again
3. Select File- Open SPEDAS Document
4. Click “Yes”
5. Select the saved tgd file.

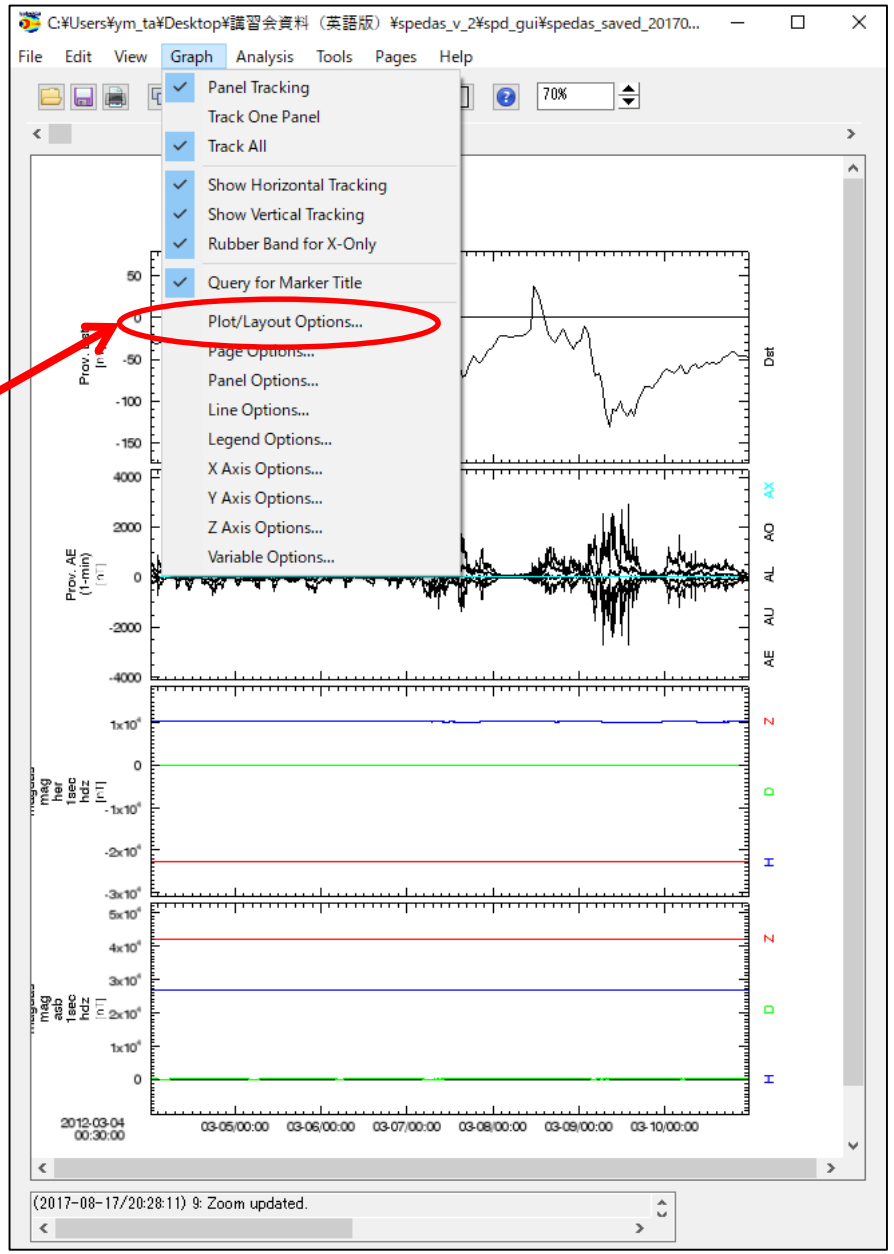




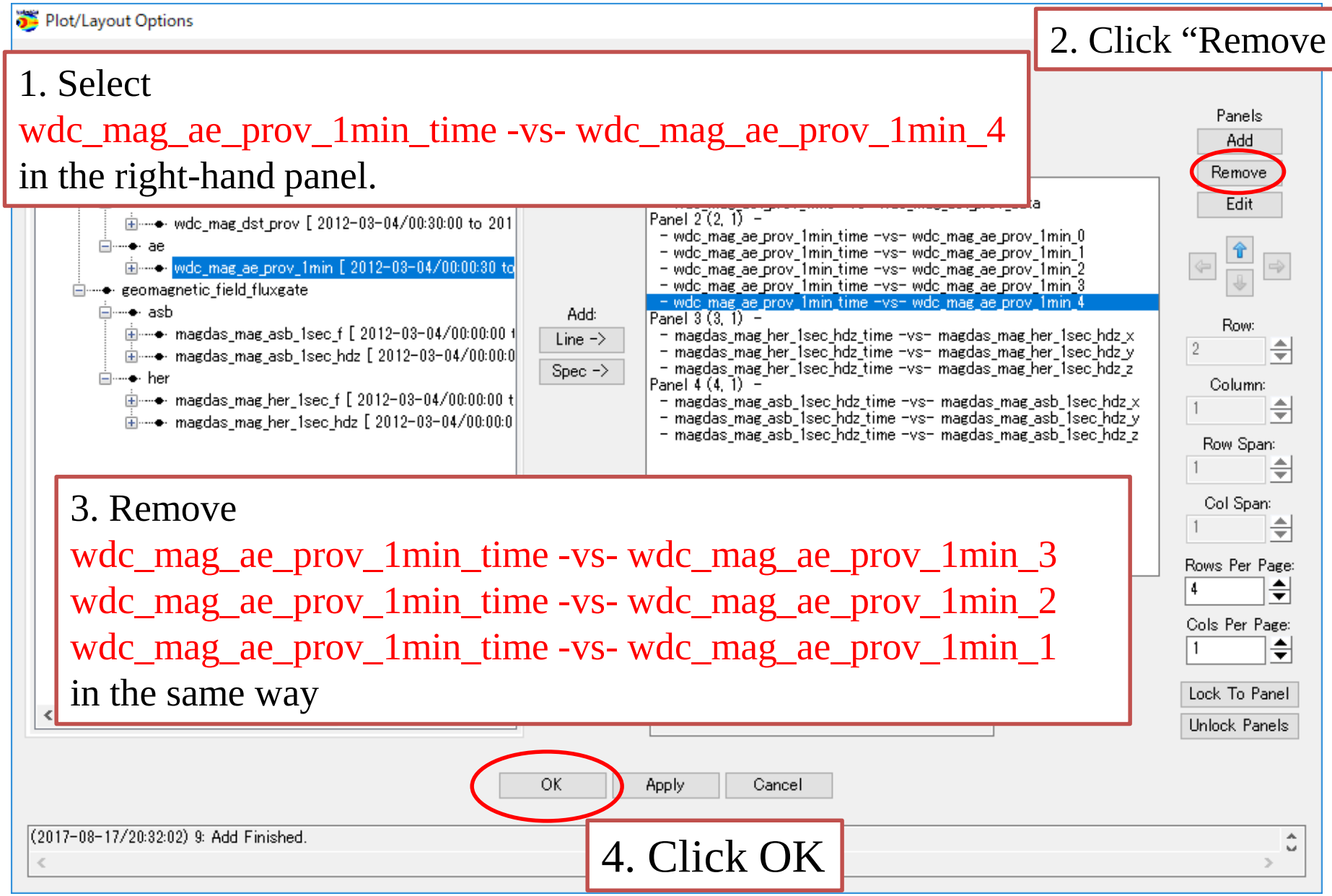
GUI Basic Operation

Lesson:
Remove plot

1. Select
Graph – Plot/Layout Options

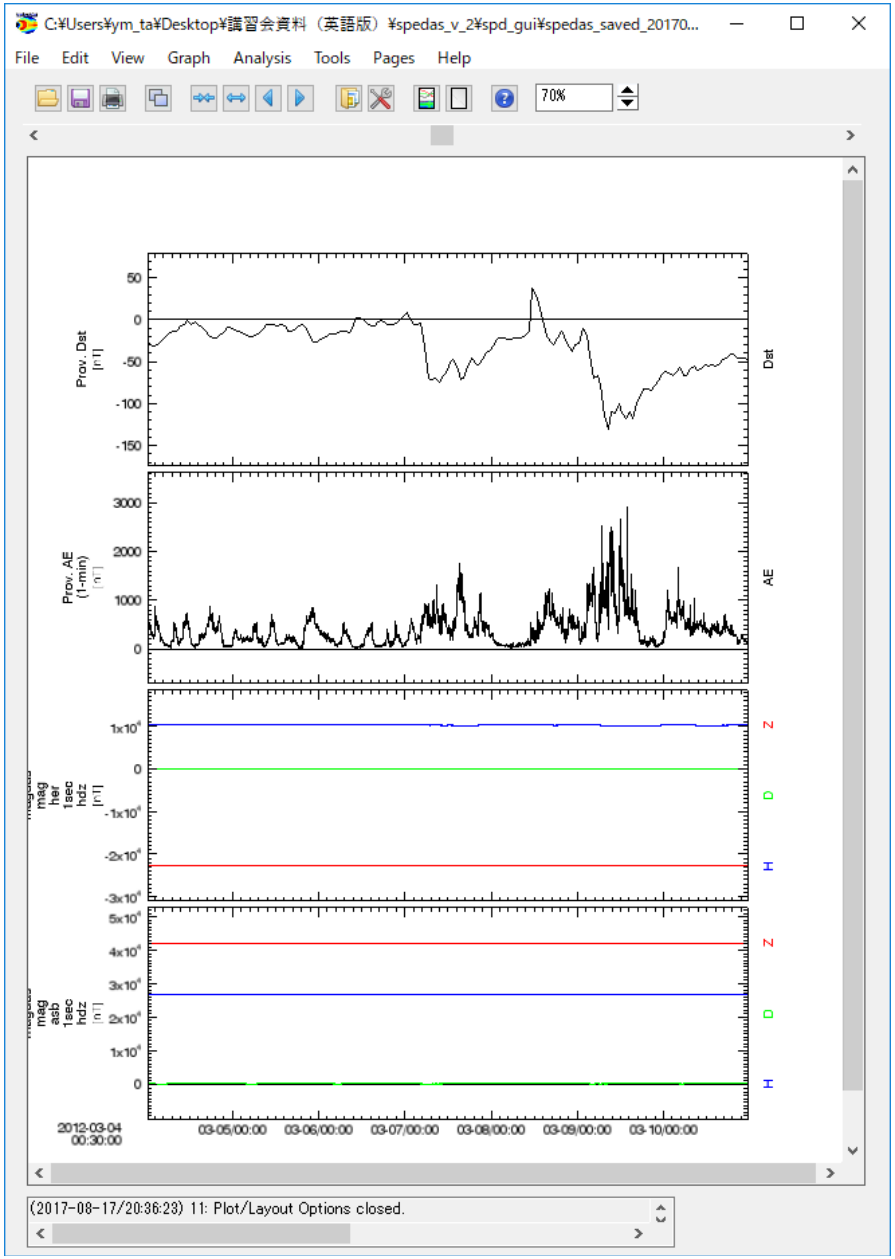


GUI Basic Operation



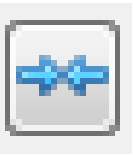
GUI Basic Operation

Result

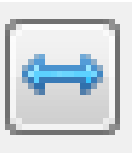


GUI Basic Operation

Lesson:
Change X range (time scale) of the plot (1)



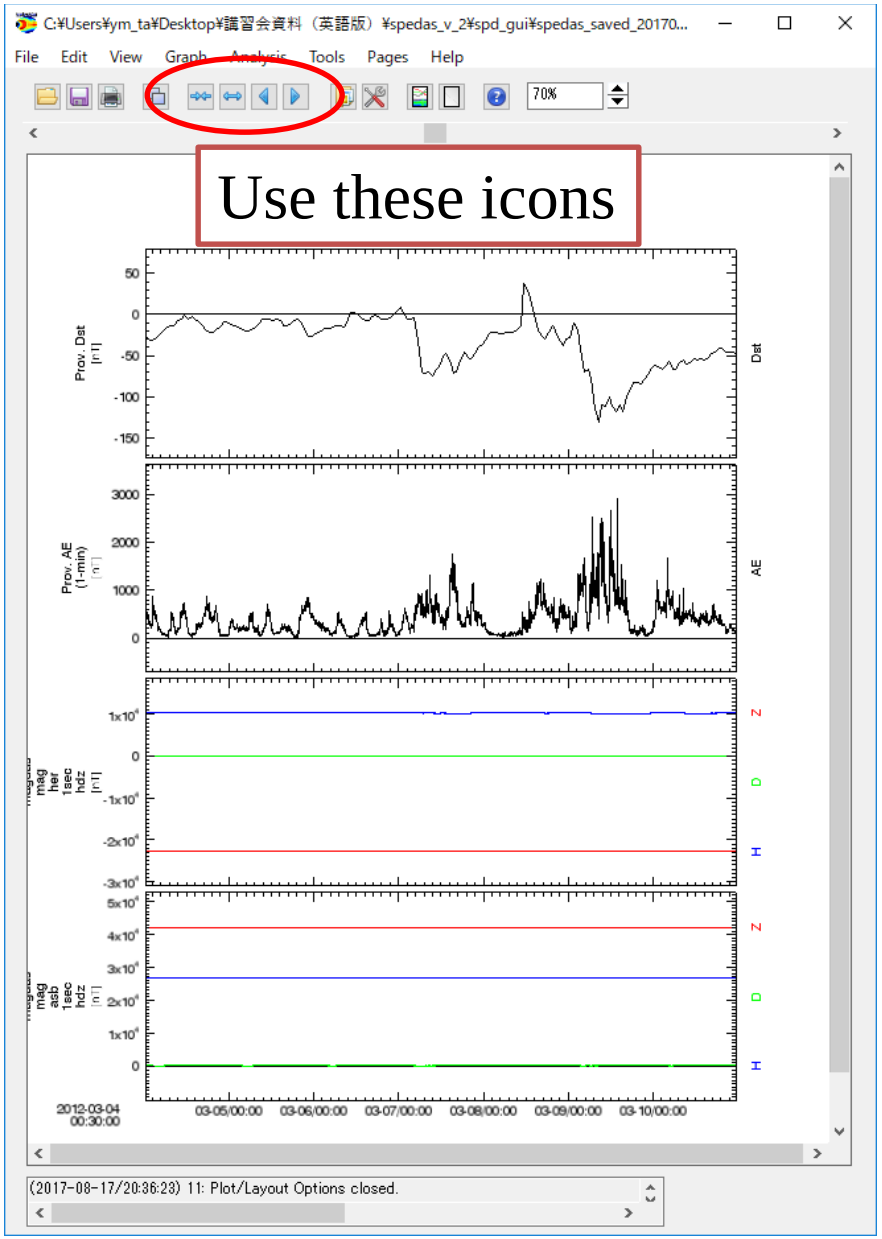
Reduces X range by major tick marker



Expands X range by major tick marker

Shift left X range by major tick marker

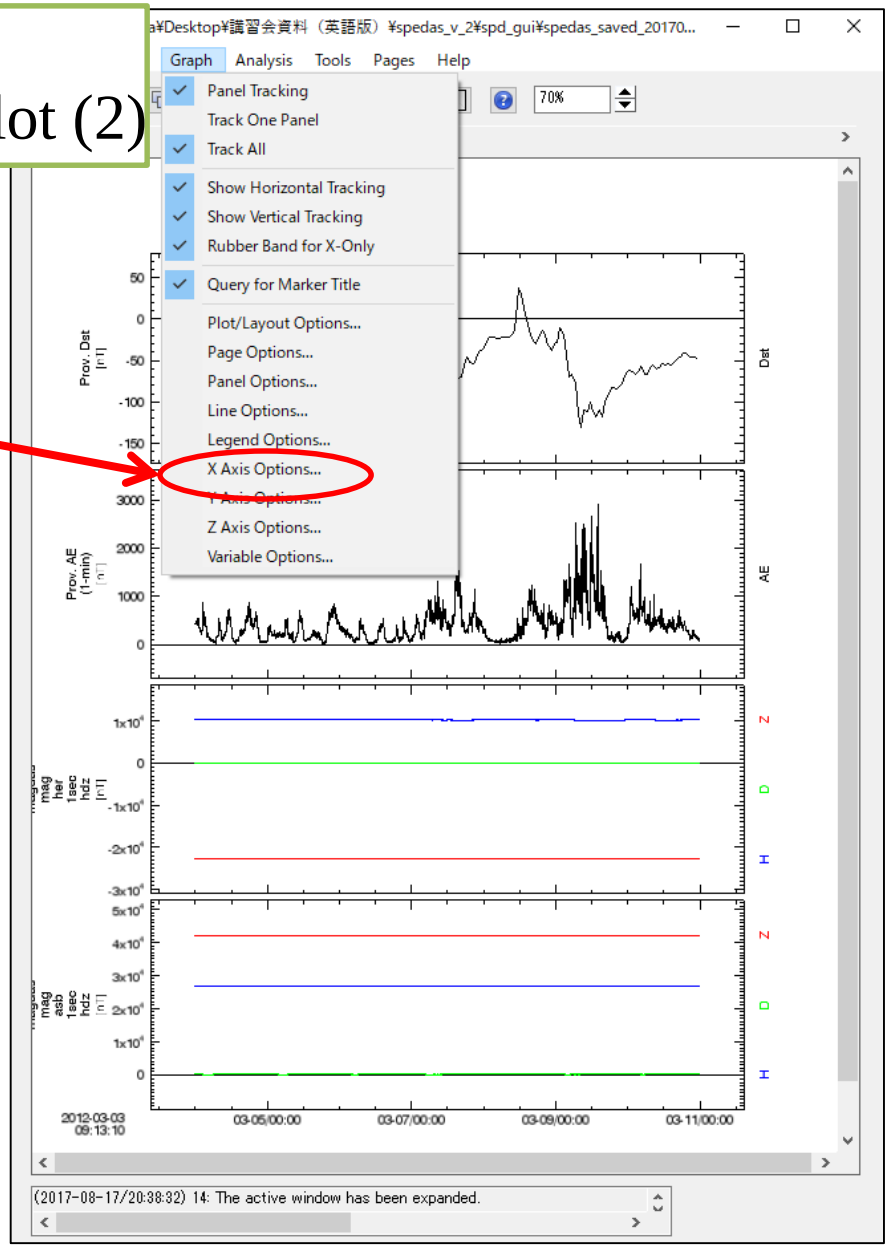
Shift right X range by major tick marker



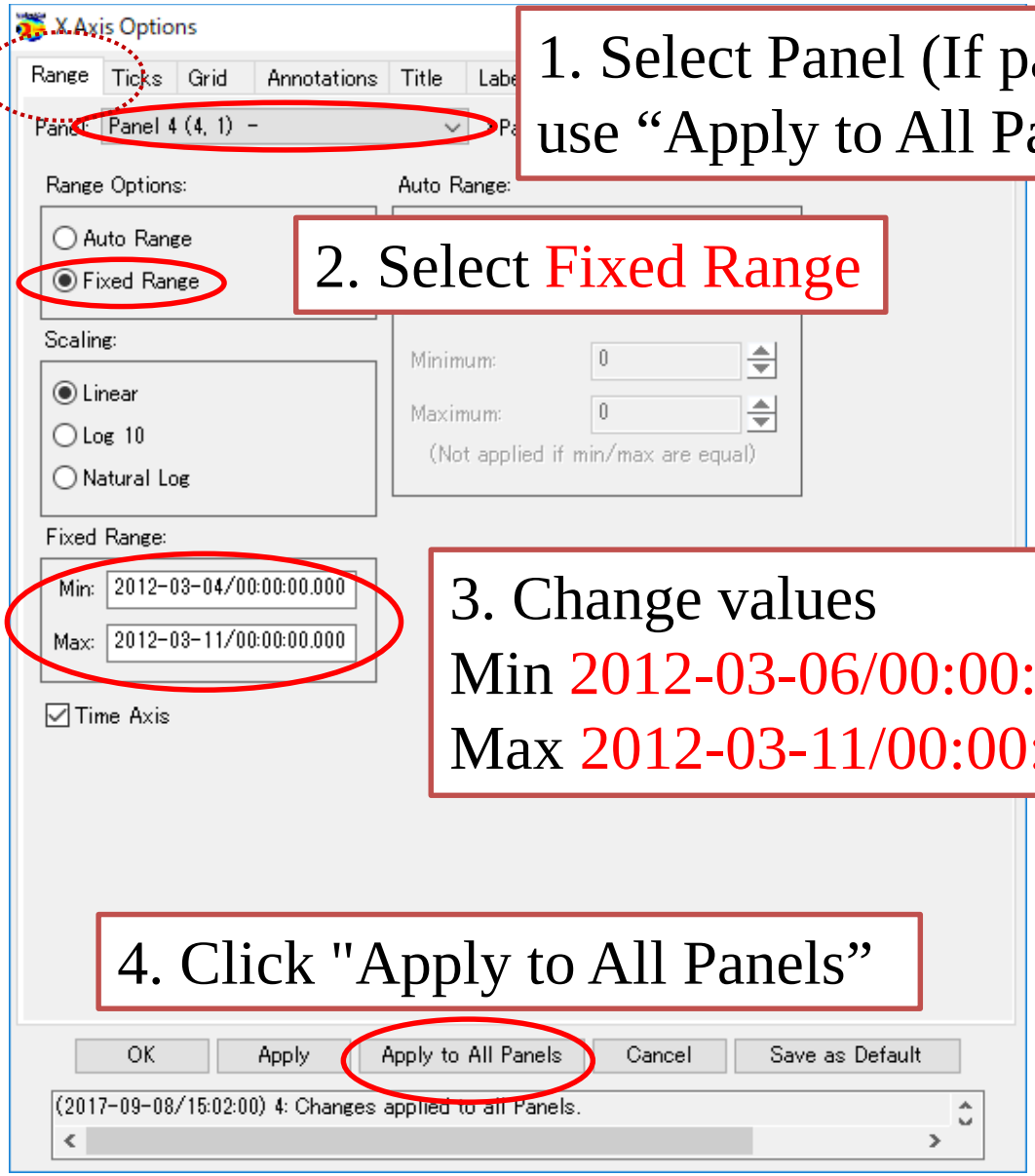
GUI Basic Operation

Lesson:
Change X range (time scale) of the plot (2)

1. Select
Graph – X Axis Options



GUI Basic Operation



1. Select Panel (If panel is locked, use “Apply to All Panels”.)

2. Select Fixed Range

3. Change values
Min 2012-03-06/00:00:00.000
Max 2012-03-11/00:00:00.000

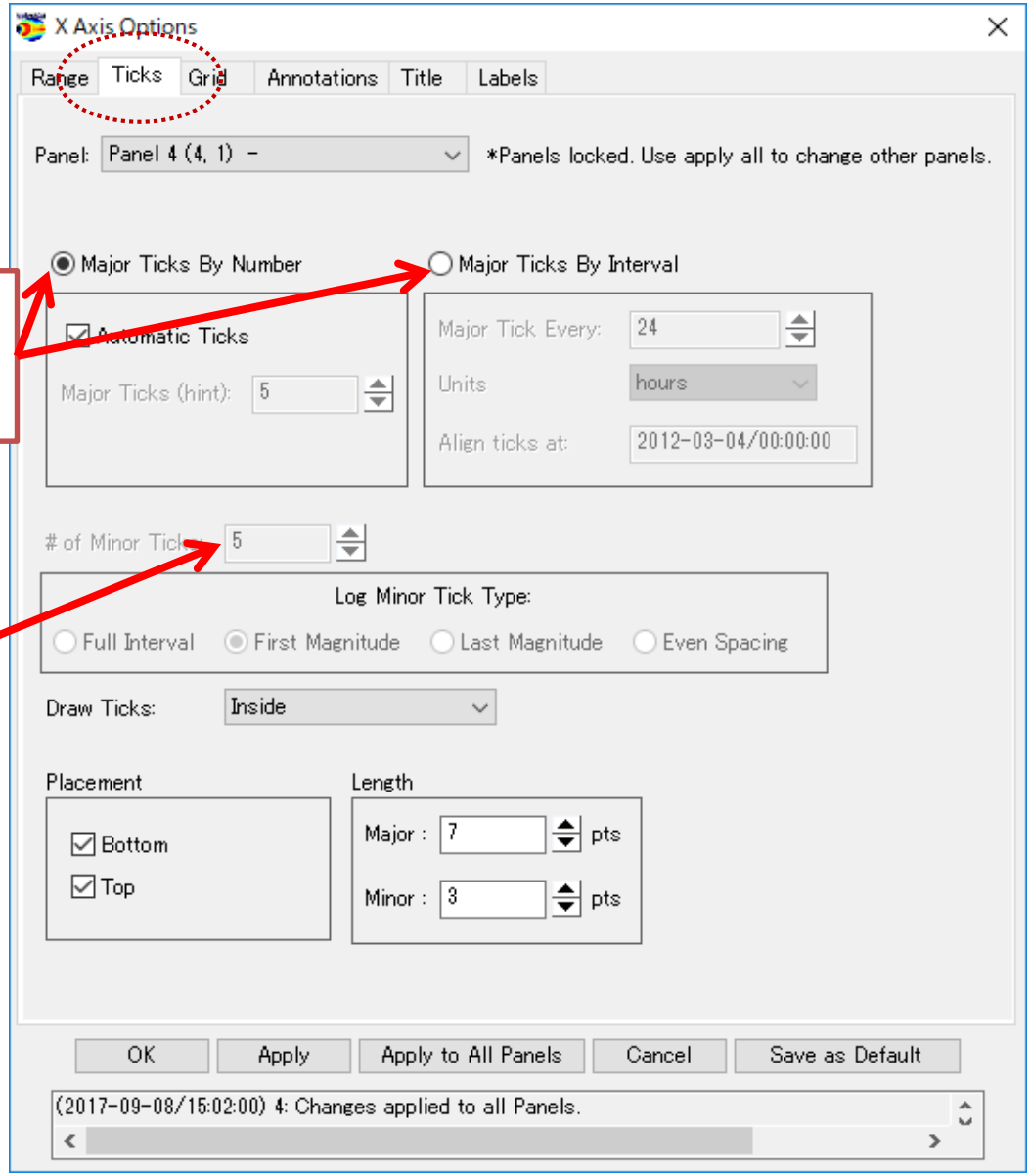
4. Click "Apply to All Panels”

GUI Basic Operation

Lesson:
Customize Ticks.

