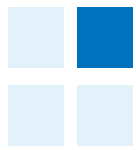


# **JMA Practical Training (Part1)**

**Katsushige Kitazawa  
Tokyo Typhoon Center  
Japan Meteorological Agency**



# Goal of this training

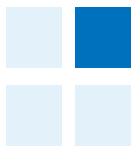
---

## ■ Use of Himawari-8 data

- How can we use the data in operation?
- What can we do using the data?

## ■ Do Exercise with SATAID!

- What is 'SATAID' software?
- Do exercise to deepen the understanding



# Contents

---

**1. Preparation**

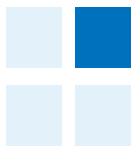
**2. Introduction**

**3. Basic Functions of SATAID**

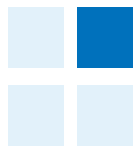
**4. Exercise**

- **Cloud Analysis**
- **Detect Various Phenomenon**

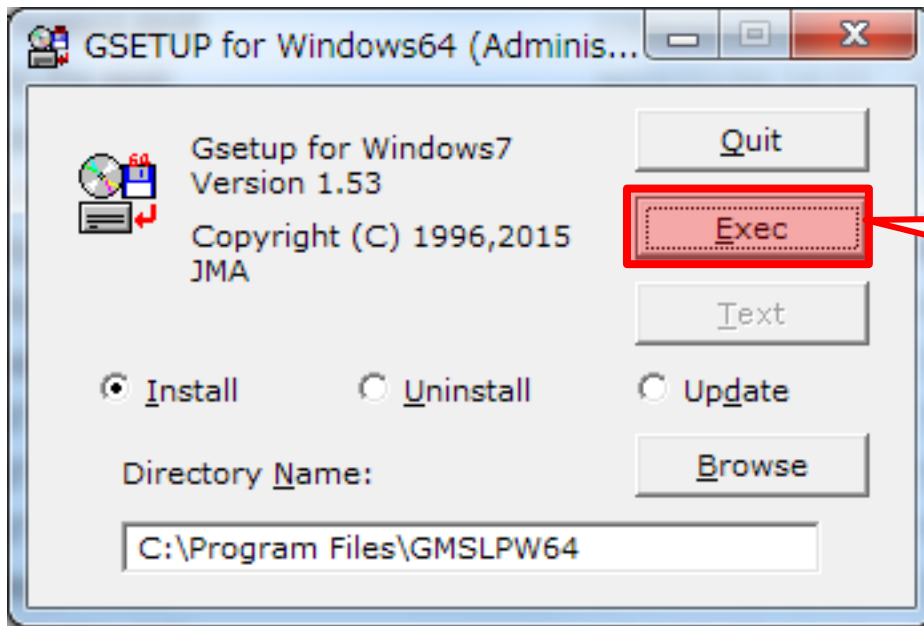
**Try it out and  
become familiar!!**



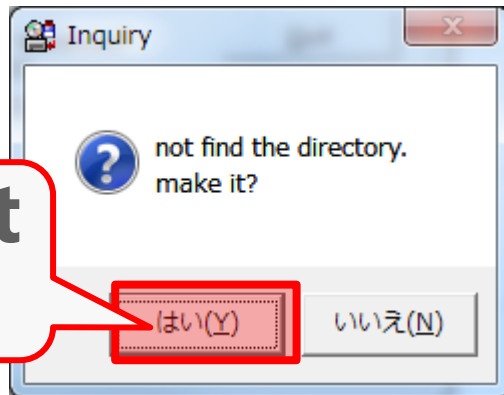
1. Open **“C Drive” folder** from “Computer”
  2. Open **“JMA\_Practical\_Training(Part1)” folder**
- Do not open it in USB memory.
  - It takes too long time to read it from USB.



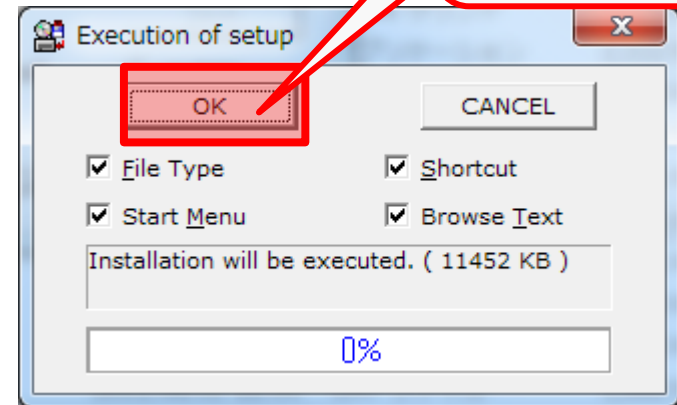
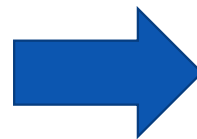
1. Open **“Gmslpd”** folder
  2. Double-click **“Gsetup64.exe”**
- If OS type of your PC is 32 bit windows, open **“Gsetup.exe”**.
  - The PCs we prepared is 64 bit windows.



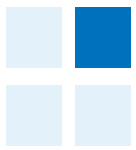
Select  
'Exec'



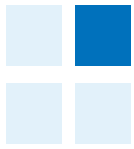
Select  
'Yes'



Select  
'OK'



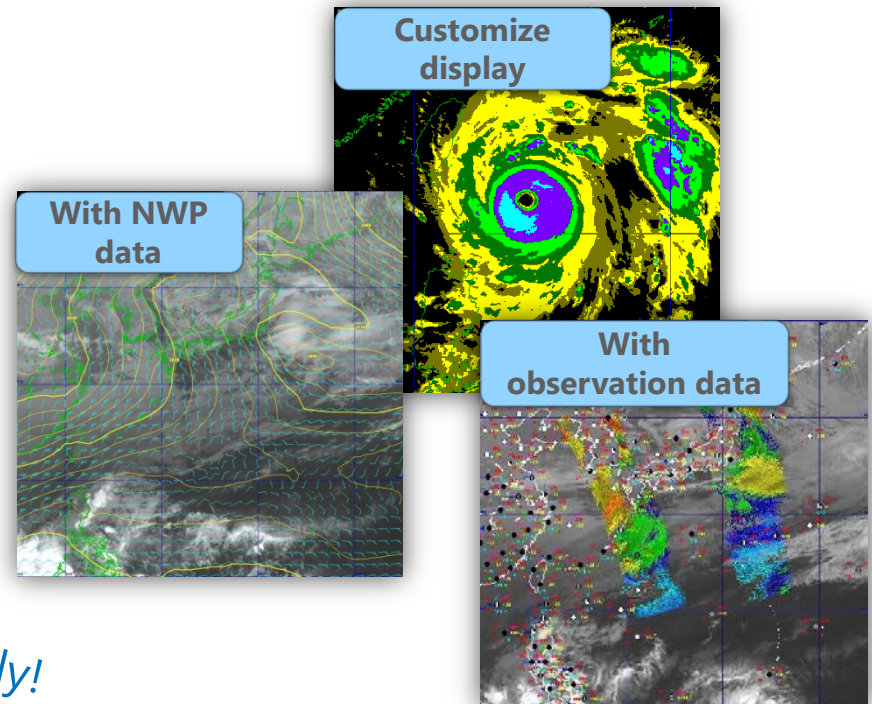
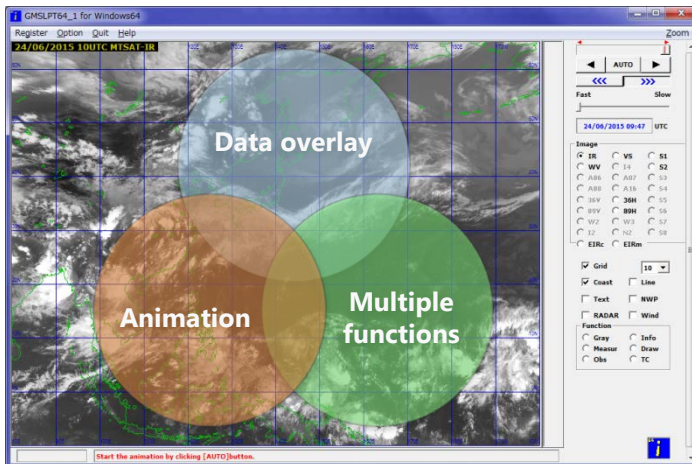
- Go back to **the**  
**“JMA\_Practical\_Training(Part1)”** folder
- Double-click **“1\_Demonstration.atc”**



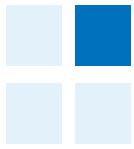
# What is SATAID?

## Introduction

SATAID (**SAT**ellite **A**nimation and **I**nteractive **D**iagnosis) is a sophisticated display software visualizing meteorological information **in multiple dimensions (spatial and temporal)**, which assists forecasters to analyze and monitor continually weather parameters and phenomena for better meteorological services.







