Quick-Guide

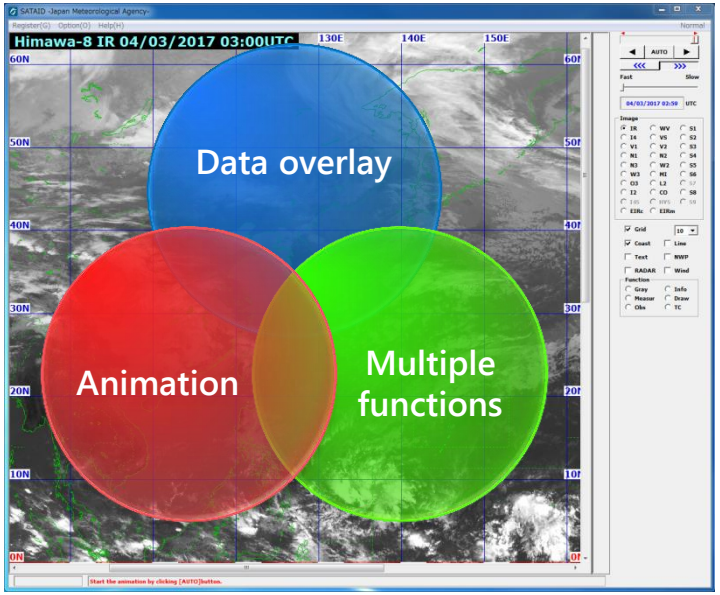
to SATAID

Japan Meteorological Agency

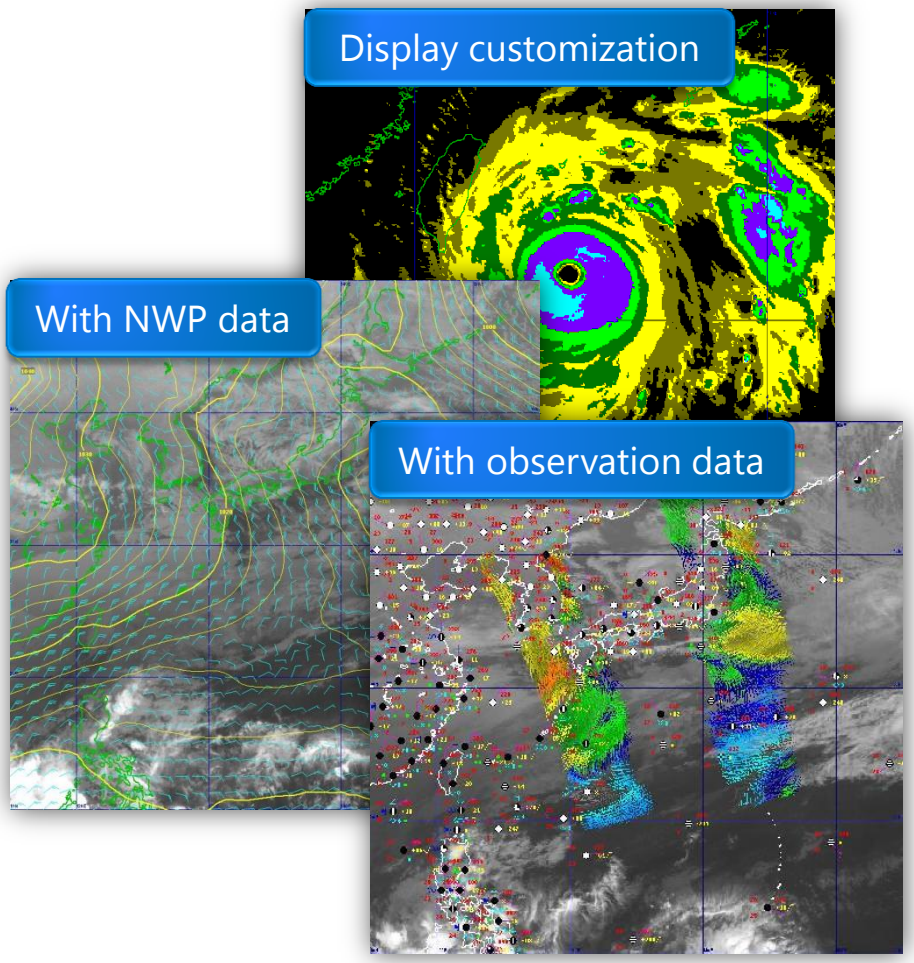
Updated as of 2017/07/24

What is SATAID?

SATAID (**SAT**ellite **A**nimation and **I**nteractive **D**iagnosis) is a sophisticated display program that enables visualization of meteorological information in multiple spatial and temporal dimensions.
This helps forecasters to continually analyze and monitor weather parameters and phenomena for improved meteorological services.



High efficiency and accuracy!



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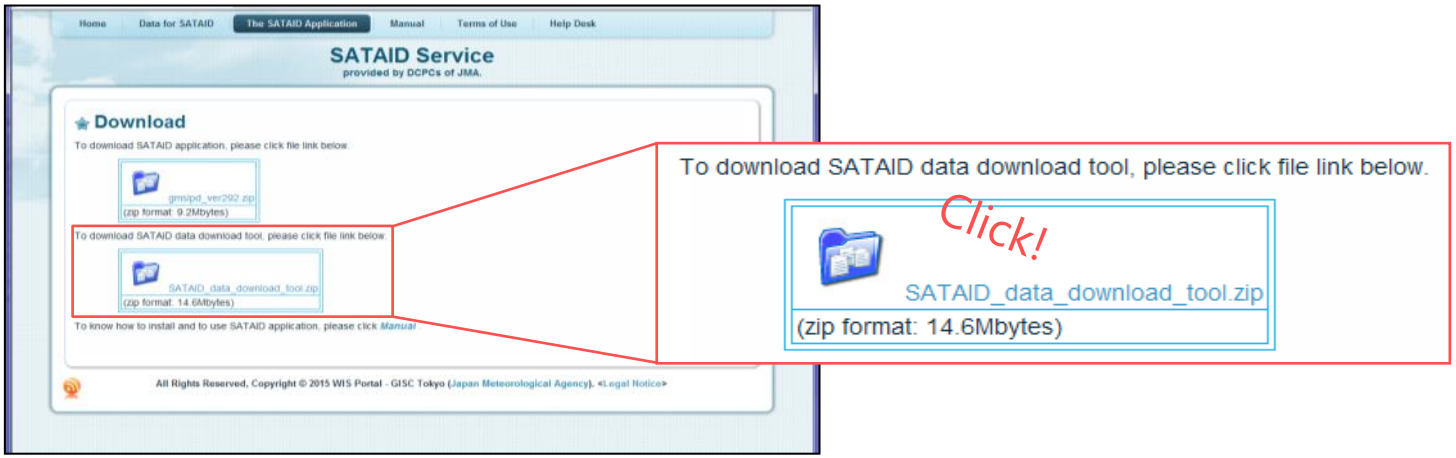
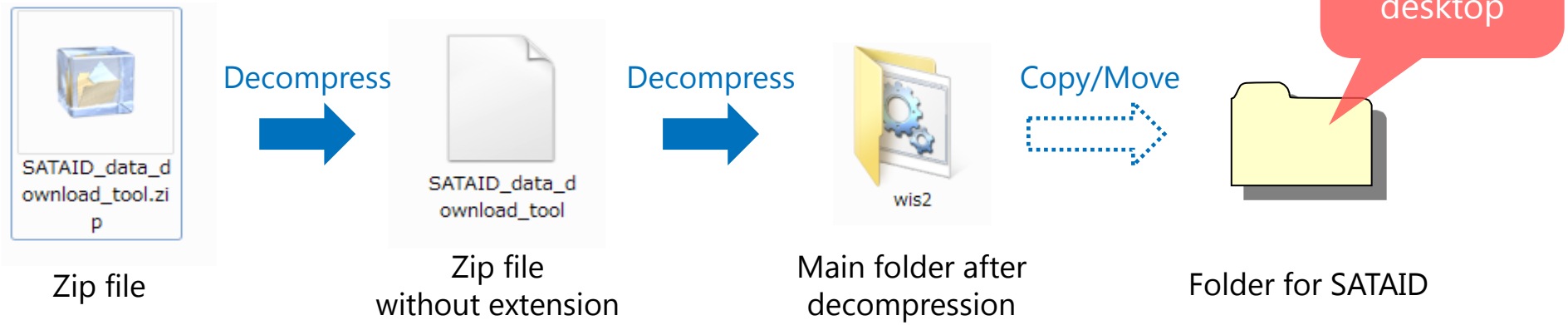
1. Installing SATAID and Downloading Data

Installing SATAID

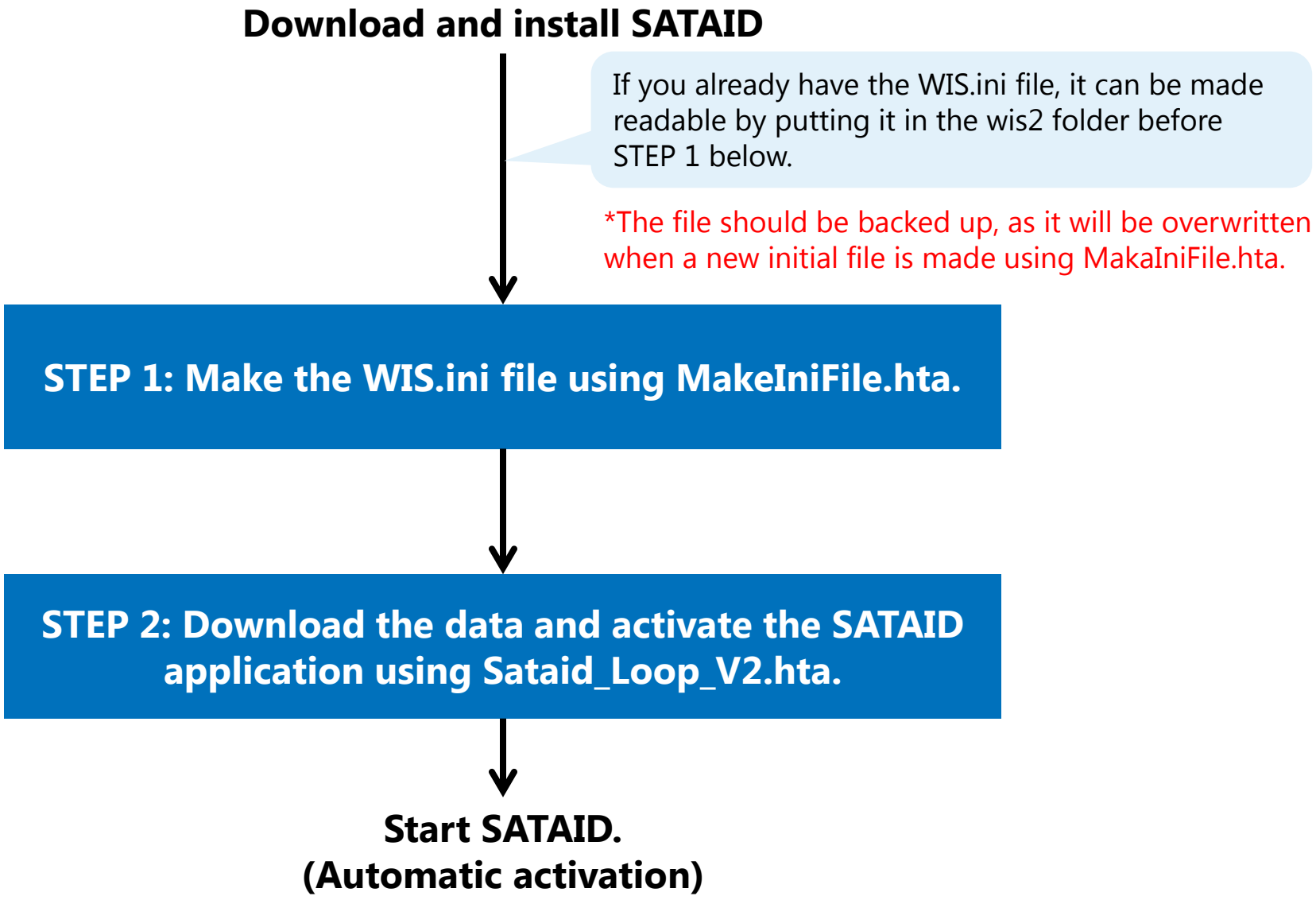
1. Download **SATAID_data_download_tool.zip** from the SATAID Service website (ID/Password required).
   http://www.wis-jma.go.jp/cms/sataid/app/download/



2. Decompress the zip file and copy/move the folder to the desired location.



Downloading Data Using WIS Downloader

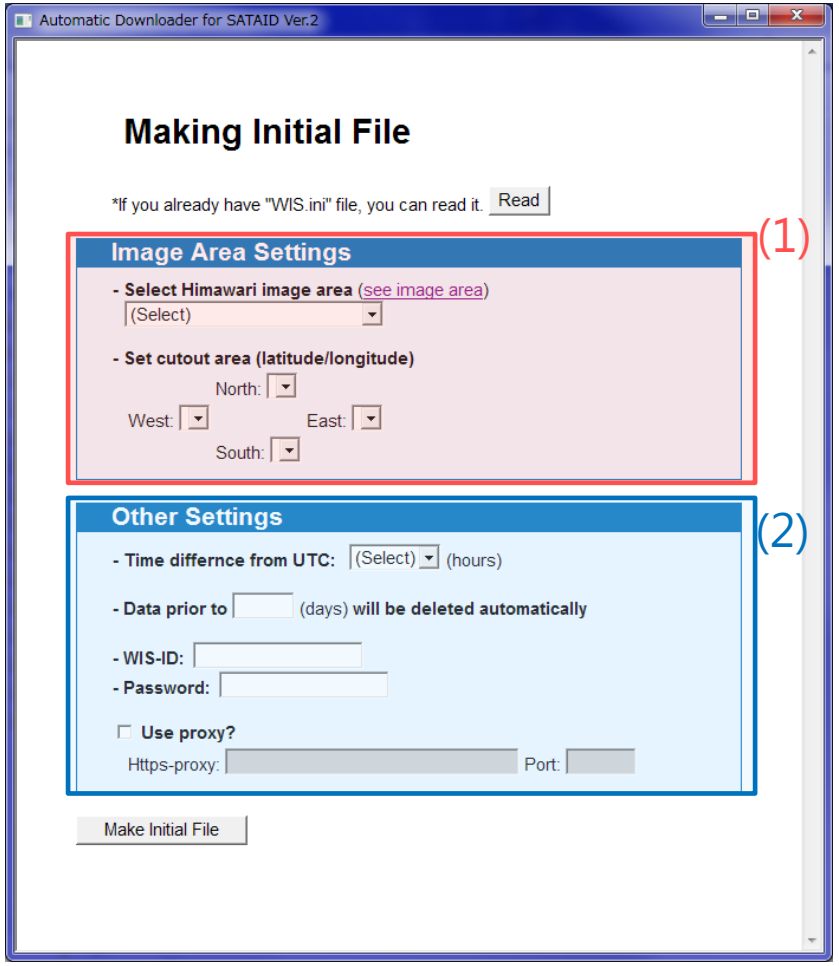


Downloading Data Using WIS Downloader

1. Make an initial file for WIS Downloader.

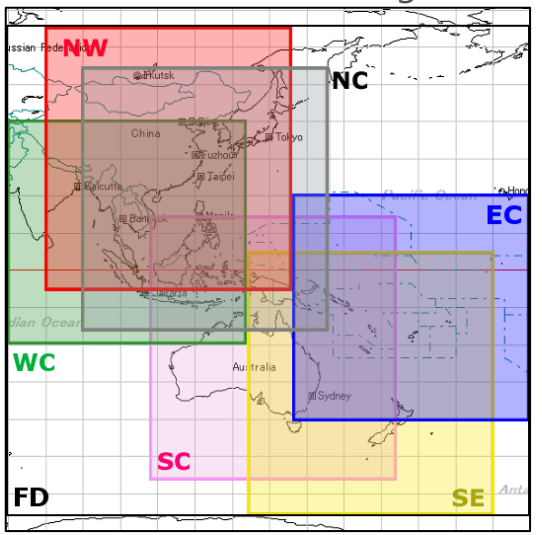
* If you already have the WIS.ini file, it can be made readable by clicking Read button.

"MakeIniFile.hta" file



(1) Image Area Settings

- ✓ Select Himawari image area
- ✓ Select cutout area using Lat/Lon



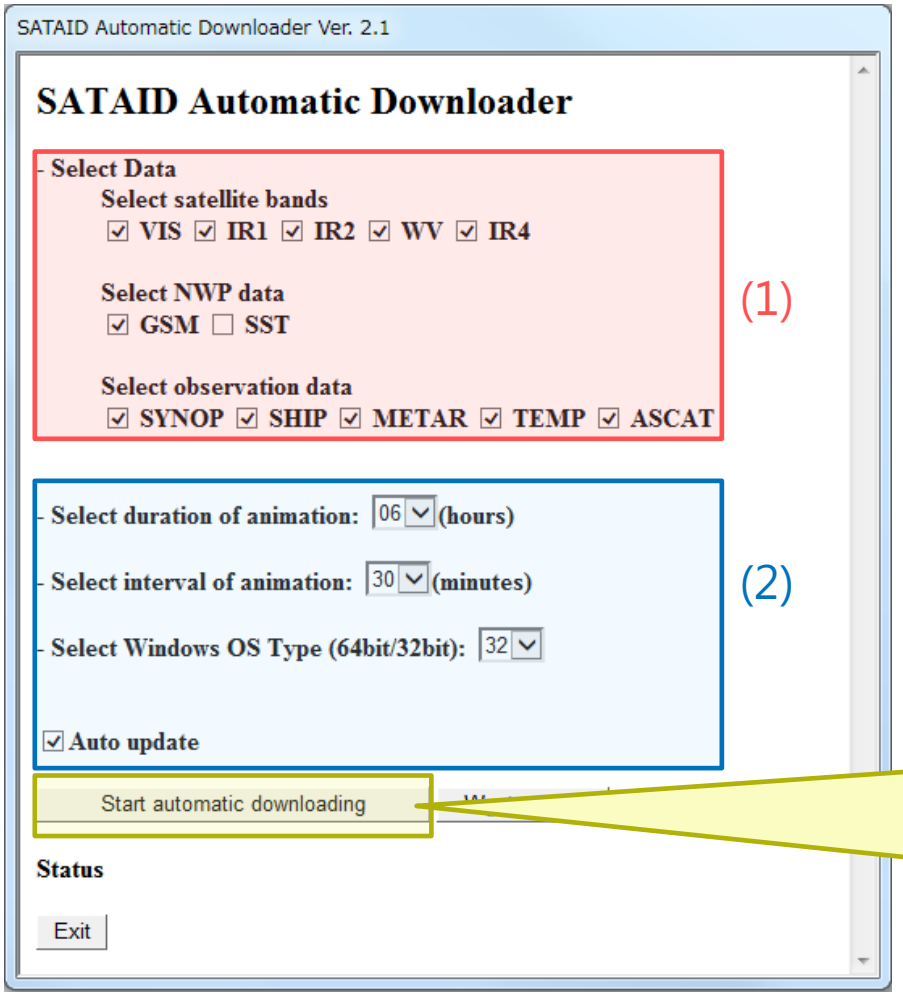
(2) Other Settings

- ✓ Time difference from UTC
- ✓ Time of file deletion
- ✓ WIS ID, Password
- ✓ Proxy

Downloading Data Using WIS Downloader

2. Download data from the WIS server.

* Close SATAID (GMSLPD) before using the SATAID Automatic Downloader.



(1) Select Data.

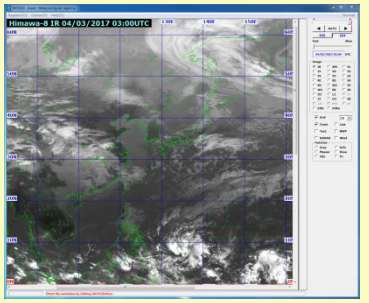
- ✓ Himawari-8 bands
- ✓ NWP data
- ✓ Other observation data

(2) Set up details.