1. Select Major Ticks By Number or Interval.

2. Input the number into # (Number or Interval) of Minor Ticks

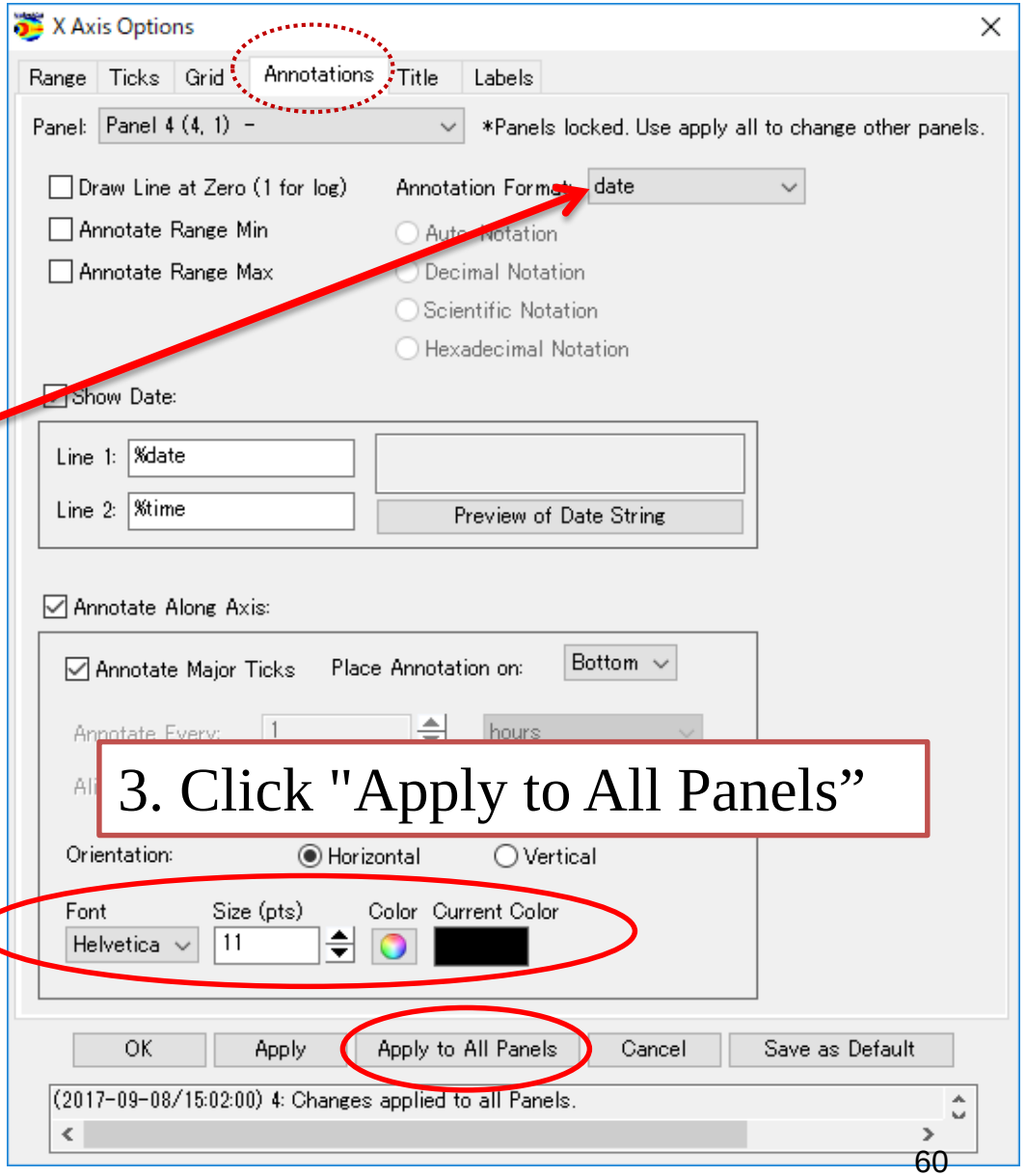


GUI Basic Operation

Lesson:
Change Annotations

1. Select your favorite format in the pull-down menu of Annotation Format.

2. If you want to change the character font, size, and color, select your favorite format in the pull-down menu here.



3. Click "Apply to All Panels"

GUI Basic Operation

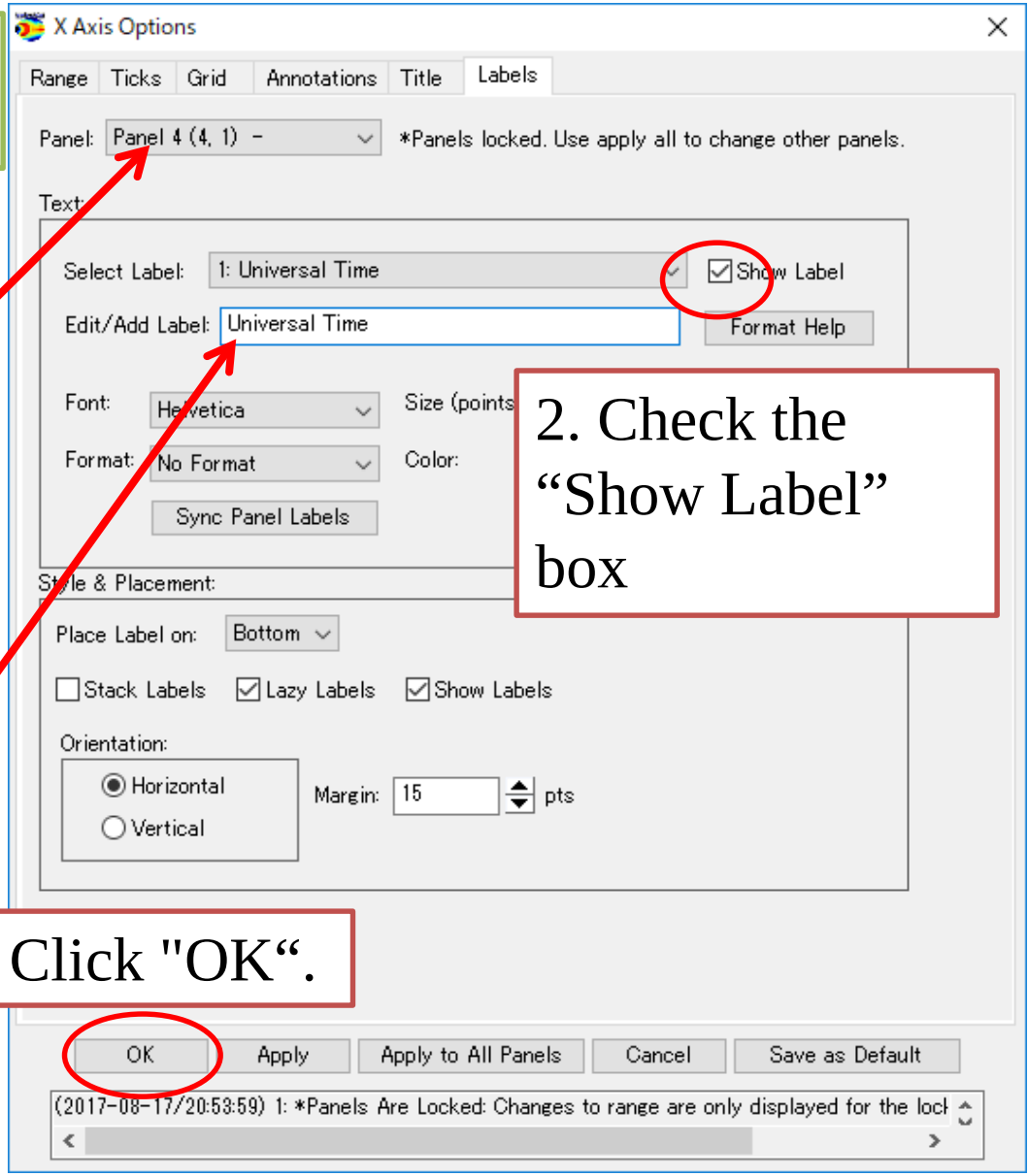
Lesson:
Customize Labels (of X axis)

1. Select Panel 4 (bottom panel)

2. Check the “Show Label” box

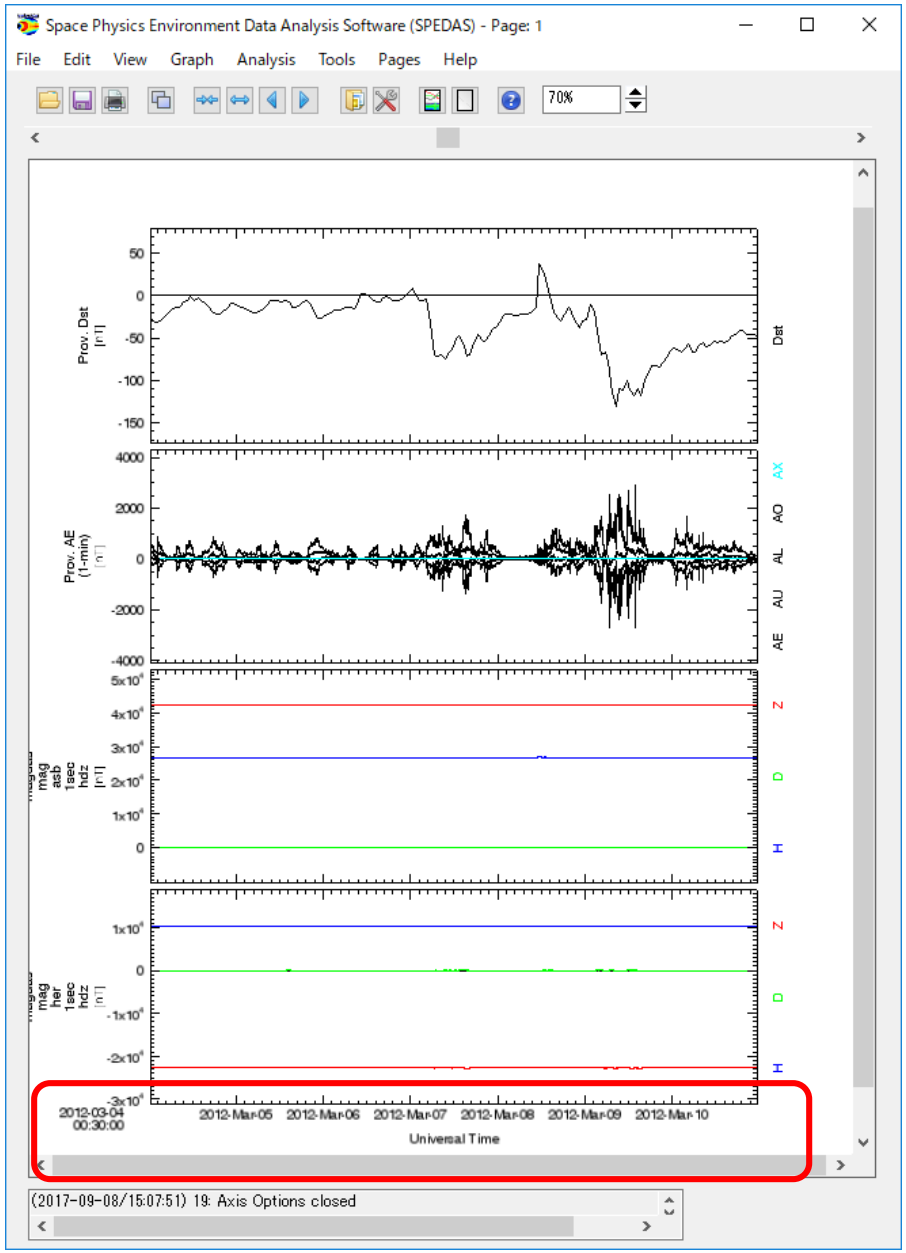
3. Type “Universal Time ” on the Edit/Add Label

4. Click "OK“.



GUI Basic Operation

Result



GUI Basic Operation

Other options.

- **Page Options…**

  Customize the text and layout of the page.

- **Panel Options…**

  Customize the title and color of each panel.

- **Line Options…**

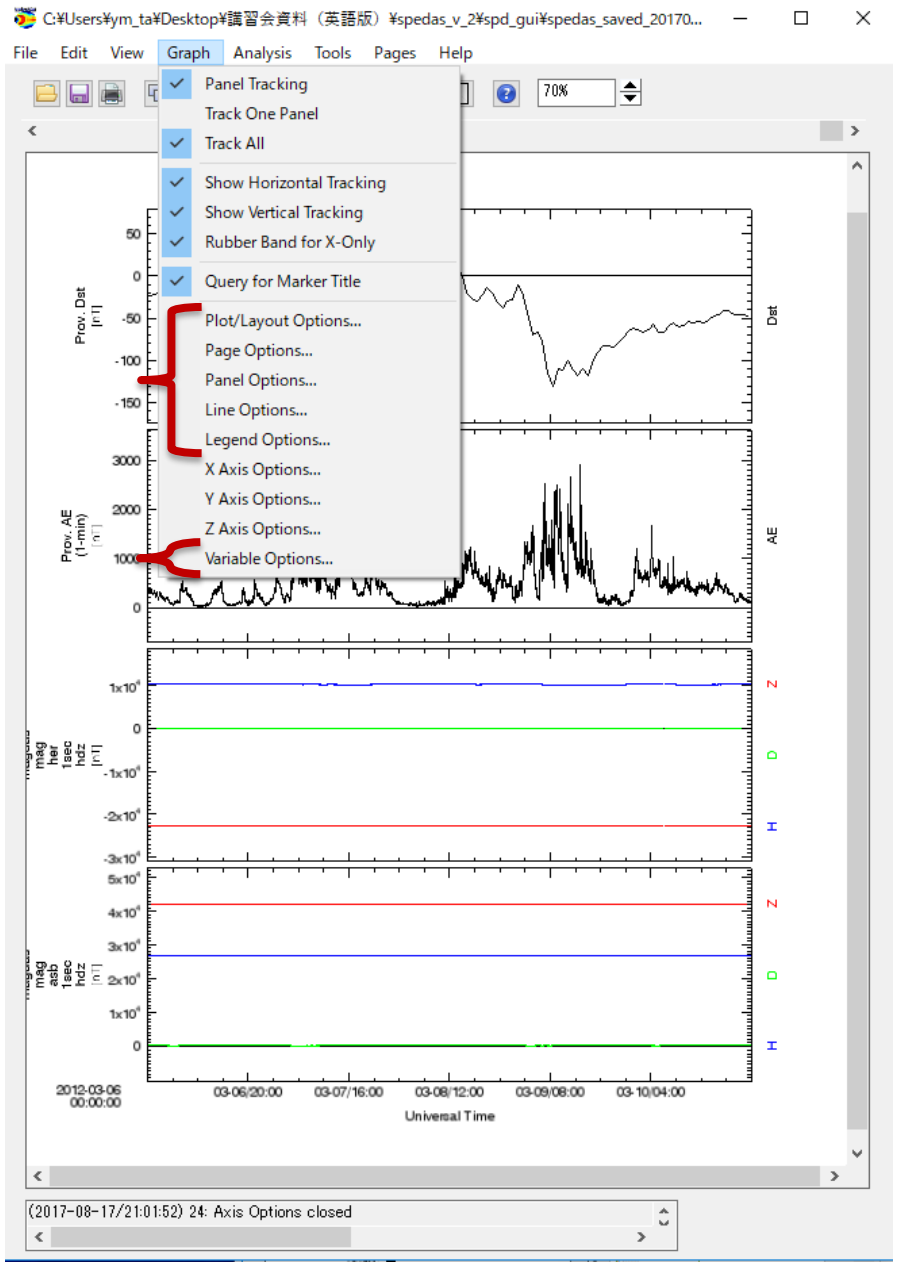
  Customize the line and symbol of each plot panel.

- **Legend Options…**

  Customize the legend which appears when you put the mouse cursor on the plot.

- **Variable Options…**

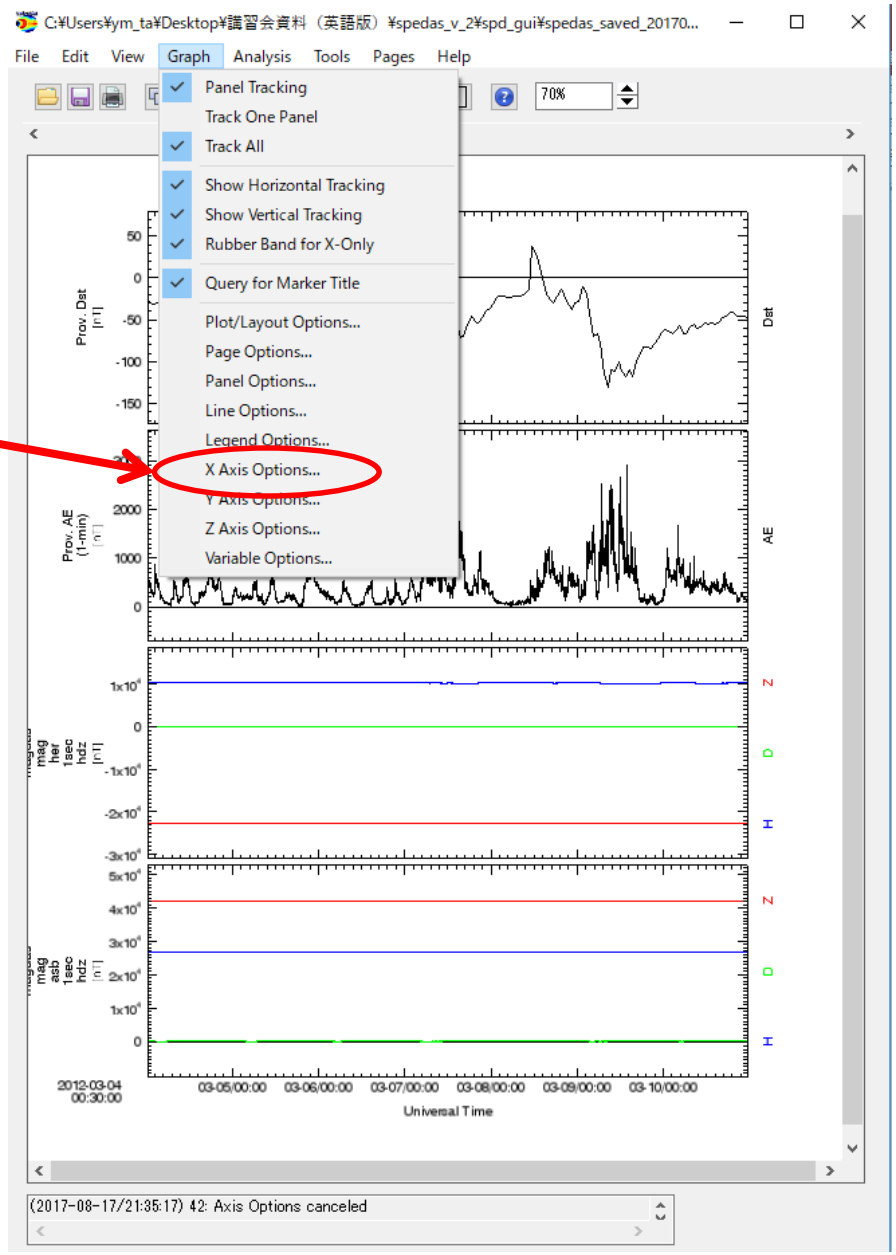
  Display the values of the selected parameters under the time label.