# How do we get it?

## Introduction

### WIS Website

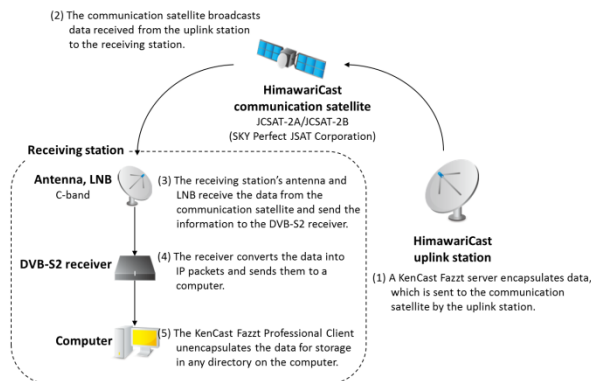
<http://www.wis-jma.go.jp/cms/sataid/>



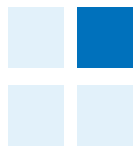
- You need Internet Environment
- 5 channels are available every 10 minutes
- You need to get ID and Password (*wis-jma at met.kishou.go.jp*)

### Himawari-Cast

[http://www.data.jma.go.jp/mscweb/en/himawari89/himawari\\_cast/himawari\\_cast.html](http://www.data.jma.go.jp/mscweb/en/himawari89/himawari_cast/himawari_cast.html)



- You need dedicated antenna and computers
- 14 channels are available every 10 minutes



# Data for Demonstration

---

- **16 Channels**
  - **Every-10-minute images**
  - **Spatial resolution:**
    - **1km for Visible (0.64 $\mu$ m)**
    - **4km for others**
- (Original Data is 2km for IR and 0.5 or 1km for VS)**

# 16 Bands of AHI (Advanced Himawari Imager)

MTSAT  
Channels

Band			Wavelength [ $\mu\text{m}$ ]	Spatial Resolution	
VIS	1	V1	Visible	0.46	1Km
	2	V2		0.51	1Km
	3	VS		0.64	0.5Km
IR4	4	N1	Near Infrared	0.86	1Km
	5	N2		1.6	2Km
	6	N3		2.3	2Km
IR3(WV)	7	I4	Infrared	3.9	2Km
	8	WV		6.2	2Km
	9	W2		7.0	2Km
IR1	10	W3	Infrared	7.3	2Km
	11	MI		8.6	2Km
	12	O3		9.6	2Km
IR2	13	IR	Infrared	10.4	2Km
	14	L2		11.2	2Km
	15	I2		12.3	2Km
	16	CO		13.3	2Km

RGB band  
Composited



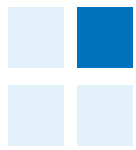
Aerosol  
Water cloud and Ice cloud  
Size of the cloud droplet  
Fog , Hot spot(Forest fire)

Water vapor

SO<sub>2</sub>(Sulfur dioxide)  
O<sub>3</sub>(Ozone)

Atmospheric Windows

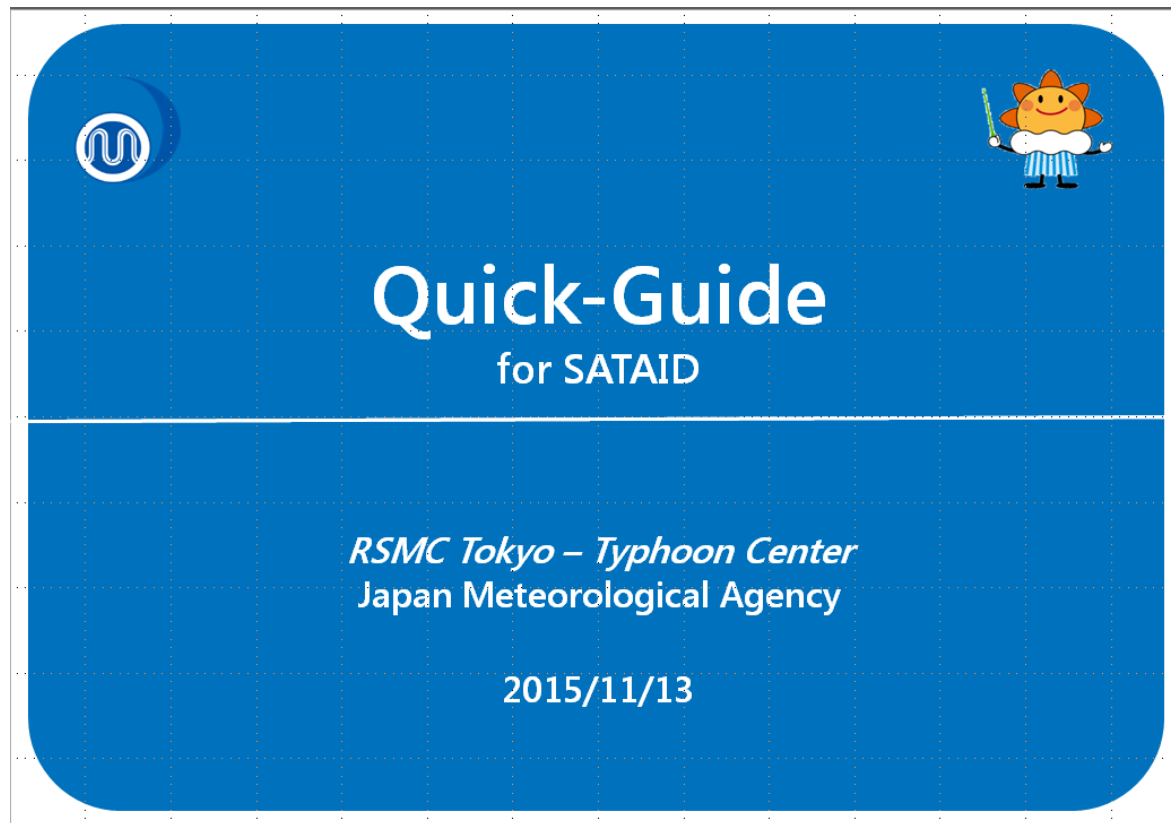
CO<sub>2</sub>(Carbon dioxide)

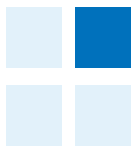


# Introduction to SATAID

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Please look at the 'Quick-Guide' (handout)



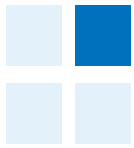


# Exercise1

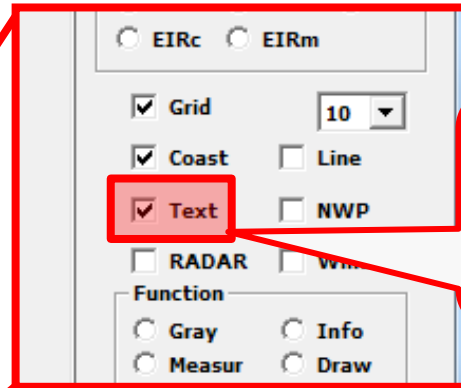
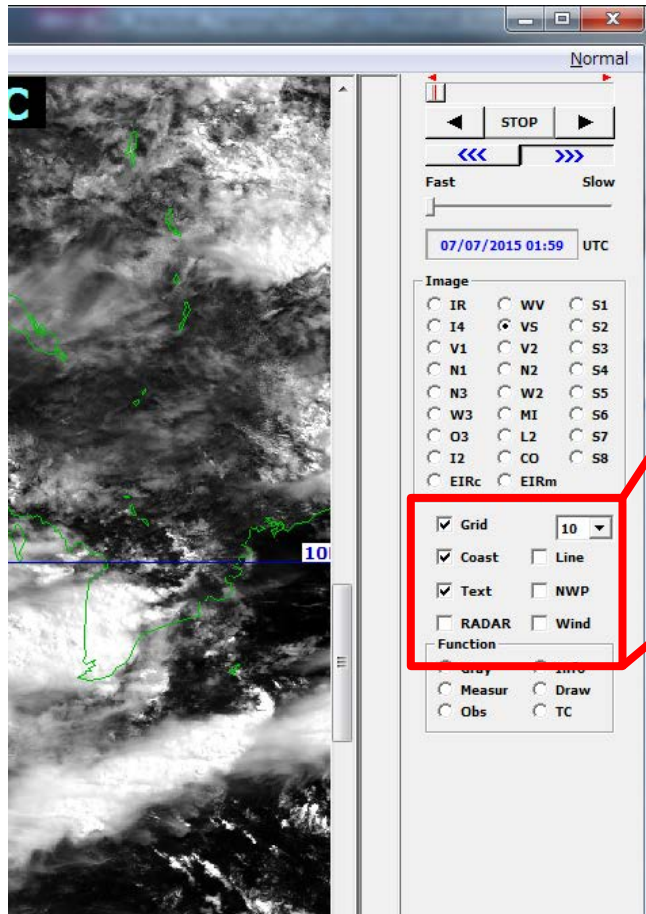
---

