Instructions for data analysis software:
- Preparation
- The IUGONET project and its products for space weather study
- Installation
- How to Use SPEDAS, part 1
- How to Use SPEDAS, part 2

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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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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

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

- **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

- **Equatorial Atmosphere Observatory**

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

- **SuperDARN Radar**

- **Hida Observatory**
  - Solar Magnetic Activity Research Telescope

- **SuperDARN Hokkaido HF radar**

- **Equatorial Atmosphere Radar**

- **MAGDAS Observation Point**
  - Fluxgate Magnetometer System

- **Peru Ica University**

- **Flare Monitoring Telescope**

- **Itate and Onagawa Observatories**
  - Planetary Radio Telescope

- **Itate and Onagawa Observatories**

- **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.
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

Expand the system to other Geoscience community

Kyushu Univ.
ICSWSE

Kyoto Univ.
RISH

Nagoya Univ.
STEL

IPRT

Tohoku Univ.
PPARC

WDC for Cosmic Rays

NIPR

WDC for Aurora

IUGONET Information Center

Kyoto Univ.
Astronomical Observatories

PPARC

WDC for geomagnetism Space Magnetism

Chairperson

Nagoya Univ.
ICSWSE

EISCAT Svalbard Radar

Kyoto Univ.
DACGSM
IUGONET metadata format = SPASE + modifications

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

- 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.

http://search.iugonet.org/
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
Data can be easily plotted, for example, by only three basis commands with the SPEDAS-CUI tool.

1. Set a time period
2. Load *** data
3. Plot the loaded data

\[ \text{timespan, 'yyyy-mm-dd'} \]
\[ \text{iug\_load\_***} \]
\[ \text{tplot, +++} \]

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

13:40 UT

11.51 UT
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.
ICSU - WDS
ICSU - CODATA
(International Framework)

IUGONET is a basis of a network datacenter

- Functioning like a big data center efficiently

IUGONET includes three WDC members
- NIPR(Aurora)
- Kyoto Univ.(Geomagnetism)
- STEL(Cosmic Ray)

Middle Class DC

Various Geosciences Databases in Japan

IUGONET includes three WDC members

Virtual Observatory (US STP community)

SPASE

VMO - VEPO

Virtual Observatory (Project of EU STP community)

RBO

Japanese STP community

Big Data Centers
Hand on of SPEDAS
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

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

Supported 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]  …
```

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

\[
\begin{align*}
\text{date}[0] & \quad \text{time}[0] & \quad \text{vdata}[0] & \quad \text{ydata1}[0] & \quad \text{ydata2}[0] & \quad \text{ydata3}[0] & \ldots \\
\text{date}[0] & \quad \text{time}[0] & \quad \text{vdata}[1] & \quad \text{ydata1}[1] & \quad \text{ydata2}[1] & \quad \text{ydata3}[1] & \ldots \\
\vdots & & \\
\text{date}[0] & \quad \text{time}[1] & \quad \text{vdata}[99] & \quad \text{ydata1}[99] & \quad \text{ydata2}[99] & \quad \text{ydata3}[99] & \ldots \\
\text{date}[0] & \quad \text{time}[1] & \quad \text{vdata}[0] & \quad \text{ydata1}[100] & \quad \text{ydata2}[100] & \quad \text{ydata3}[100] & \ldots \\
\text{date}[0] & \quad \text{time}[1] & \quad \text{vdata}[1] & \quad \text{ydata1}[101] & \quad \text{ydata2}[101] & \quad \text{ydata3}[101] & \ldots \\
\vdots & & \\
\text{date}[0] & \quad \text{time}[1] & \quad \text{vdata}[99] & \quad \text{ydata1}[199] & \quad \text{ydata2}[199] & \quad \text{ydata3}[199] \\
\end{align*}
\]

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


[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 to apply the changes. Restart the program and then try your plot over again.
Start of IDL-VM(GUI) tool

Ready?
How to Use SPEDAS
part1

- Load data
- Plot data
- Save figure, data, and your work
Lesson: Load Dst index

1. Click this icon

Or,
Select “Load Data” from “File” dropdown menu.
GUI Basic Operation

1. Click **IUGONET Tab**

2. Uncheck “Use Single Day”

3. Set Date and Time
   - Start Time: 2012-03-04/00:00:00
   - Stop Time: 2012-03-11/00:00:00

4. Change Instrument Type
   - geomagnetic_field_index

Note: # means that the load procedure has been developed in collaboration with the ERG Science Center.
1. Choose three parameters
   - *Dst_index*
   - *(all)*
   - *'

2. Click the arrow
1. Click "OK"
1. Data was loaded successfully!

2. Click “Done”
Lesson: Plot data

1. Click this icon

Or,
Select “Plot/Layout Options…” from “Graph” dropdown menu.
1. Select data which you want to plot: **wdc_mag_dst_prov**

2. Click “Line”
1. Selected variable name is added to this box

2. Click OK
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.
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
1. Select IUGONET tab

2. Select magnetic_field_index

3. Select AE_index, *(all), *

4. Click arrow

5. Data is loaded
1. Select geomagnetic_field_fluxgate

2. Select magdas#, asb & her, *

3. Click arrow

4. Data is loaded

5. Click Done
Lesson: Add Plot

Or, Select “Plot/Layout Options…” from “Graph” dropdown menu.
1. Click Add
2. Select wdc_mag_ae_prov_1min
3. Click “Line”
4. Data are added
5. Click OK
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
1. Select `magdas_mag_her_1sec_hdz`

2. Click Line

3. Data are added
1. Select magdas_mag_asb_1sec_hdz
2. Click Line
3. Data are added
4. Click OK
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”
Click “Save”
GUI Basic Operation

X pixel 428, Y pixel 554

X pixel 856, Y pixel 554 (65%)
Lesson:
Save data as ascii

1. Select
File – Save Data As
1. Select data which you want to save: `magdas_mag_her_1sec_hdz_x`

2. Check this box

3. Select time interval

4. Check this box

5. Click Save

6. Select save folder

7. Input file name (data is saved in csv format)

8. Click “save”
An ascii data file was successfully saved!!!
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...
How to Use SPEDAS
part2

- Restore your work
- Manage axis
- Process and data
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.
Lesson:
Remove plot

1. Select
Graph – Plot/Layout Options
1. Select