GUI Basic Operation

Lesson:
Reset X range (time scale)

1. Select X Axis Options

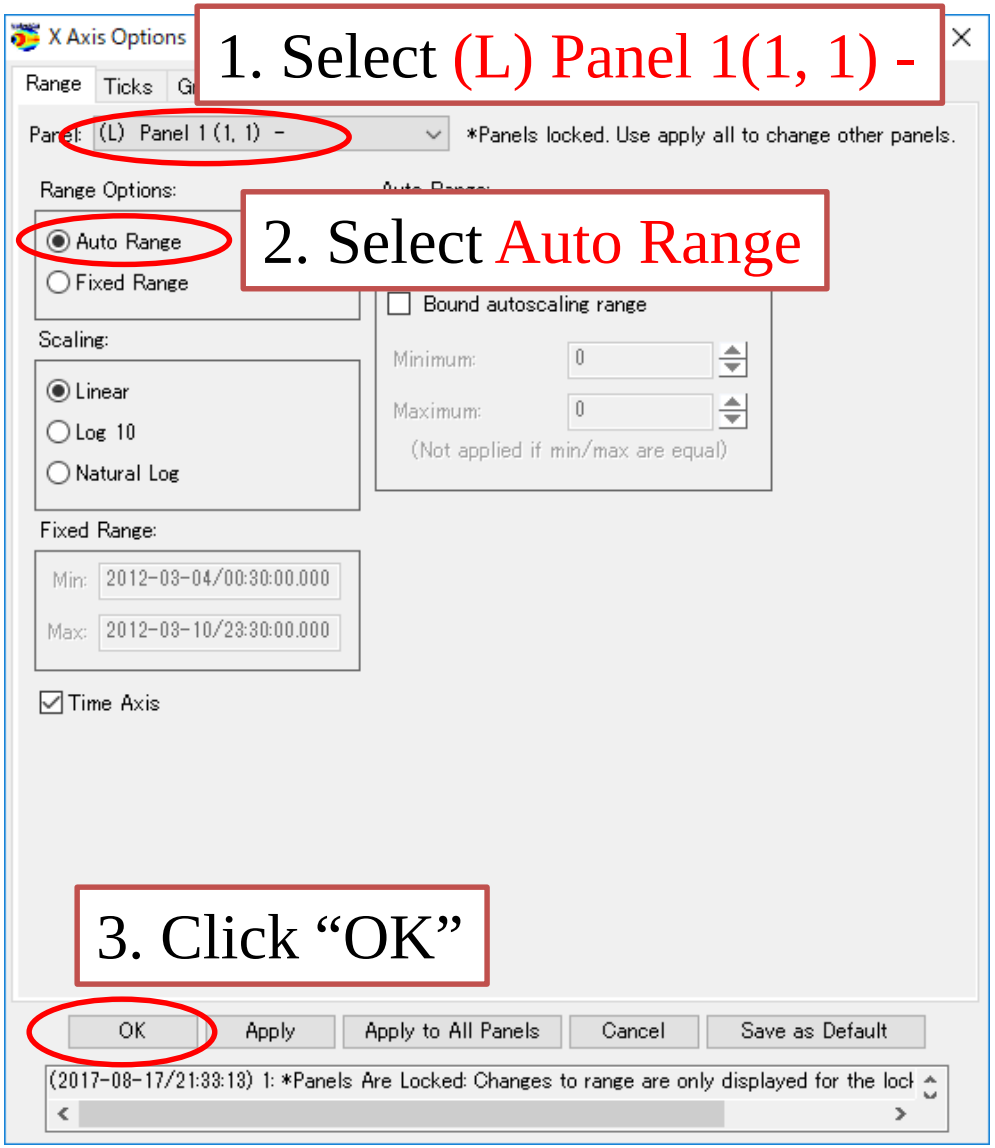


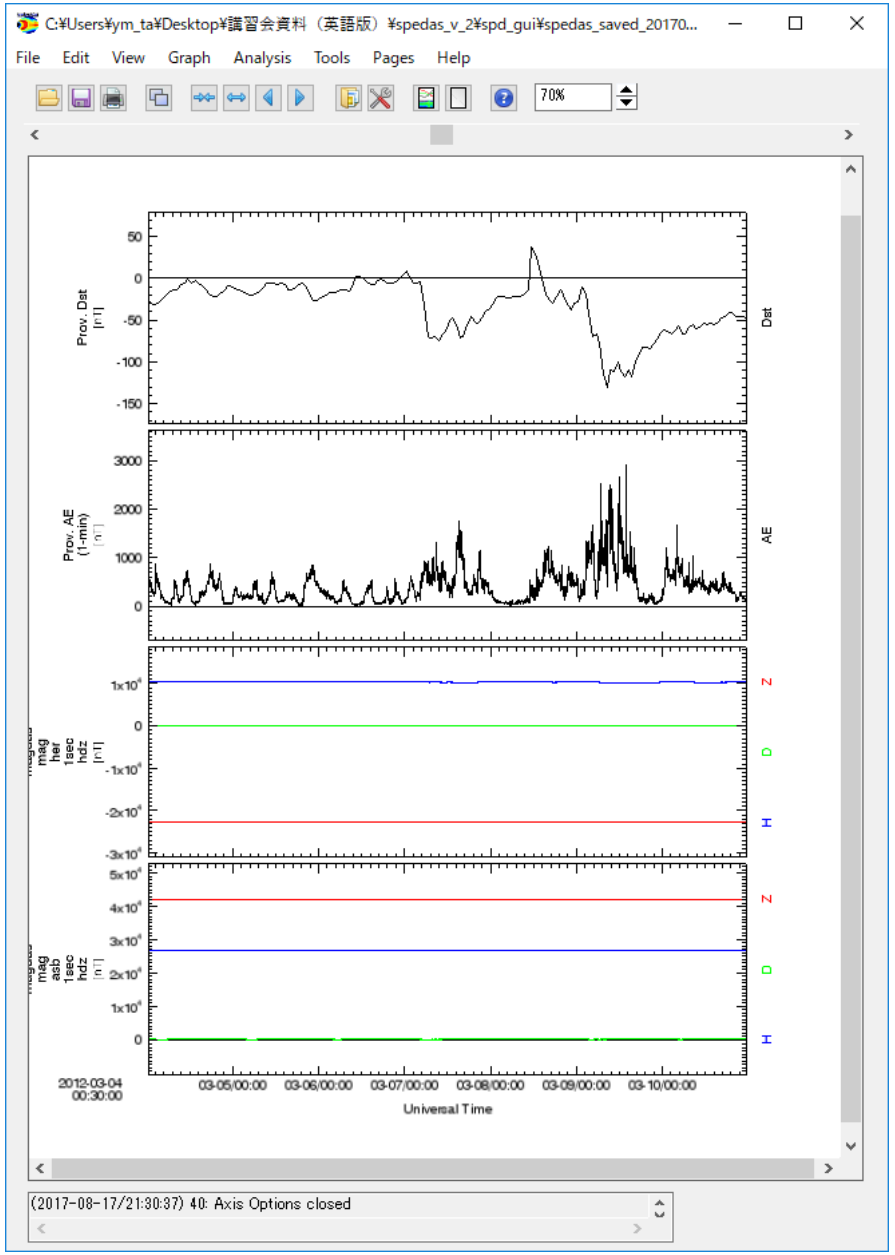
GUI Basic Operation

1. Select (L) Panel 1(1, 1) -

2. Select Auto Range

3. Click “OK”

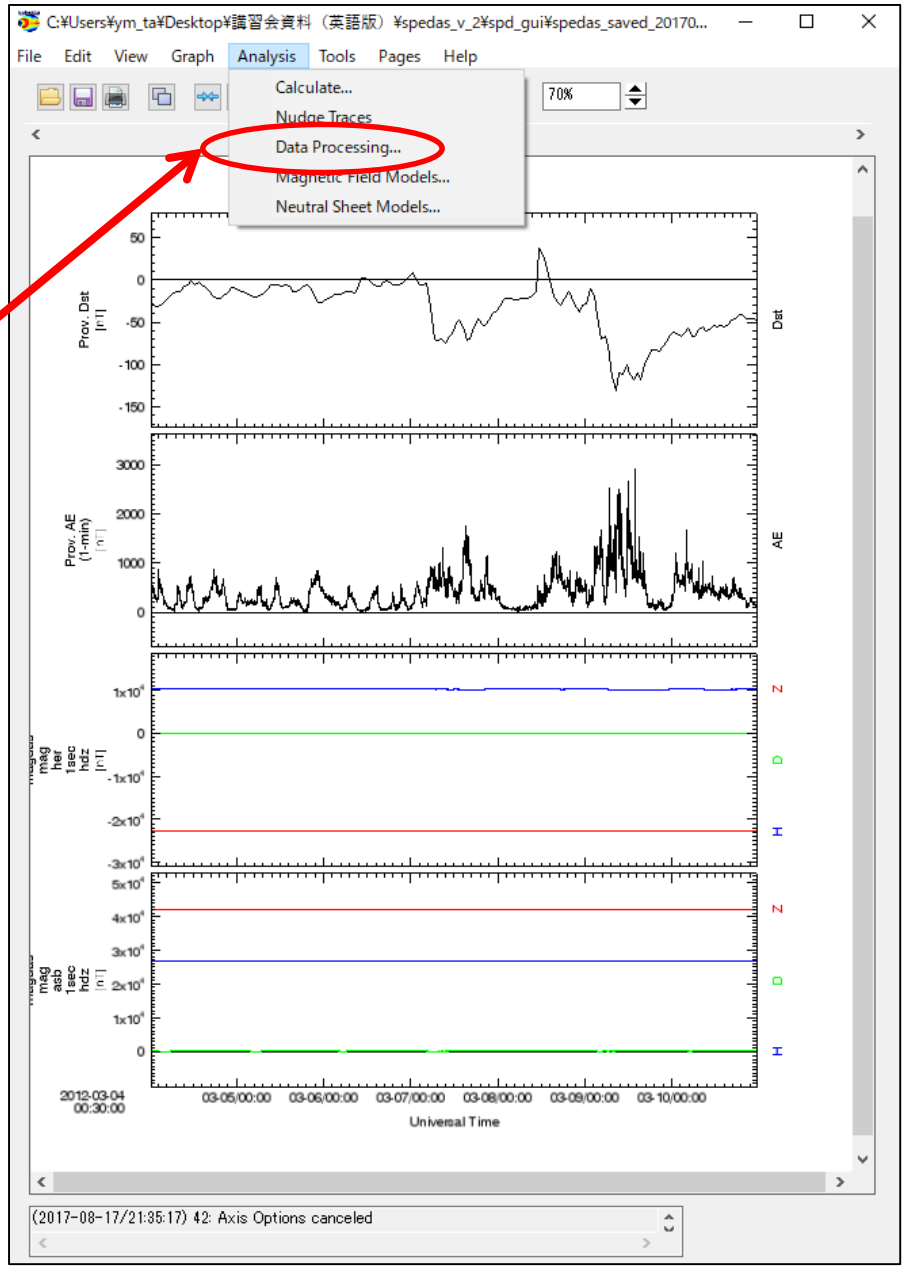




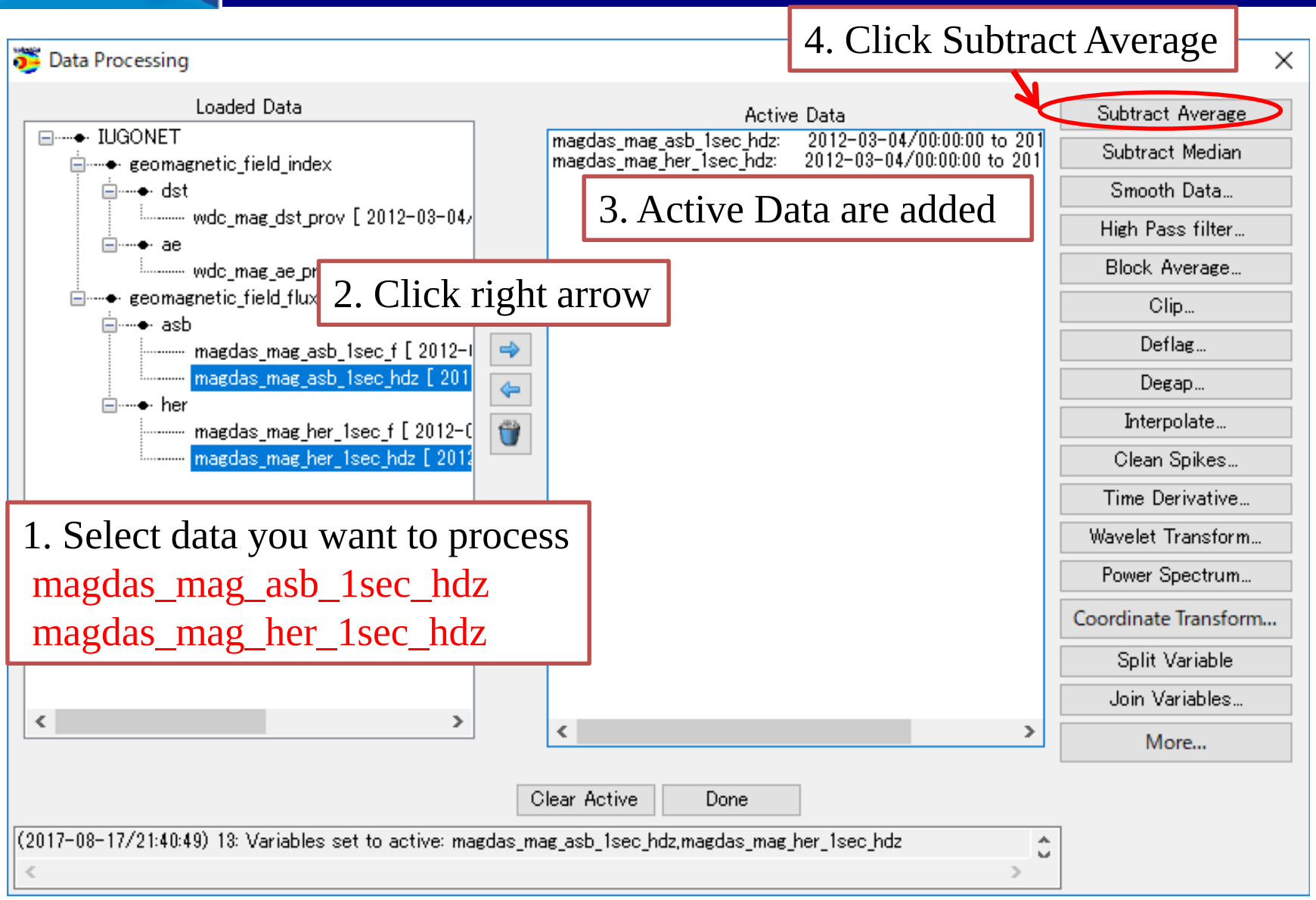
GUI Basic Operation

Lesson:
Processing- subtract average

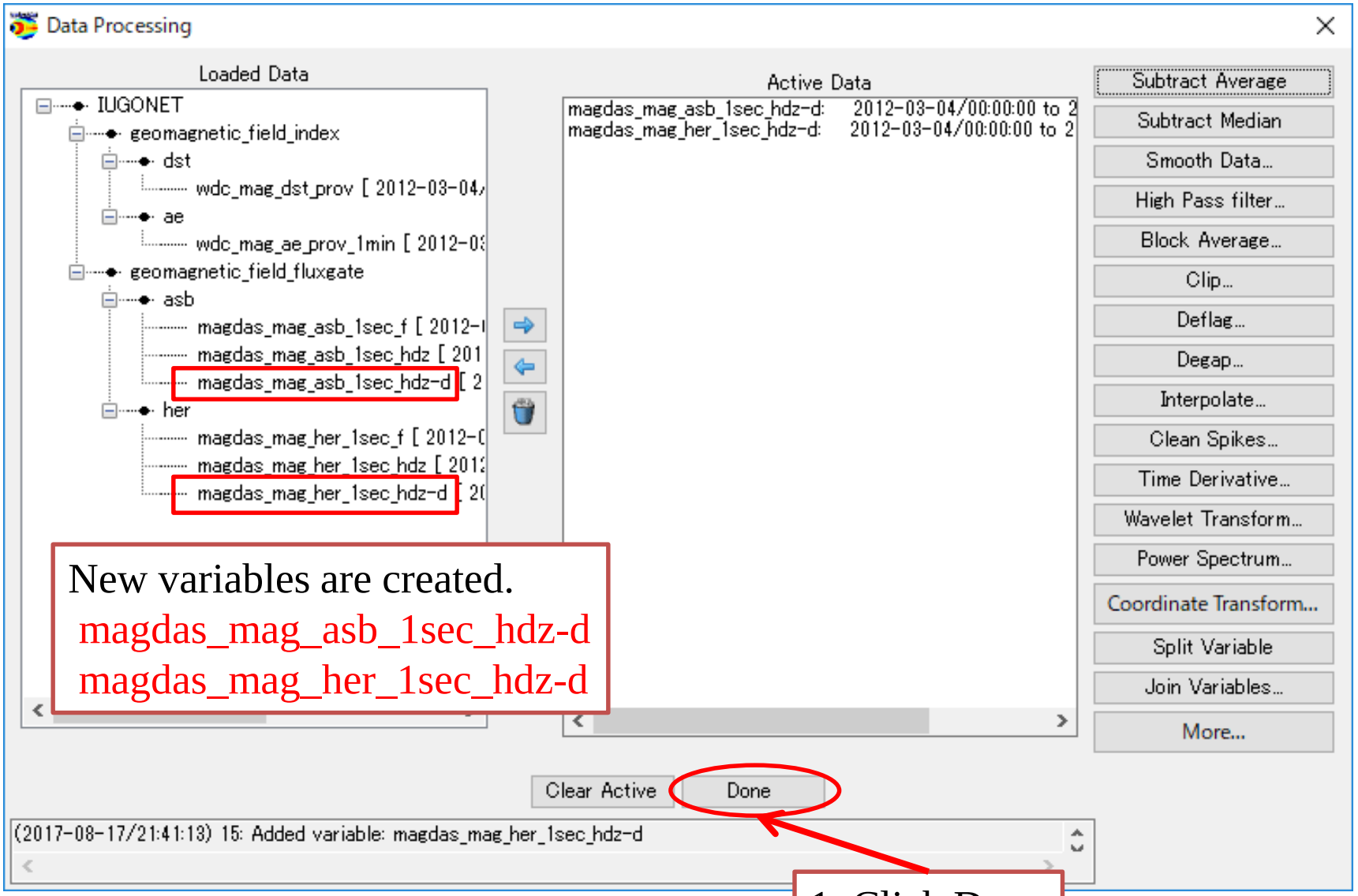
1. Select
Analysis – Data Processing



GUI Basic Operation

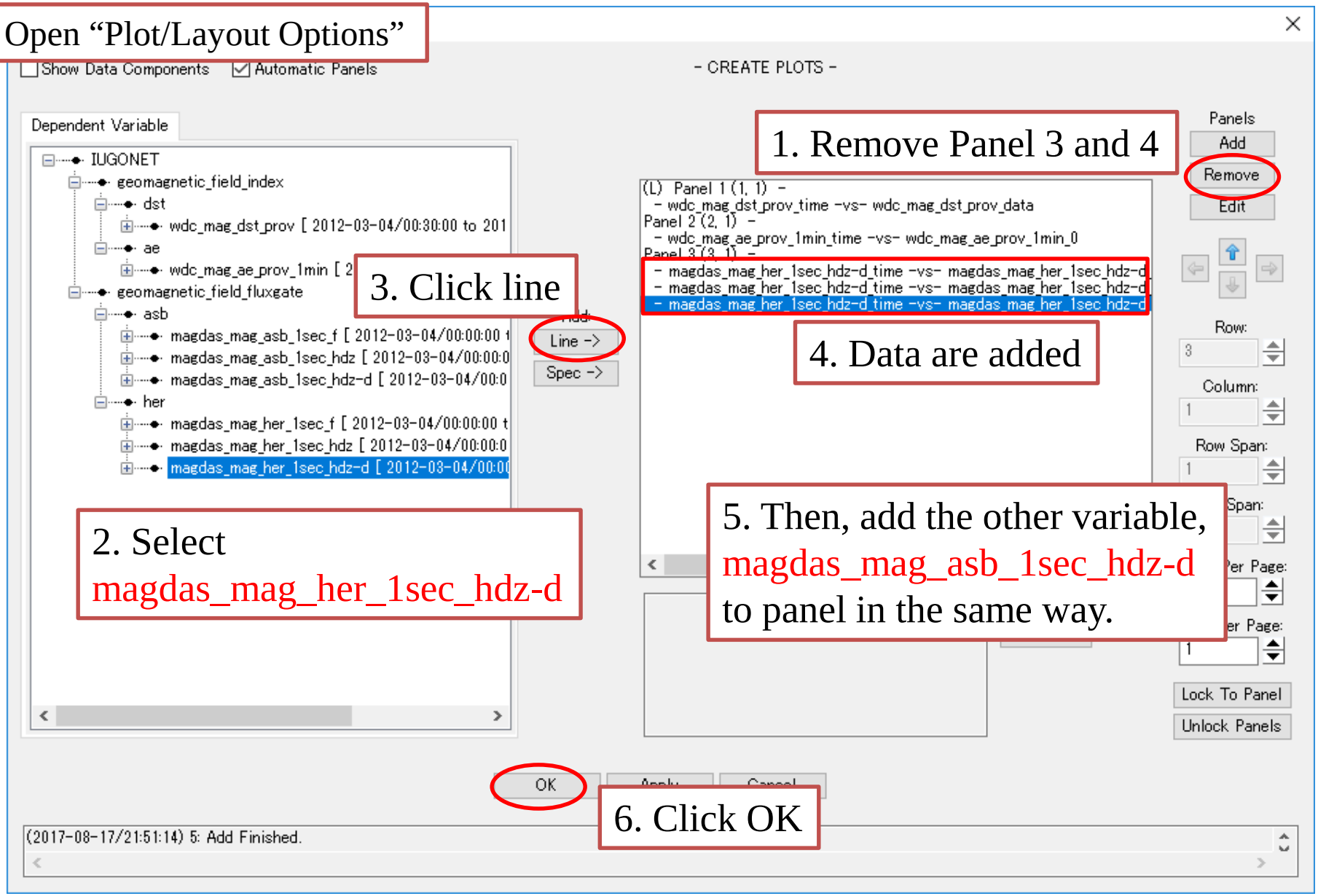


GUI Basic Operation



GUI Basic Operation

Open “Plot/Layout Options”