**You will find;**

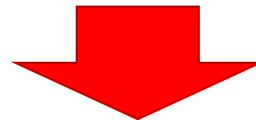
- 1. Fog / Stratiform Cloud**
- 2. Cb / Cg**
- 3. Transverse Line**
- 4. Upper level flow**
- 5. Jet stream, upper level vortex...**
- 6. Lower level flow**
- 7. Tropical Cyclone**



# Answer the questions

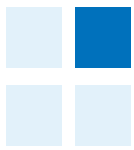


Check 'Text'



## 7 questions

1. Lets find stratiform cloud (St or Fog) areas. (Draw Yellow color : line) [Hint](#) [How to Draw](#)  
(See IR image and VS image.)
2. Lets find convective cloud areas containing Cb or Cg. (Draw Red color : cloud type mark) [Hint](#) [How to Draw](#)
3. Lets find Transverse Line. (Draw Blue color : Extended drawing [Transv]) [Hint](#) [How to Draw](#)
4. Lets find Upper level wind flow. (Cyan color : Extended drawing [Block arw] ) [How to Draw](#)  
(See Water Vapor image animation.)
5. Lets find jet stream , Upper trough and vortex. (Blue color : Extended drawing [Arrow , Trough and cloud type mark]) [How to Draw](#)  
(See Water Vapor image.) [Hint](#)
6. Lets find Lower level wind flow. (Magenta color : Extended drawing [Block arw] ) [How to Draw](#)  
(See VS image animation.)
7. Lets find Tropical Cyclone and Tropical depression. (Magenta color : cloud type mark)



# 7 Questions

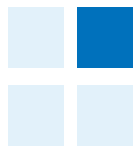
## 7 questions

**Exercise1**      [Extra Drawing 1](#)      [Extra Drawing 2](#)

1. Lets find stratiform cloud (St or Fog) areas. (**Draw Yellow color : line**) [Hint](#) [How to Draw](#)  
(See IR image and VS image.)
2. Lets find convective cloud areas containing Cb or Cg. (**Draw Red color : cloud type mark**) [Hint](#) [How to Draw](#)
3. Lets find Transverse Line. (**Draw Blue color : Extended drawing [Transv]**) [Hint](#) [How to Draw](#)
4. Lets find Upper level wind flow. (**Cyan color : Extended drawing [Block arw]**) [How to Draw](#)  
(See Water Vapor image animation.)
5. Lets find jet stream , Upper trough and vortex. (**Blue color : Extended drawing [Arrow , Trough and cloud type mark]**) [How to Draw](#)  
(See Water Vapor image.) [Hint](#)
6. Lets find Lower level wind flow. (**Magenta color : Extended drawing [Block arw]**) [How to Draw](#)  
(See VS image animation.)
7. Lets find Tropical Cyclone and Tropical depression. (**Magenta color : cloud type mark**)

# **Fog / Stratiform Cloud (Question 1)**

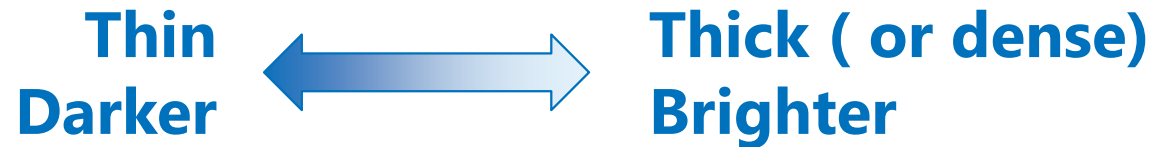




# Visible and Infrared Imagery

## Visible Image

- Measure intensity of reflected solar radiation
- Estimate the **optical thickness** of cloud



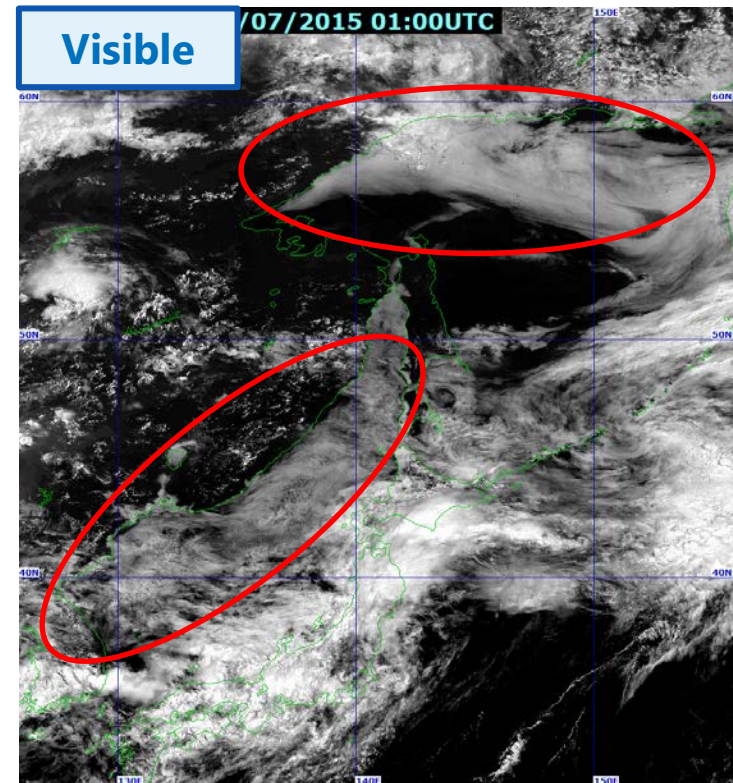
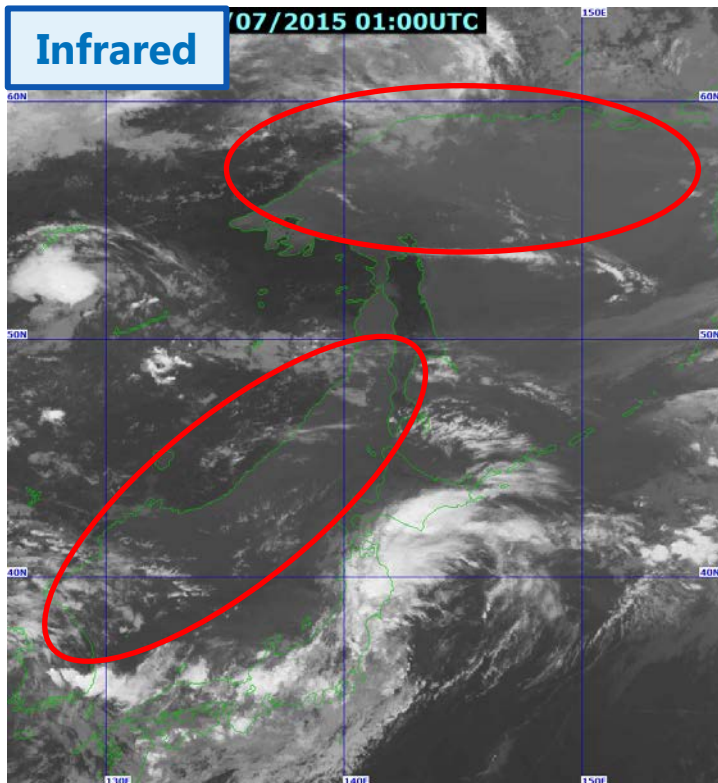
## Infrared Image

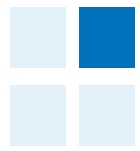
- Measure brightness temperature emitted from target object
- Estimate the **height** of cloud



# Detect Fog/Stratiform cloud

- Fog / Stratiform cloud is dense cloud in very low level.
- This means that it looks **darker in Infrared image** and **brighter in Visible image**.
- Also, **the surface of the fog area is smooth** in Visible image because it's just under stable layer