- ✓ Animation duration
- ✓ Interval between animation frames*
- ✓ OS type (32/64bit)
- ✓ Auto-update function

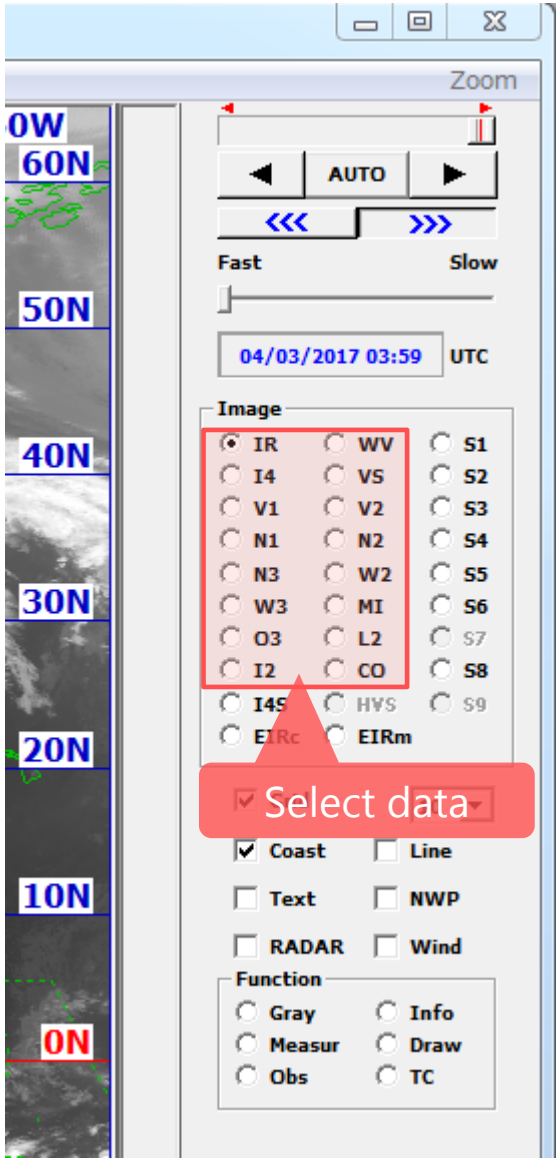
* Depending on PC memory capacity, a short animation may need to be specified if 10-min intervals are selected.

After the data download, SATAID will start automatically.



2. Controlling and Displaying Satellite Images

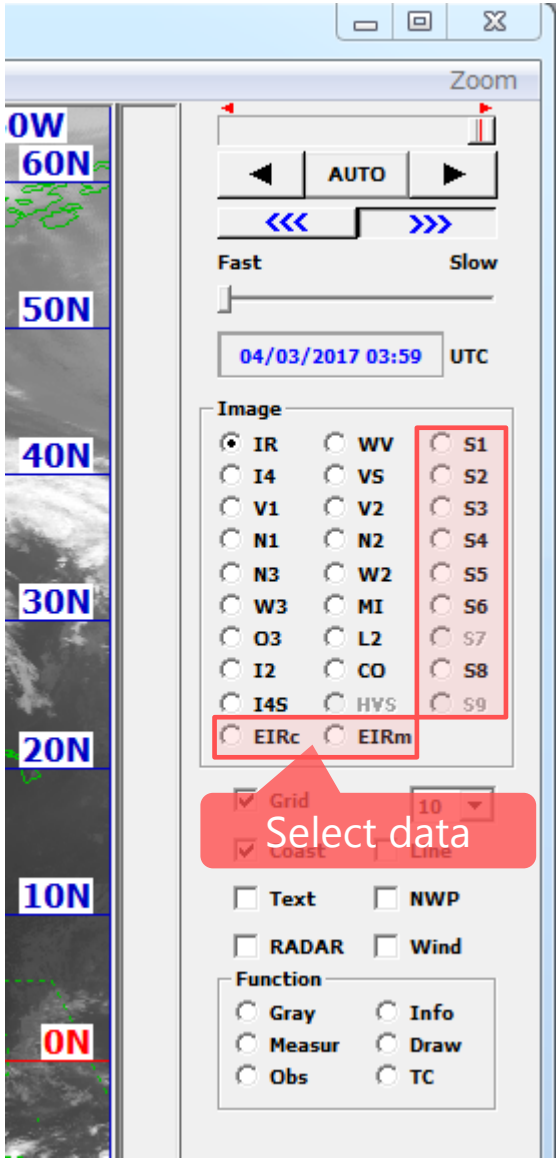
Selecting Satellite Images



Band		Wavelength [μm]	Himawari Cloud*	Himawari Cast*	WIS*
V1	Visible	0.46	○ (1 km)		
V2		0.51	○ (1 km)		
VS		0.64	○ (0.5 km)	○ (1 km)	○ (4 km)
N1	Near Infrared	0.86	○ (1 km)	○ (4 km)	
N2		1.6	○ (2 km)	○ (4 km)	
N3		2.3	○ (2 km)	○ (4 km)	
I4	Infrared	3.9	○ (2 km)	○ (2 or 4 km)	○ (4 km)
WV		6.2	○ (2 km)	○ (4 km)	○ (4 km)
W2		7.0	○ (2 km)	○ (4 km)	
W3		7.3	○ (2 km)	○ (4 km)	
MI		8.6	○ (2 km)	○ (4 km)	
O3		9.6	○ (2 km)	○ (4 km)	
IR		10.4	○ (2 km)	○ (4 km)	○ (4 km)
L2		11.2	○ (2 km)	○ (4 km)	
I2		12.3	○ (2 km)	○ (4 km)	○ (4 km)
CO		13.3	○ (2 km)	○ (4 km)	

***(): spatial resolution**

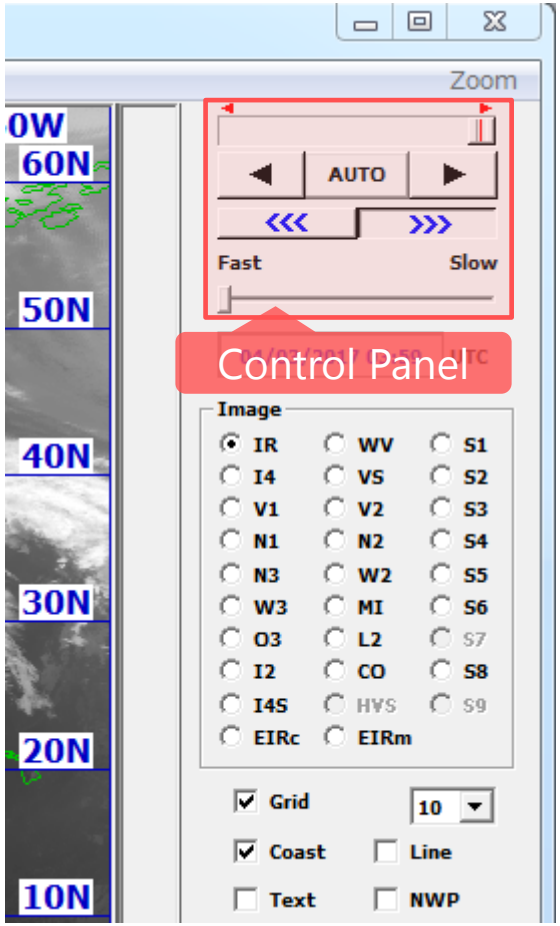
Selecting Satellite Images

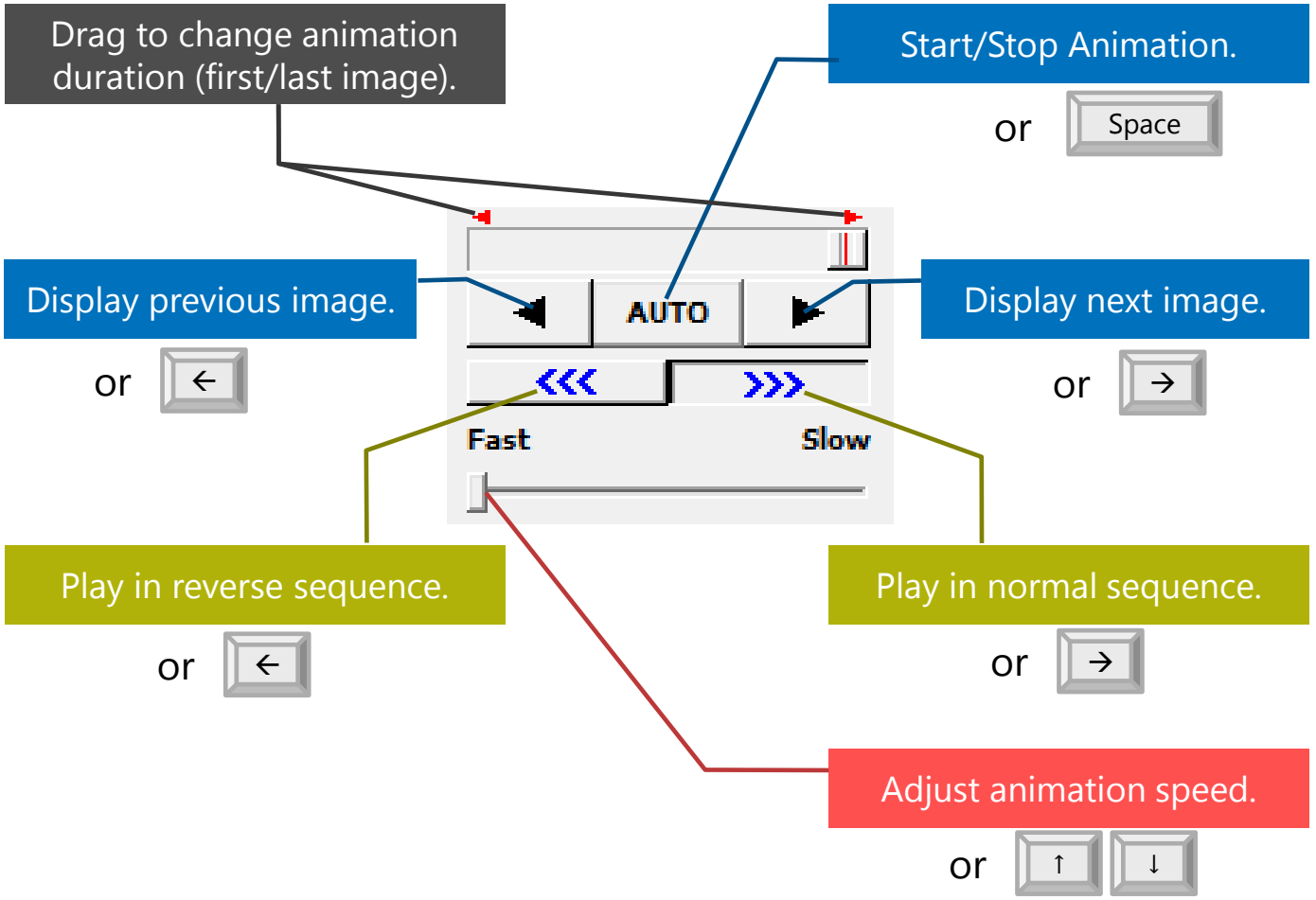


- **Differential Images**
  - S1: Differential images 1 (IR – I2)
  - S2: Differential images 2 (I4 – IR)
  - S3: Differential images 3 (IR-WV)
  - etc…

- **Enhanced Images**
  - EIRc: Colored enhanced infrared images
  - EIRm: Monochrome enhanced infrared images

Controlling animation



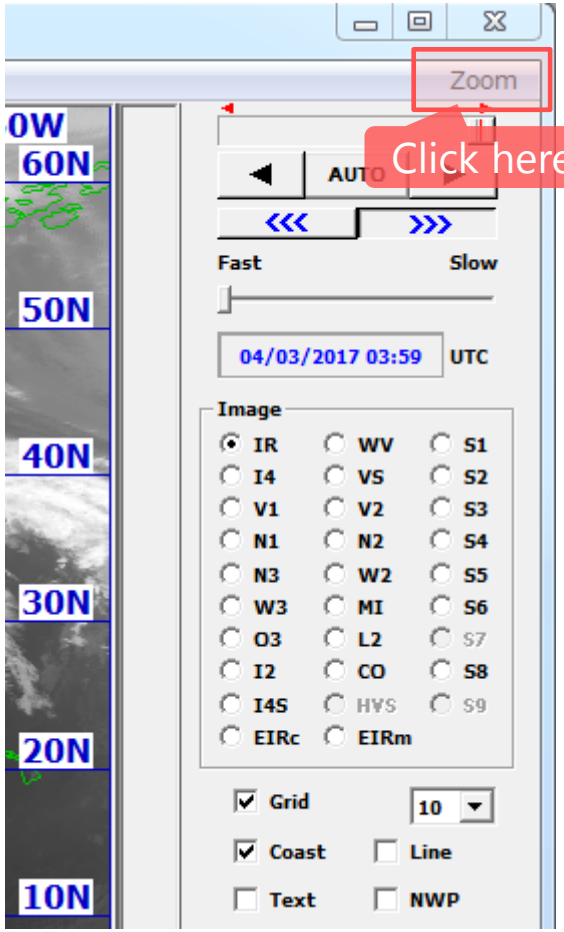


Tips

"Ctrl" + ◀ or ▶

: Specify current image as the first/last image of animation.

Zooming In/Out



◆Method 1

- **Display enlarged area.**
  Click [Zoom] button and drag area.
- **Return to whole image.**
  Click [Normal] button.

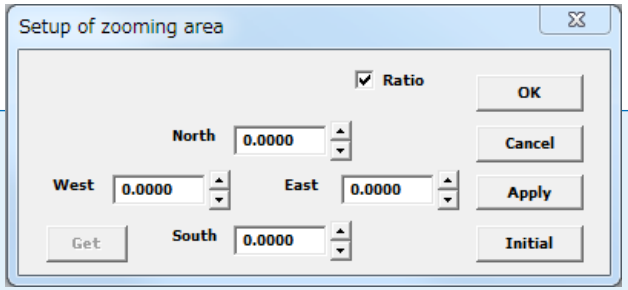
◆Method 2

- Zoom in: Ctrl + Shift + **Left-Click**
- Zoom out: Ctrl + Shift + **Right-Click**

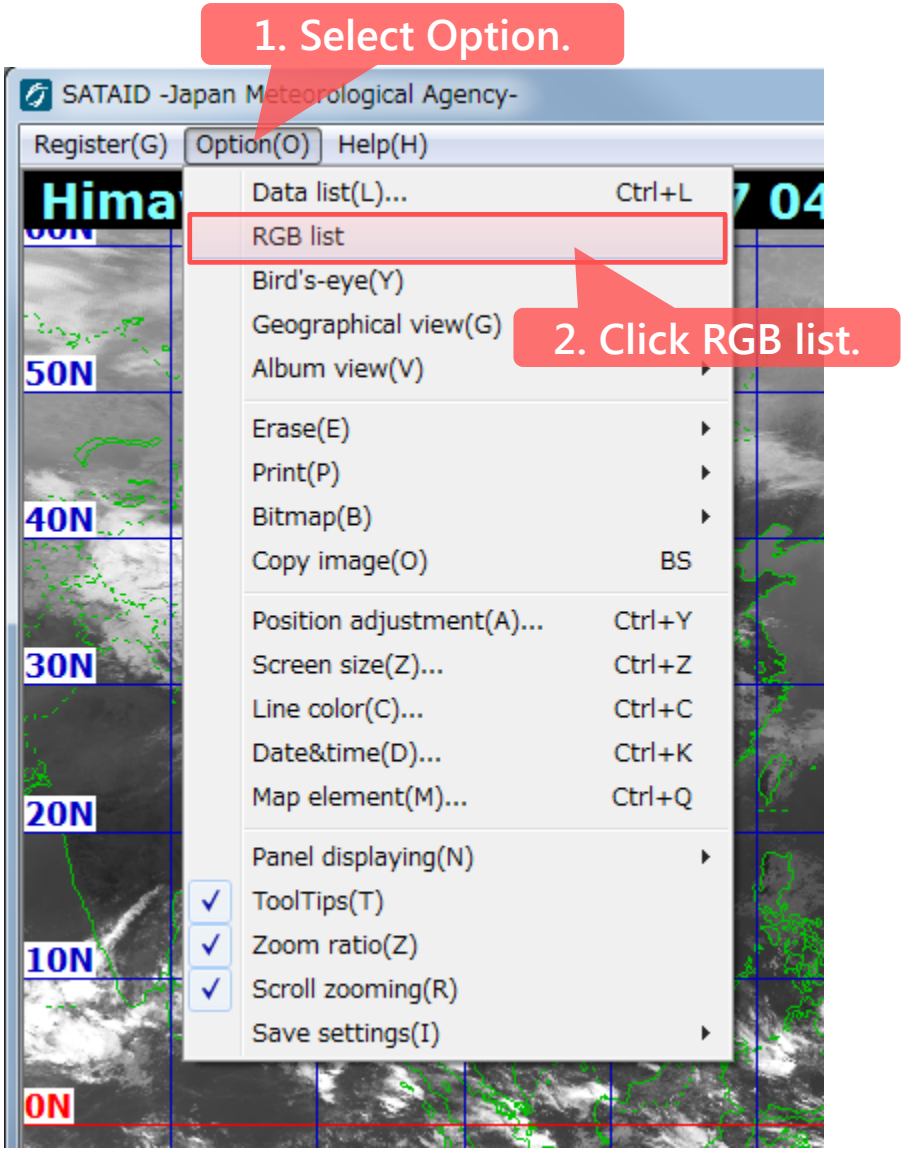
Tip

Areas can be digitally designated with longitude/latitude information.

Ctrl + Shift + [Zoom]

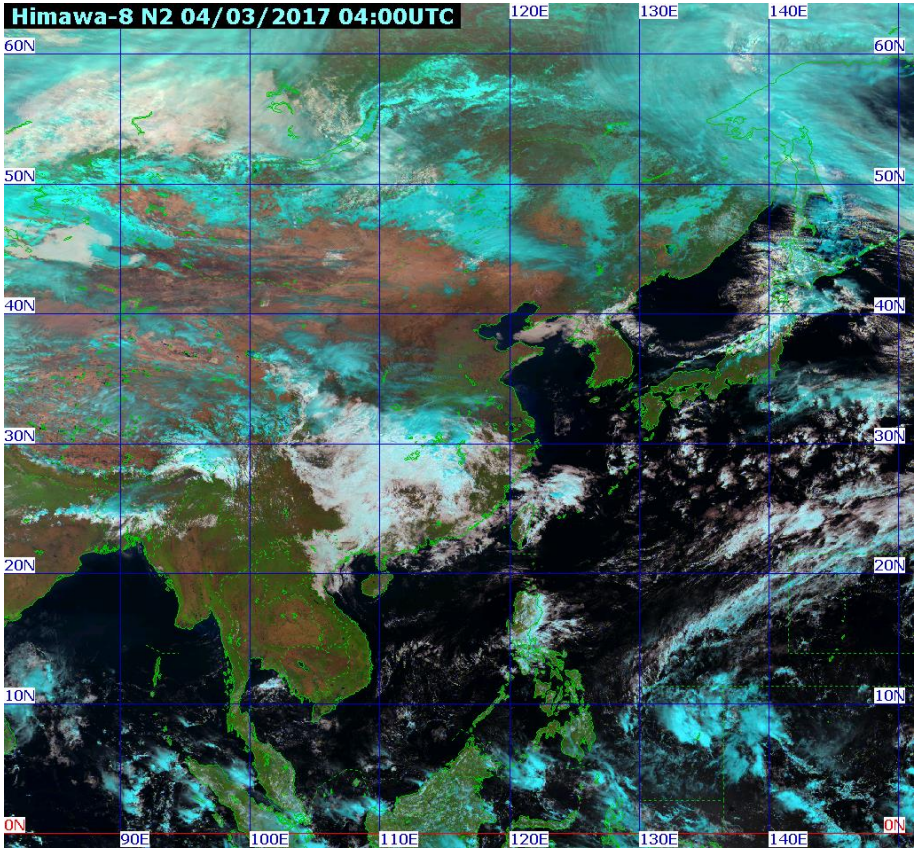


Displaying RGB Images



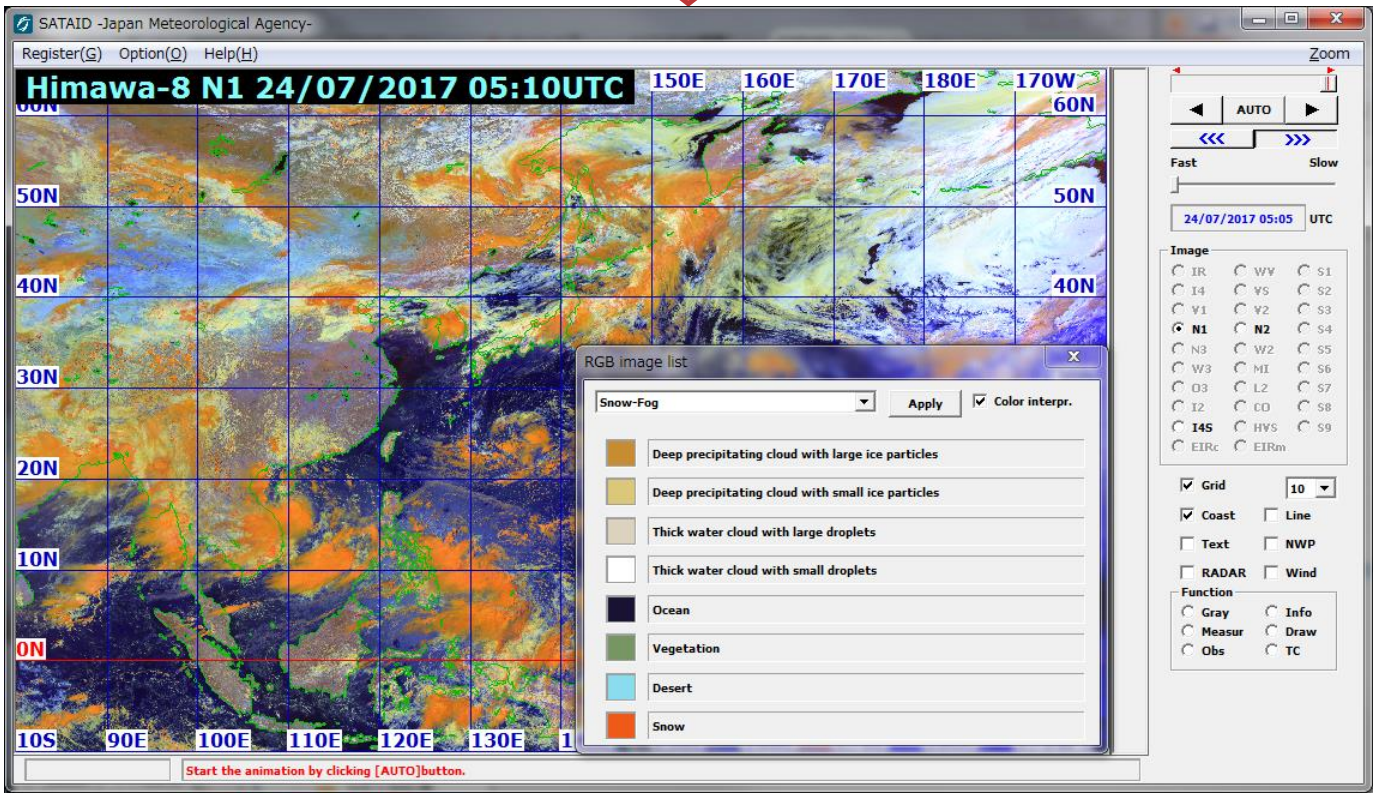
3. Select RGB image.