```
wdc_mag_ae_prov_1min_time -vs- wdc_mag_ae_prov_1min_4
```

in the right-hand panel.

2. Click “Remove”

3. Remove

```
wdc_mag_ae_prov_1min_time -vs- wdc_mag_ae_prov_1min_3
wdc_mag_ae_prov_1min_time -vs- wdc_mag_ae_prov_1min_2
wdc_mag_ae_prov_1min_time -vs- wdc_mag_ae_prov_1min_1
```

in the same way

4. Click OK
GUI Basic Operation

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

Use these icons:
- 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
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"
Lesson: Customize Ticks.

1. Select **Major Ticks By Number or Interval**.

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

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.
Lesson: Reset X range (time scale)

1. Select X Axis Options
1. Select (L) Panel 1(1, 1) -
2. Select Auto Range
3. Click “OK”
Lesson: Processing - subtract average

1. Select Analysis – Data Processing
GUI Basic Operation

1. Select data you want to process
   - magdas_mag_asb_1sec_hdz
   - magdas_mag_her_1sec_hdz

2. Click right arrow

3. Active Data are added

4. Click Subtract Average
GUI Basic Operation

1. Click Done

New variables are created.
magdas_mag_asb_1sec_hdz-d
magdas_mag_her_1sec_hdz-d
GUI Basic Operation

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!
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

1. Select
Analysis – Data Processing
1. Click Clear Active

2. Active Data is removed
1. Select data: `magdas_mag_her_1sec_hdz`

2. Click right arrow

3. Active Data are added

4. Click Power Spectrum

5. Click OK
1. New variables are created!

2. Click Done
GUI Basic Operation

1. Select magdas_mag_her_1sec_hdz_x_dpwrspc
2. Click Spec
3. Data are added
4. Click OK
This color bar can be customized in Graph - Z Axis Options.
Lesson: Use Calculate (Equation editor)

1. Select Analysis – Calculate…
GUI Basic Operation

Equation Editor for SPEDAS

Variable: Your loaded data

Built-in function:
- IUGONET
- geomagnetic_field_index
  - dst
  - wdc_mag_dst: 2012-03-04 00:00:00 to 2012-
  - ae
  - wdc_mag_auc: 2012-03-04 00:00:00 to 2012-
- geomagnetic_field_fluxgate
  - asb
    - magdas_mag: 2012-03-04 00:00:00 to 2012-
  - her
    - magdas_mag: 2012-03-04 00:00:00 to 2012-

Built-in Operator:
- +
- -
- *
- /
- <<
- >
- <
- >>

Built-in Constant:
- pi
- e
- Re

Select item from list to add it to program.

(2017-08-17 23:24:21) 1: Calculate opened. Displaying File: --scratch--
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
Lesson:
Make an equation using the loaded variables.

1. Select `magdas_mag_her_1sec_hdz-d_x`

2. Click arrow

3. Variable is added

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

1. Click Run

2. A new variable is created

3. Click done

笑道magdas_mag_her_1sec_hdz-d_x_ofst" = "magdas_mag_her_1sec_hdz-d_x" + 200
1. Select Panel 3 and Remove it

2. Select
   - magdas_mag_her_1sec_hdz-d_y
   - magdas_mag_her_1sec_hdz-d_x_ofst

3. Click Line

4. Data are added
GUI Basic Operation

1. Change the value of Row to 3

2. Panel 6 is changed to (3, 1)

3. Click OK
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
How to Use SPEDAS
part3

- Additional data loading
Lesson: Load Additional ASCII Data

Sample1: magnetometer data

**HEADER (13 lines)**

Data (6 columns)

See `Data/testfile_format0.txt`

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>XYZ1</th>
<th>XYZ2</th>
<th>XYZ3</th>
<th>XYZ4</th>
<th>XYZ5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-03-01</td>
<td>00:00:00</td>
<td>26723.88</td>
<td>111.31</td>
<td>42126.88</td>
<td>49888.35</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>01:00:00</td>
<td>26723.91</td>
<td>110.90</td>
<td>42126.65</td>
<td>49888.22</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>02:00:00</td>
<td>26723.86</td>
<td>108.84</td>
<td>42126.45</td>