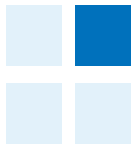




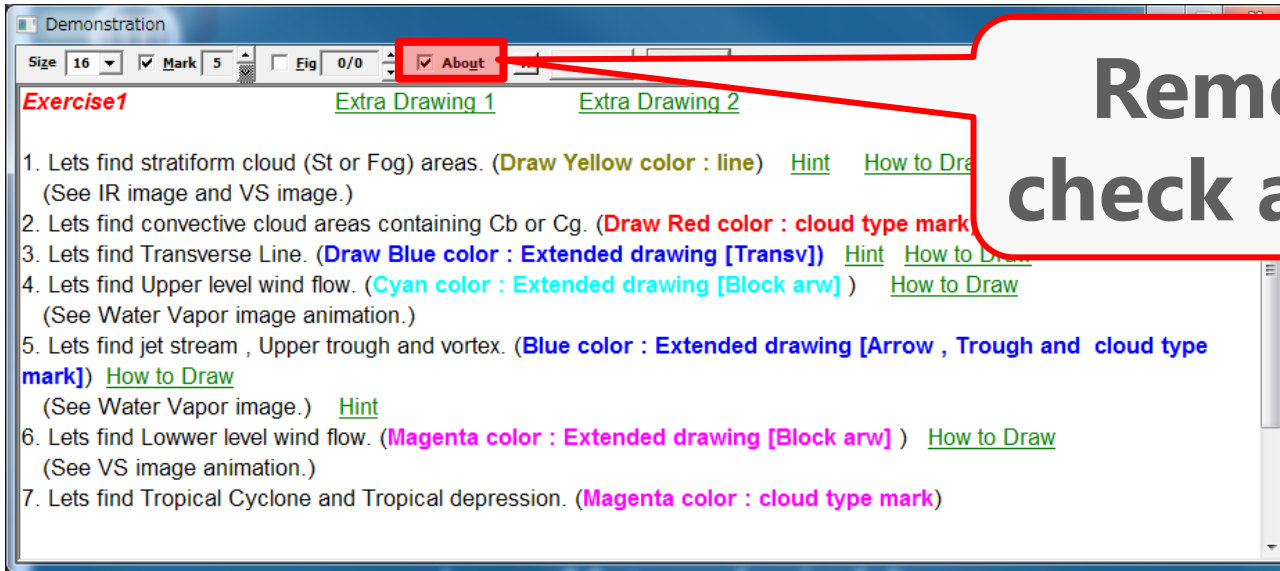
## **Find Fog/Stratiform Cloud Area!**

---

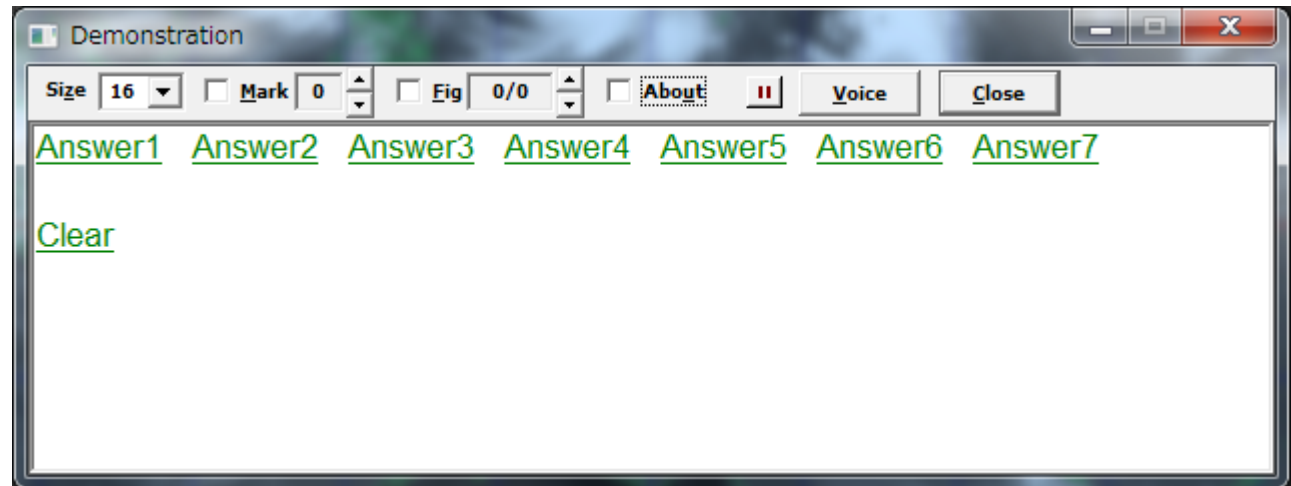
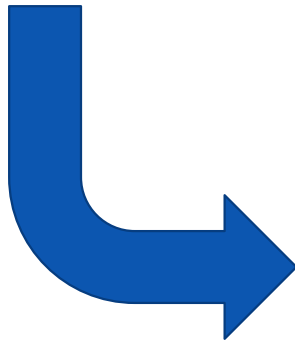
- 1. Compare visible image with infrared image (Change image type)**
- 2. Check the surface of the area. Is it smooth? (Zoom in the area)**
- 3. Mark the area with drawing function (See 'How to draw')**



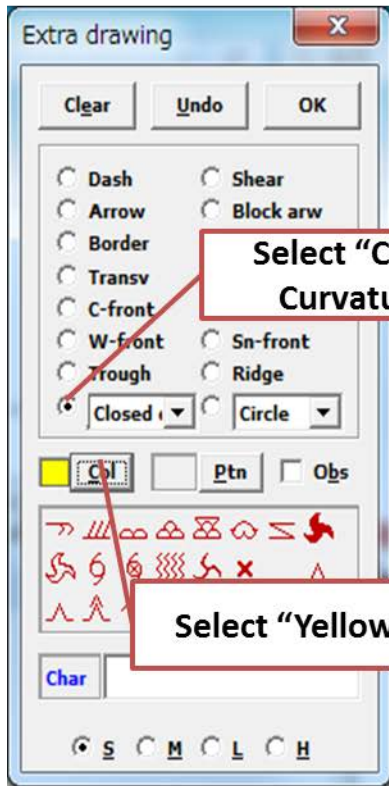
# How to see the answers



Remove the check at 'About'



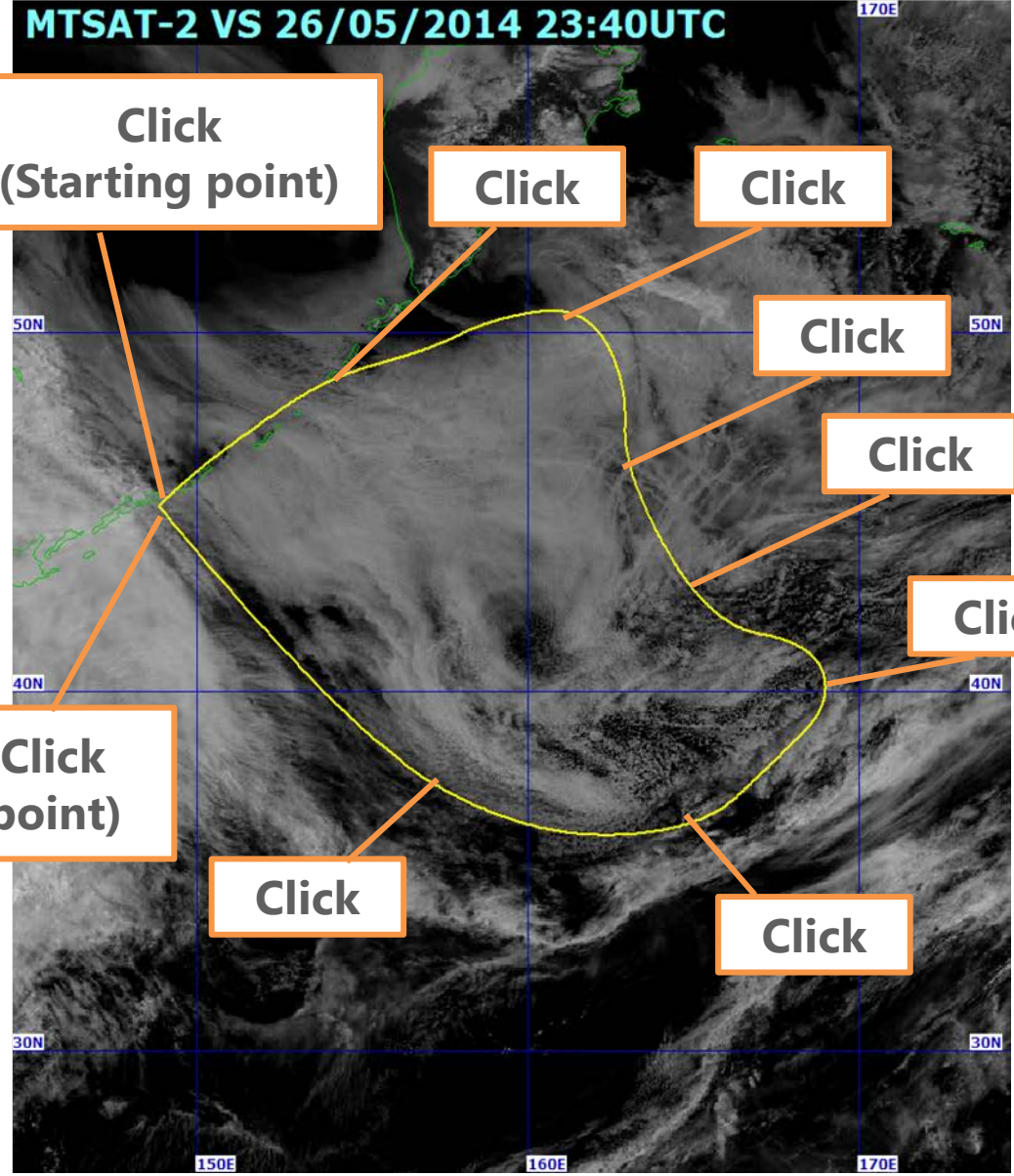
# Example



Select "Closed Curvature"