4. Click Apply to display.

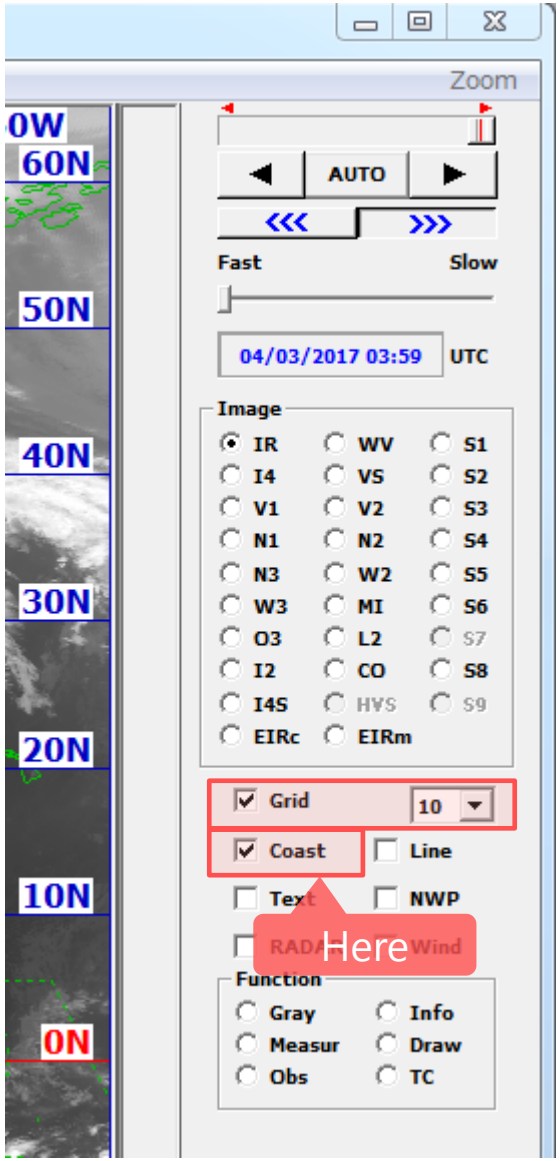


Displaying color legends

Activate this checkbox.



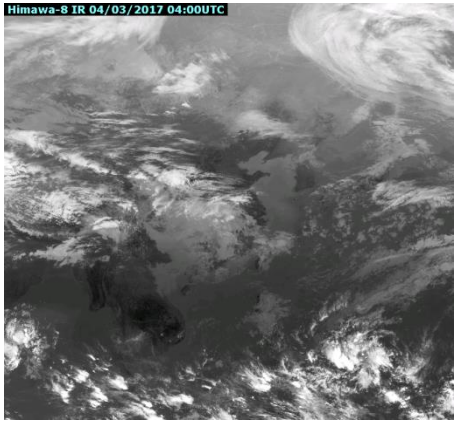
Displaying Coast/Grid Lines

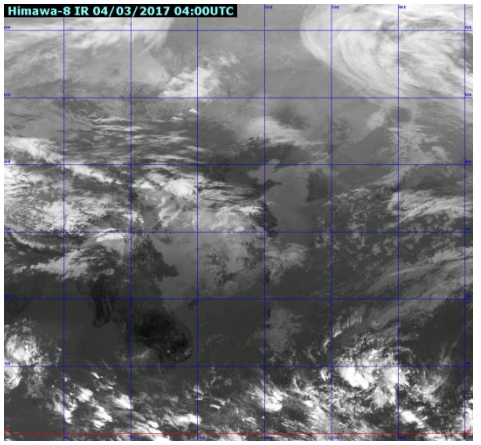


Checkbox activation with [Ctrl] pressed: **larger font for latitude/longitude figures**
Checkbox activation with [Shift] pressed: **with background color for latitude/longitude figures**
Checkbox activation with [Ctrl] + [Shift] pressed: **larger font with background color**

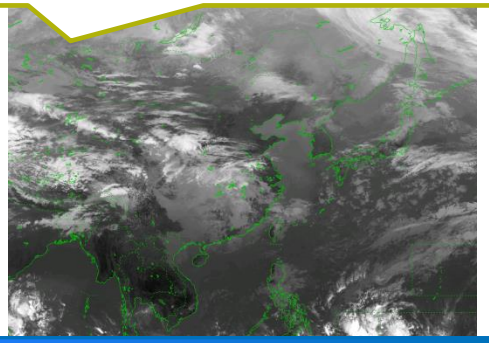
Check!

Select latitude/longitude intervals.





[Map element] can be selected from the [Option] menu to add rivers/lakes/borders, etc.



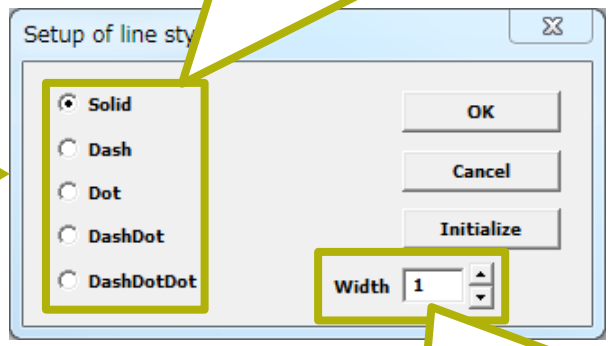
Check!

<u>The colors of these lines can be changed</u> using [Line color] in the [Option] menu.

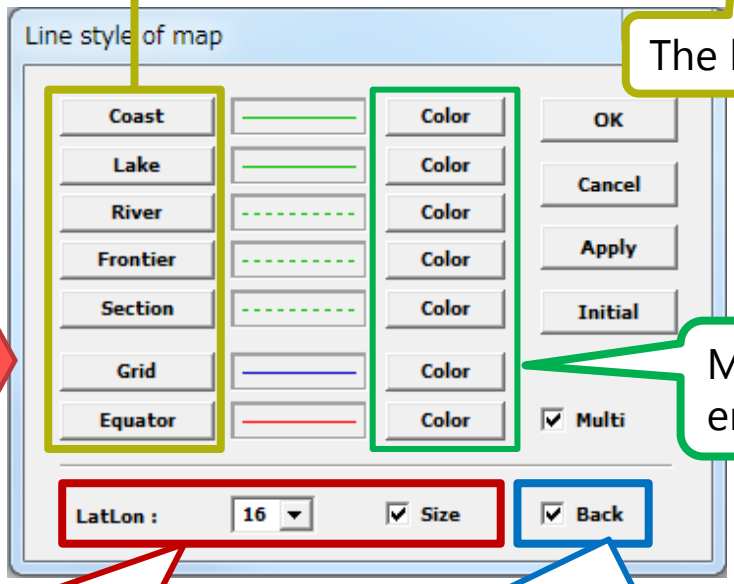
Changing Line Style

Click Map element... with Shift pressed.

The line style can be set here.



The line width can be set here.



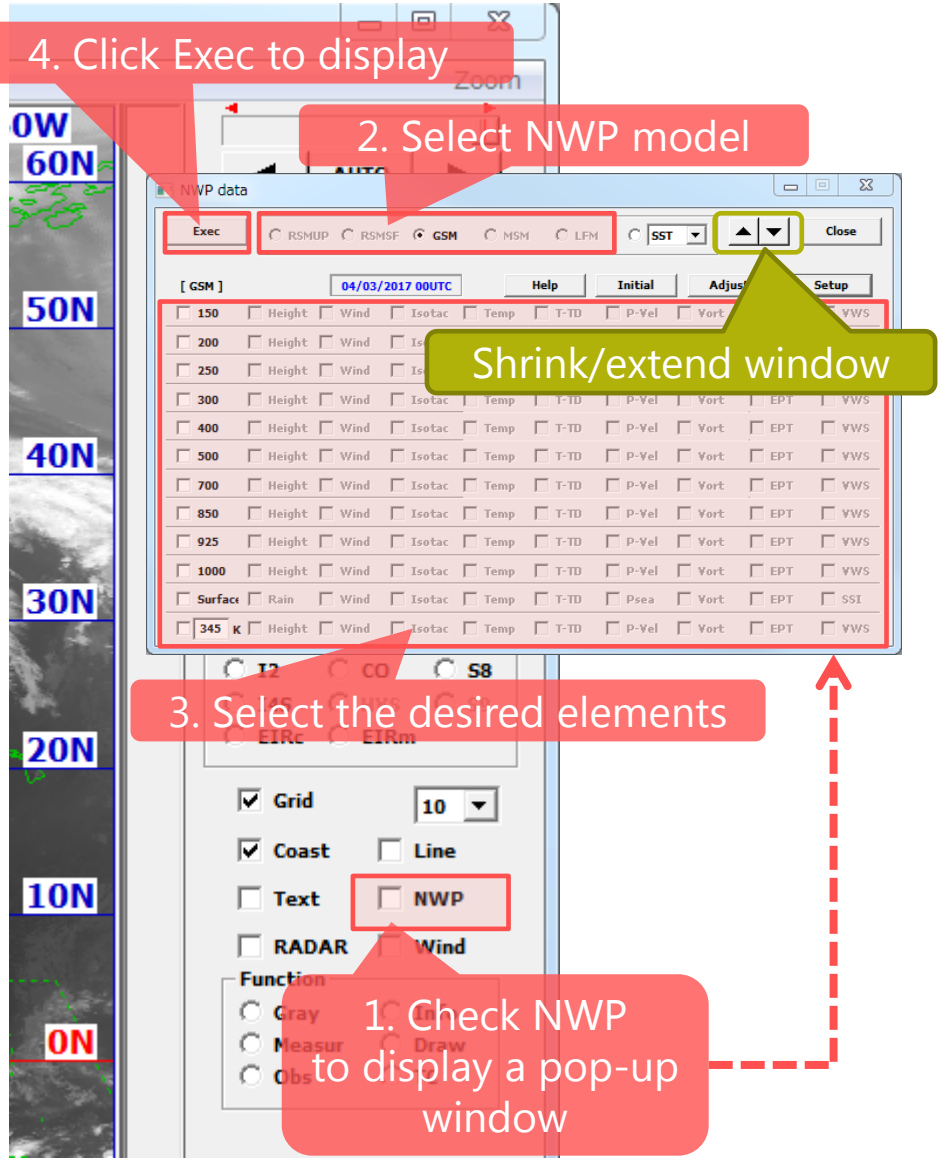
Multi can be checked to enable line color change.

Latitude and longitude character size can be changed here.

Latitude/longitude background can be toggled on and off here.

3.Displaying NWP Data

Displaying NWP data

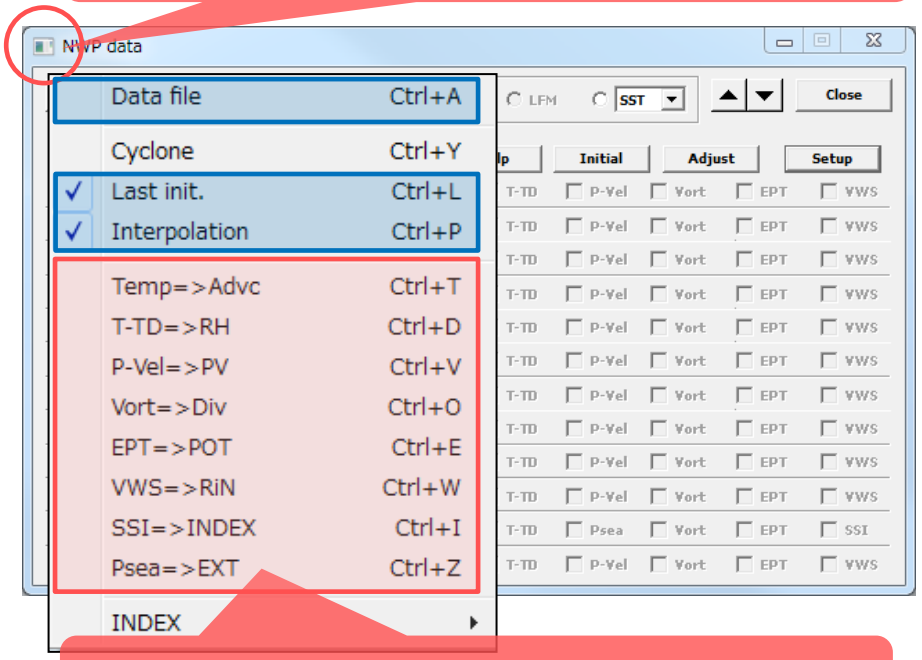


Available NWP data

Symbol	Content	Unit
Height	Altitude	gpm
Wind	Wind barb	kt
Isotac	Isotach	kt
Temp	Air temperature	℃
T-TD	Dew-point depression	℃
P-Vel	Vertical p-velocity	hPa/h
Vort	Relative vorticity	10^{-6}/s
EPT	Equivalent potential temperature	K
VWS	Vertical wind shear	kt/1000ft
Rain	Precipitation (3 hours)	mm/3h
Psea	Sea level pressure	hPa
SSI	Showalter stability index	℃
RH	Relative humidity	%
Div	Horizontal divergency	10^{-6}/s
POT	Potential temperature	K
RiN	Richardson number	–
CAPE	Convective available potential energy	J/kg
PV	Potential vorticity	0.1PVU
Avor	Absolute vorticity	10^{-6}/s
Advc	Temperature advection	10^{-6}/s/h
Vadv	Relative vorticity advection	0.1℃/h
SH	Specific humidity	0/1g/kg
EXT	Extra element (diff. between levels)	undefined

Changing Elements

1. Click the upper-left corner of the window to display a pop-up window.



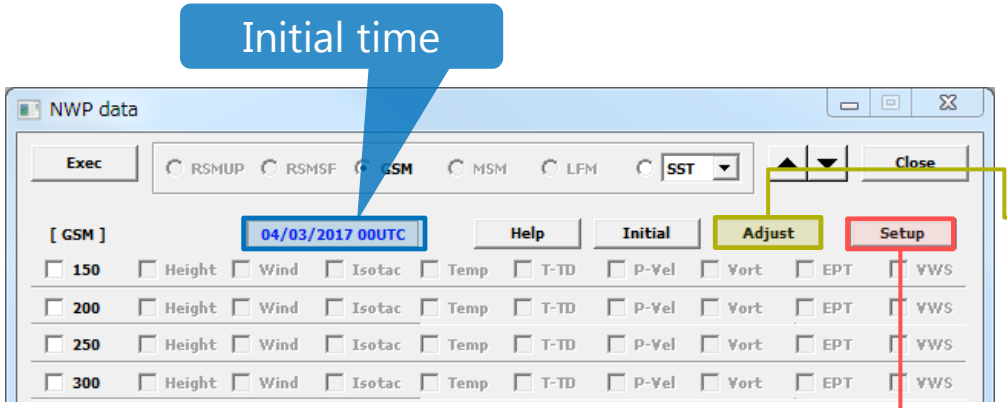
2. Elements can be changed on the panel.

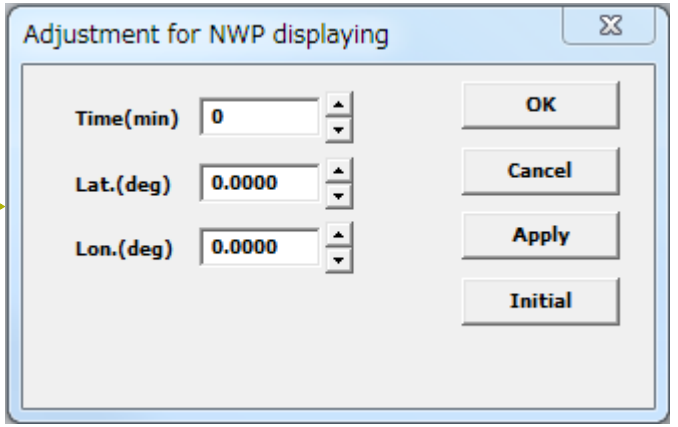
Symbol	Content	Unit
Height	Altitude	gpm
Wind	Wind barb	kt
Isotac	Isotach	kt
Temp	Air temperature	°C
T-TD	Dew-point depression	°C
P-Vel	Vertical p-velocity	hPa/h
Vort	Relative vorticity	10^{-6}/s
EPT	Equivalent potential temperature	K
VWS	Vertical wind shear	kt/1000ft
Rain	Precipitation (3 hours)	mm/3h
Psea	Sea level pressure	hPa
SSI	Showalter stability index	°C
RH	Relative humidity	%
Div	Horizontal divergency	10^{-6}/s
POT	Potential temperature	K
RiN	Richardson number	–
CAPE	Convective available potential energy	J/kg
PV	Potential vorticity	0.1PVU
Avor	Absolute vorticity	10^{-6}/s
Advc	Temperature advection	10^{-6}/s/h
Vadv	Relative vorticity advection	0.1°C/h
SH	Specific humidity	0/1g/kg
EXT	Extra element (diff. between levels)	undefined

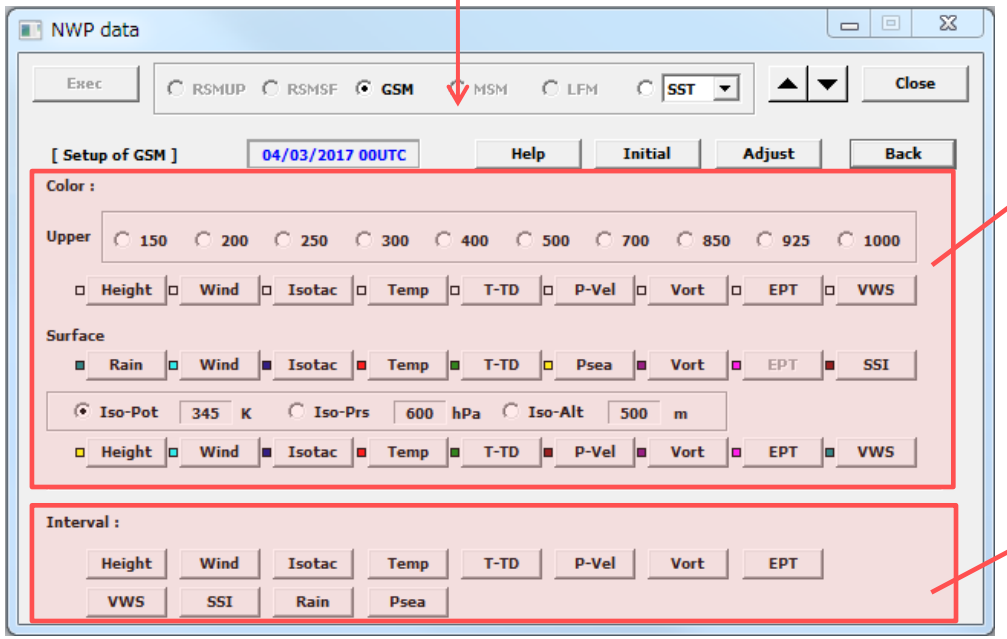
Tips

- When [Data file] is clicked, a CSV file of selected NWP elements is output.
- When **[Last init.]** is NOT selected, the previous initial NWP data is displayed.
- When **[Interpolation]** is selected, forecast fields between forecast times can be interpolated and displayed (i.e. if [Interpolation] is NOT selected, NWP data are shown only every six hours).