1. Remove Panel 3 and 4

2. Select magdas_mag_her_1sec_hdz-d

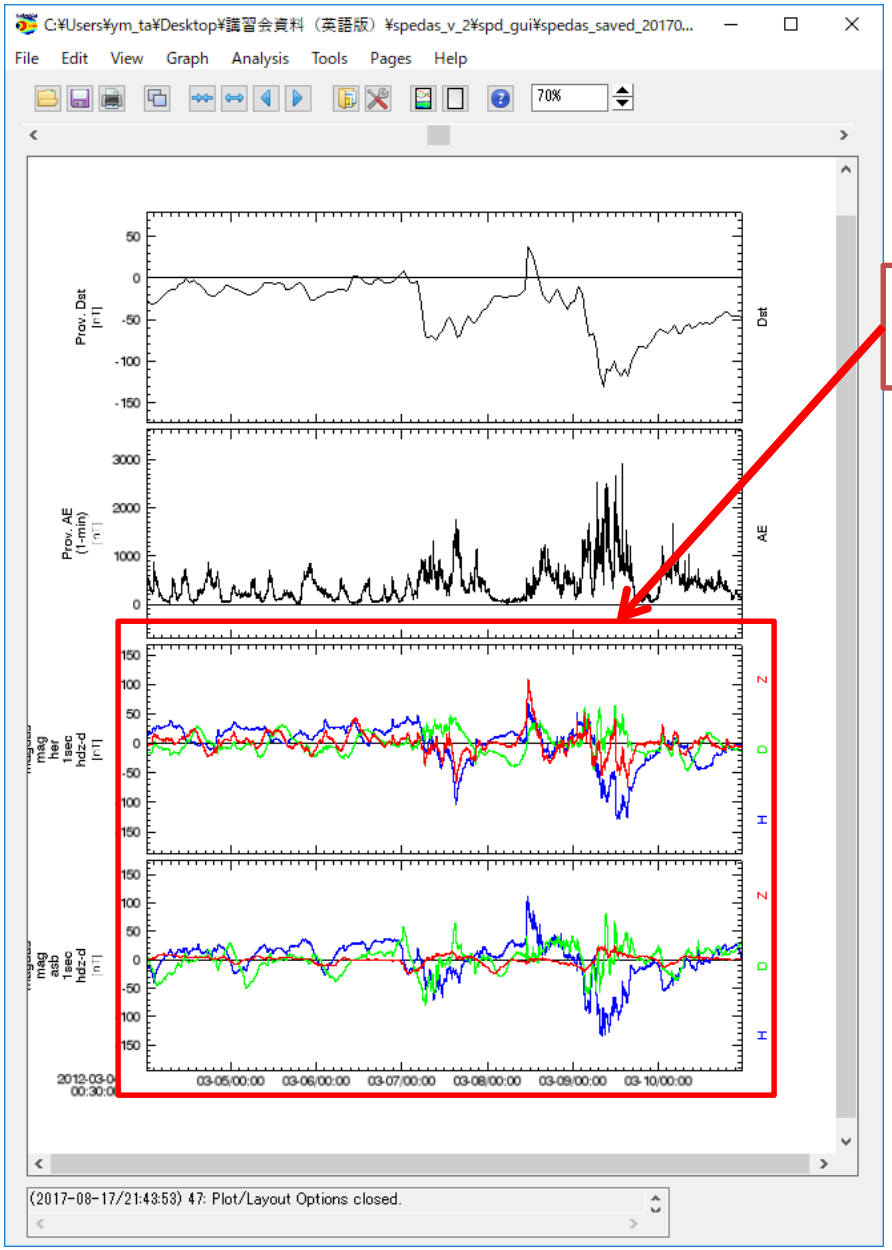
3. Click line

4. Data are added

5. Then, add the other variable, magdas_mag_asb_1sec_hdz-d to panel in the same way.

6. Click OK

GUI Basic Operation



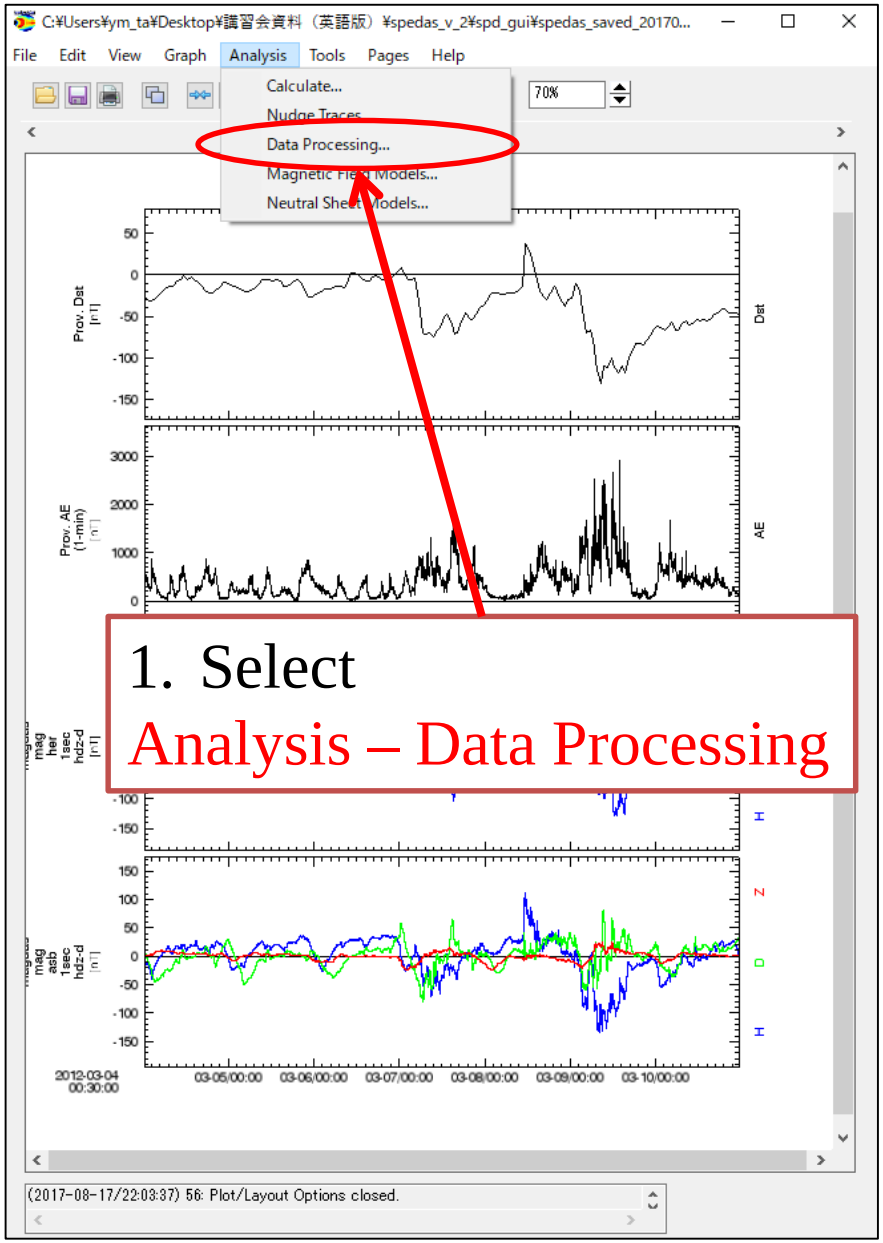
Subtracted average!

GUI Basic Operation

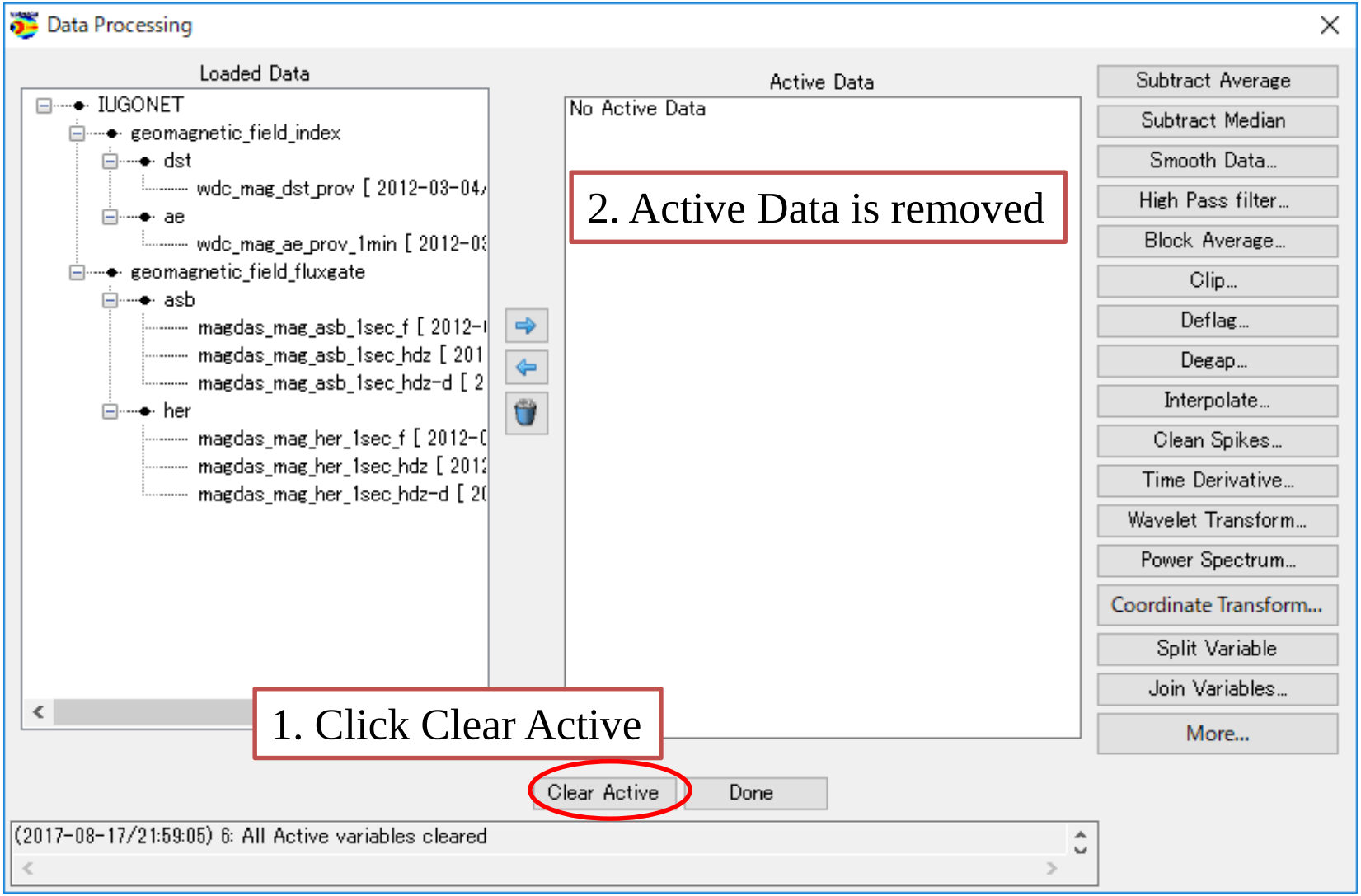
Try:
Plot Power Spectrum of
magdas_mag_her_1sec_hdz_x

Hint1: Use “Data Processing” for calculating (if you will get an option dialog, use default value)

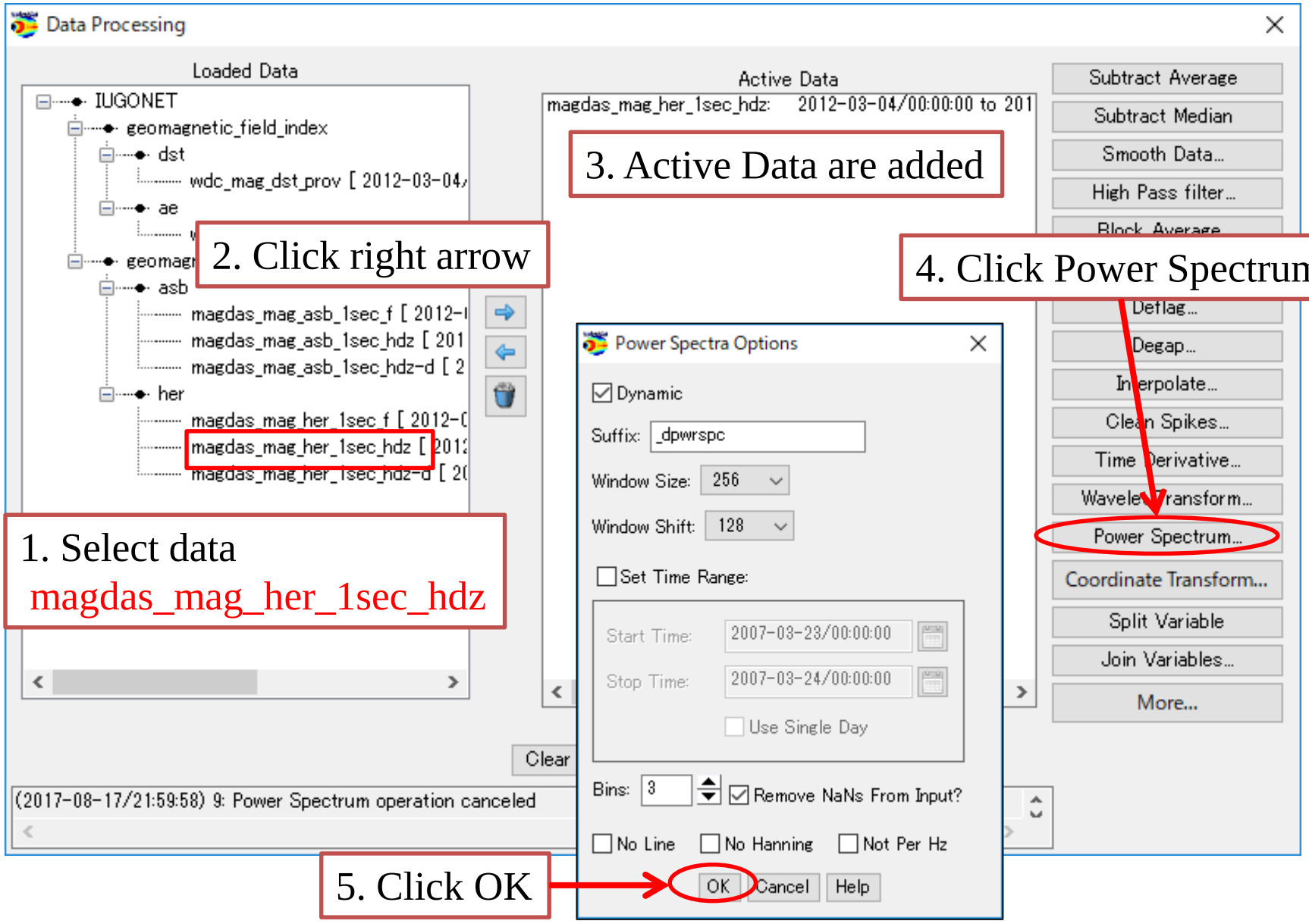
Hint2: Use “Spec” for plotting



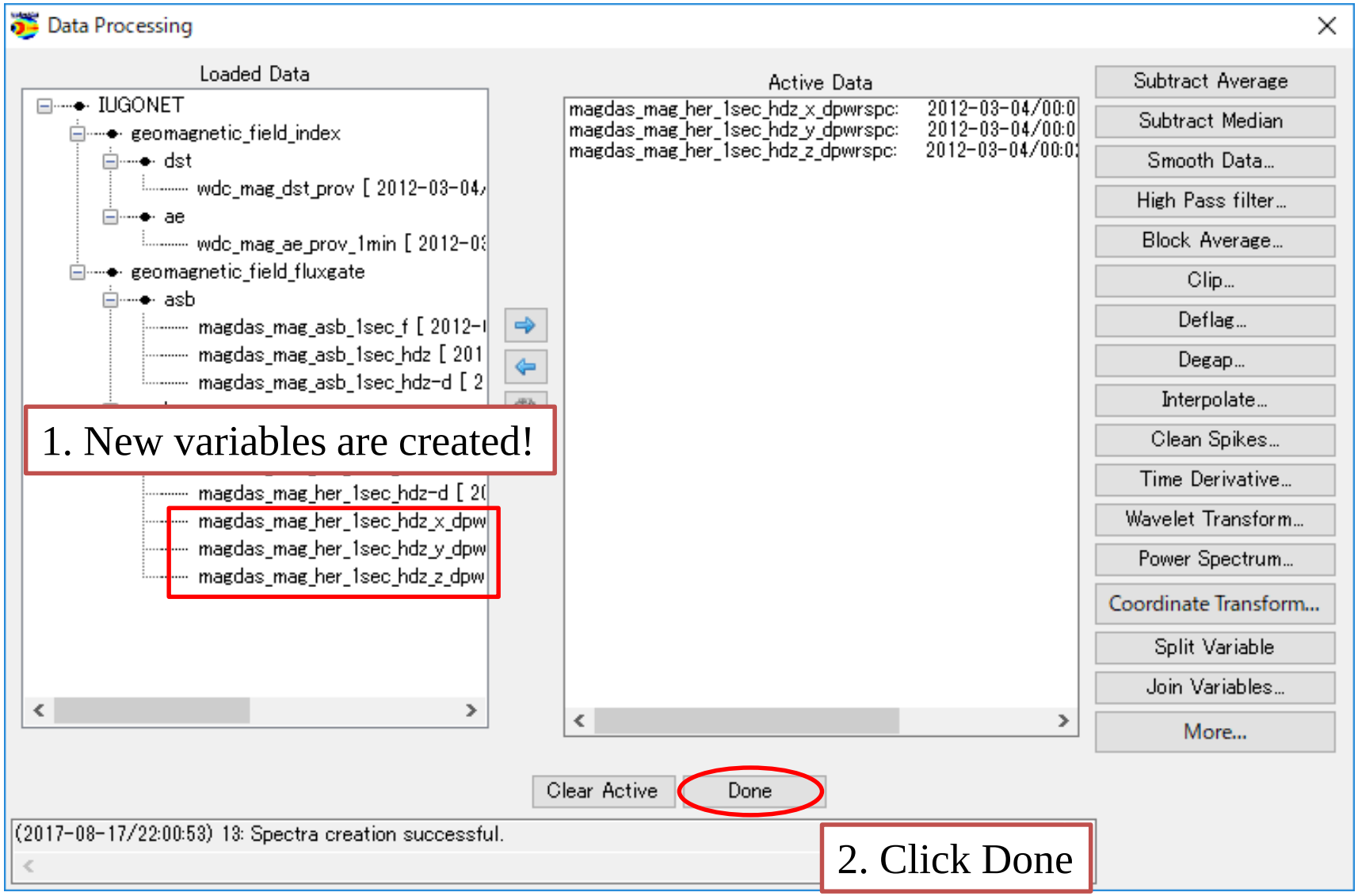
GUI Basic Operation



GUI Basic Operation

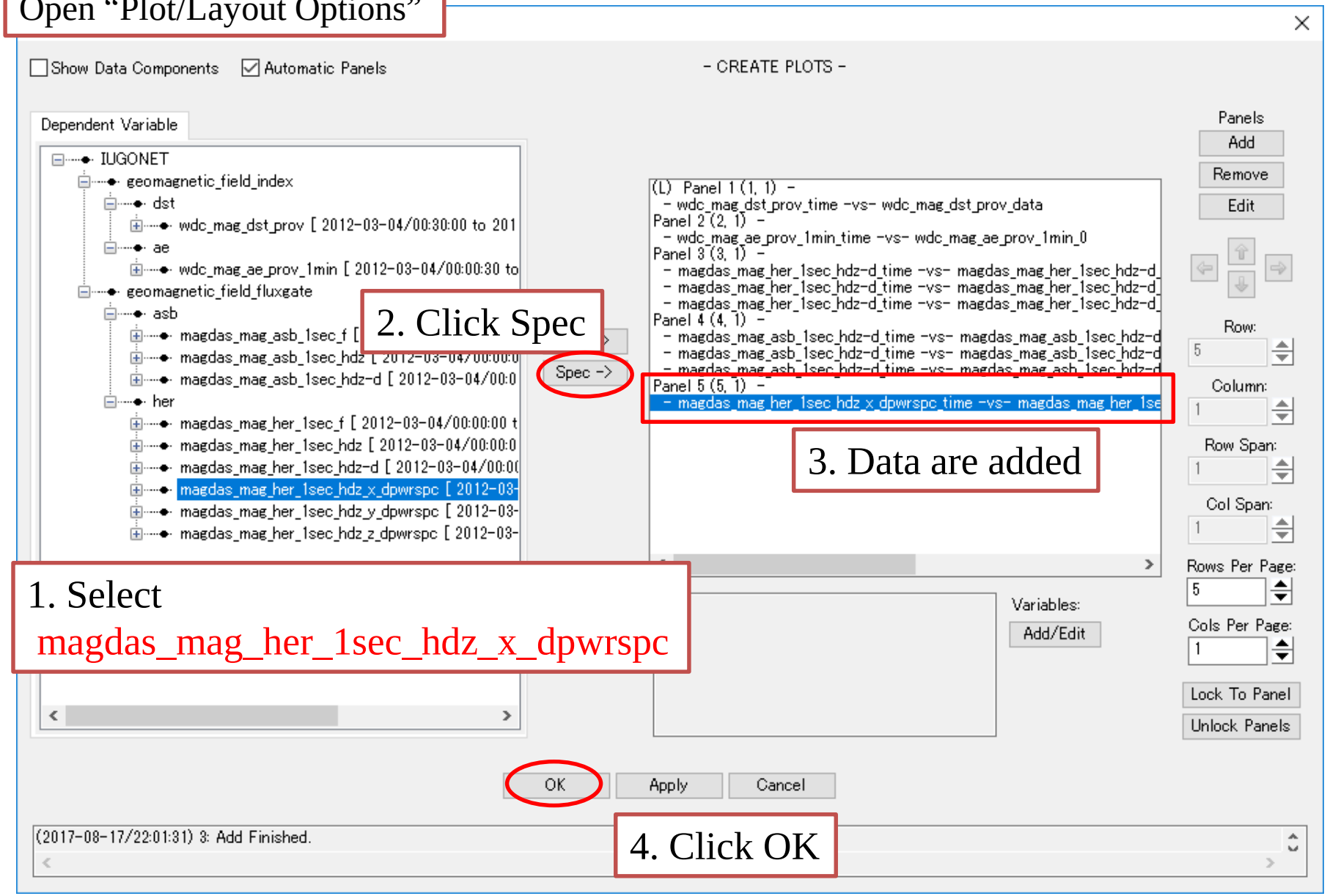


GUI Basic Operation



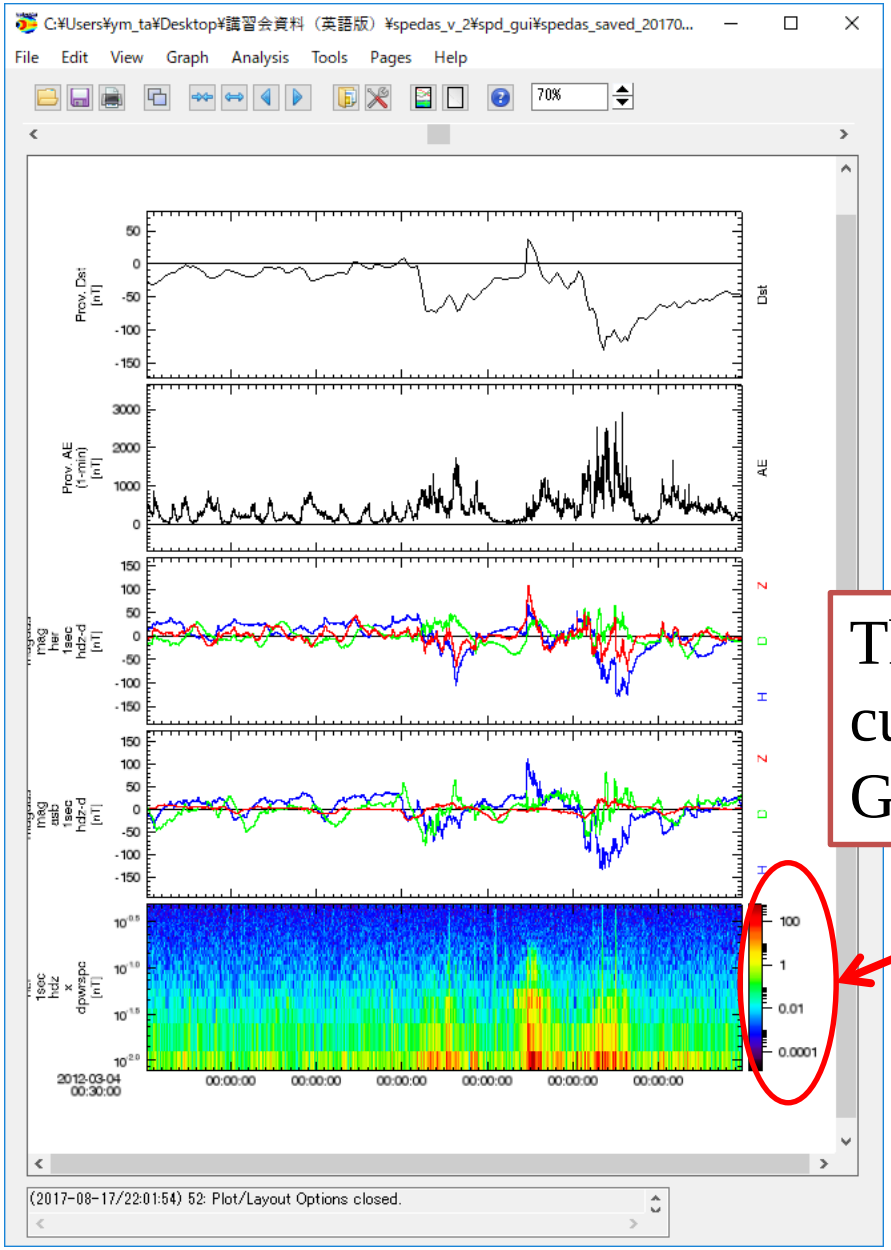
GUI Basic Operation

Open “Plot/Layout Options”



GUI Basic Operation

Result

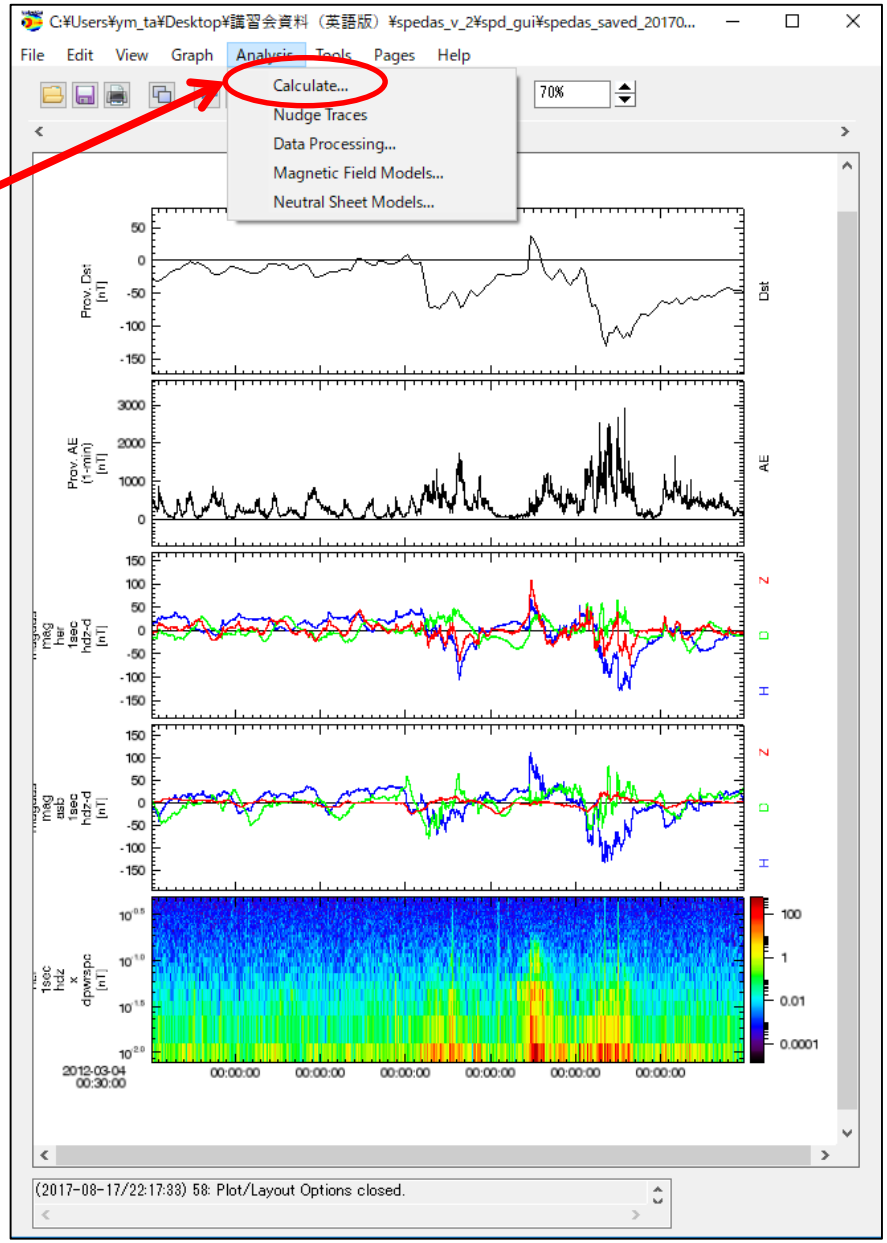


This color bar can be customized in Graph - Z Axis Options.