Select "Yellow"

MTSAT-2 VS 26/05/2014 23:40UTC



Click (Starting point)

Click

Click

Click

Click

Click

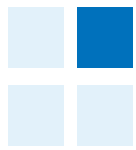
Double-Click (ending point)

Click

Click

# **Cb / Cg**

## **(Question 2)**



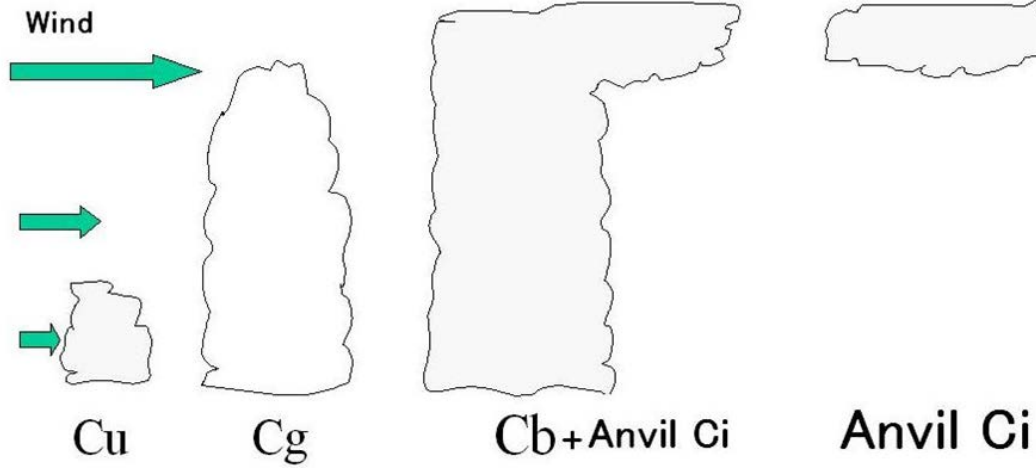
# How to differentiate Cb and Cg

## Schematics of Convective Cloud

### IR Image



### Cross Section



### Cb

- Looks whiter than Cg in Infrared image
- Accompanied with anvil Ci

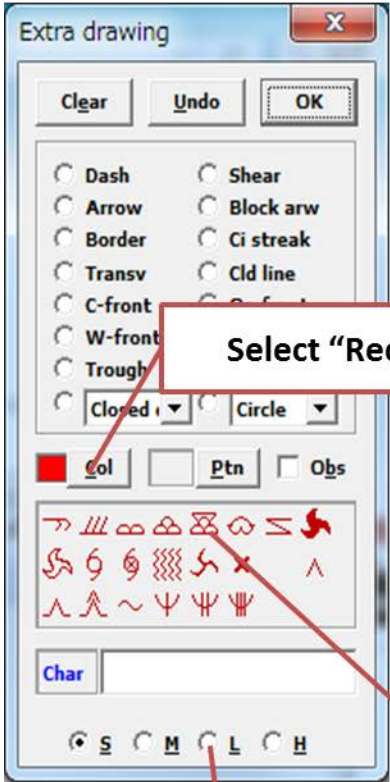
### Cg

- Looks like dots

### Anvil Ci

- Use animation to see the movement

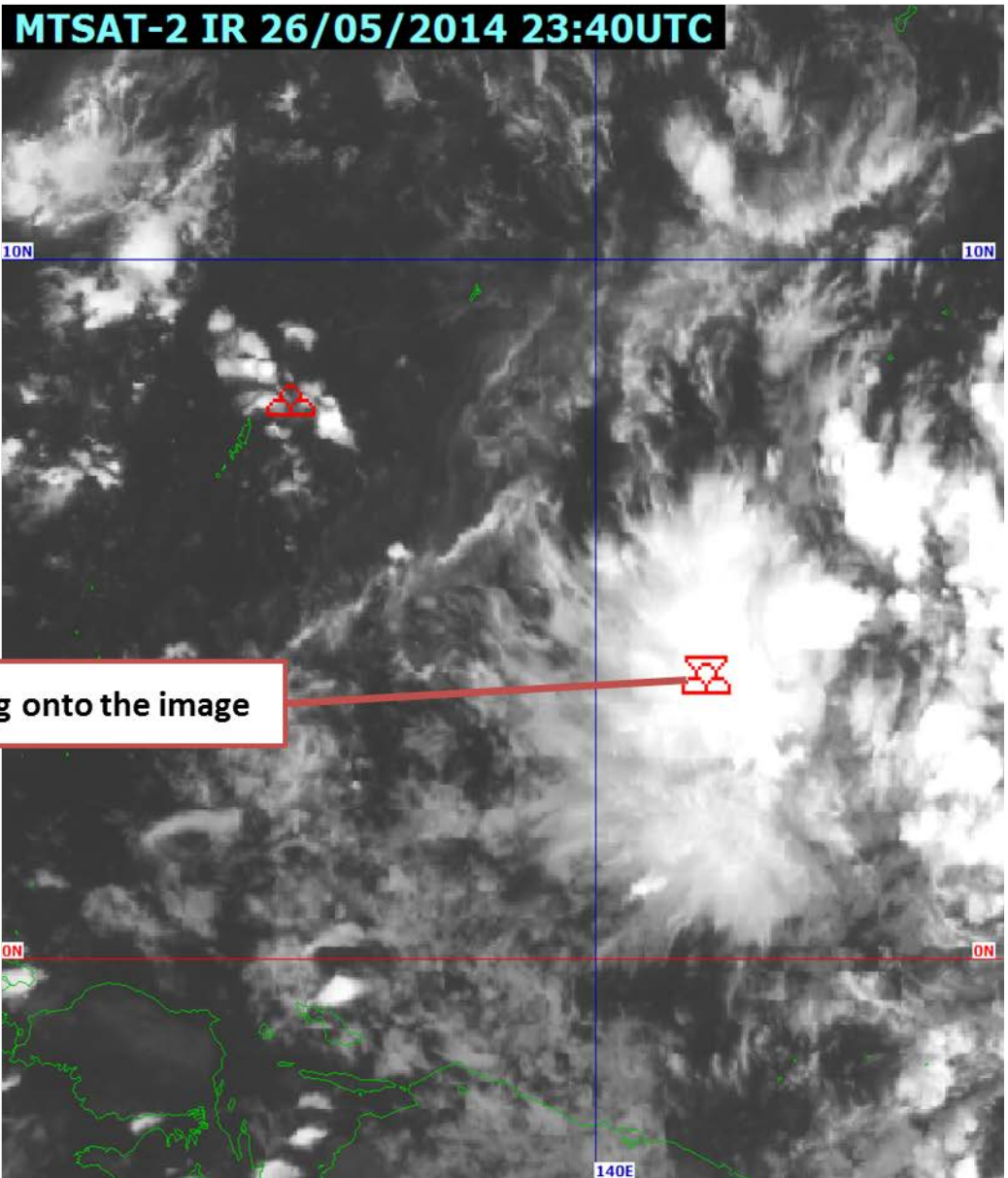
# Example



Select "Red"

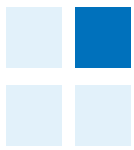
Drag onto the image

Select "L"