Changing Colors/Line Types/Hatch Patterns







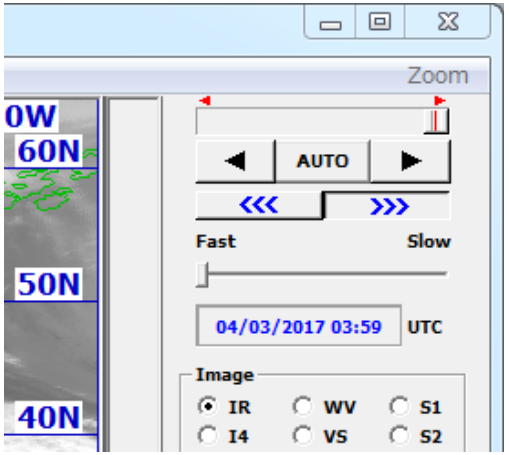
Colors can be changed here.

Intervals between contours (isolines) can be selected here.

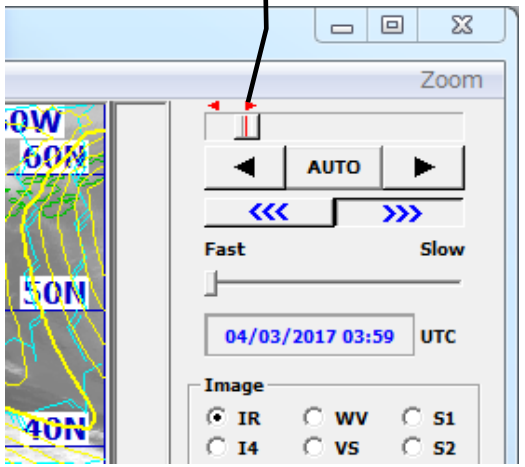
Displaying Forecast Values

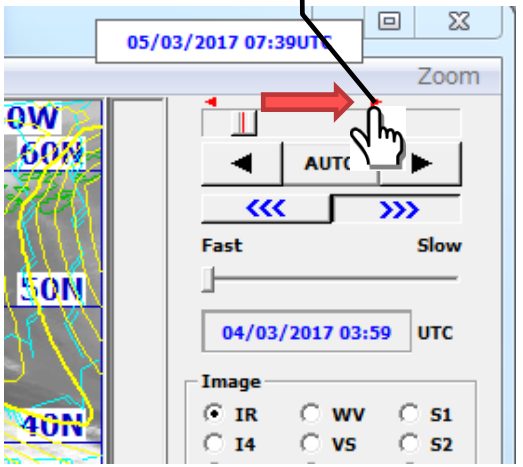
The space between the red arrows becomes shorter.

Drag the red arrow to the right to select the forecast time.



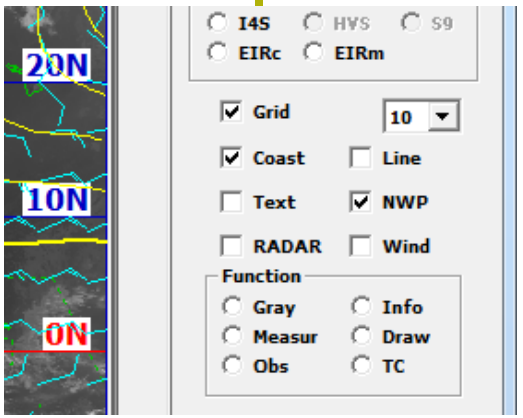
Open NWP menu.

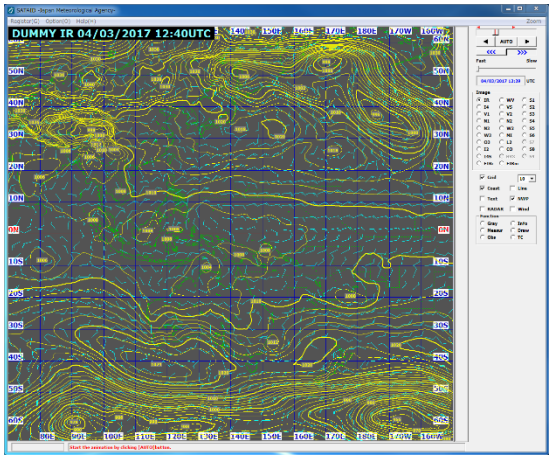




Before

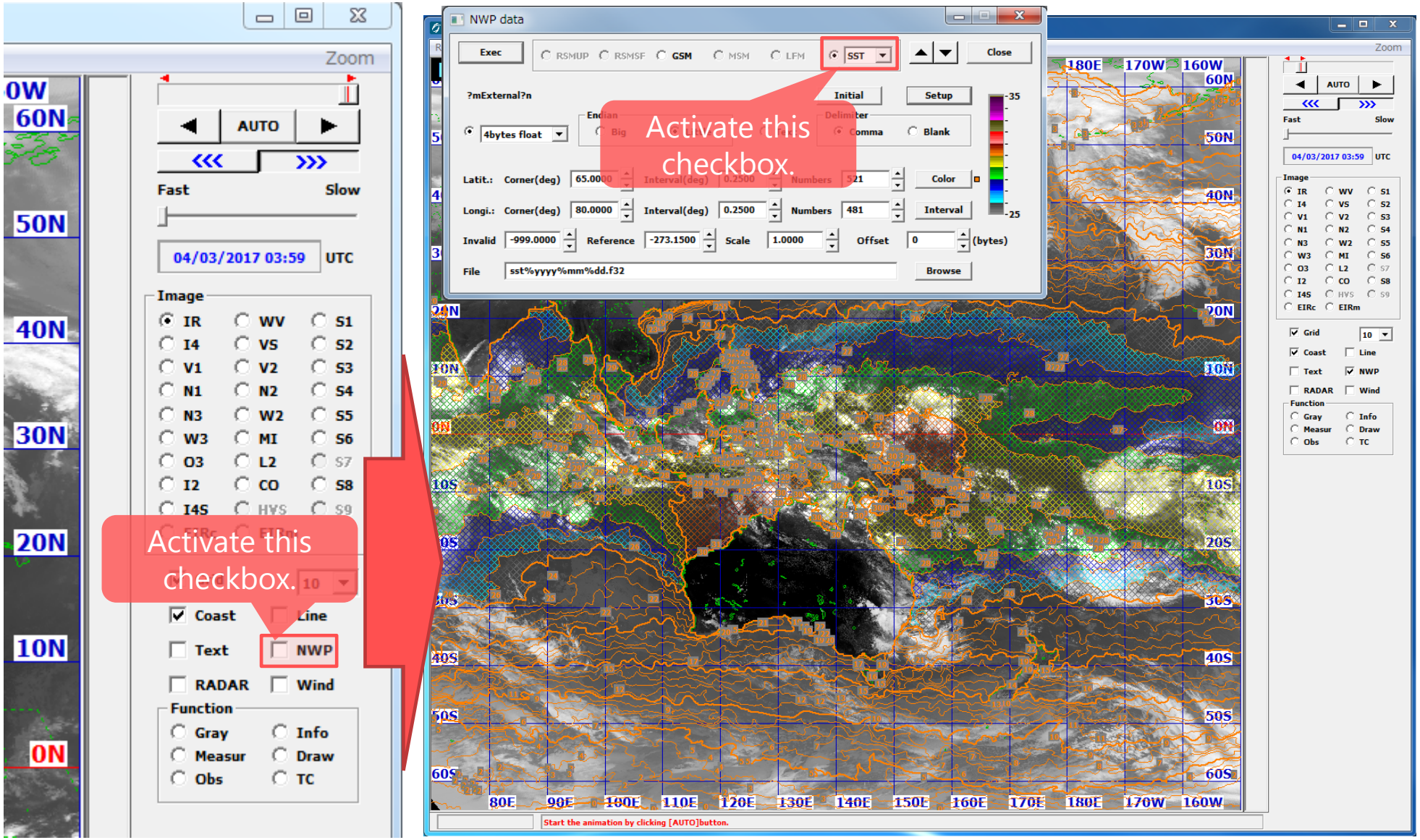
After





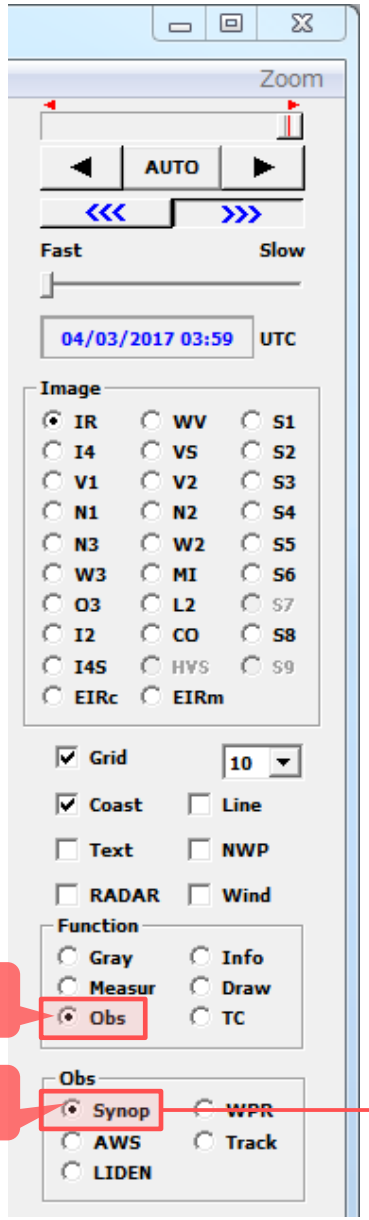
Satellite images are not shown while forecast time data are being displayed.

Displaying SST data

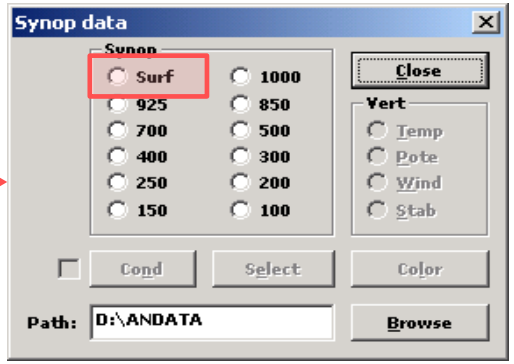


4. Displaying Observation Data

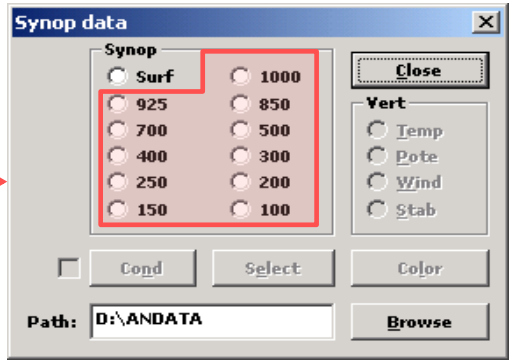
Displaying SYNOP/SHIP/TEMP Data



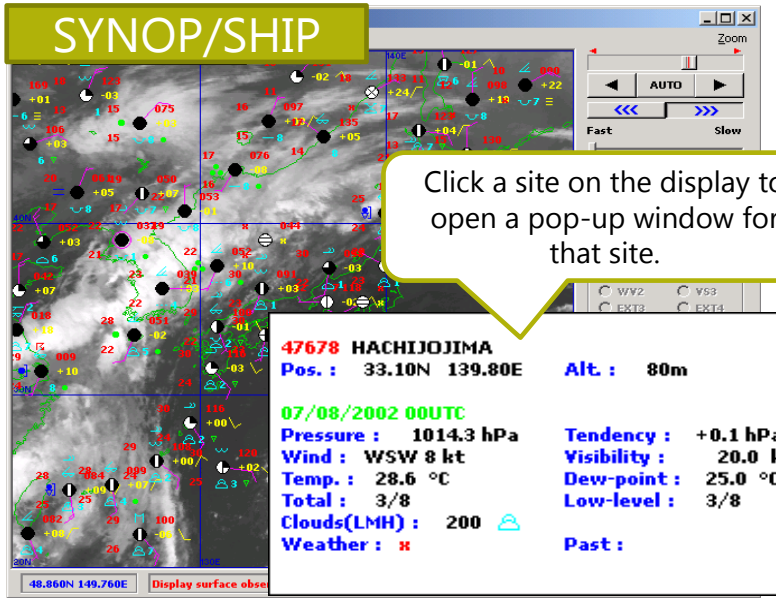
Select Surf.



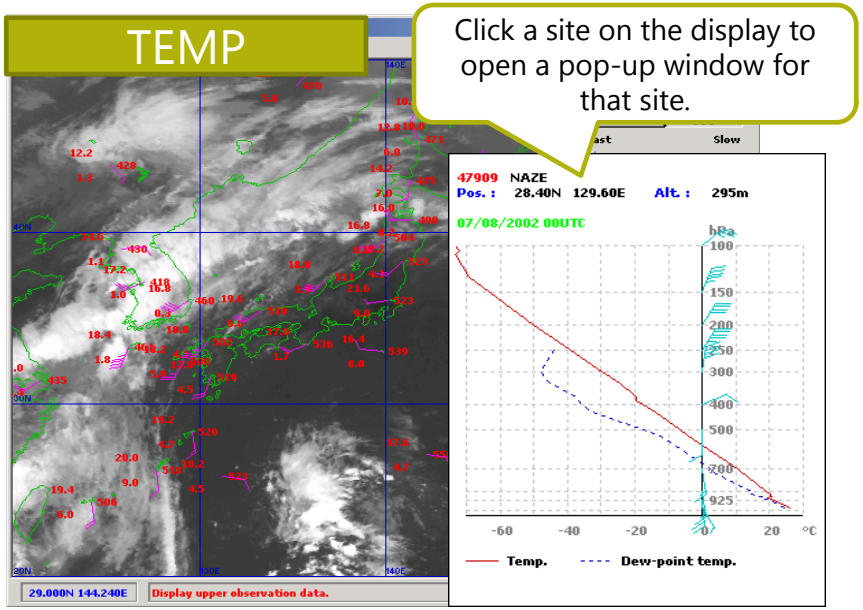
Select a figure between 1,000 and 100.



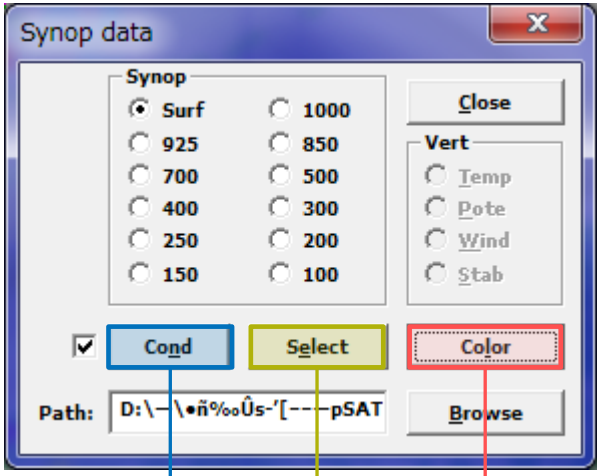
SYNOP/SHIP



TEMP



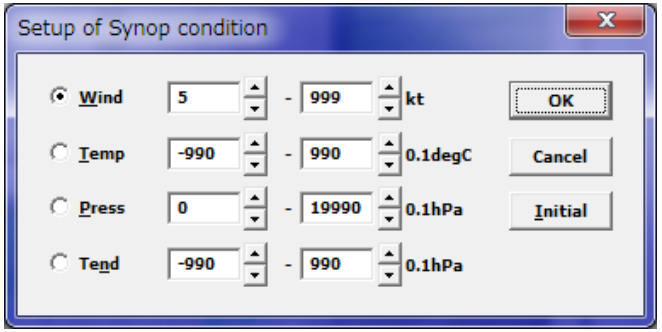
Displaying SYNOP/SHIP/TEMP Data

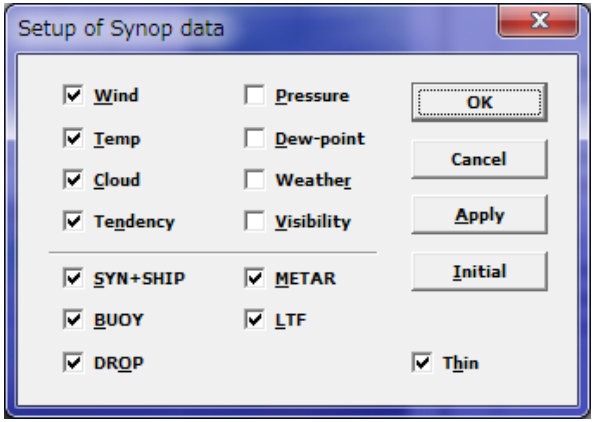


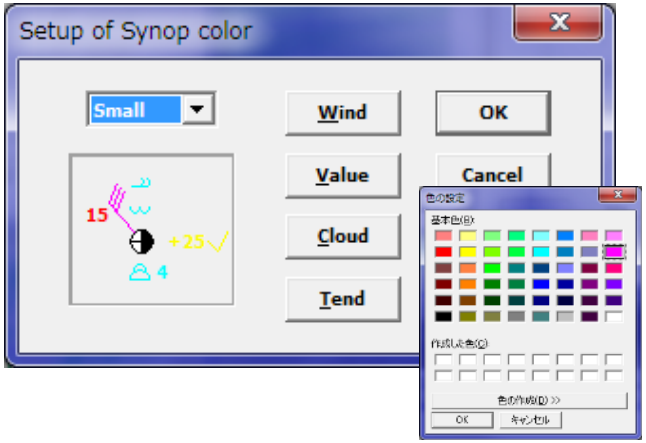
Set data display thresholds.

Select elements to be displayed

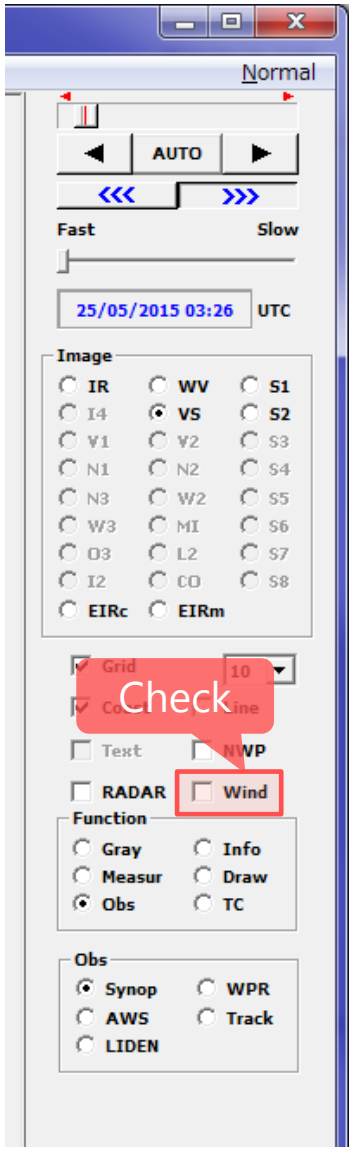
Set symbol color.