<td>49888.09</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>03:00:00</td>
<td>26723.71</td>
<td>111.25</td>
<td>42125.25</td>
<td>49888.80</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>04:00:00</td>
<td>26723.54</td>
<td>111.38</td>
<td>42125.16</td>
<td>49888.61</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>05:00:00</td>
<td>26723.46</td>
<td>112.31</td>
<td>42125.99</td>
<td>49888.42</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>06:00:00</td>
<td>26723.29</td>
<td>112.31</td>
<td>42125.81</td>
<td>49887.18</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>07:00:00</td>
<td>26723.19</td>
<td>112.31</td>
<td>42125.61</td>
<td>49888.95</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>08:00:00</td>
<td>26723.07</td>
<td>112.31</td>
<td>42125.38</td>
<td>49888.70</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>09:00:00</td>
<td>26722.95</td>
<td>112.31</td>
<td>42125.18</td>
<td>49888.44</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>10:00:00</td>
<td>26722.82</td>
<td>112.31</td>
<td>42125.04</td>
<td>49888.08</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>11:00:00</td>
<td>26722.38</td>
<td>112.31</td>
<td>42124.88</td>
<td>49887.75</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>12:00:00</td>
<td>26722.23</td>
<td>112.31</td>
<td>42124.68</td>
<td>49887.50</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>13:00:00</td>
<td>26721.96</td>
<td>112.31</td>
<td>42124.40</td>
<td>49886.41</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>14:00:00</td>
<td>26721.77</td>
<td>112.31</td>
<td>42124.15</td>
<td>49885.06</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>15:00:00</td>
<td>26721.44</td>
<td>112.31</td>
<td>42123.89</td>
<td>49884.74</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>16:00:00</td>
<td>26721.19</td>
<td>112.31</td>
<td>42123.63</td>
<td>49884.35</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>17:00:00</td>
<td>26720.92</td>
<td>112.31</td>
<td>42123.38</td>
<td>49883.82</td>
<td></td>
</tr>
<tr>
<td>2012-03-01</td>
<td>18:00:00</td>
<td>26720.63</td>
<td>112.31</td>
<td>42123.11</td>
<td>49883.44</td>
<td></td>
</tr>
</tbody>
</table>
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

1. Click “OK”
Open “Plot/Layout Options”

1. Click +, and select tvar1_0

2. Click Line

3. Data are added

4. Repeat the same process to tvar1_1, tvar_1_2, and tvar1_3

5. Click “OK”
GUI Basic Operation

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

Click this icon before next lesson
**Lesson:**
Load External ASCII Data

**Sample2: EISCAT radar data**

```
HEADER (starts from %)
```

Data (11520 lines)

See [Data/testfile_format1.txt](https://example.com/data/testfile_format1.txt)

**Data (19 columns)**
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. Loading 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

5. Click OK
GUI Basic Operation

1. Click “OK”
GUI Basic Operation

1. Select Ne
2. Click Spec
3. Data are added
4. Repeat the same process to Vi, Ti, and Te
5. Click “OK”
GUI Basic Operation

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

Click this icon before next lesson
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
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
9. Click OK
Open “Plot/Layout Options”

1. Select u
2. Click Spec
3. Data are added
4. Repeat the same process to v and w

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 download 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 7.00 (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 own data files into SPEDAS/IDL. According to the document, the users can easily create the load procedure for their own data by modifying the 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)
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.
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!