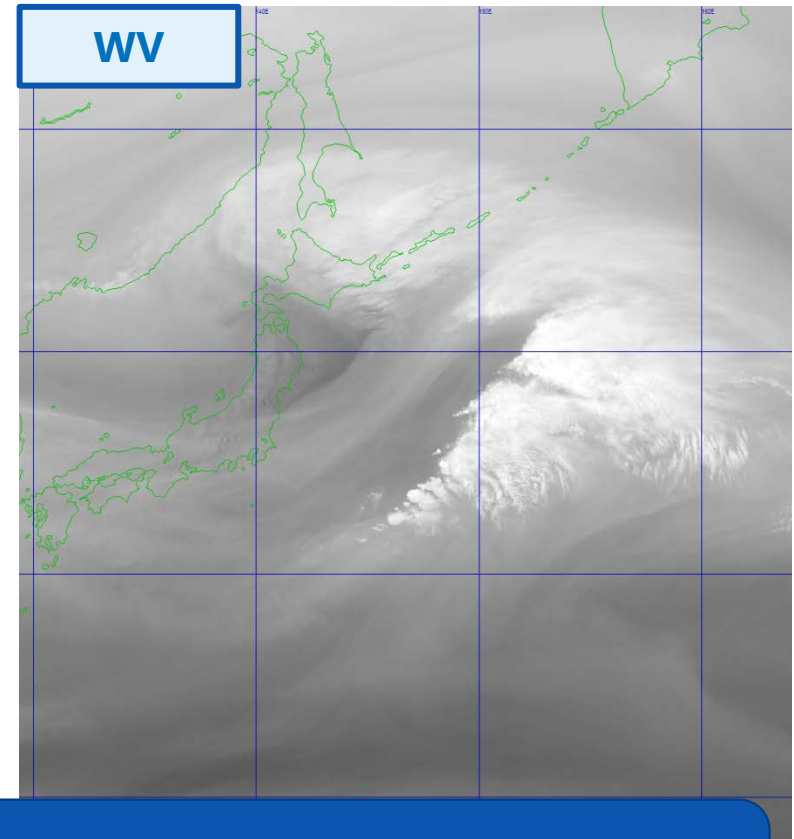
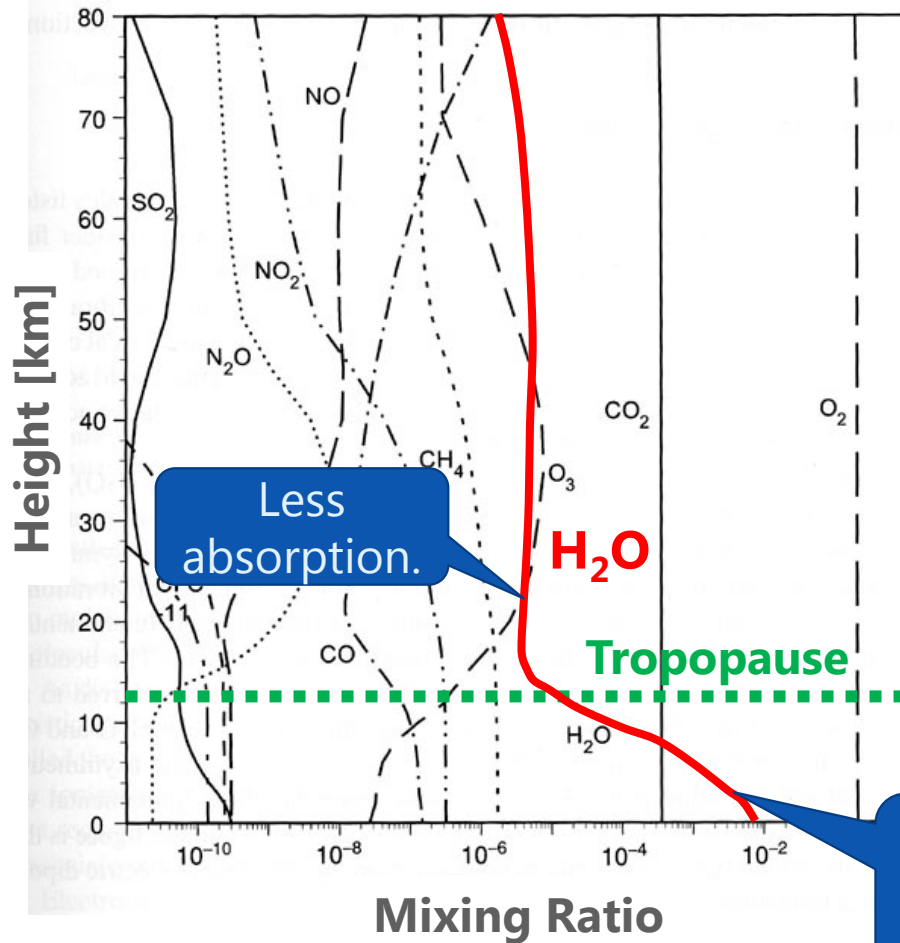




# Upper level phenomenon (Question 4&5 )



# Use Water Vapor Imagery



The radiation from lower level is mostly absorbed by middle level water vapor.

# Example

Extra drawing

Clear Undo OK

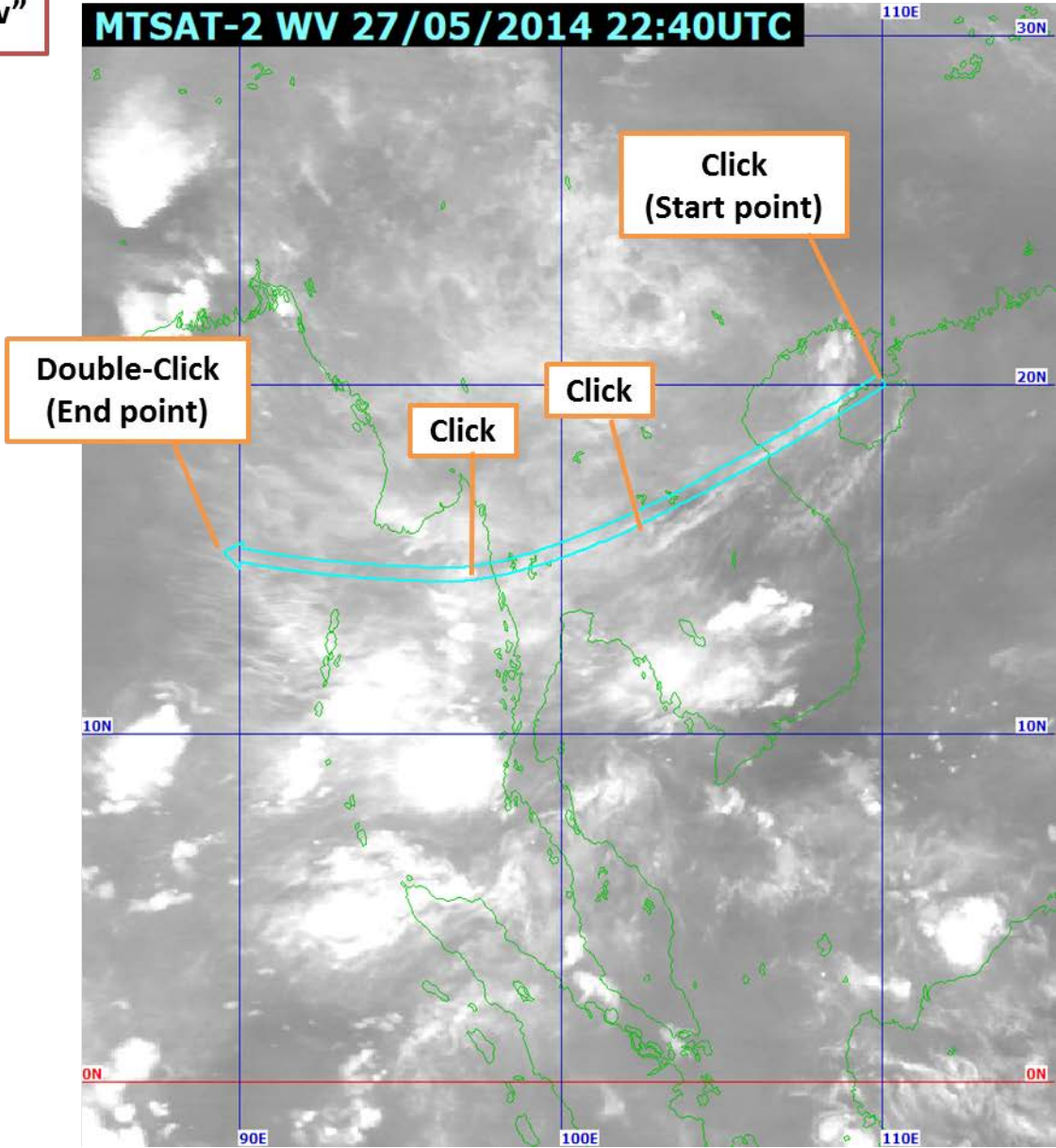
Dash  Shear  
 Arrow  Block arw  
 Border  Ci streak  
 Transv  Cld line  
 C-front  Oc-front  
 W-front  Sn-front  
 Trough  Ridge  
 Closed  Circle