GUI Basic Operation

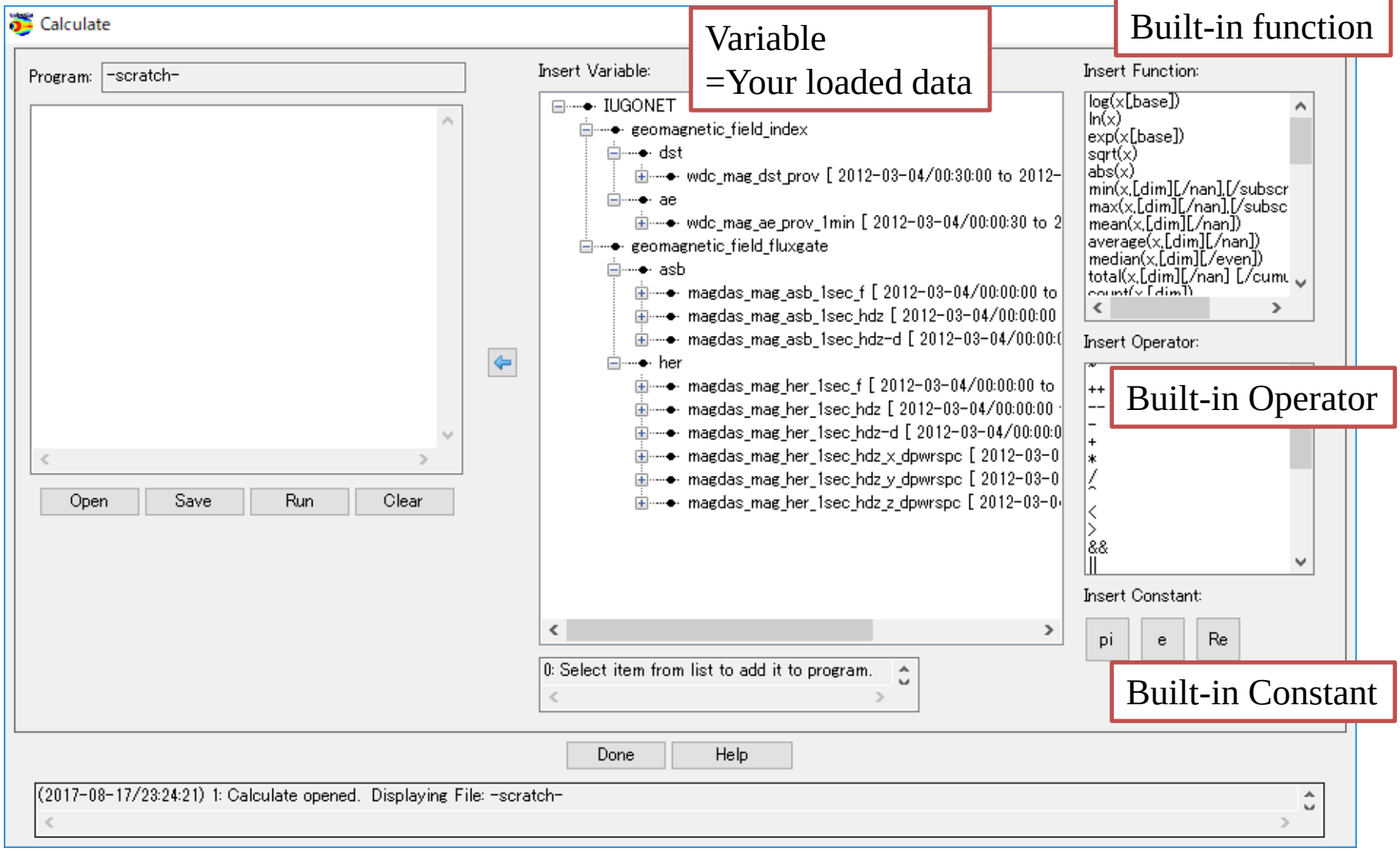
Lesson:
Use Calculate (Equation editor)

1. Select
Analysis – Calculate…



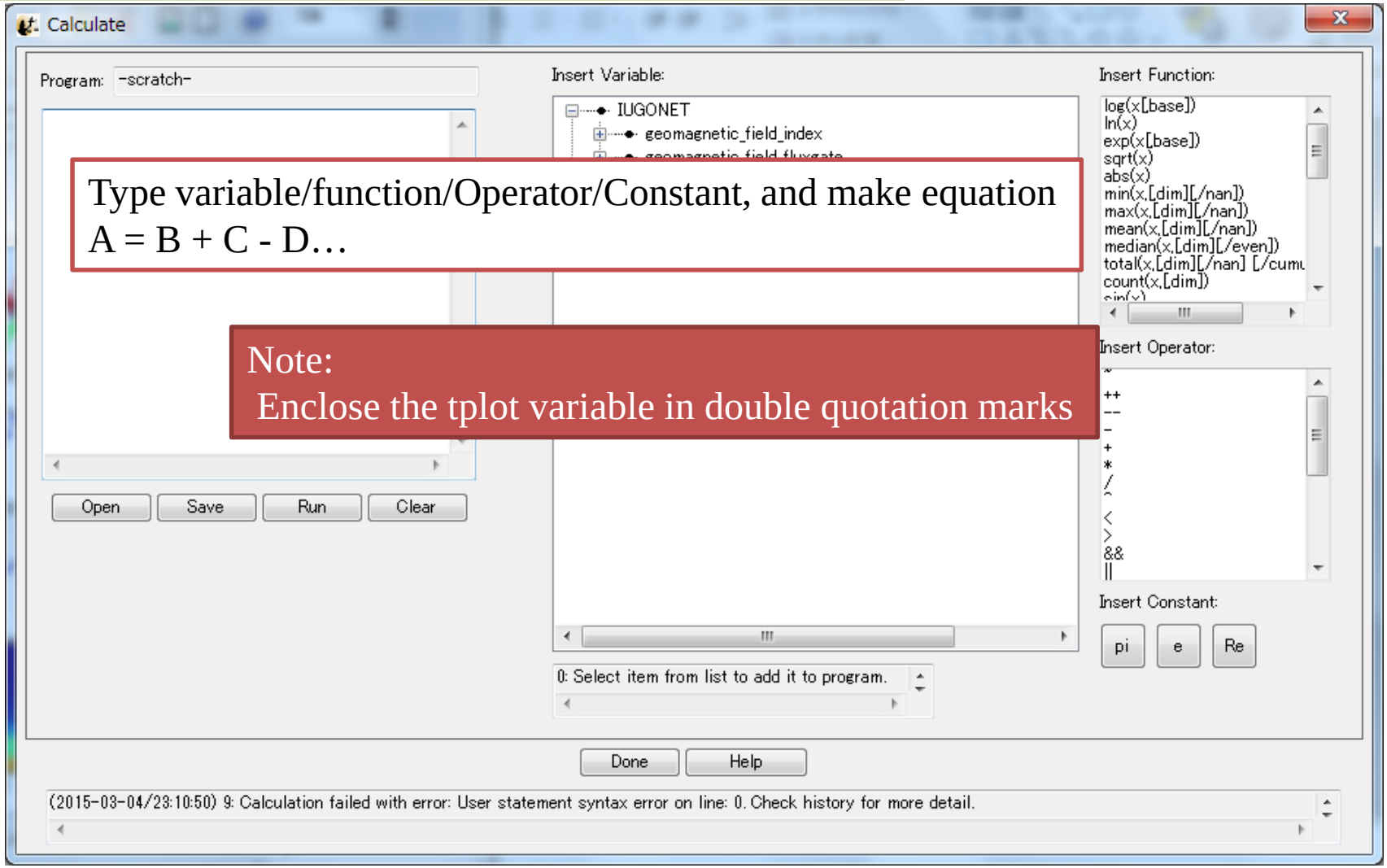
GUI Basic Operation

Equation Editor for SPEDAS



GUI Basic Operation

Lesson:
Make an equation using the loaded variables.

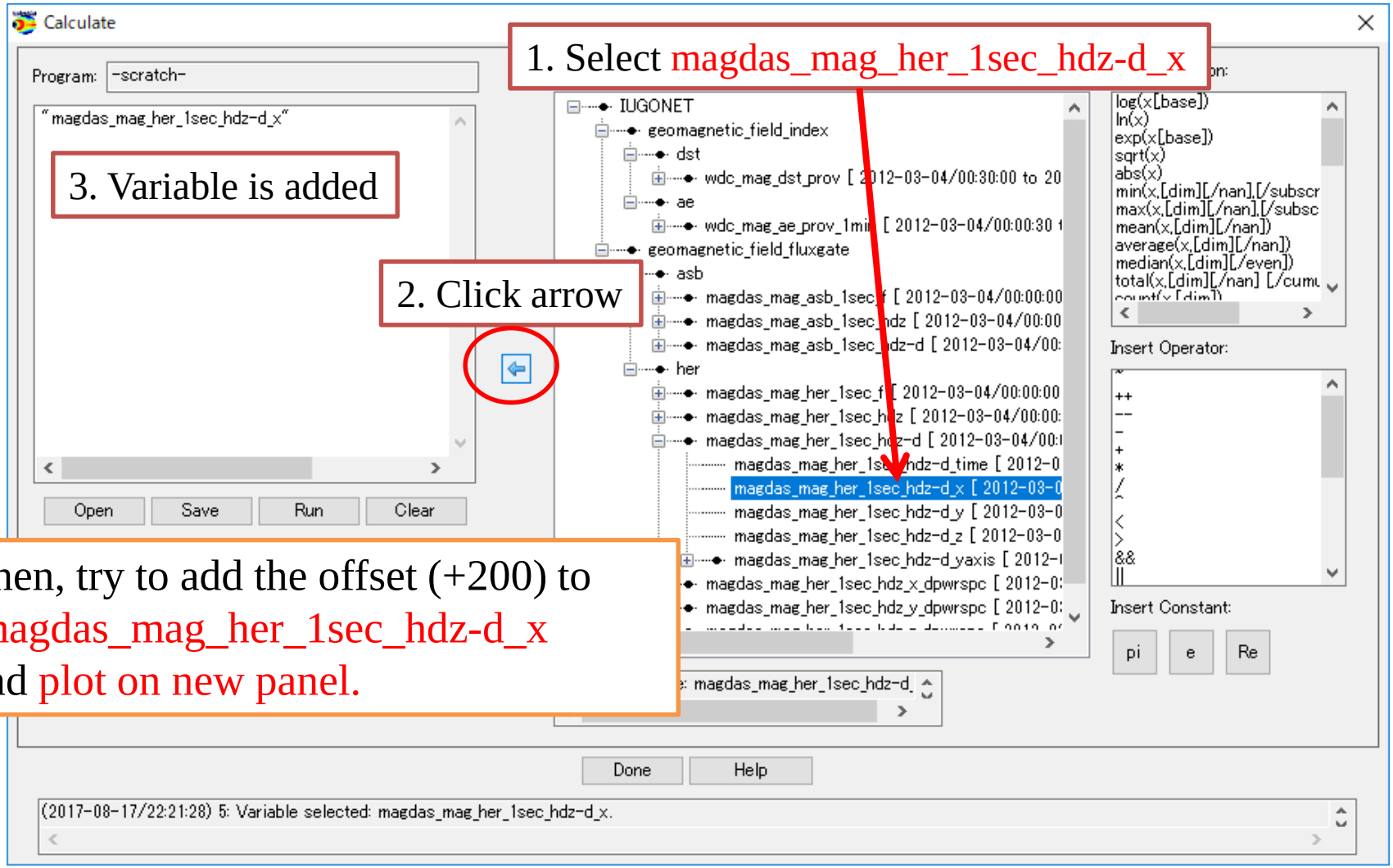


Type variable/function/Operator/Constant, and make equation
A = B + C - D…

Note:
Enclose the tplot variable in double quotation marks

GUI Basic Operation

Lesson:
Make an equation using the loaded variables.



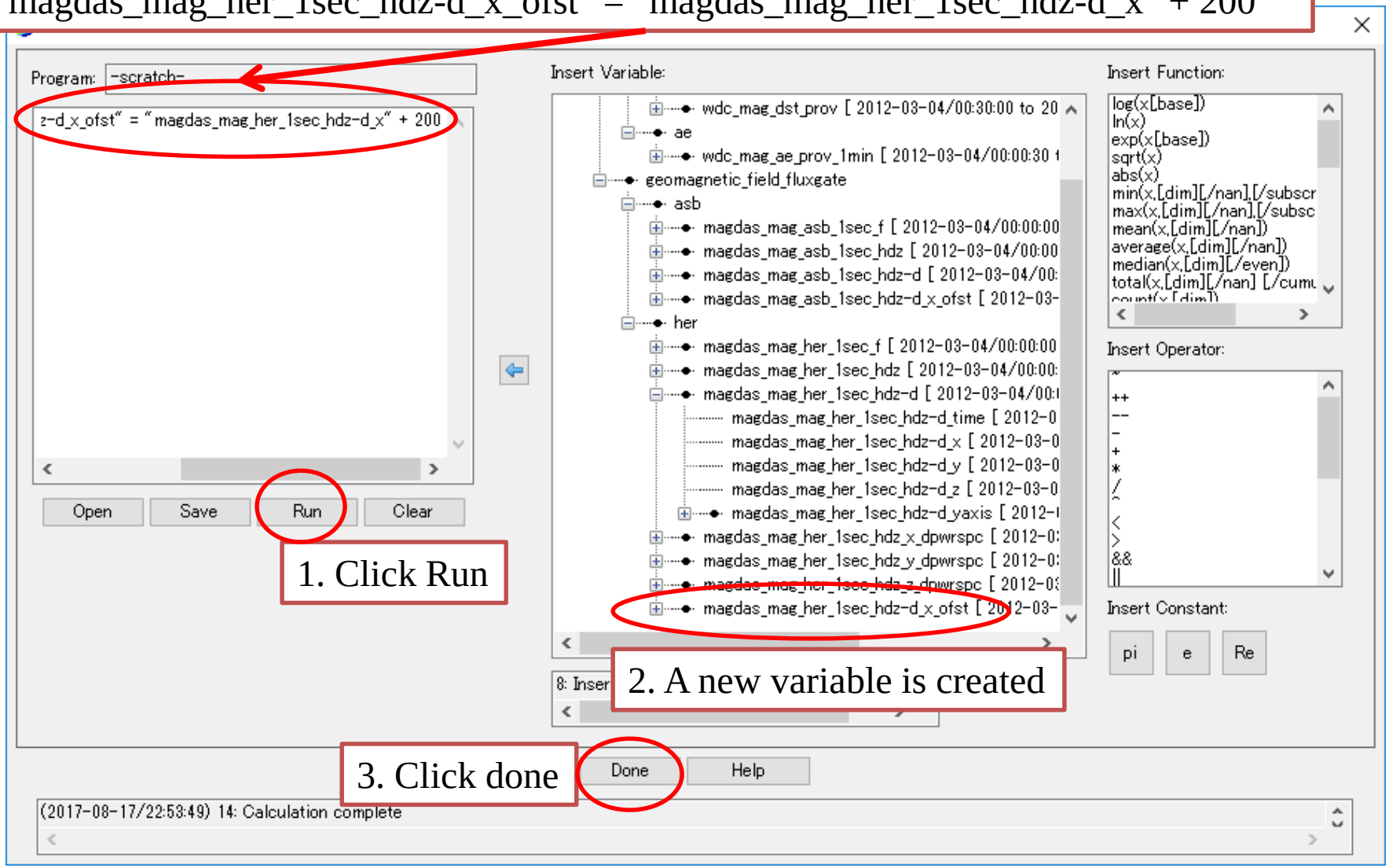
Then, try to add the offset (+200) to magdas_mag_her_1sec_hdz-d_x and plot on new panel.

GUI Basic Operation

Answer

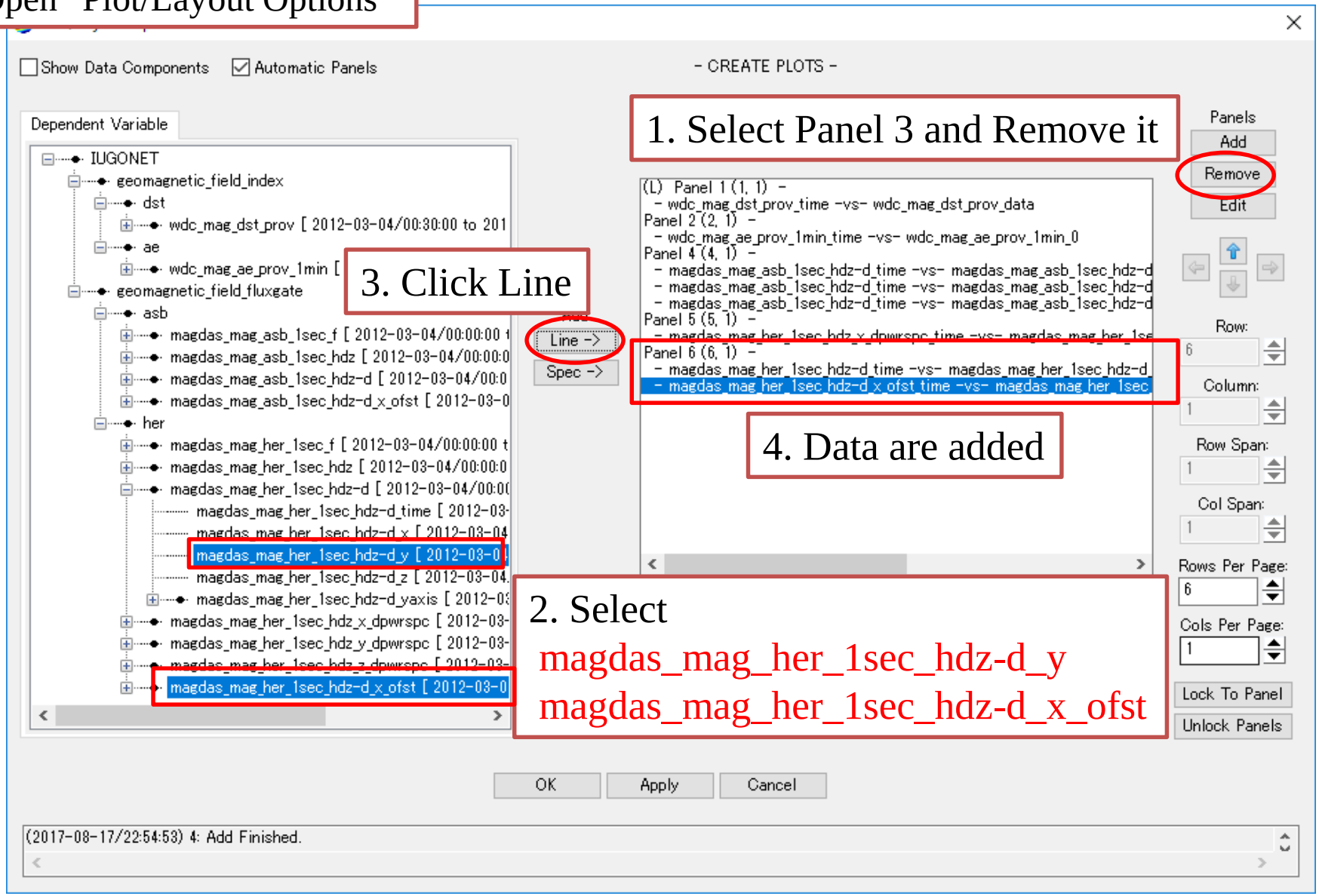
Note: one line, never return

"magdas_mag_her_1sec_hdz-d_x_ofst" = "magdas_mag_her_1sec_hdz-d_x" + 200



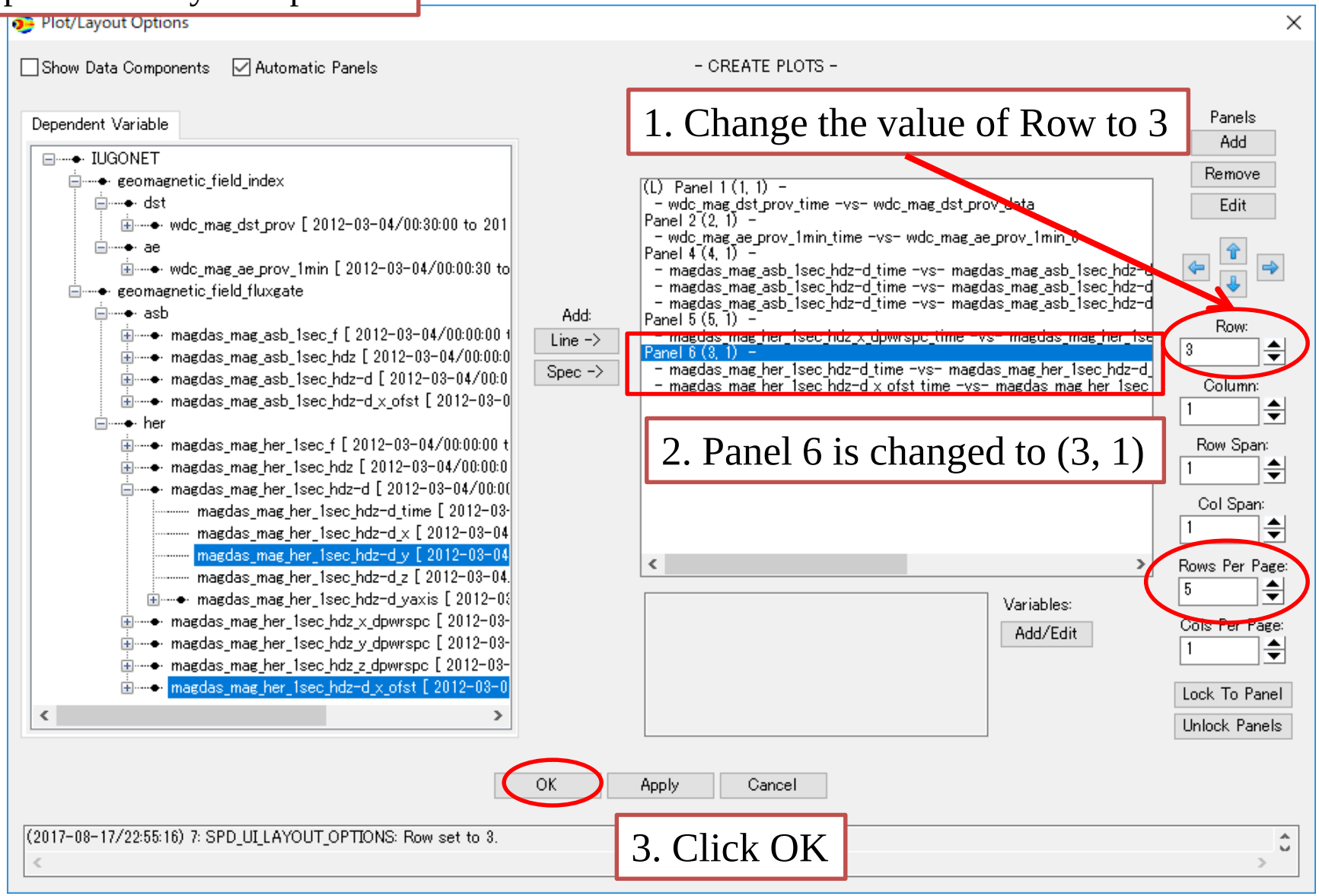
GUI Basic Operation

Open “Plot/Layout Options”