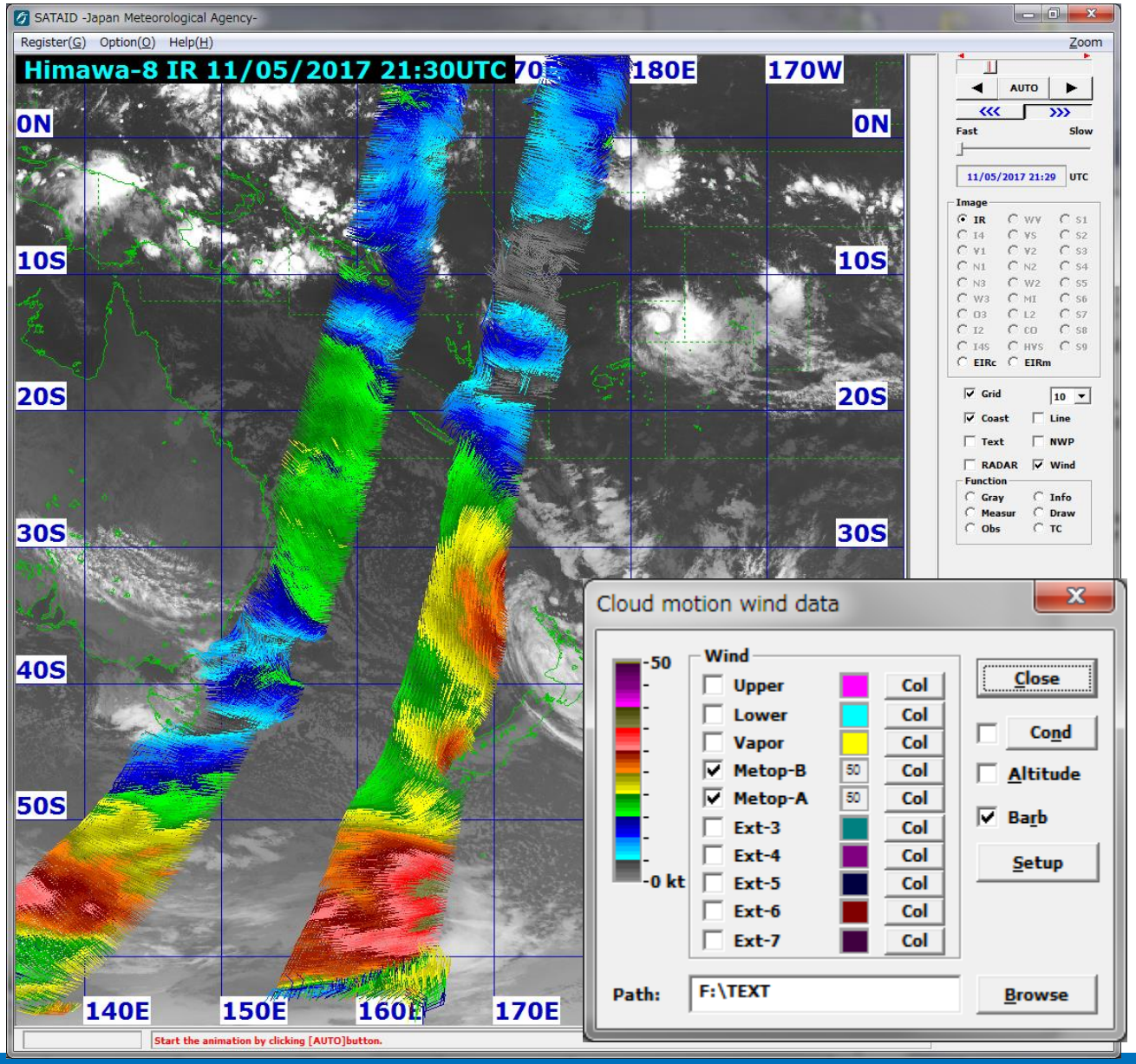






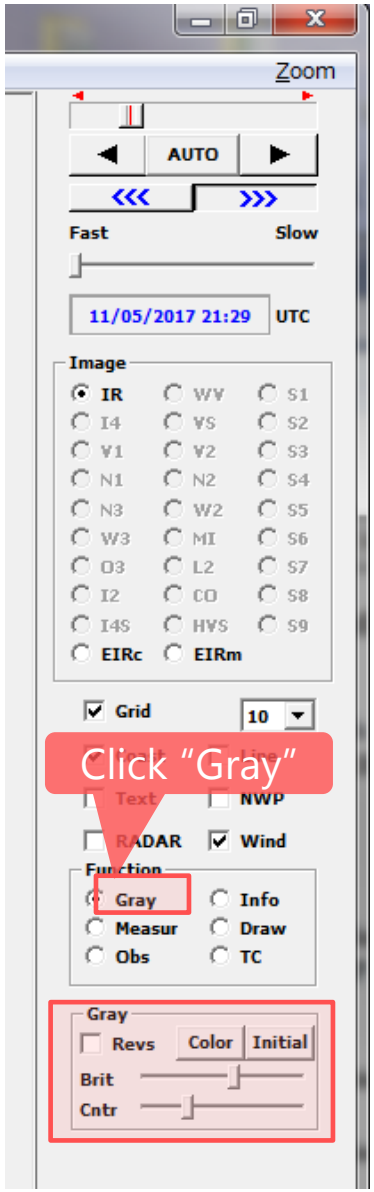
Displaying ASCAT Data

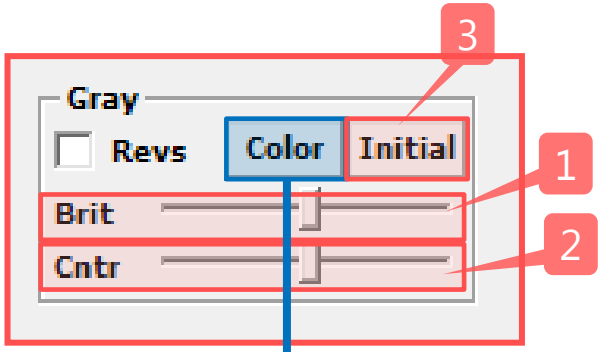




5. Customizing Display

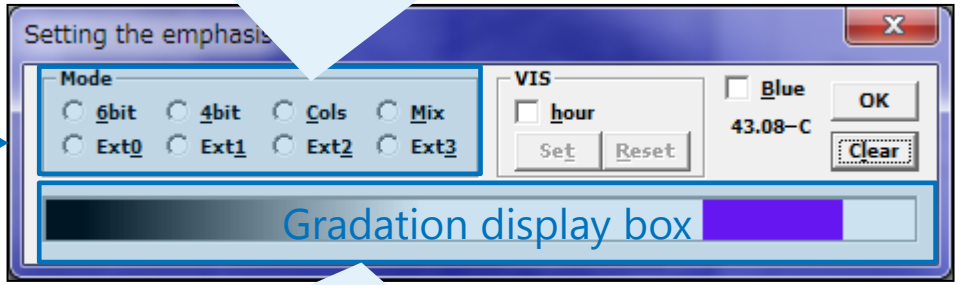
Adjusting Gradation and Enhancing Color





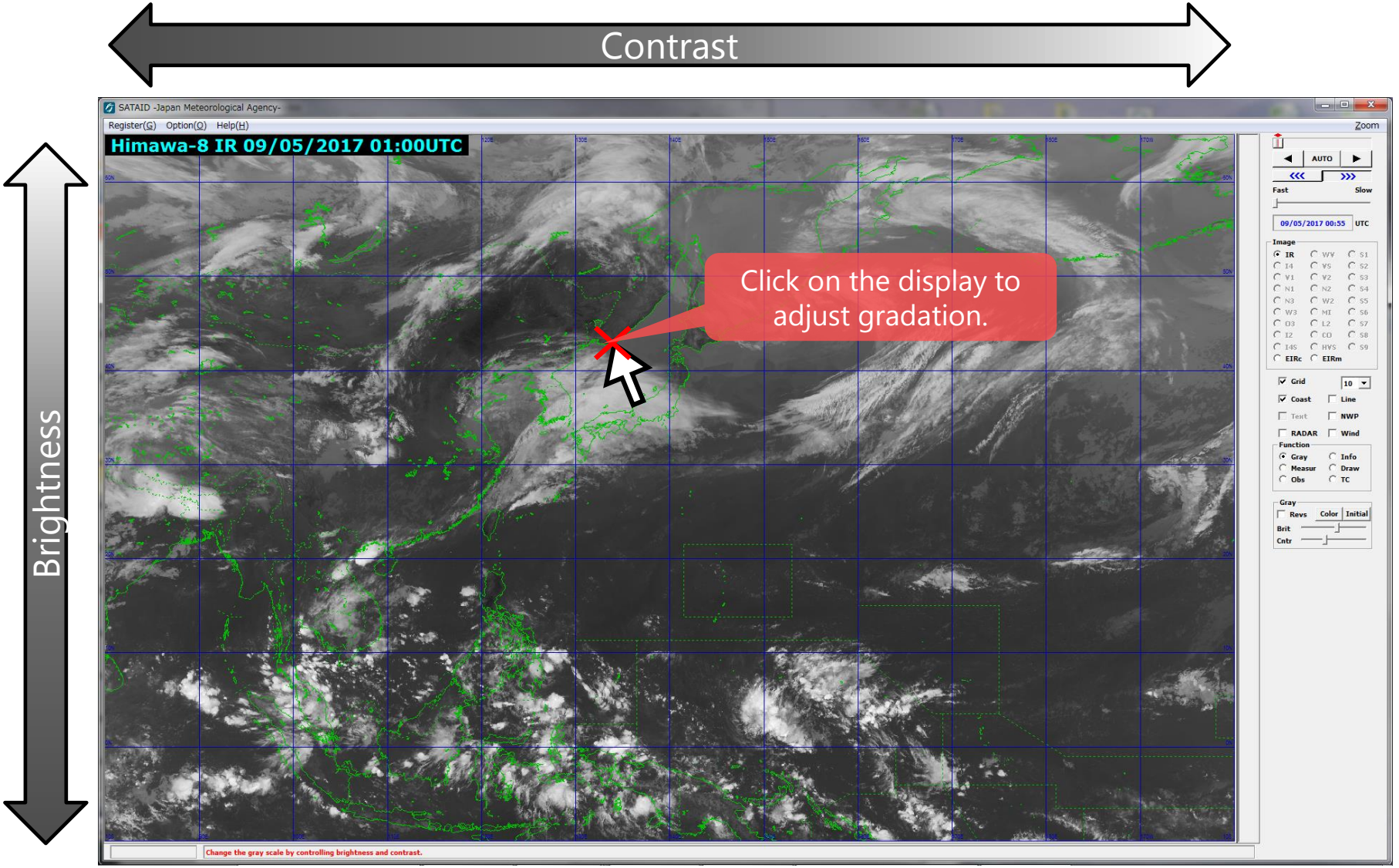
1. Adjust brightness.
2. Change contrast.
3. Reset grayscale.

Select a radio button to change the grayscale setting.



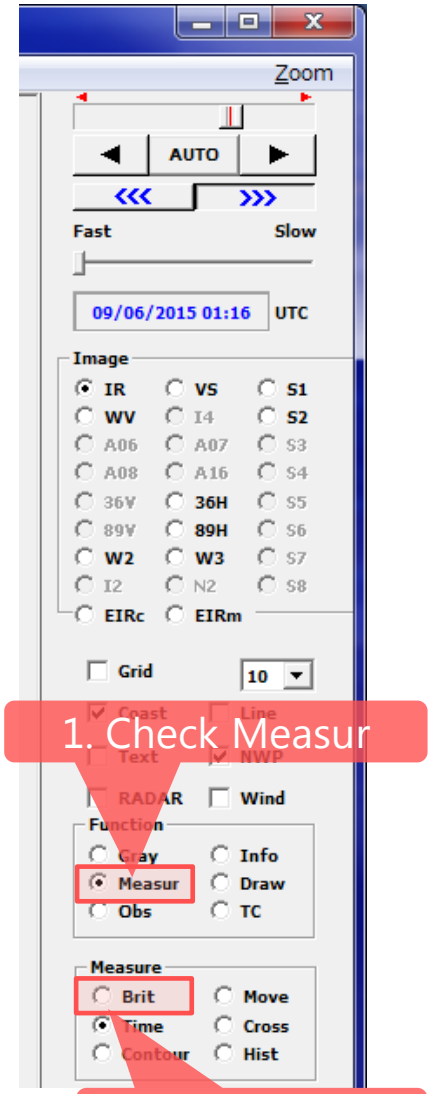
- To select a range to be emphasized:
  Click on two arbitrary points
- To clear the range to be emphasized:
  Right-click on the first point and left-click on the second.

Adjusting Gradation



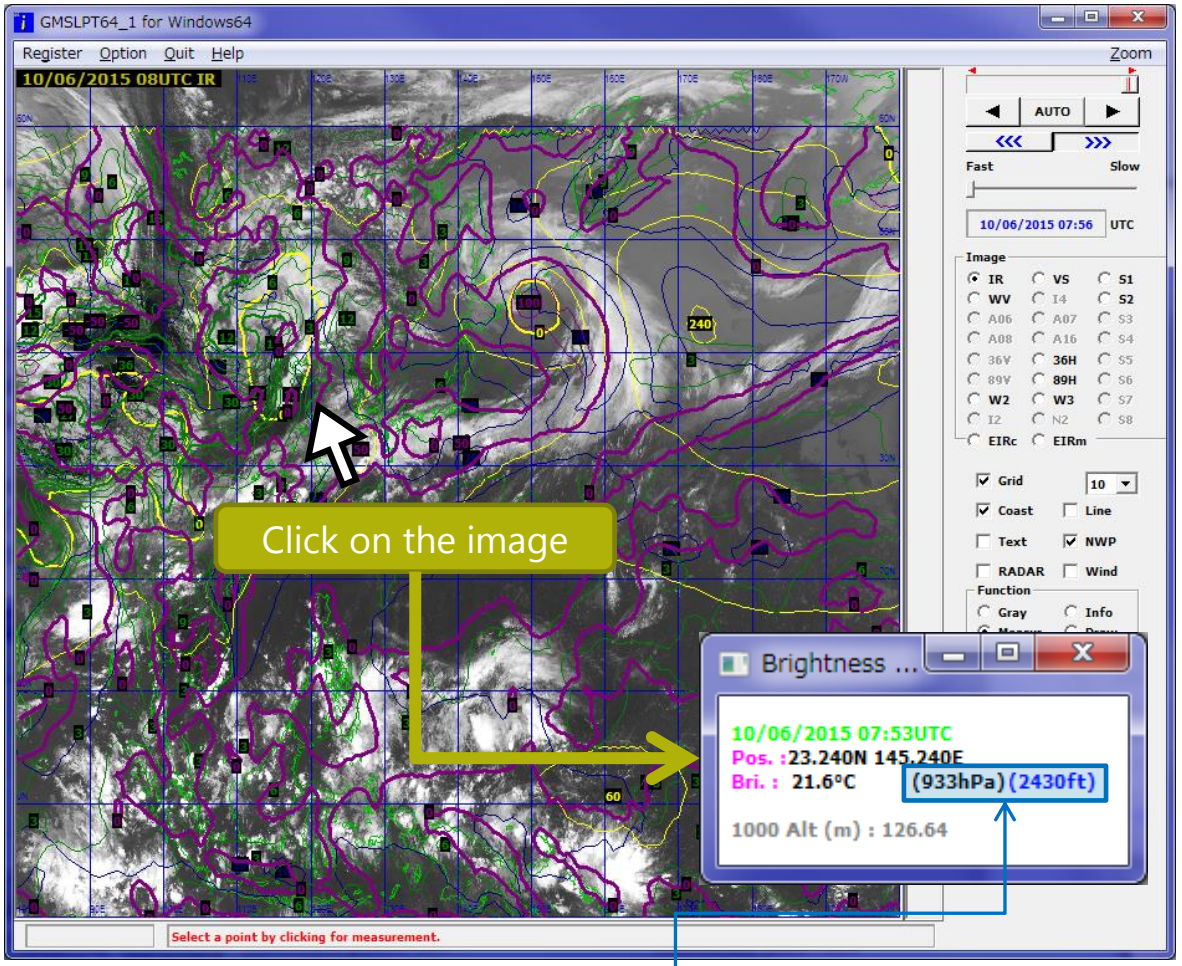
6. Data Evaluation

Brightness Evaluation



1. Check Measur

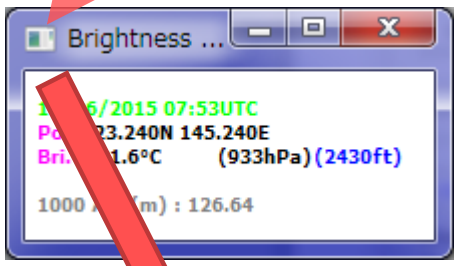
2. Check Brit

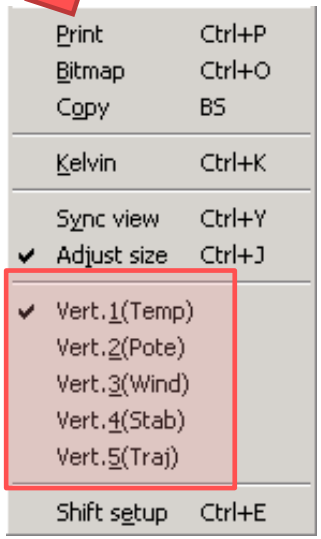


When NWP data are displayed, estimated altitudes will be shown.

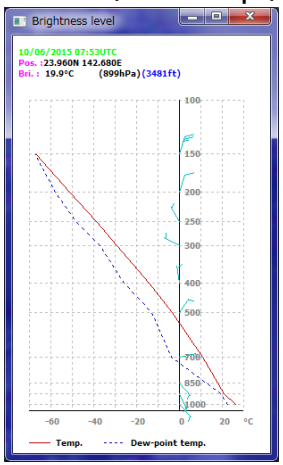
Brightness Evaluation

Click the upper-left of the window



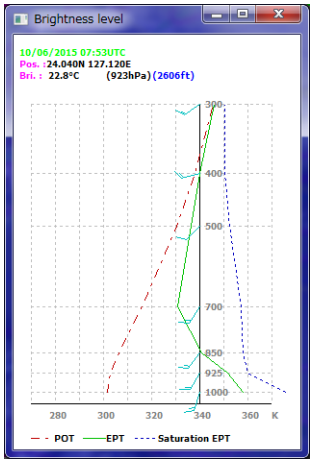


Vert.1 (Air temp.)



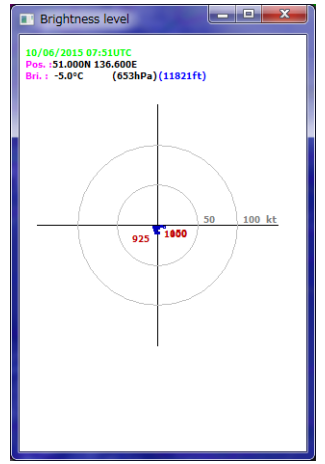
Wind, temperature and dew-point temperature

Vert.2 (Potential temp.)