Col ptn Obs

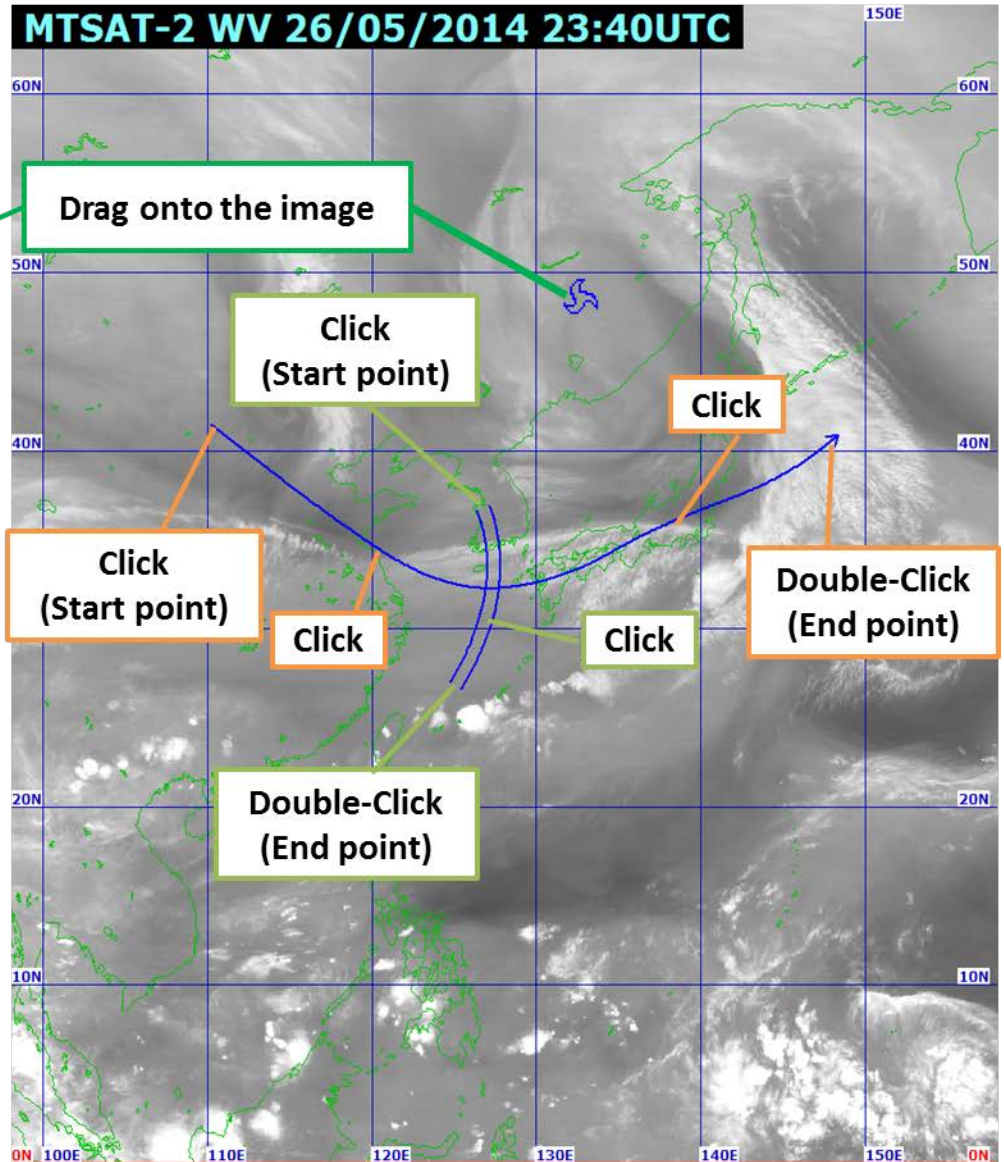
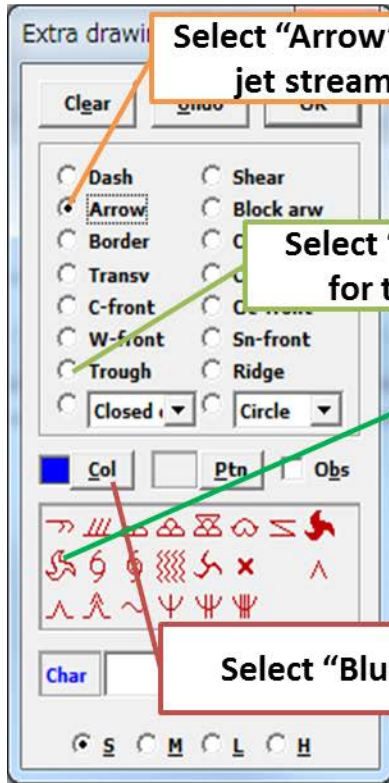
Char

Select "Block arw"

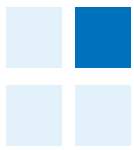
Select "Cyan"



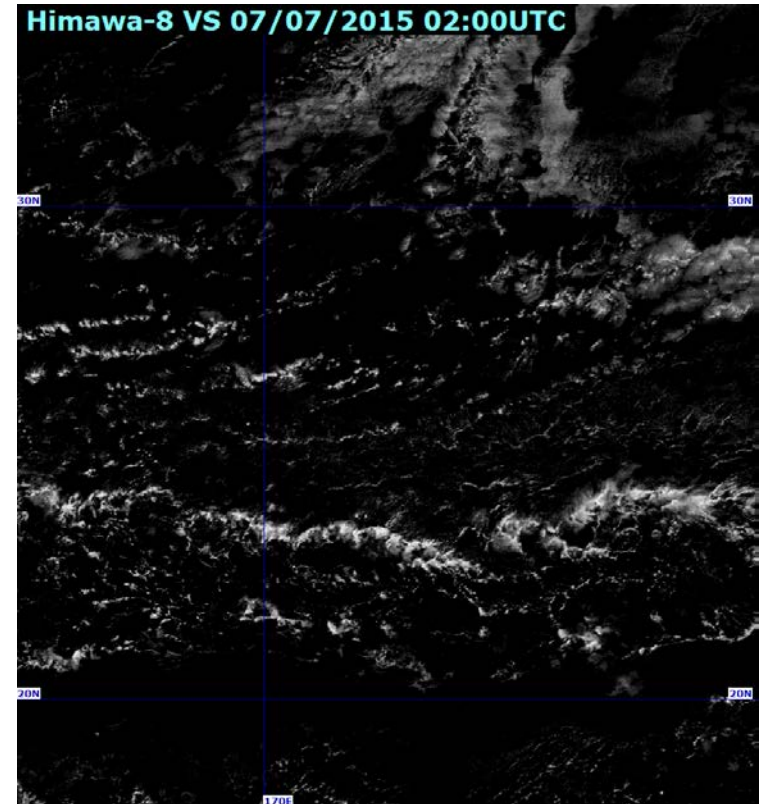
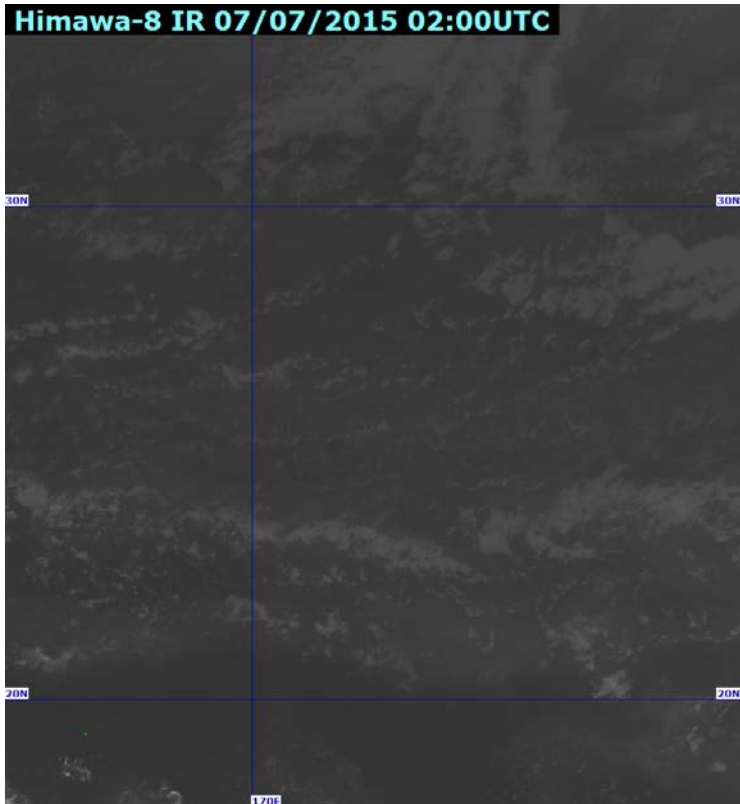
# Example