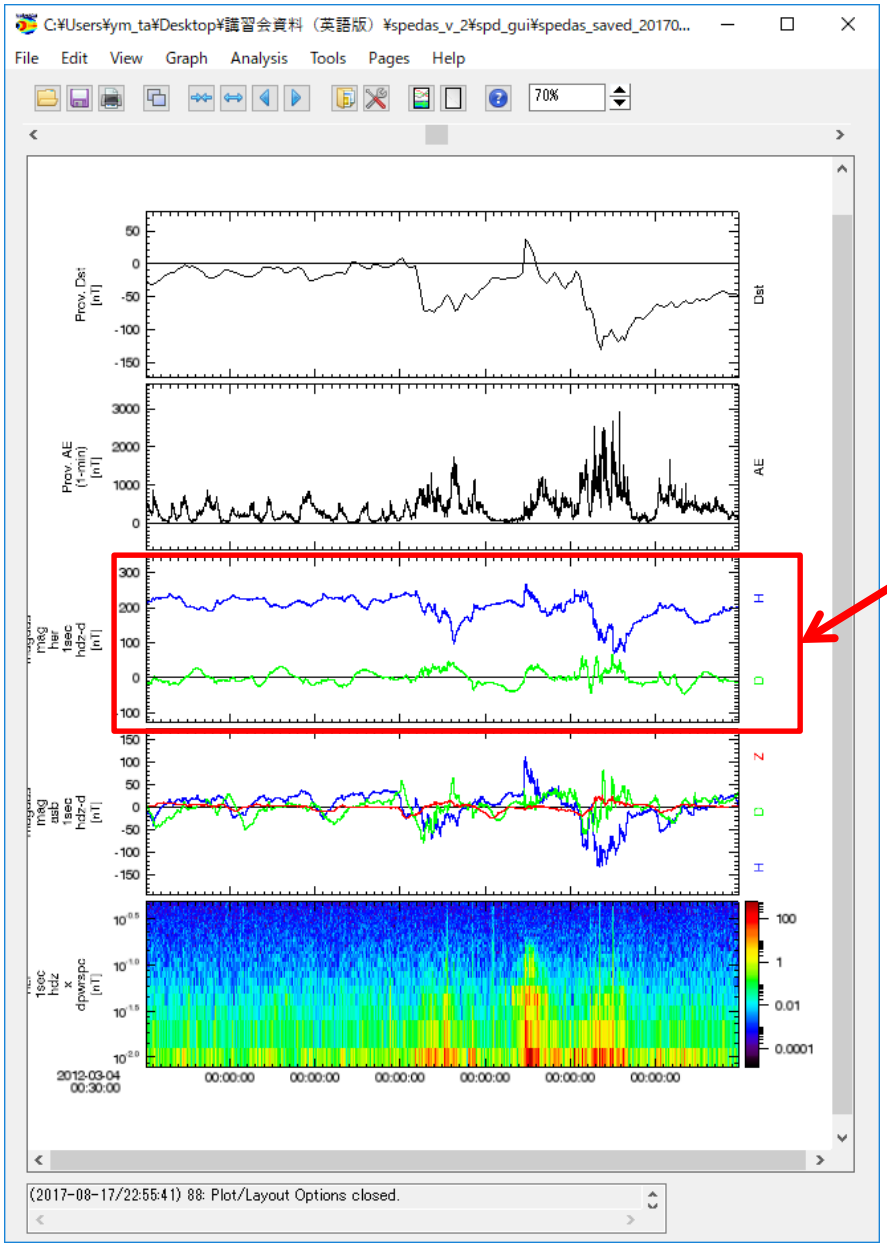
GUI Basic Operation

Open “Plot/Layout Options”



GUI Basic Operation

Result



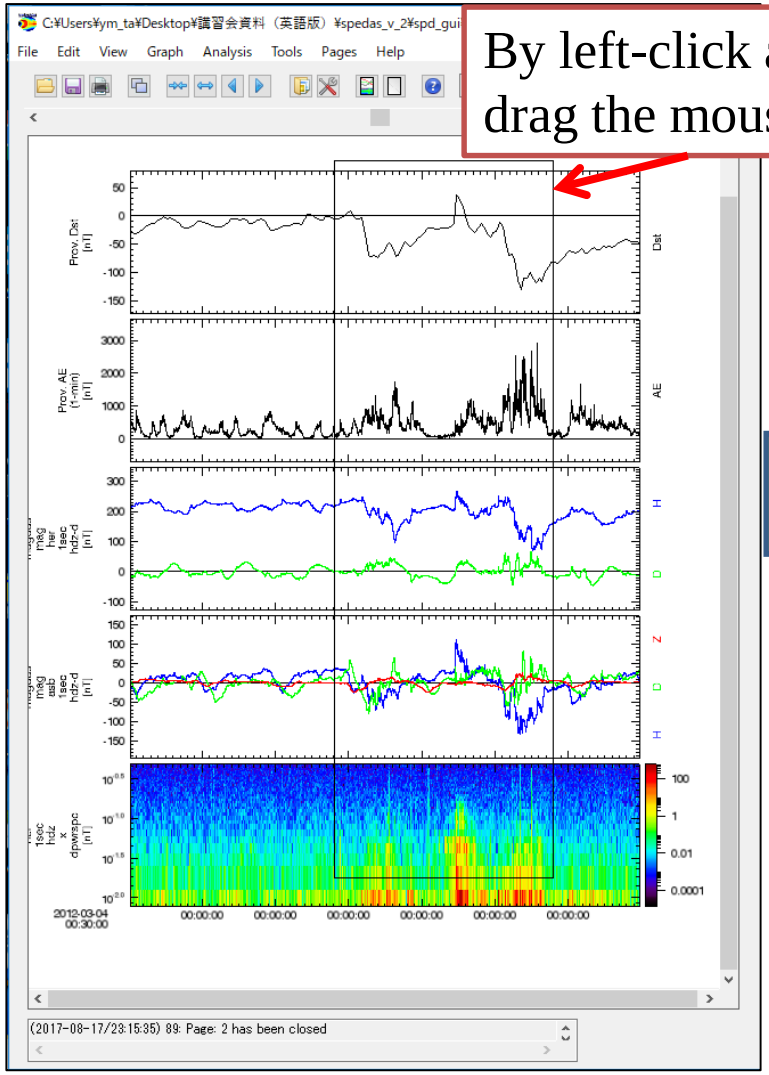
Offset (+200nT) was added to the H comp.

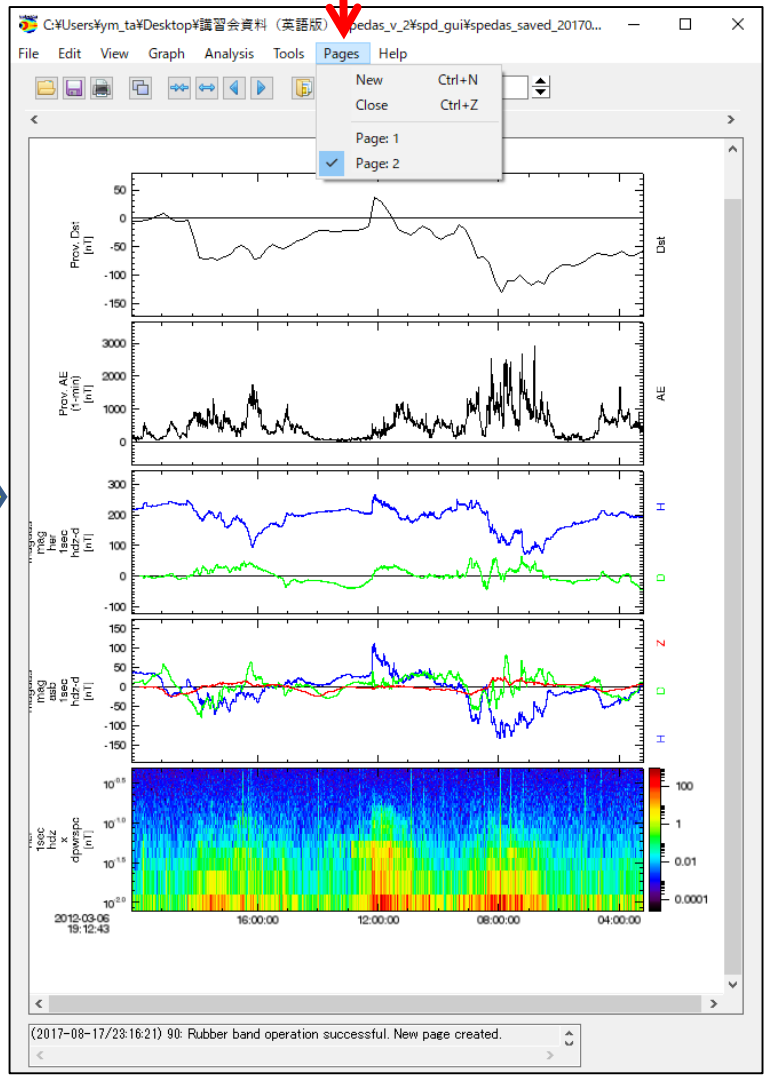
GUI Basic Operation

Try:
Expand the plot using the mouse.

By left-click and drag the mouse

A new page opens





IUGONET

超高層大気長期変動の全地球上ネットワーク観測・研究

Inter-university Upper atmospher Global Observation NETwork

Metadata DB for Upper Atmosphere

How to Use SPEDAS part3

- **Additional data loading**

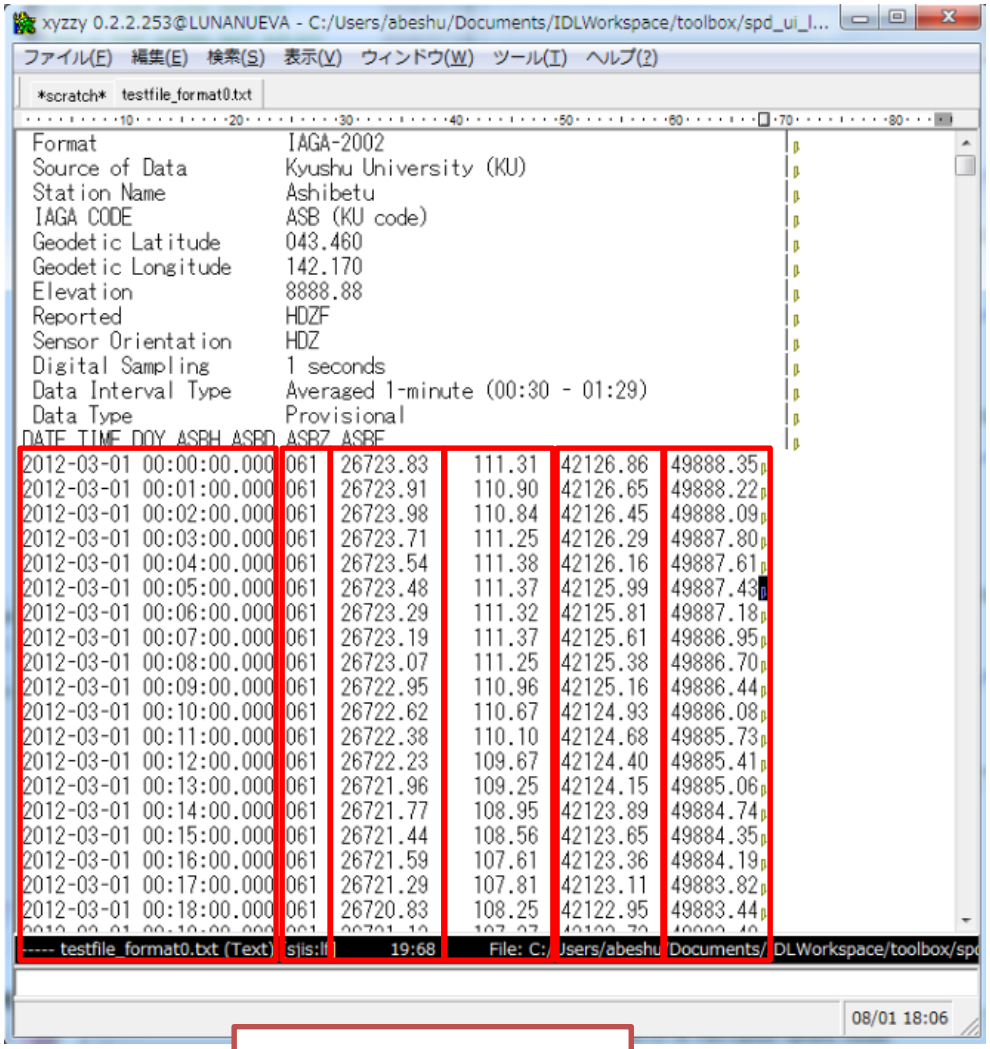
GUI Basic Operation

Lesson:
Load Additional ASCII Data

Sample1: magnetometer data

HEADER(13 lines)

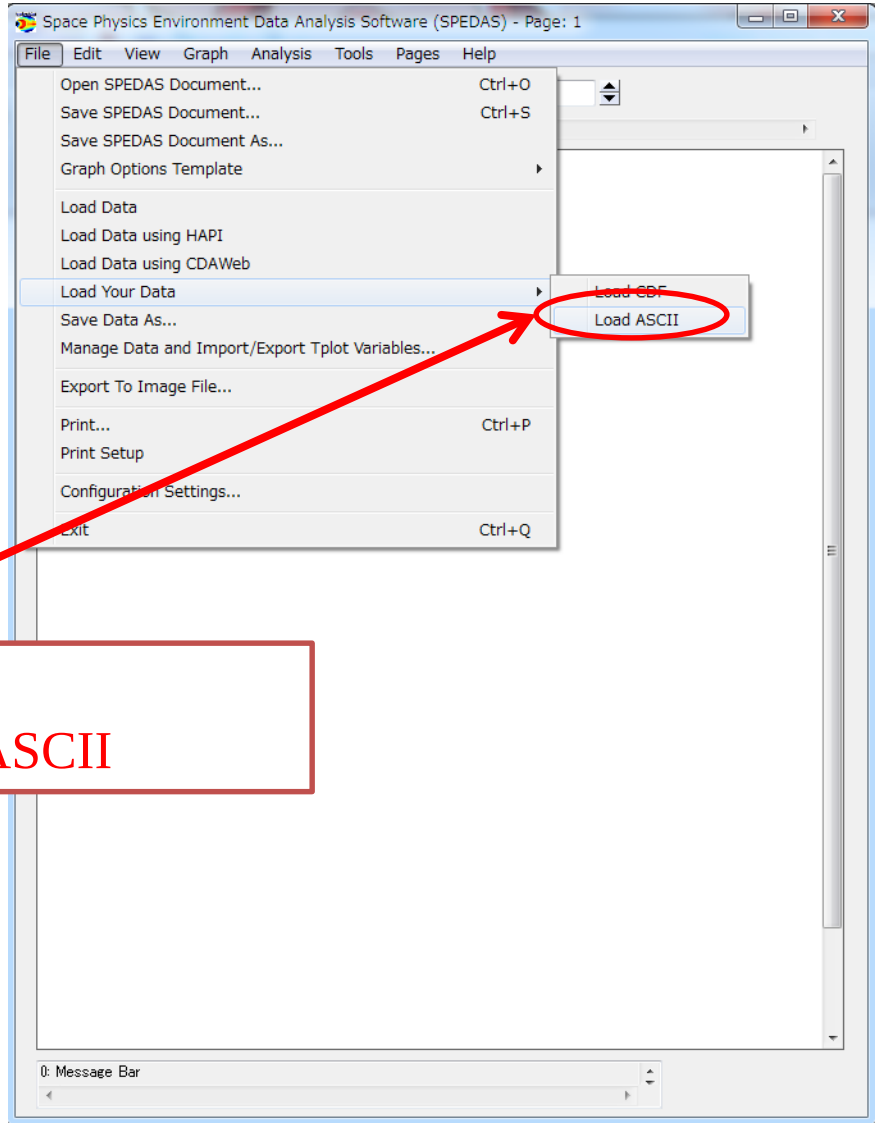
Data(86400lines)



Data(6 columns)

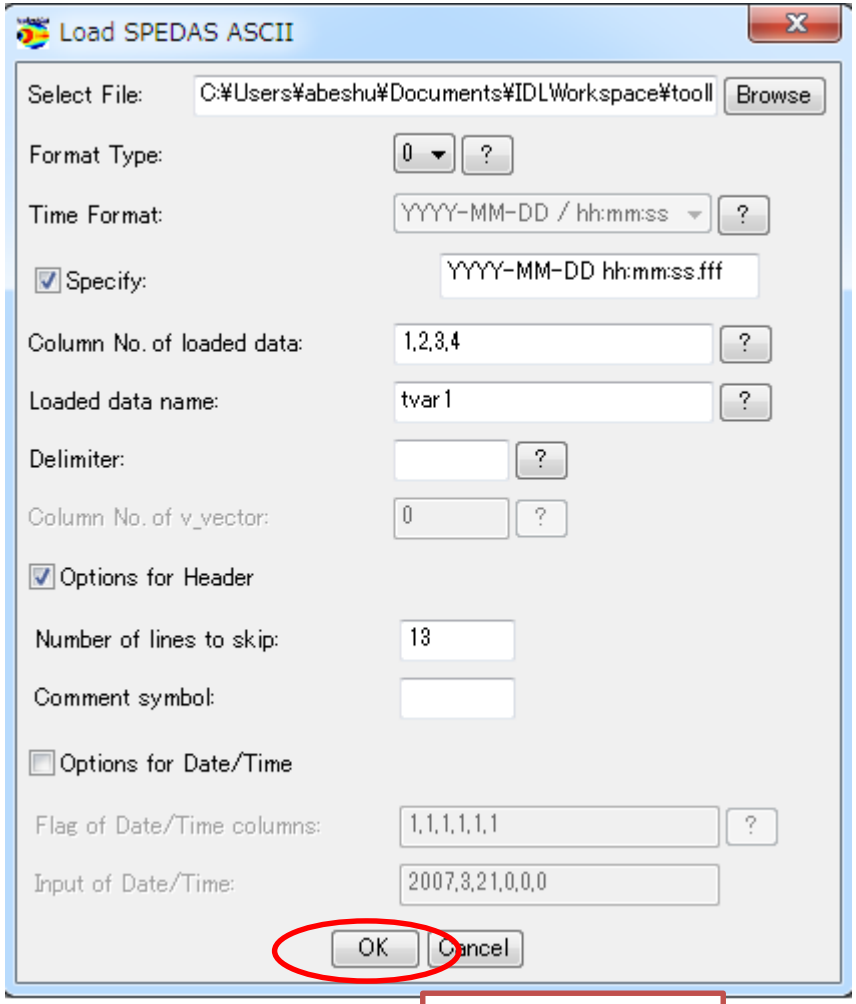
See Data/testfile_format0.txt

GUI Basic Operation



1. Select
File – Load Your Data – Load ASCII

GUI Basic Operation



1. Click"Browse", and select 'testfile_format0.txt'.

2. Format Type: Select 0

3. Time Format: Check Specify, and put 'YYYY-MM-DD hh:mm:ss.fff'

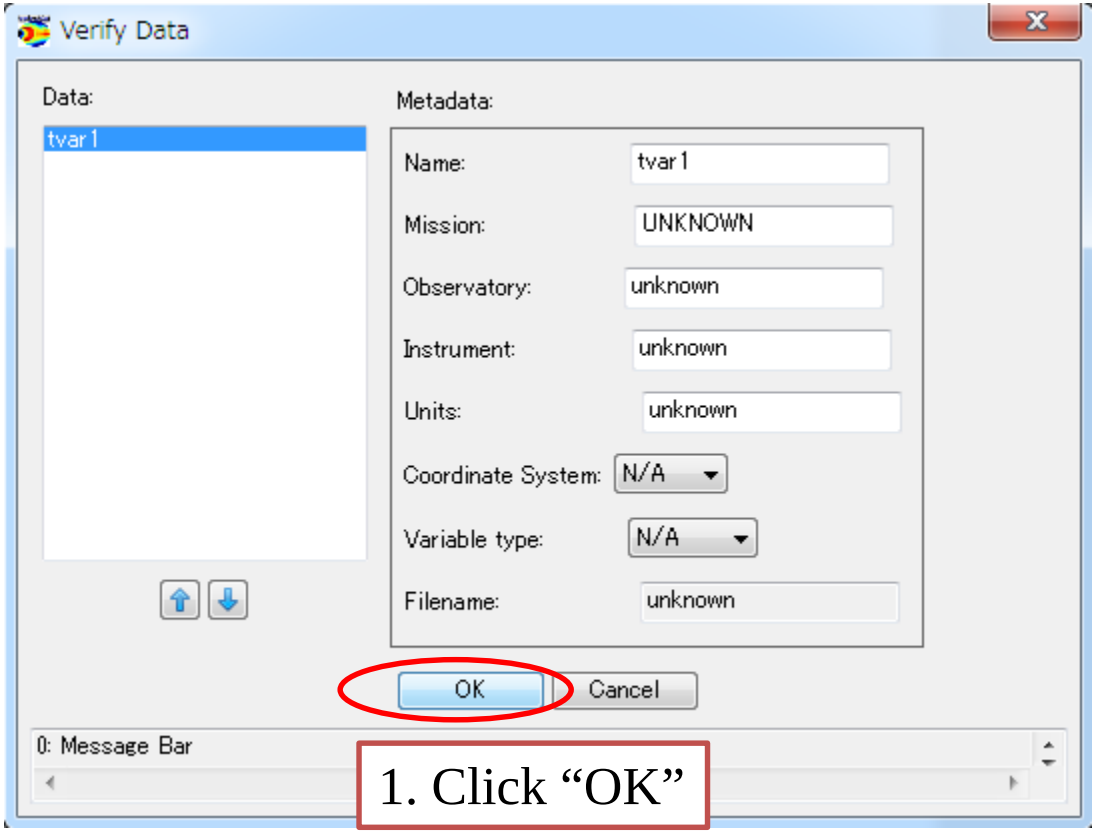
4. Column No. of loaded data: put '1,2,3,4'

Note:Column number starts from 0.