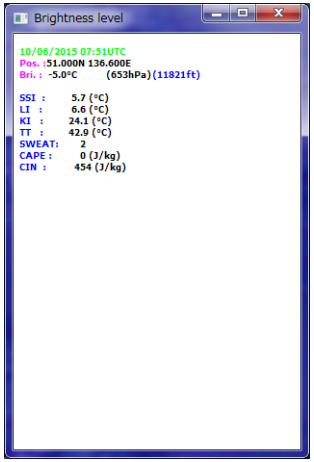
Wind, potential temperature, equivalent potential temperature and saturated equivalent potential temperature

Vert.3 (wind)



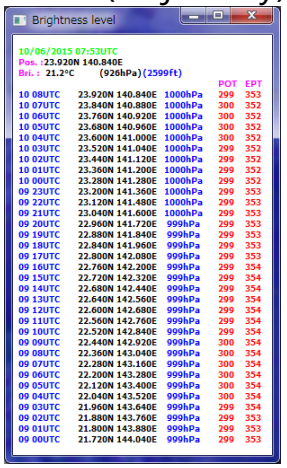
Wind hodograph or scorer number

Vert.4 (Stability)



SSI, KI, CAPE and CIN

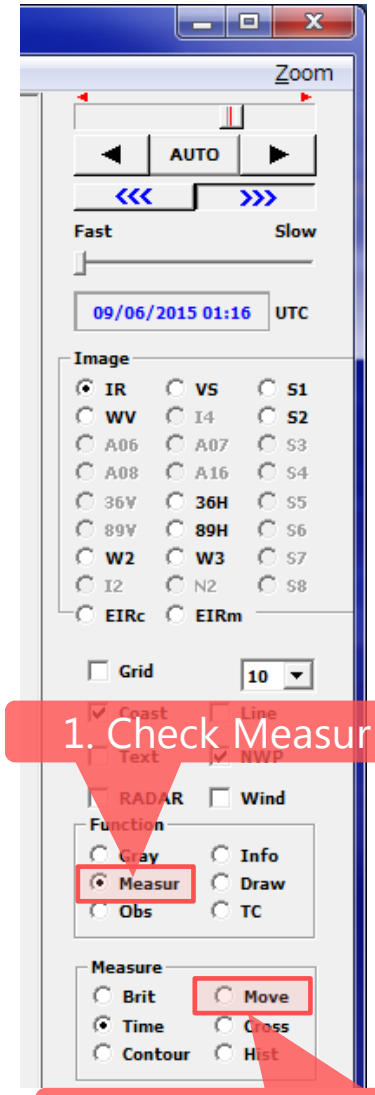
Vert.5 (Trajectory)



			POT	EPT
10 08UTC	23.920N 140.840E	1000hPa	299	353
10 07UTC	23.840N 140.880E	1000hPa	300	352
10 06UTC	23.760N 140.920E	1000hPa	300	352
10 05UTC	23.680N 140.960E	1000hPa	300	352
10 04UTC	23.600N 141.000E	1000hPa	300	352
10 03UTC	23.520N 141.040E	1000hPa	299	352
10 02UTC	23.440N 141.120E	1000hPa	299	352
10 01UTC	23.360N 141.200E	1000hPa	299	352
10 00UTC	23.280N 141.280E	1000hPa	299	352
09 23UTC	23.200N 141.360E	1000hPa	299	353
09 22UTC	23.120N 141.480E	1000hPa	299	353
09 21UTC	23.040N 141.600E	1000hPa	299	353
09 20UTC	22.960N 141.720E	999hPa	299	353
09 19UTC	22.880N 141.840E	999hPa	299	353
09 18UTC	22.840N 141.960E	999hPa	299	353
09 17UTC	22.800N 142.080E	999hPa	299	353
09 16UTC	22.760N 142.200E	999hPa	299	354
09 15UTC	22.720N 142.320E	999hPa	299	354
09 14UTC	22.680N 142.440E	999hPa	299	354
09 13UTC	22.640N 142.560E	999hPa	299	354
09 12UTC	22.600N 142.680E	999hPa	299	354
09 11UTC	22.560N 142.760E	999hPa	299	354
09 10UTC	22.520N 142.840E	999hPa	299	354
09 09UTC	22.440N 142.920E	999hPa	300	354
09 08UTC	22.360N 143.040E	999hPa	300	354
09 07UTC	22.280N 143.160E	999hPa	300	354
09 06UTC	22.200N 143.280E	999hPa	300	354
09 05UTC	22.120N 143.400E	999hPa	300	354
09 04UTC	22.040N 143.520E	999hPa	300	354
09 03UTC	21.960N 143.640E	999hPa	299	354
09 02UTC	21.880N 143.760E	999hPa	299	353
09 01UTC	21.800N 143.880E	999hPa	299	353
09 00UTC	21.720N 144.040E	999hPa	299	353

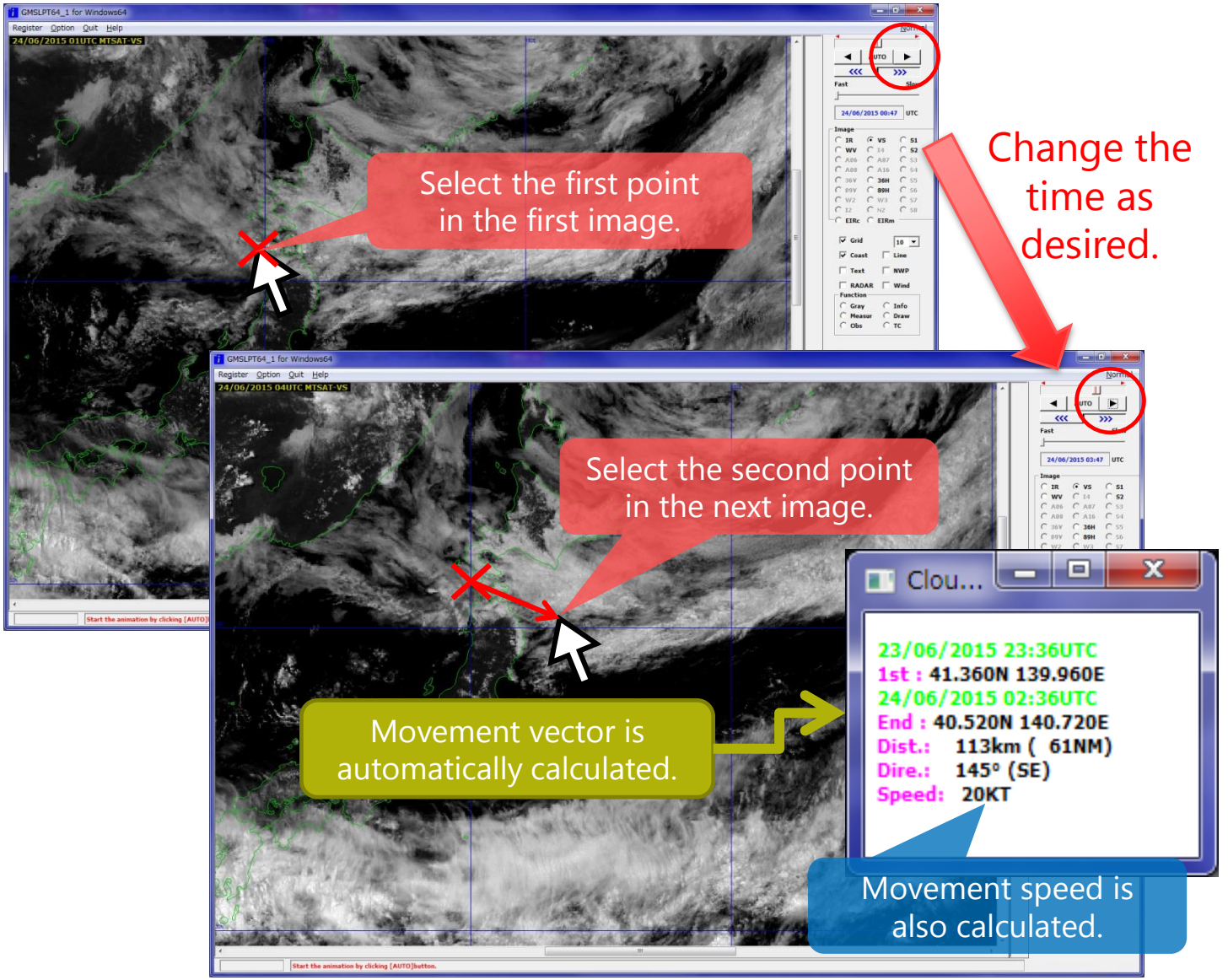
Trajectories with positions, altitudes, potential temperature and equivalent potential temperature changed over time.

Movement (Vector) Evaluation

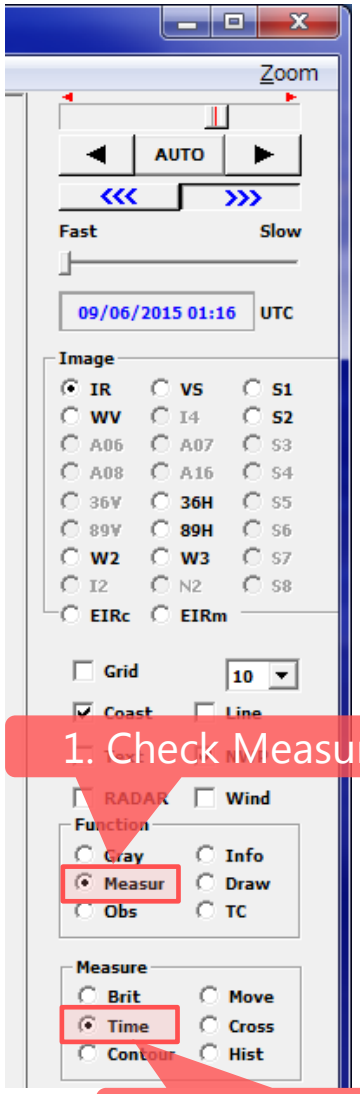


1. Check Measur

2. Check Move

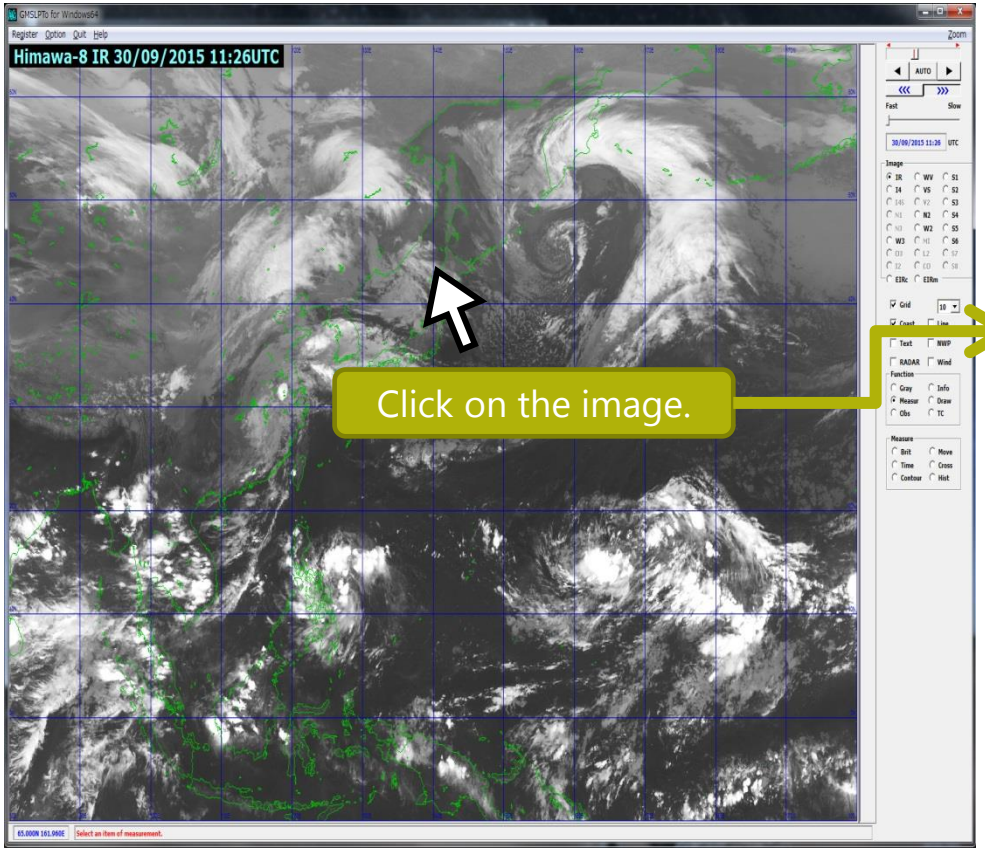


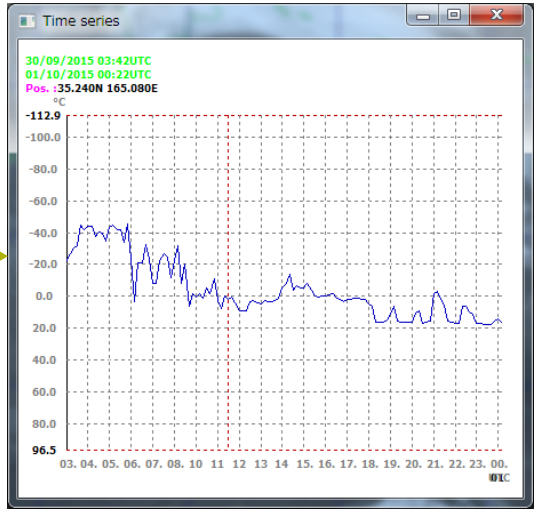
Time-series Evaluation



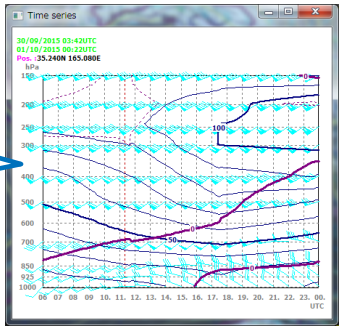
1. Check Measur

2. Check Time

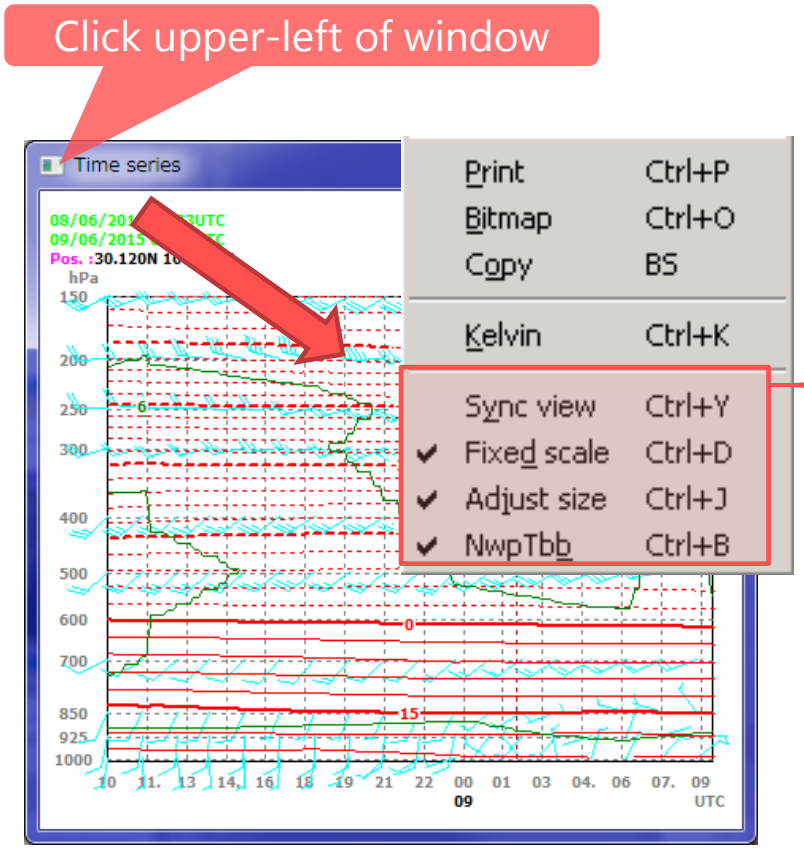




When NWP data are displayed, a time-series graph of NWP data for the selected point will be shown.



Time-series Evaluation



Sync view:

Data in the graph are updated in synchronization with animation.

Fixed scale:

Upper- and lower-limit values on the scale are fixed, and can be changed in Scale setup. If this is left unchecked, actual maximum and minimum brightness values are shown.

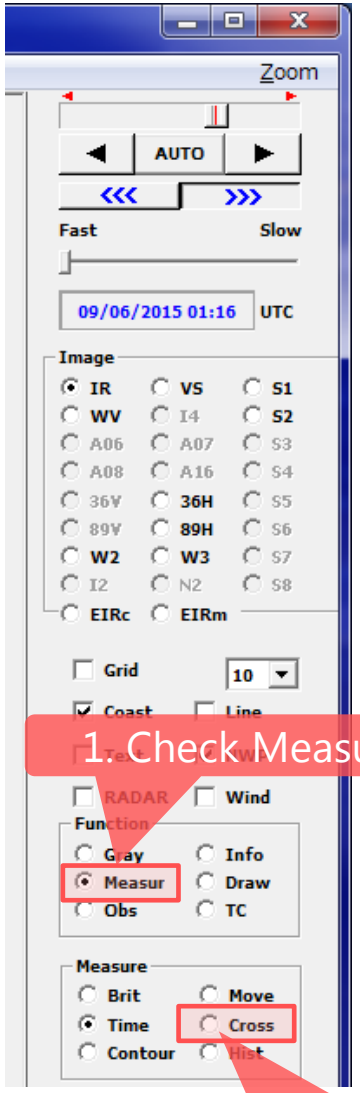
Adjust size:

Graph sizes change in proportion to the window size.

NwpTbb:

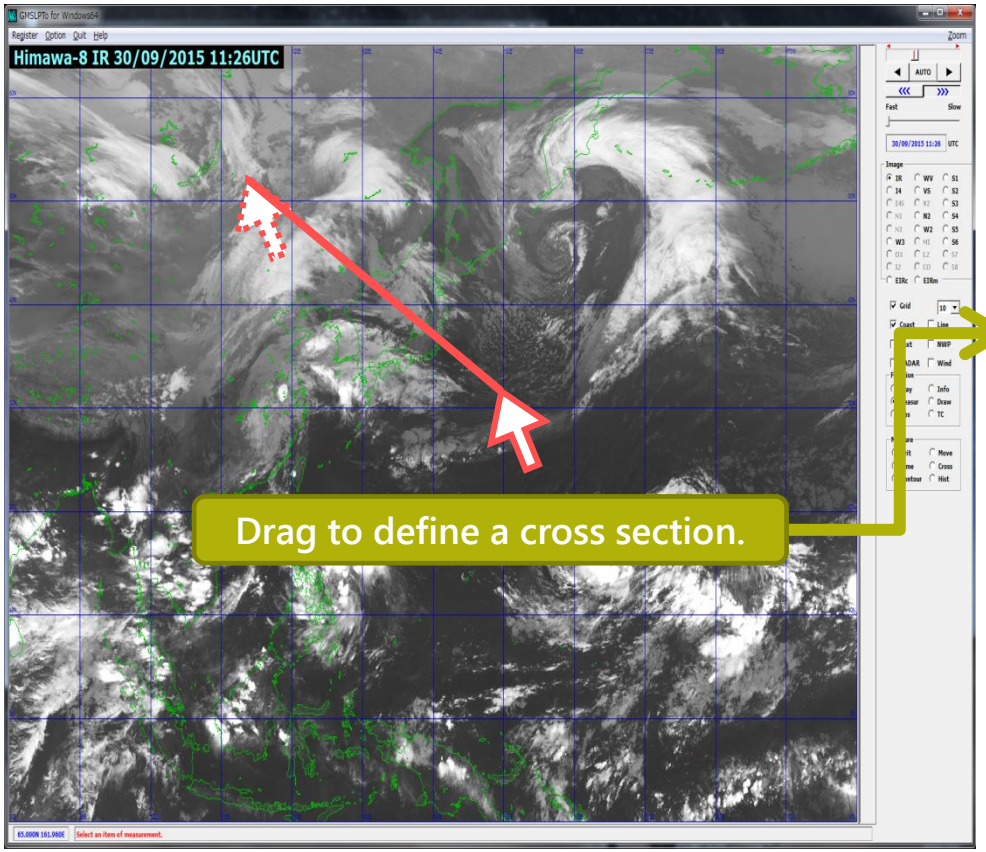
If this is left unchecked, no brightness temperature graph is shown on the screen. Only NWP data are shown.