5. Options for Header:
Check the box, and put '13' to Number of lines of skip.

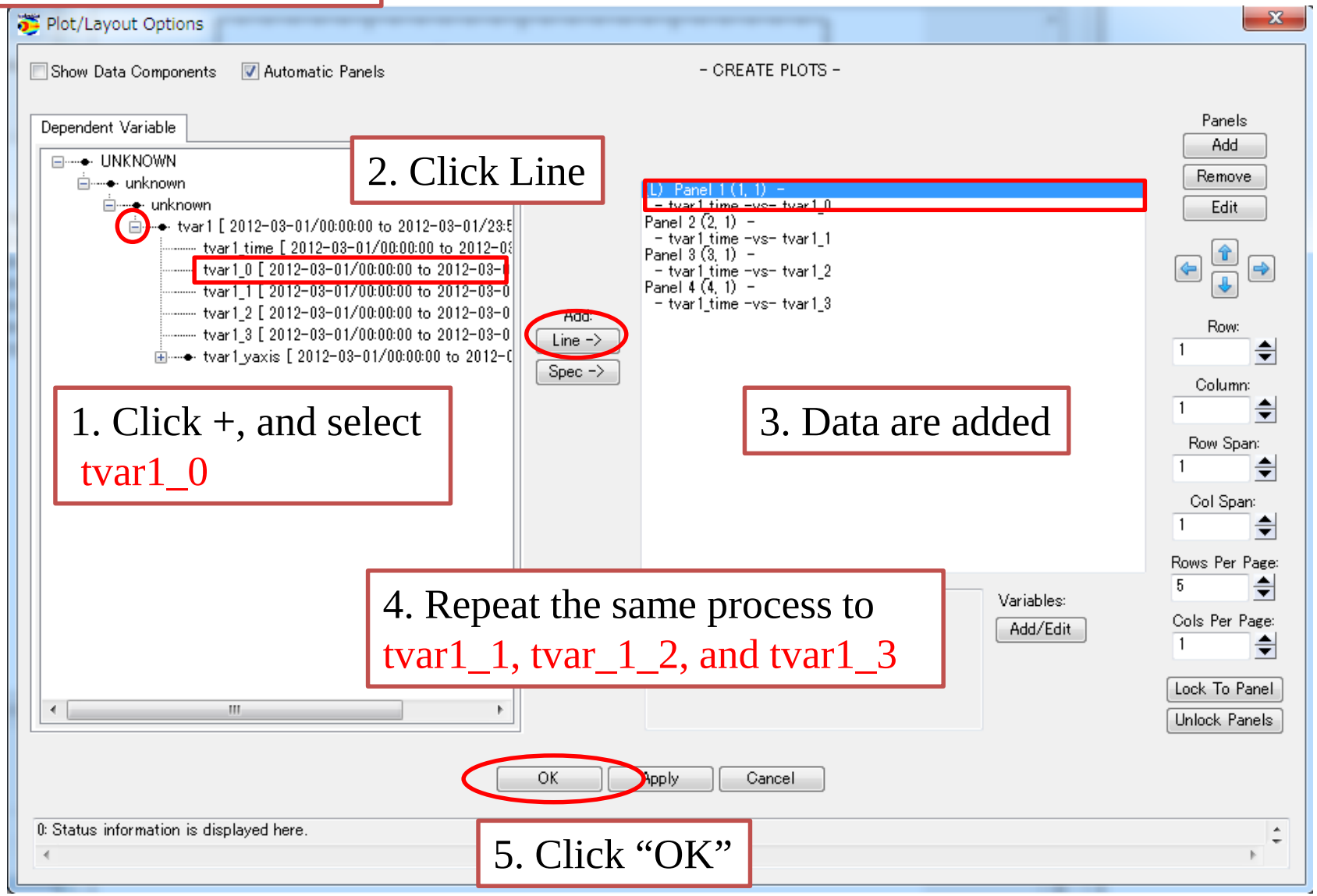
6. Click OK

GUI Basic Operation

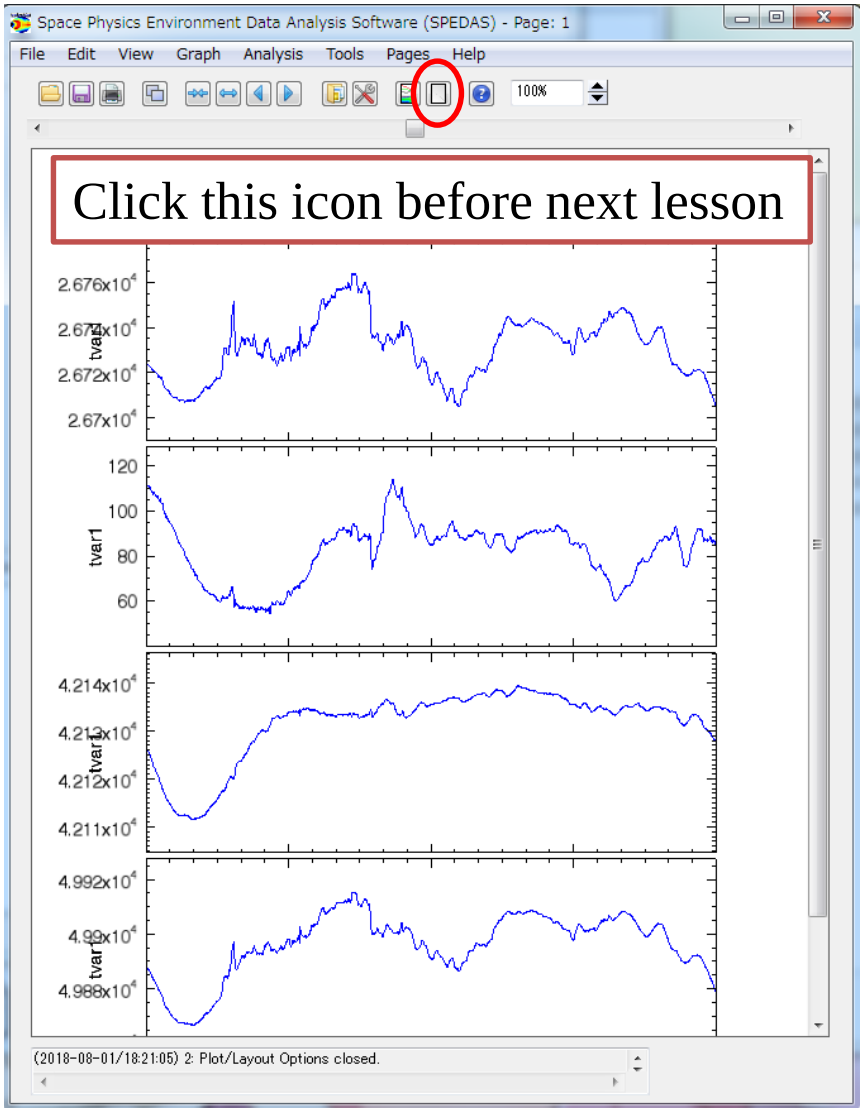


GUI Basic Operation

Open “Plot/Layout Options”



GUI Basic Operation

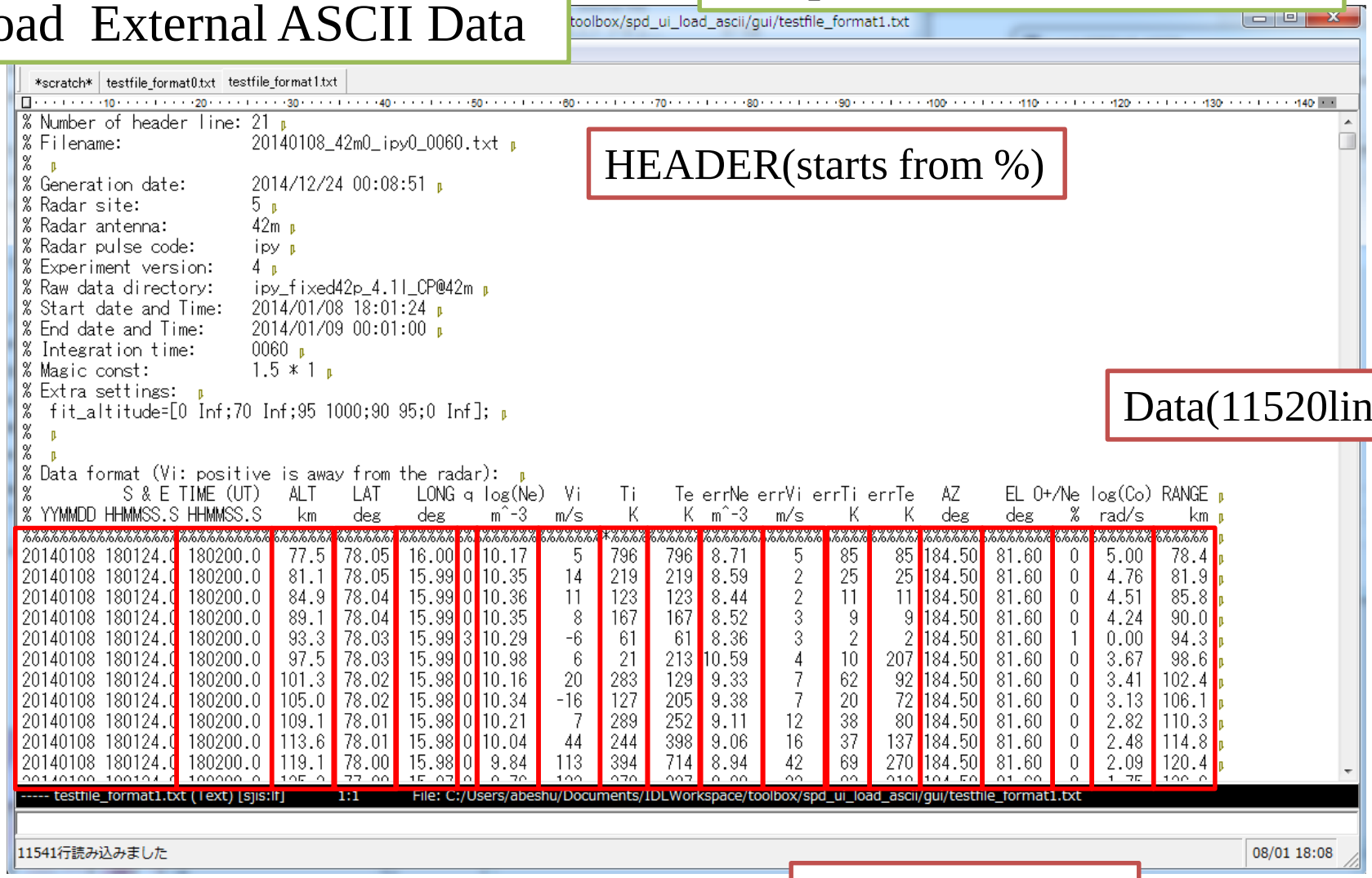


Magnetometer data written in ASCII(IAGA-2002) format are plotted.

GUI Basic Operation

Lesson:
Load External ASCII Data

Sample2: EISCAT radar data



HEADER(starts from %)

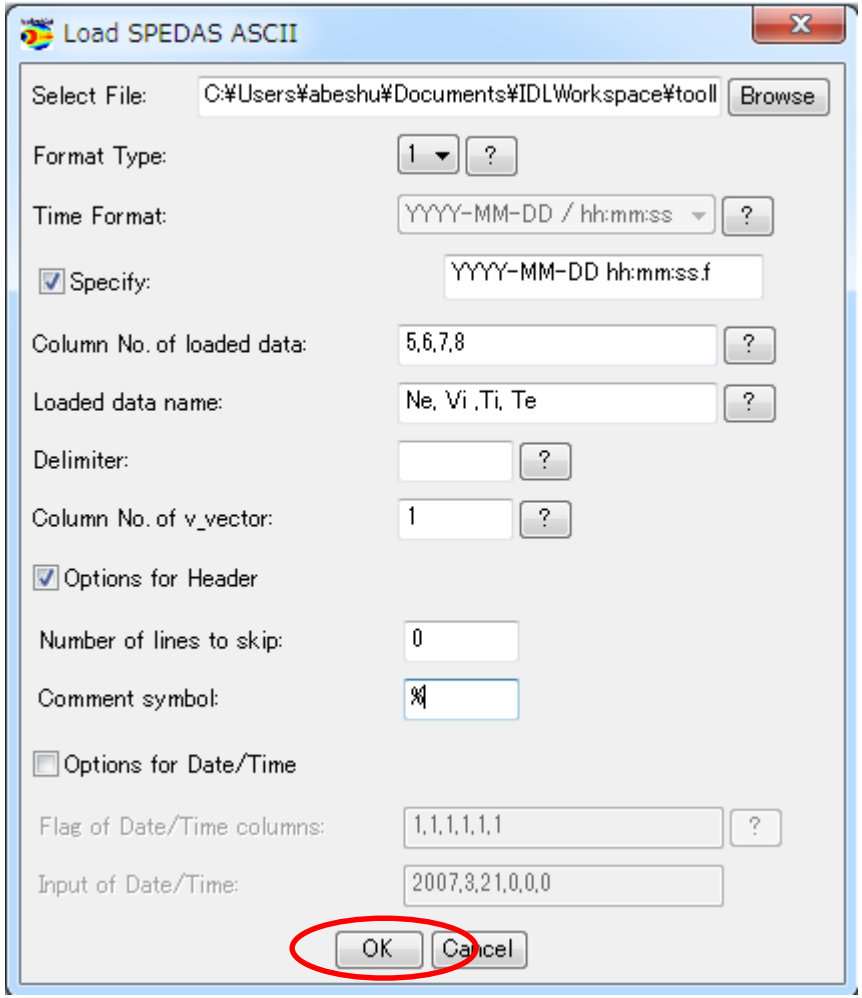
Data(11520lines)

Data(19 columns)

See Data/testfile_format1.txt

GUI Basic Operation

Open File – Load Your Data – Load ASCII



5. Click OK

1. Click"Browse", and select 'testfile_format1.txt'.

2. Format Type: Select 1

3. Time Format: Check Specify, and put 'YYYY-MM-DD hh:mm:ss.f'

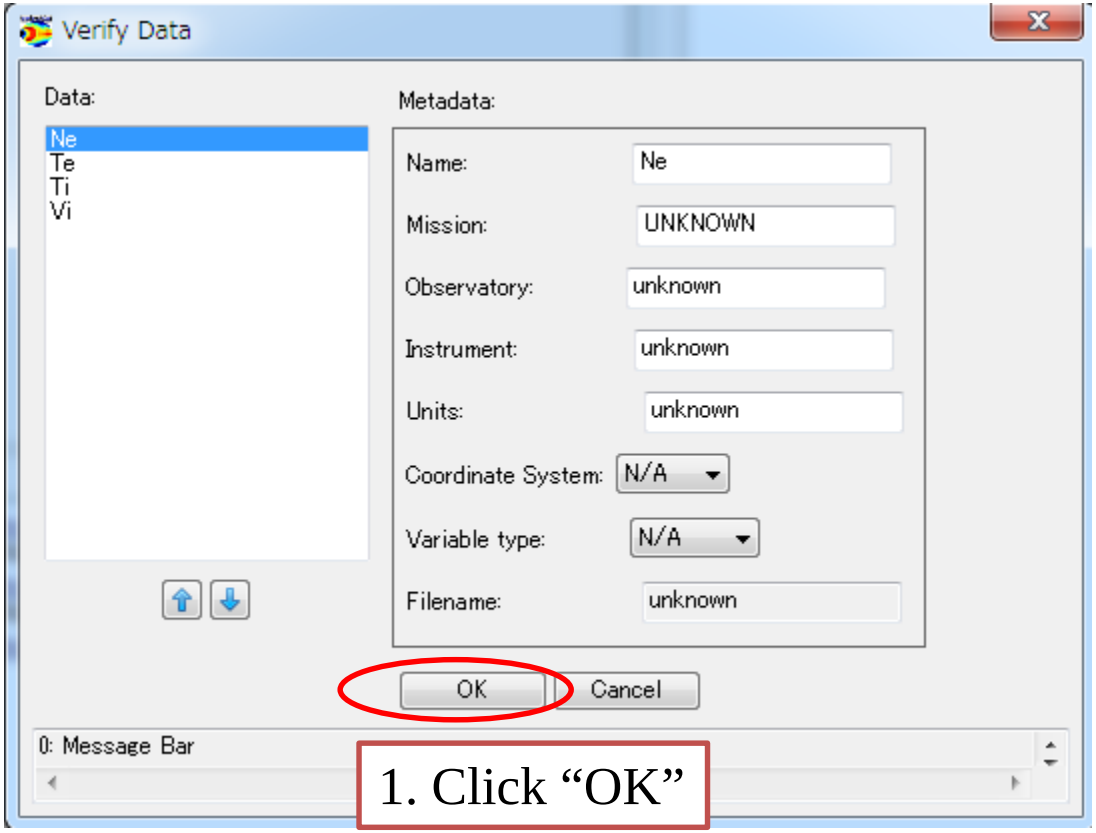
4. Column No. of loaded data: put '5,6,7,8'

5. Loaded data name: put 'Ne, Vi, Ti, Te'

6. Column No. of v_vector: put '1'

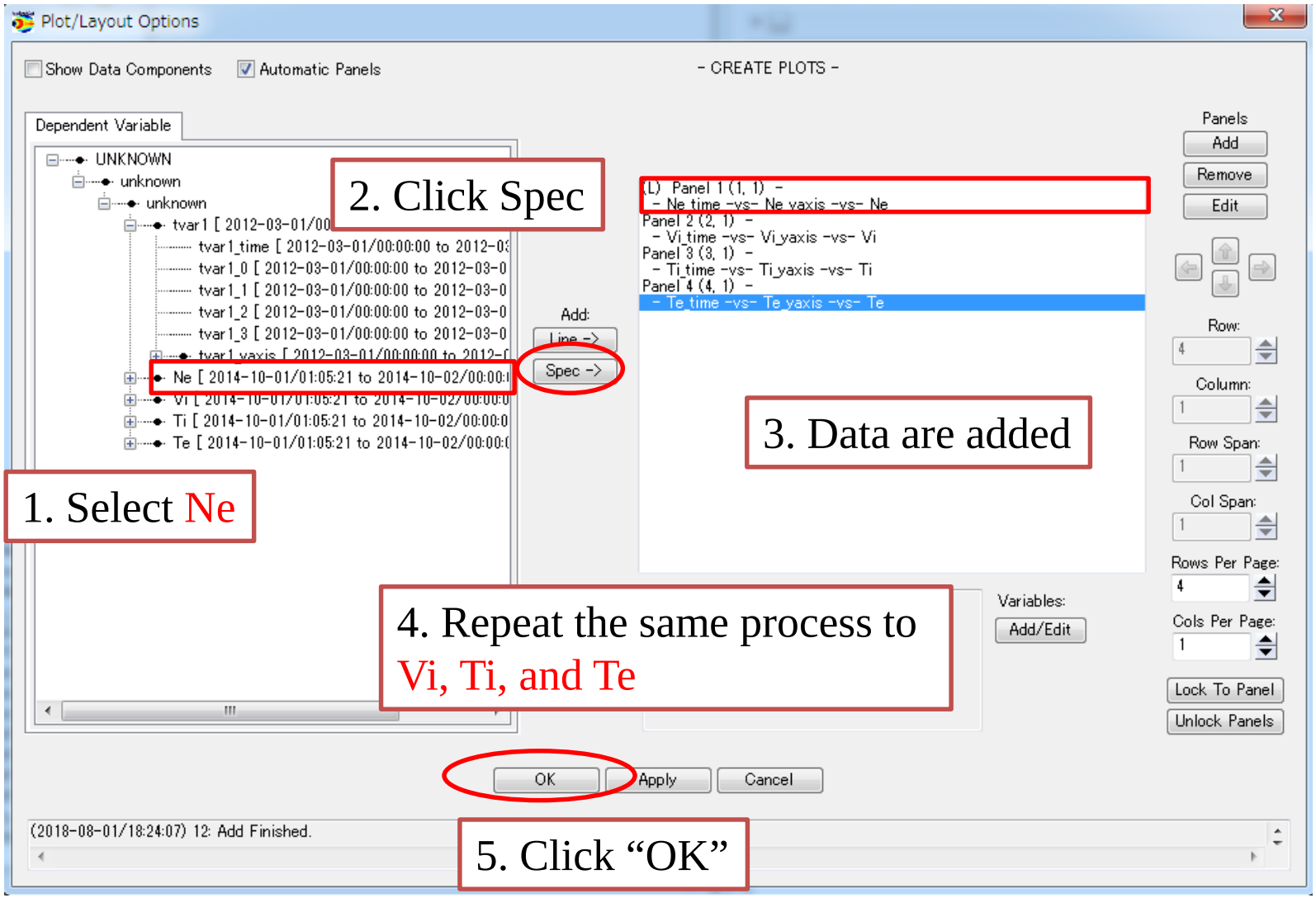
7. Options for Header: Check the box, and put '%' to Comment symbol

GUI Basic Operation

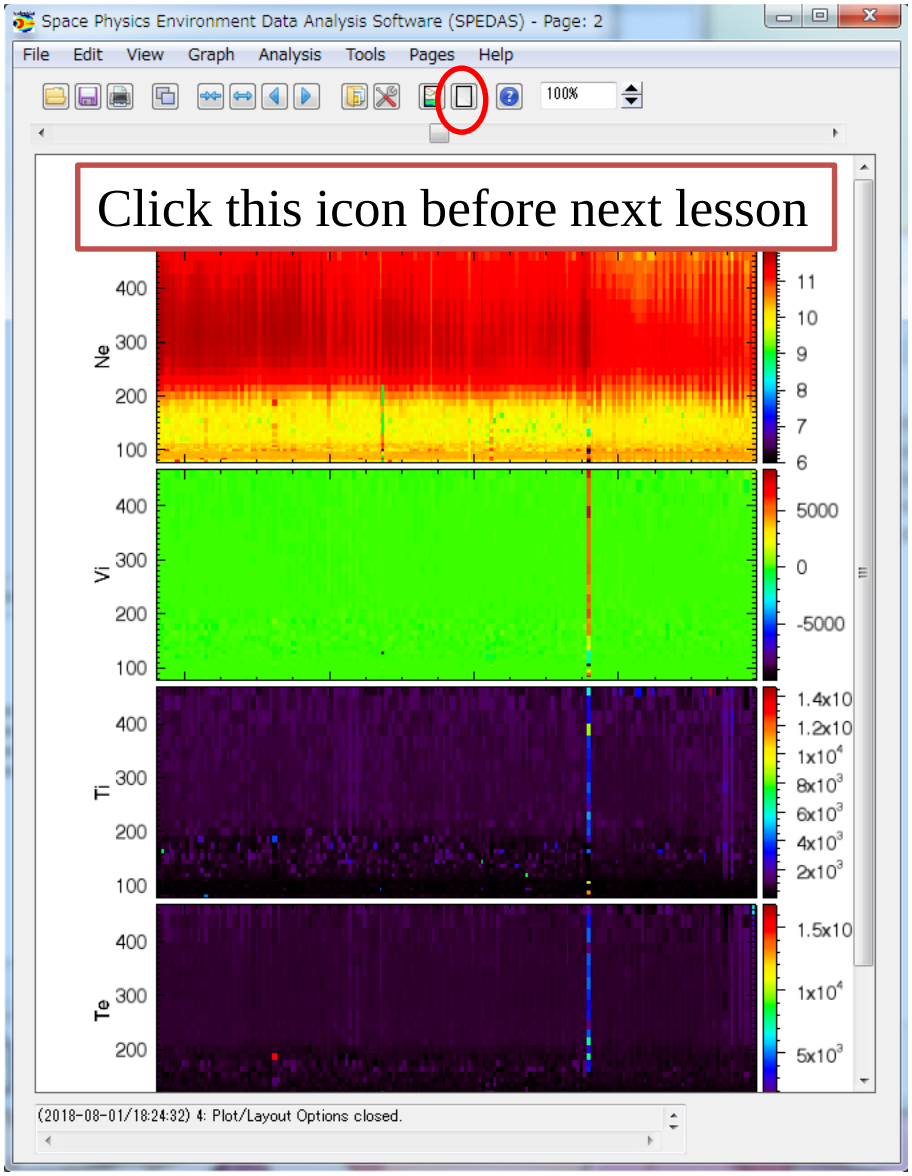


GUI Basic Operation

Open “Plot/Layout Options”