Cross-sectional Evaluation

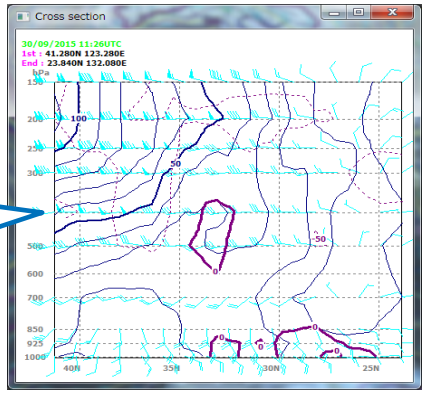


1. Check Measur

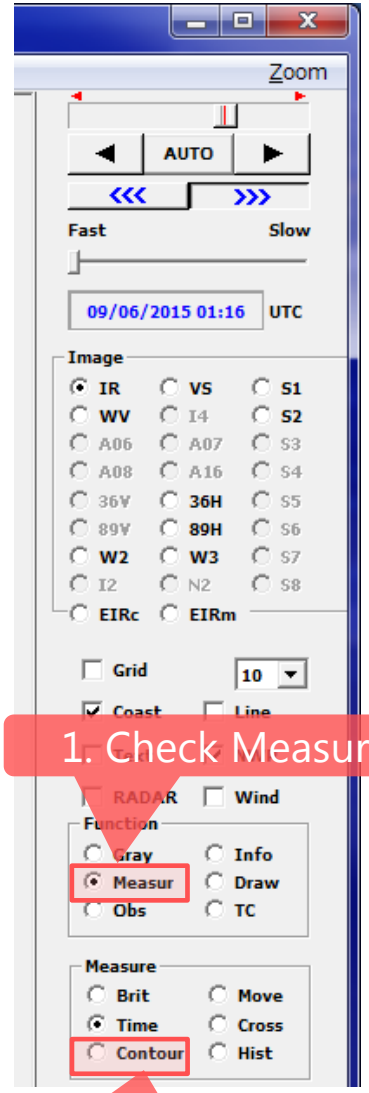
2. Check Cross



When NWP data are displayed, a cross-sectional graph of NWP data for the selected point will be shown.

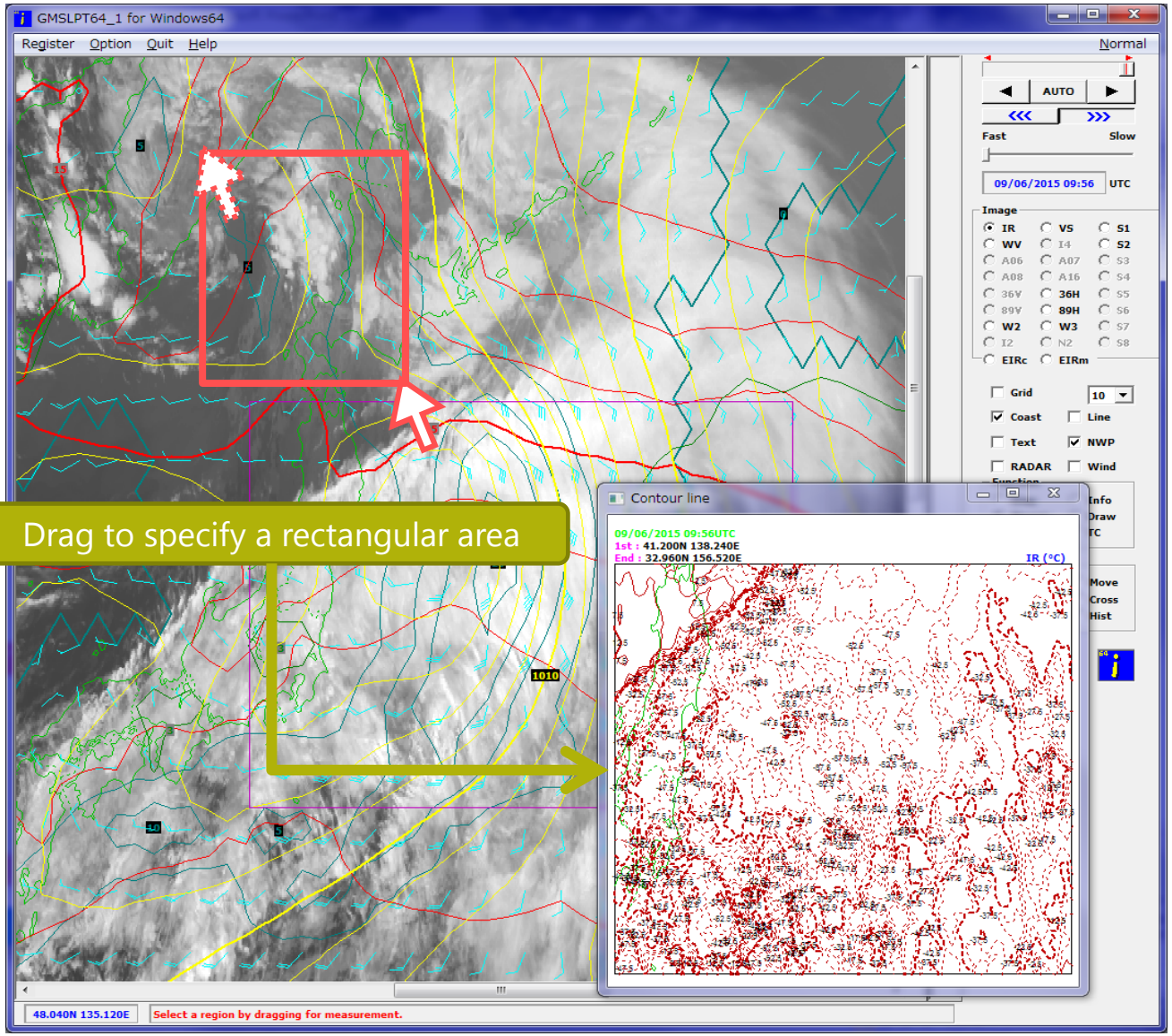


Isolines (Contours)

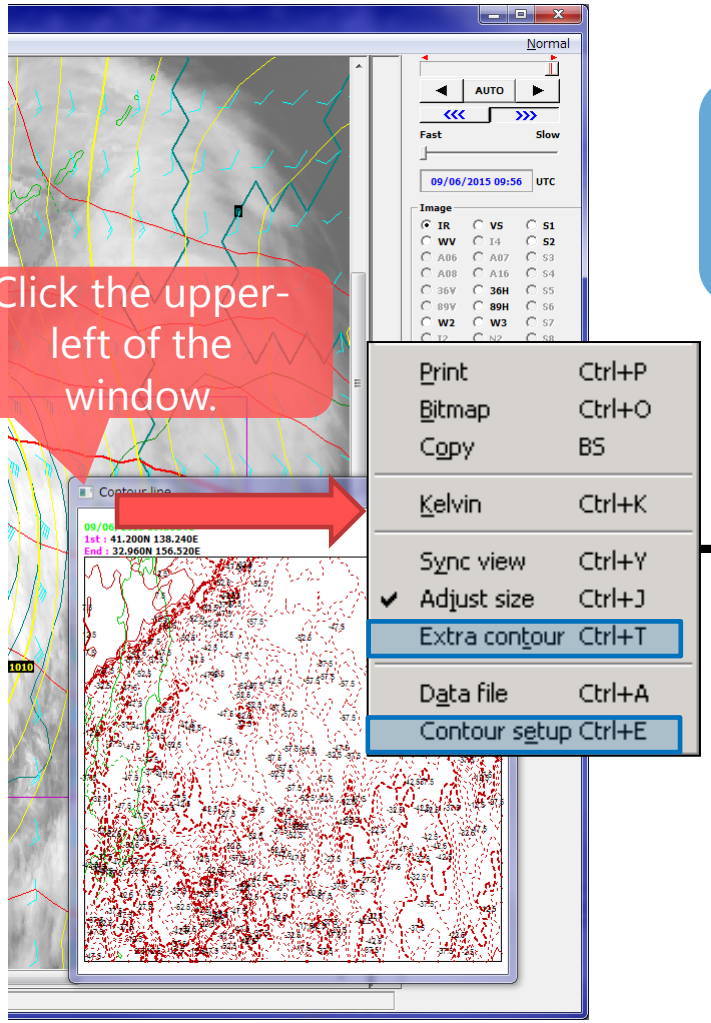


1. Check Measur

2. Check Contour

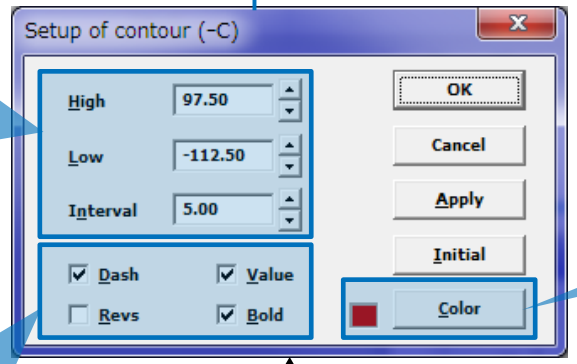


Isolines (Contours)



Click the upper-left of the window.

Set up counter.



Select upper/lower value and interval.

Select color.

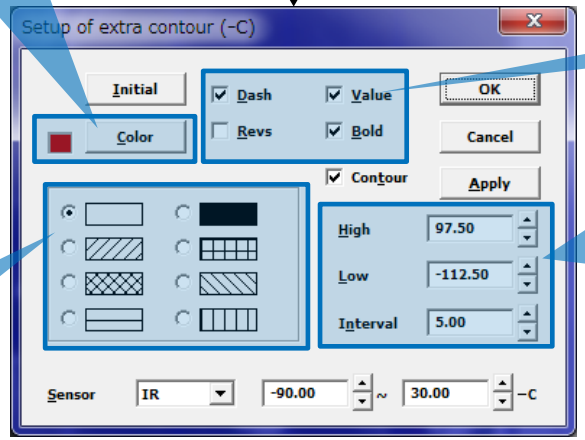
Select line type.

No (No hatch pattern shown)

Is Extra contour checked?

Yes (Hatch pattern shown)

Select color.

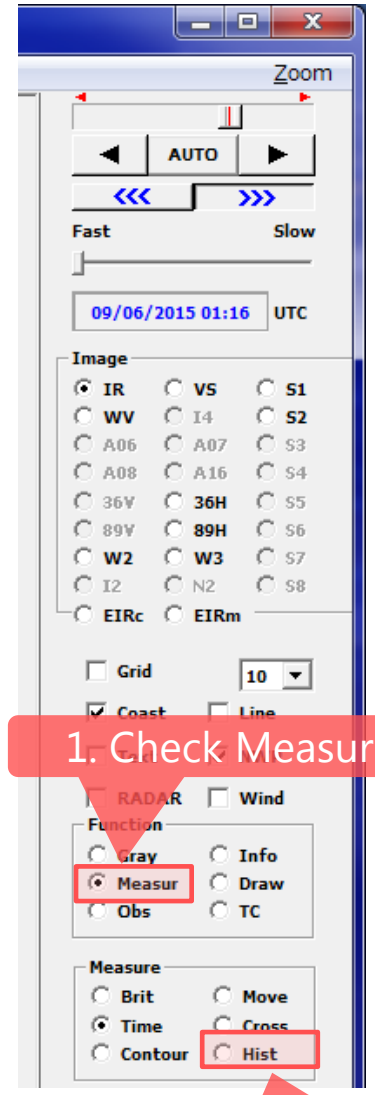


Select line type.

Select upper/lower value and interval.

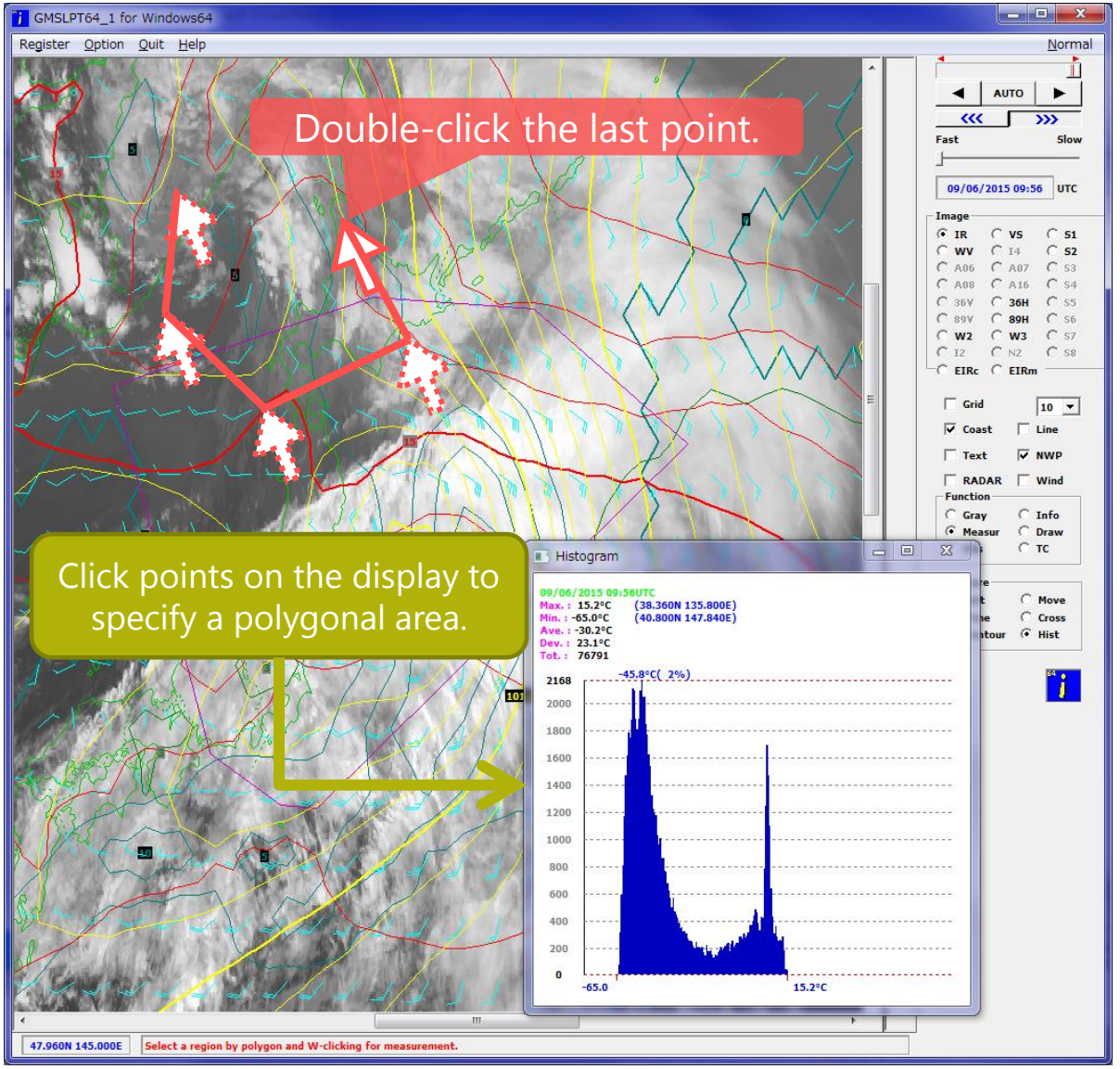
Select hatch pattern.

Histograms



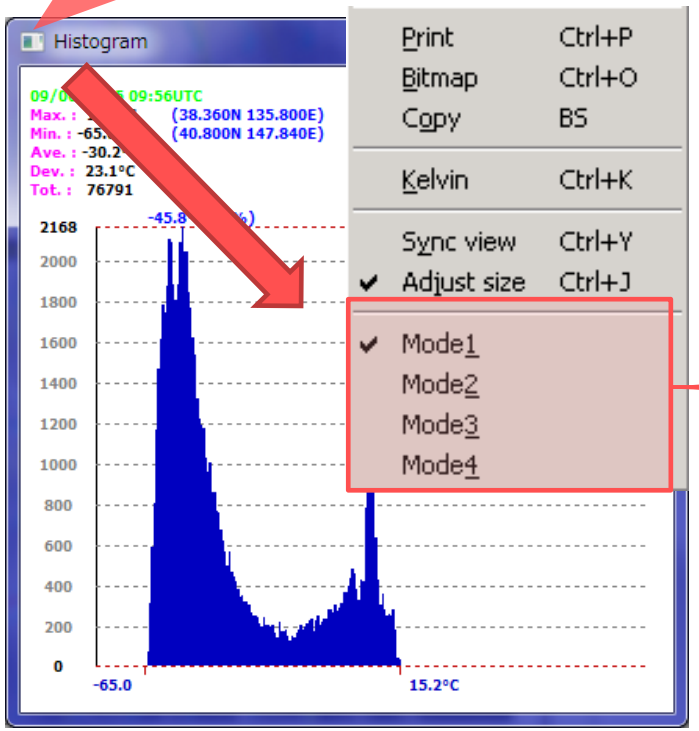
1. Check Measur

2. Check Hist

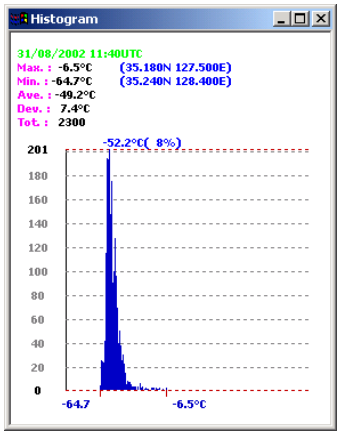


Histograms

Click the upper-left of the window.

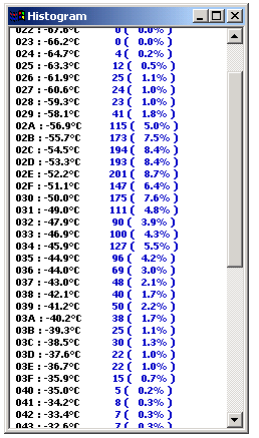


Mode1



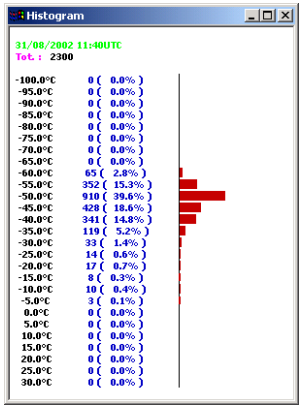
Statistical values and a histogram are shown.

Mode2



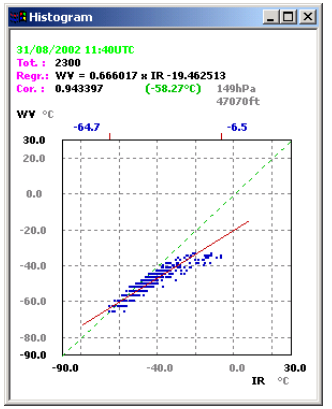
Brightness degrees (temp. for IR and reflectivity for VIS channel) are shown as numerical values.

Mode3



Frequency distribution of brightness degrees is shown (the interval can be changed on the histogram setup menu).

Mode4

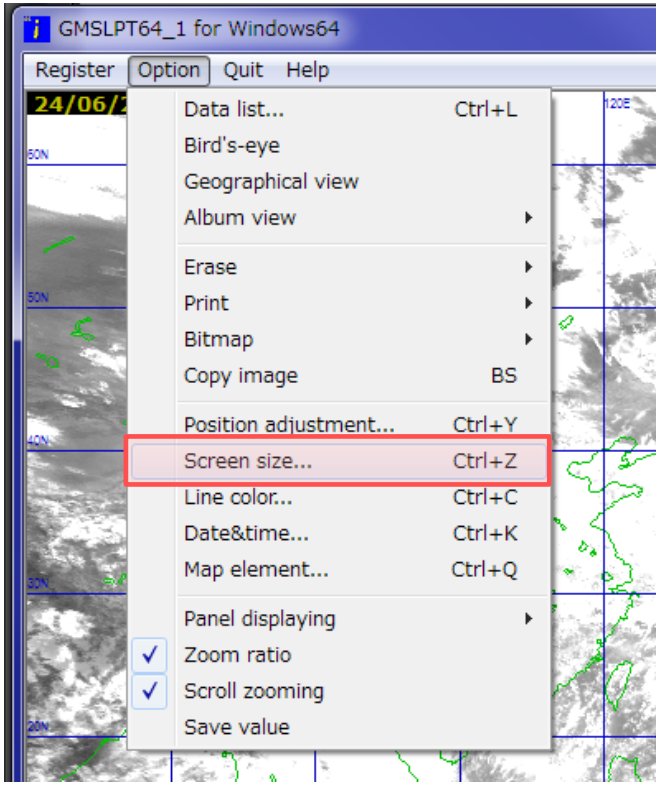


A scatter diagram of brightness temp. or reflectivity together with regression lines is shown for two different image types at the same time.