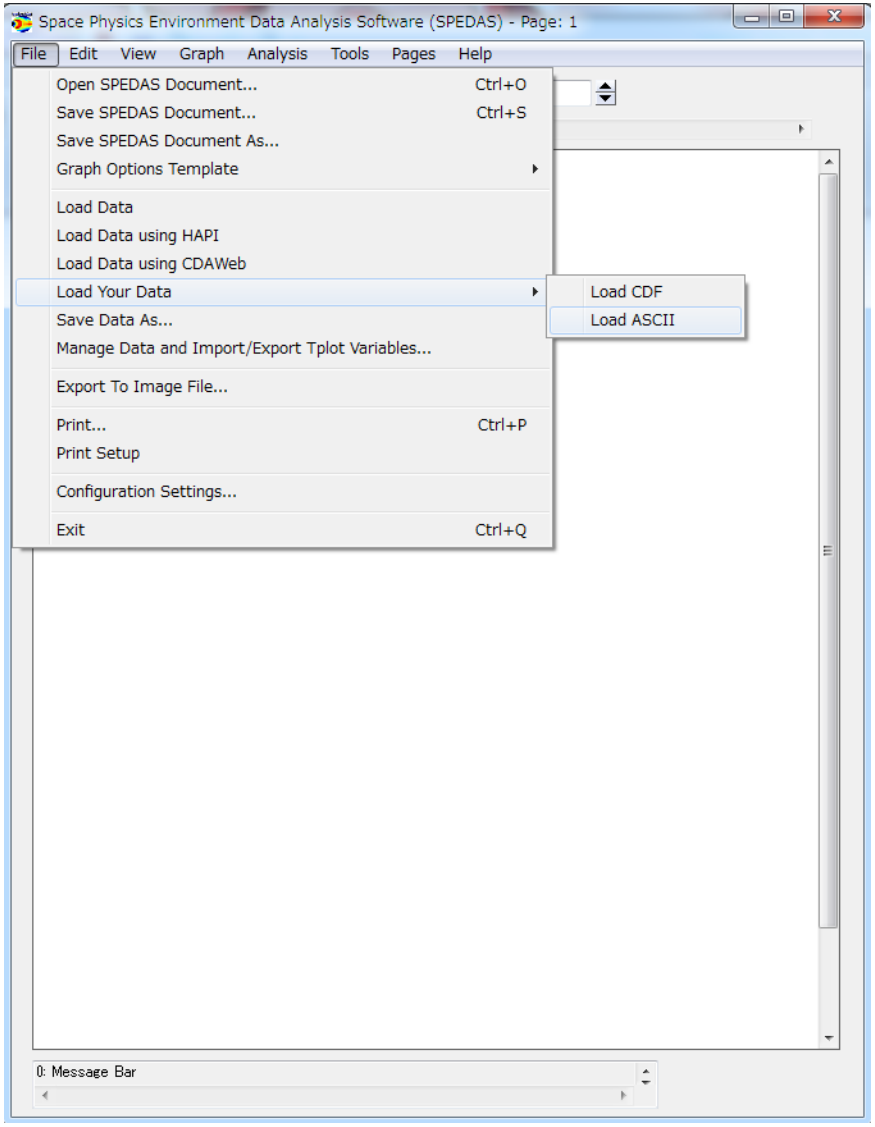
GUI Basic Operation



EISCAT radar data written in ASCII format are plotted in spectrogram.

GUI Basic Operation

Try:
Plot your own ASCII/CDF data using File – Load Your Data – Load ASCII



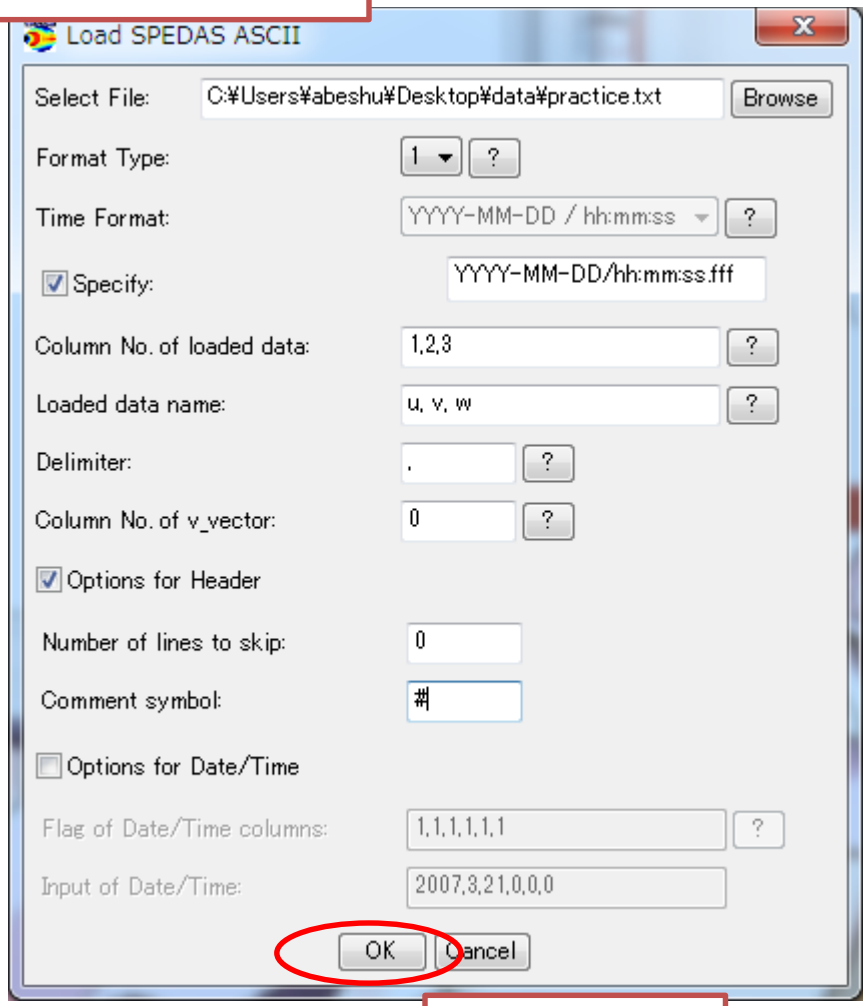
If you do not prepare your own data, let's try to plot Data/practice.txt

Hint: Use format 1 for data loading, and use SPEC for data plotting

GUI Basic Operation

Answer

Open “Load ASCII”



9. Click OK

1. Click”Browse”, and select ‘practice.txt’.

2. Format Type: Select 1

3. Time Format: Check Specify, and put ‘YYYY-MM-DD/hh:mm:ss.fff’

4. Column No. of loaded data: put ‘1,2,3’

5. Loaded data name: put ‘u, v, w’

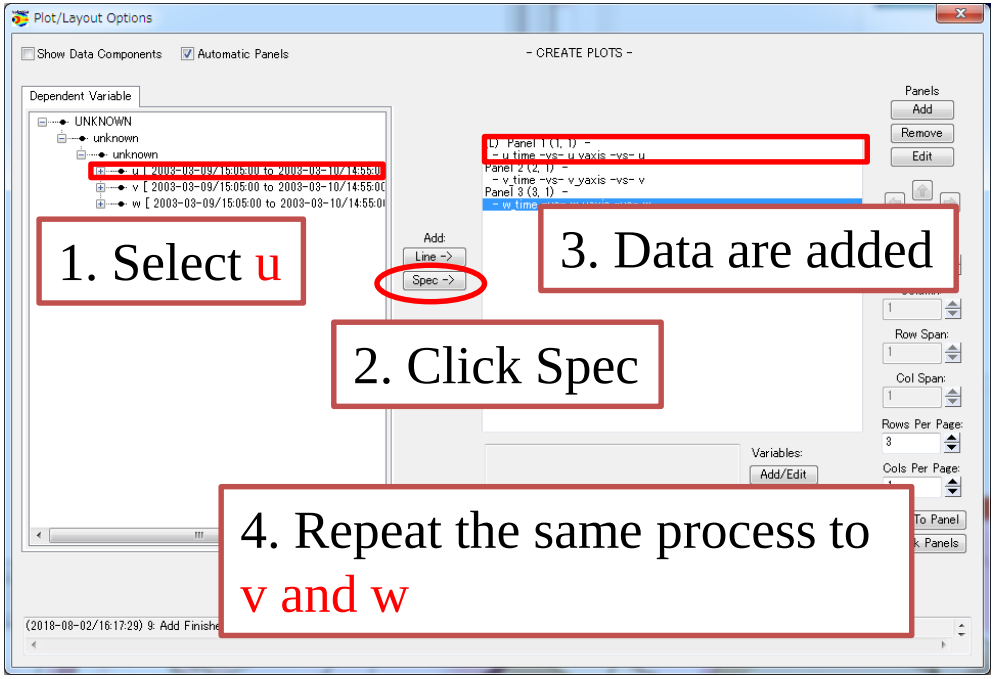
6. Delimiter: put ‘,’

7. Column No. of v_vector: put ‘0’

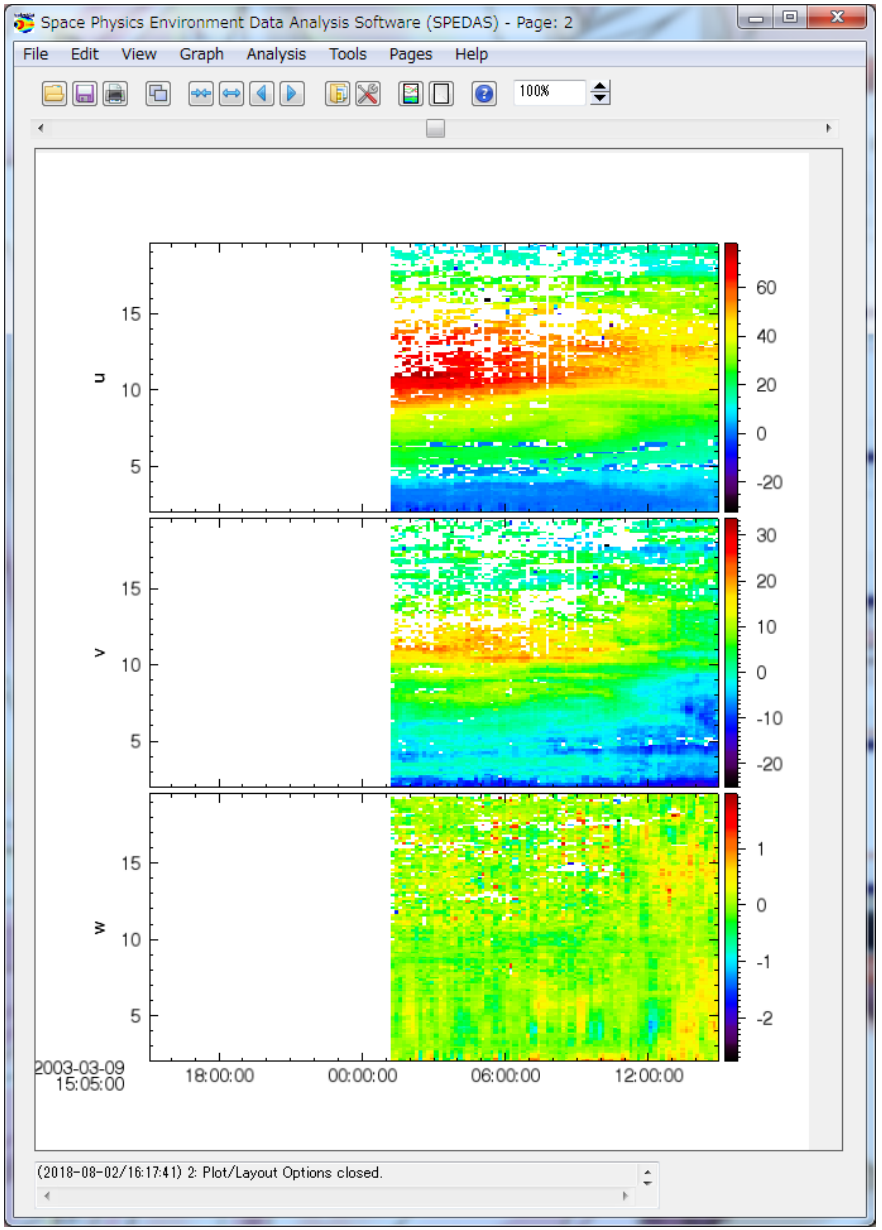
8. Options for Header:
Check the box, and put ‘#’ to Comment symbol

GUI Basic Operation

Open “Plot/Layout Options”



Practice data(wind velocity observed by MU radar) written in ASCII format are plotted in spectrogram.



For advance…

UDAS website： http://www.iugonet.org/product/analysis.jsp

UDAS

IUGONET has provided a plug-in software, UDAS (iUgonet Data Analysis Software), for SPEDAS.
UDAS is included as a SPEDAS standard plug-in. Once you install SPEDAS, UDAS will also be installed. To update UDAS part, please down load it by clicking links below.
Release Note

Latest Version

s3.00.1 for SPEDAS 3.00 (zip, 1MB, already included in SPEDAS 3.00)

Previous Version

s2.00.2 for SPEDAS 2.00 (zip, 1MB, already included in SPEDAS 2.00)
s2.00.1 for SPEDAS 2.00 (zip, 1MB, already included in SPEDAS 2.00)
s1.00.1 for SPEDAS 1.00 (zip, 1MB, already included in SPEDAS 1.00)
3.00.3 for TDAS 8.00 (zip, 1MB)
3.00.2 for TDAS 8.00 (zip, 1MB)
3.00.1 for TDAS 8.00 (zip, 1MB)
2.01.1 for TDAS 7.01 (zip, 1MB)
2.00.2 for TDAS 7.00 (zip, 1MB)
2.00.1 for TDAS 7.00 (zip, 1MB)
1.00.1 for TDAS 6.00 (zip, 1MB)

UDAS egg

UDAS egg (UDAS Easy Guide to Generate your load routines) provides users with the templates for IDL procedures that can load your ow n data files into SPEDAS/IDL. According to the document, the users can easily create the load procedure for their own data by modifying th e template procedure (about 10 lines identified in this routine). It supports Windows, Linux, and Macintosh.
It's easy to use!

1. Prepare your PC in which IDL 8.0 or higher and SPEDAS 2.00 or higher (3.00 is recommended) were installed.
2. Download UDAS egg to your PC and copy it to the directory you want.
3. Modify the template step by step according to the manual.
4. Compile and run the modified procedure to load and plot your data.
5. Further, you can analyze the loaded data using many useful functions included in the SPEDAS.

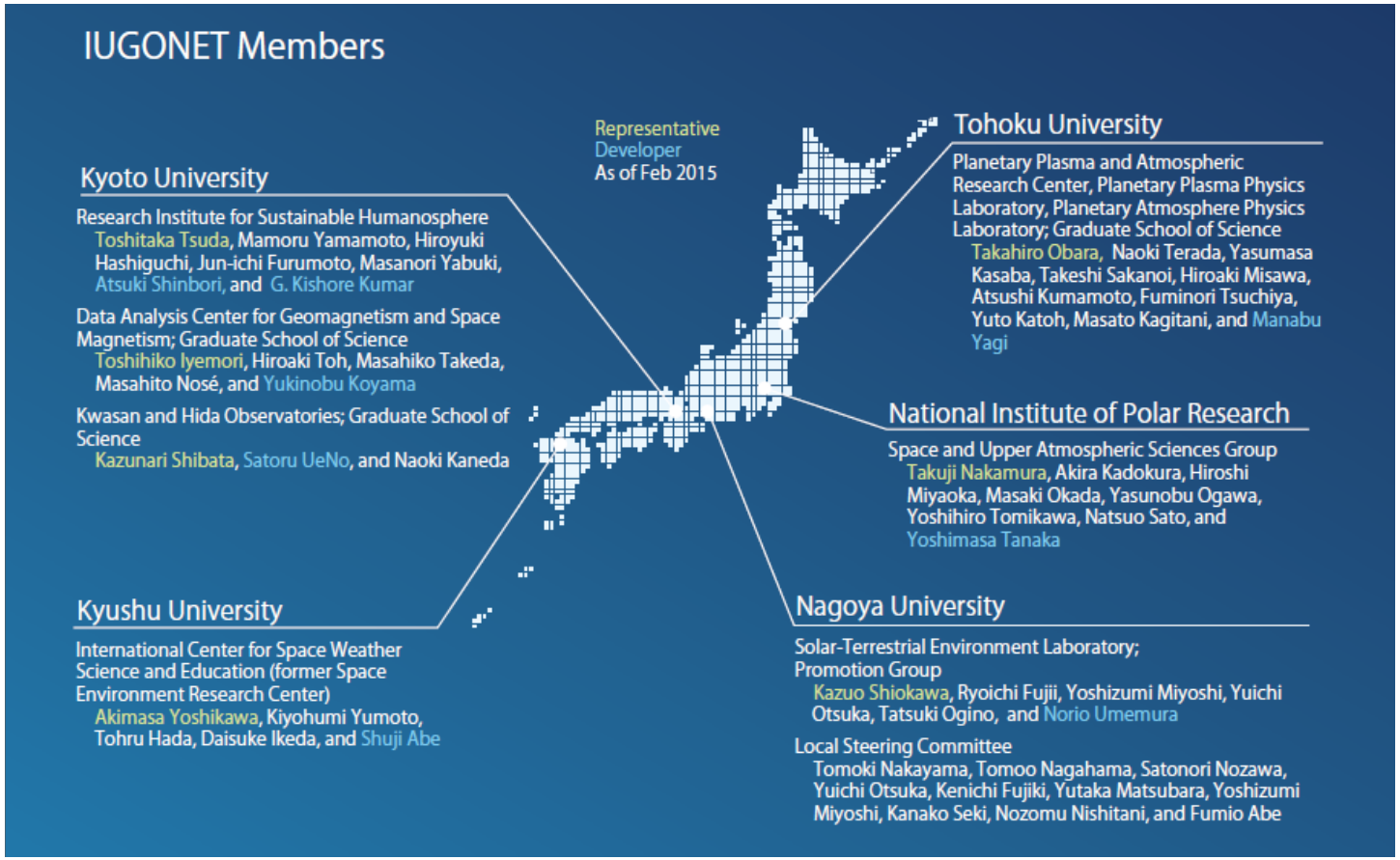
Document (PDF, 180KB)

Latest Version

1.00 for CDF/ASCII (zip, 1MB)

Acknowledgment

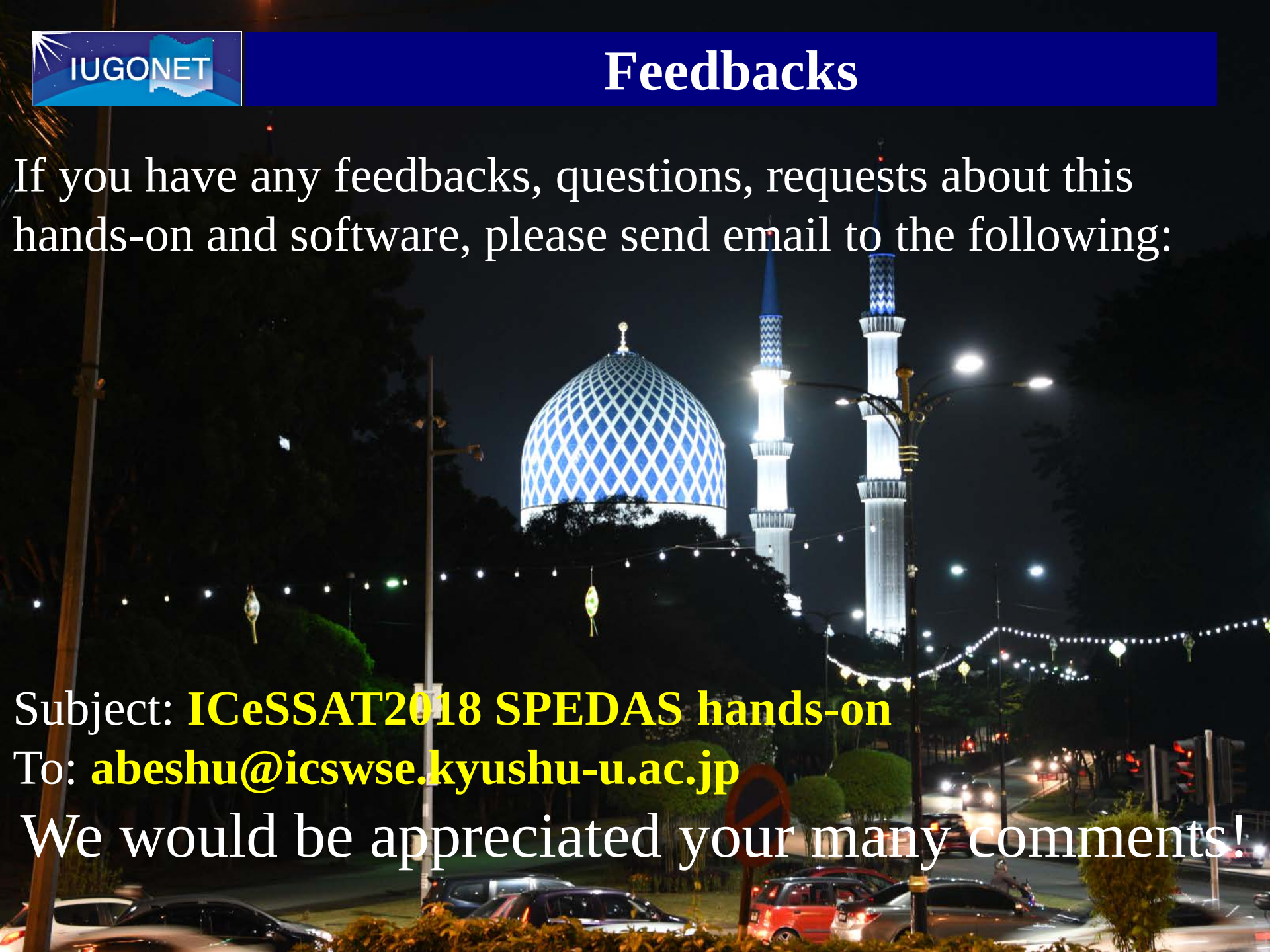
SPEDAS is a grass-roots data analysis software for the Space Physics community, which was developed by scientists and programmers of the UC Berkeley's Space Sciences Laboratory, UCLA's IGPP and other contributors



http://www.iugonet.org/

Feedbacks

If you have any feedbacks, questions, requests about this hands-on and software, please send email to the following:



Subject: **ICeSSAT2018 SPEDAS hands-on**

To: **abeshu@icswse.kyushu-u.ac.jp**

We would be appreciated your many comments!