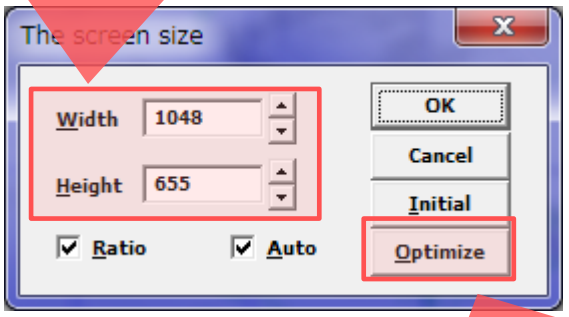
7. Other Functions

Changing Window Size

The screen size window can be opened to change the size of the SATAID window by clicking on [Screen size] in the [Option] menu.

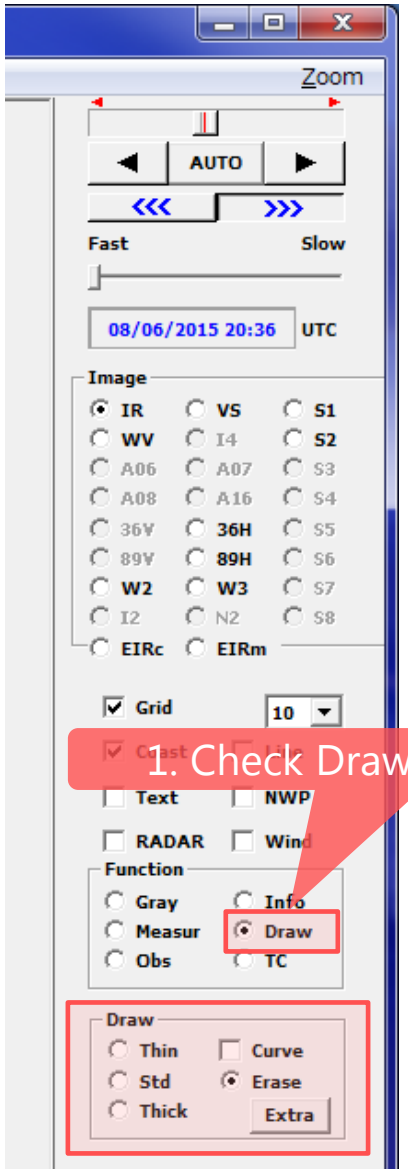


Window size can be specified using the width and height boxes (unit: pixels).



Window size is automatically adjusted to fit the display.

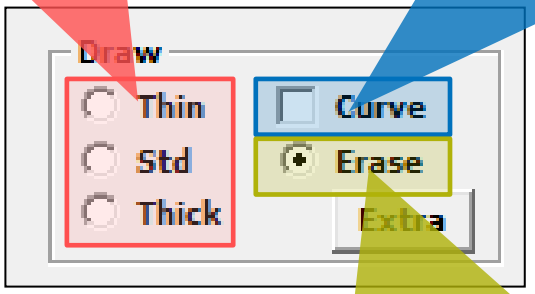
Creating Drawings



1. Check Draw

Select line width.

Select Thin, Standard or Thick.



Spline drawing

- Select the line width and check the [Curve] checkbox.
- Click on two or more points in the displayed image and double click on the end point.

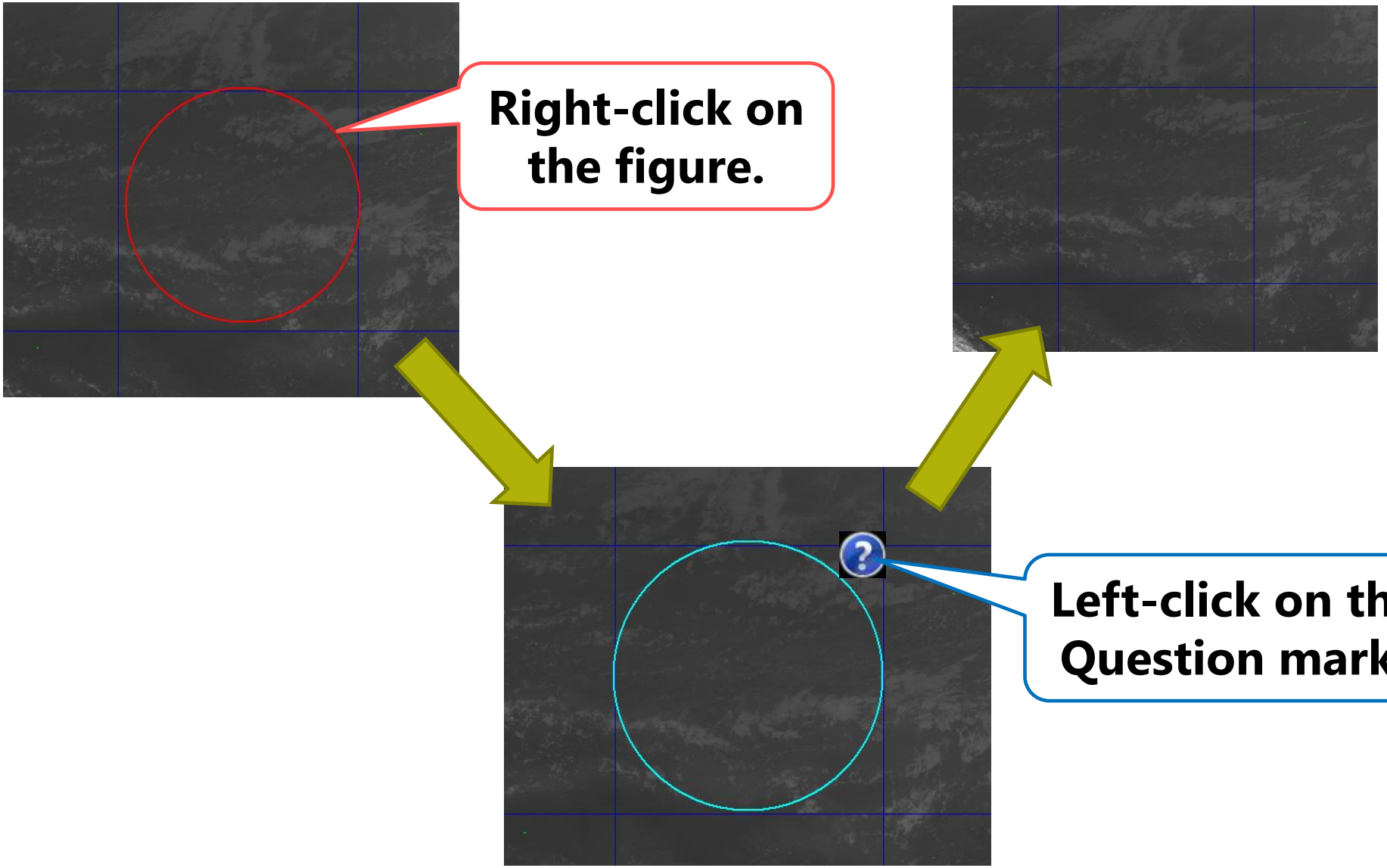
Partial erasure

- Select the [Erase] checkbox.
- Click a line or a character string, etc. in the current image to erase it. The item will be displayed in reverse color, and will be erased if clicked again.

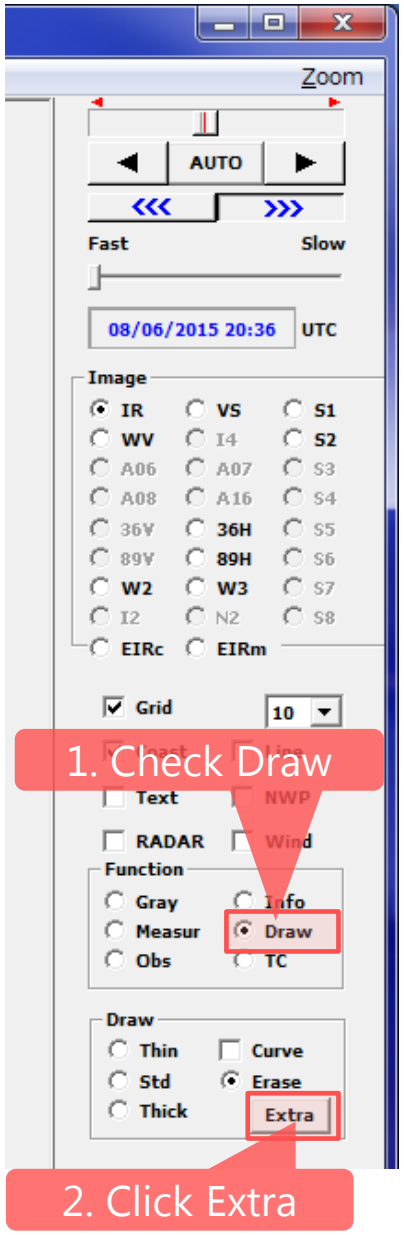
Tip

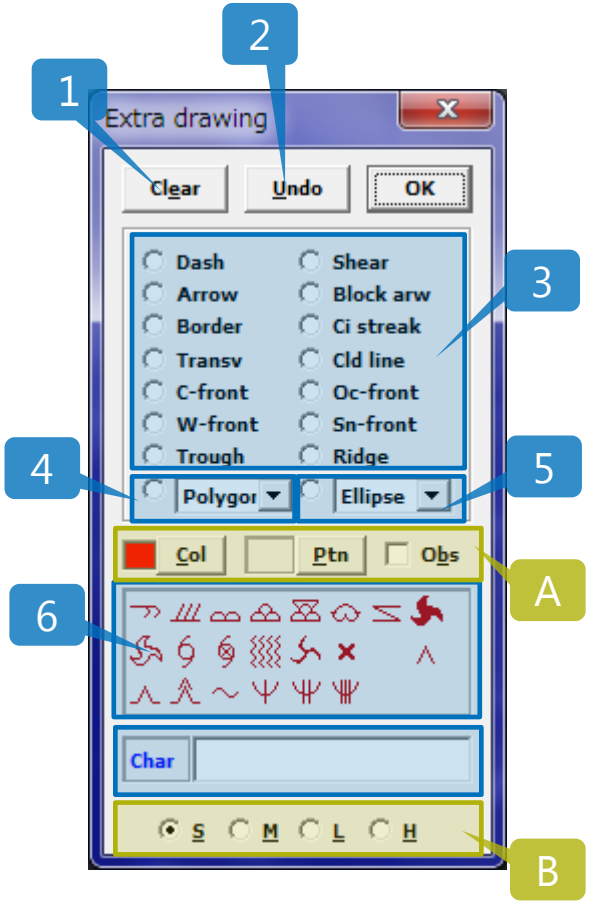
If neither [Curve] nor [Erase] is selected, freehand drawing is enabled.

Deleting Drawn Figures



Creating Drawings

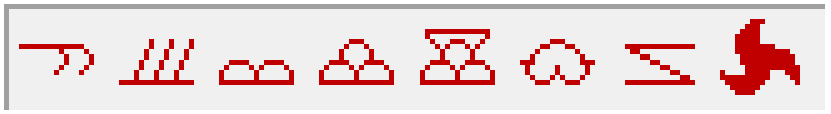




A: Change color and hatch pattern.
B: Change symbol size.

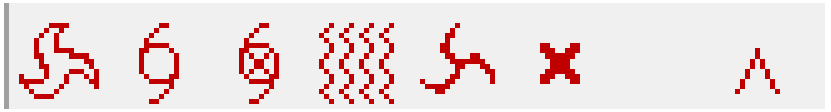
1. Delete all drawings. ([Clear] button)
2. Cancel the previous drawing operation. ([Undo] button)
3. Draw lines and arrows (fronts, troughs, or ridges), which can be created as with spline drawings.
   *Click the [Sn-front] button with [Ctrl] pressed to draw a stationary front in red and blue.
4. Draw polygons, closed curves, or cloud rims, which can be created as with spline drawings. In these figures, colors and hatched patterns can be changed.
5. Draw ellipses, circles, or flex oval. Colors can be changed and hatched patterns can be used for filling.
6. Paste cloud form symbols or vortex center symbols. (Drag a symbol to the desired point. The symbol size can be changed and the symbol can be reversed from left to right by dropping it with [Ctrl] pressed.)
7. Paste character strings. (Drag [Char] to the desired point. The character size can be changed.)
8. Paste wind barbs (Drag [Char] to the desired point after inputting WIND ddd (direction in 360 deg.) and fff (velocity). The wind barb size can be changed.)

Creating Drawings



1 2 3 4 5 6 7 8

1	High-level cloud (Ci)
2	Middle-level cloud (Cm)
3	Cumulus (Cu)
4	Cumulus Congestus (Cg)
5	Cumulonimbus (Cb)
6	Stratus
7	Stratus or Fog
8	Low-level vortex
9	Upper-level vortex
10	Center of typhoon with eye
11	Center of typhoon without eye

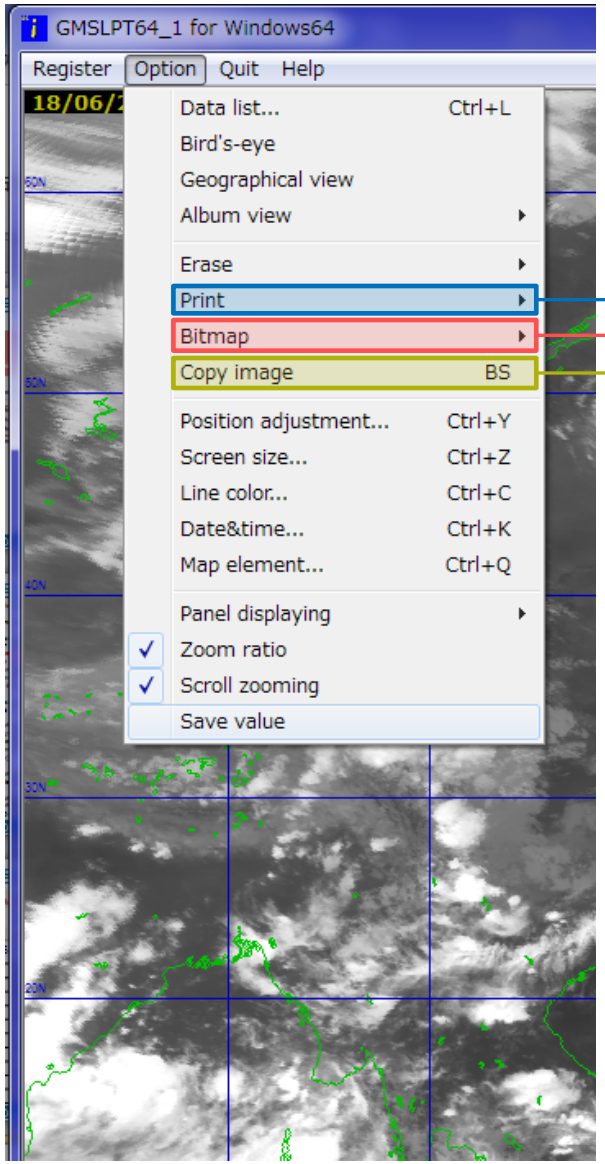


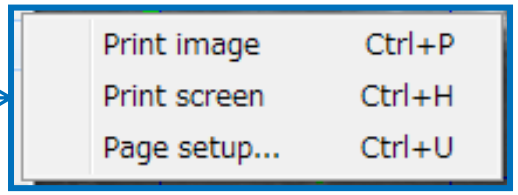
9 10 11 12 13 14 15

16 17 18 19 20 21

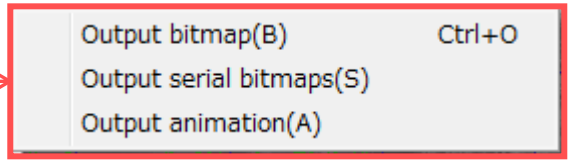
12	Waved cloud (Mountain wave)
13	Low-level vortex (Meso β-scale)
14	(Cross mark)
15	Light turbulence
16	Moderate turbulence
17	Severe turbulence
18	(Tilde mark)
19	Light icing
20	Moderate icing
21	Severe icing

Outputting Images





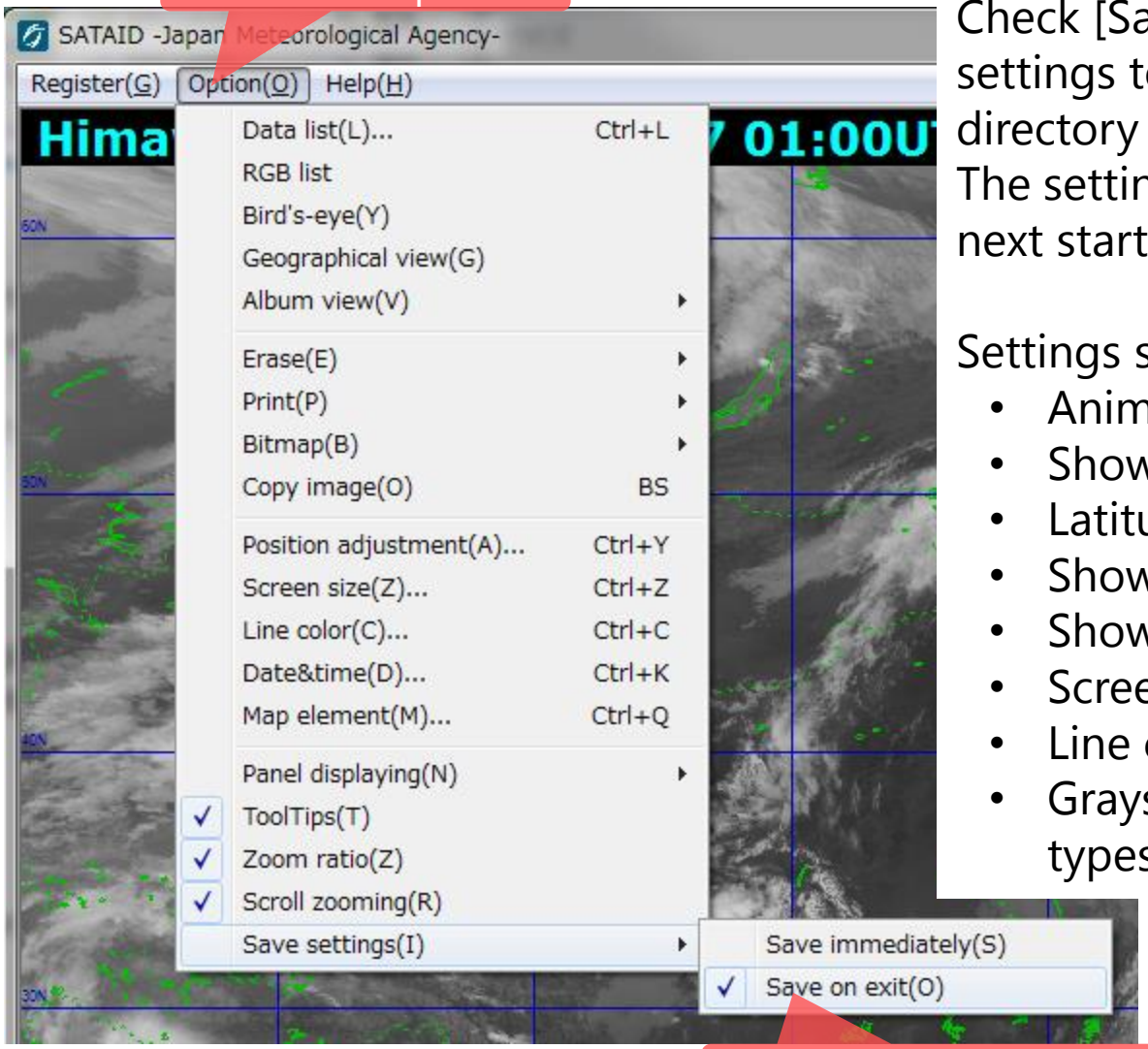
Print image: Output the current image to a printer
Print screen: Output the entire screen to a printer
Page setup: Set the margins of the printing paper



Output bitmap*: Output the current image as a bitmap file
Output serial bitmaps*: Output images as bitmap files
Output animation: Output images as a Gif or Avi animation
(*BMP, JPG, PNG, TIF and other formats can be used.)

Copy the current image to the clipboard

Saving New Settings



Check [Save on exit(O)] to save the current settings to the initial value file in the program directory before exiting the program.
The settings will be applied by default at the next startup.

Settings saved include:

- Animation speed
- Show/hide status of latitude/longitude lines
- Latitude/longitude line display intervals
- Show/hide status of coastlines
- Show/hide status of drawings
- Screen size
- Line colors
- Grayscale status set separately for image types