# **Low level flow (Question 6)**

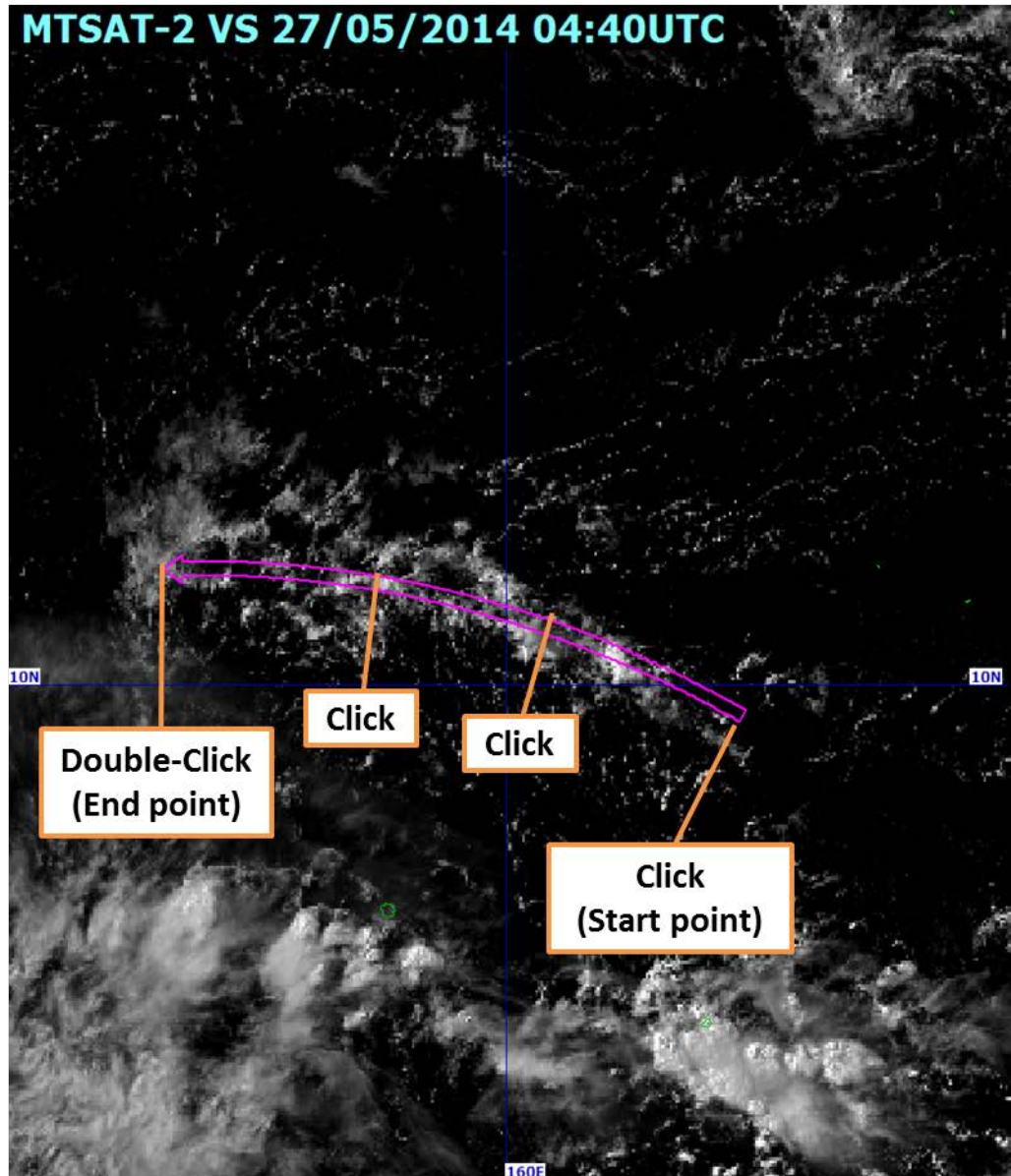
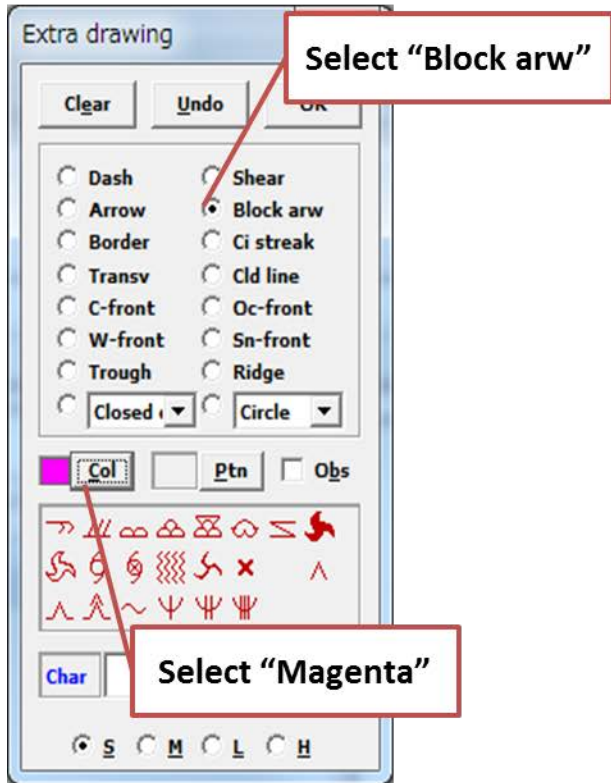


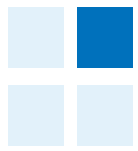
# Compare Visible with Infrared



**Low level = Darker in Infrared image**  
**Middle density = Relatively bright in Visible image**

# Example





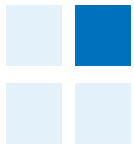
## Exercise2

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- **Night Fog**
- **Volcanic Ash**
- **Forest fires**
- **Yellow sand**

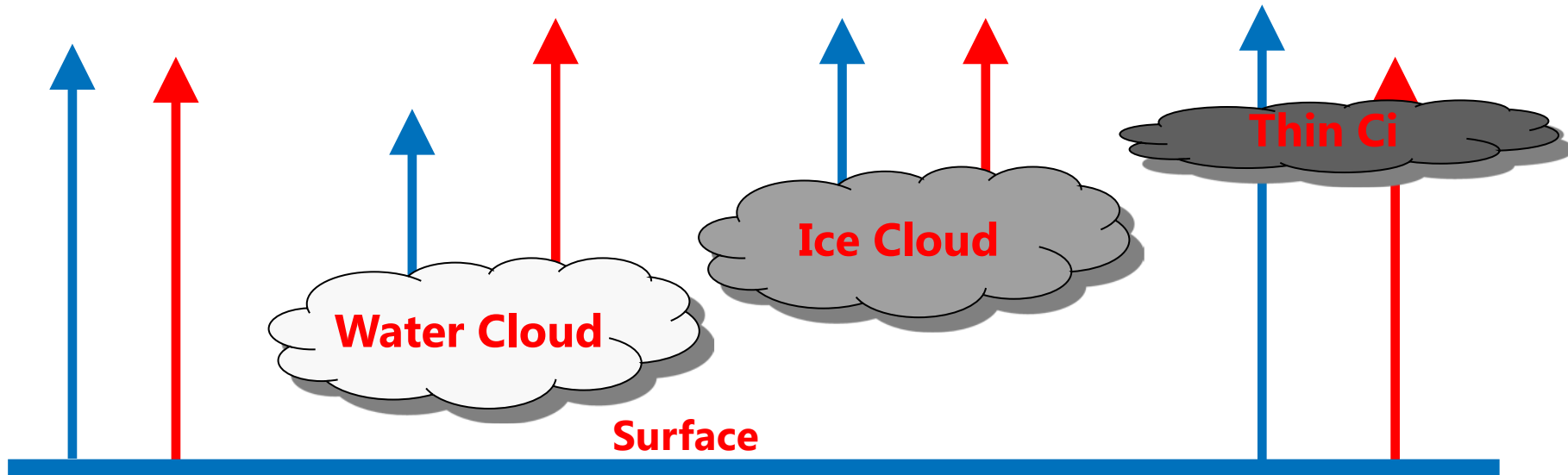


# Night Fog



# Difference between I4 and IR : Nighttime

I4 3.9 $\mu\text{m}$  IR 10.4 $\mu\text{m}$  I4 3.9 $\mu\text{m}$  IR 10.4 $\mu\text{m}$  I4 3.9 $\mu\text{m}$  IR 10.4 $\mu\text{m}$  I4 3.9 $\mu\text{m}$  IR 10.4 $\mu\text{m}$



Infrared Difference Imagery S2:I4 (3.9 $\mu\text{m}$ )–IR(10.4 $\mu\text{m}$ )

$\approx 0$   
Gray

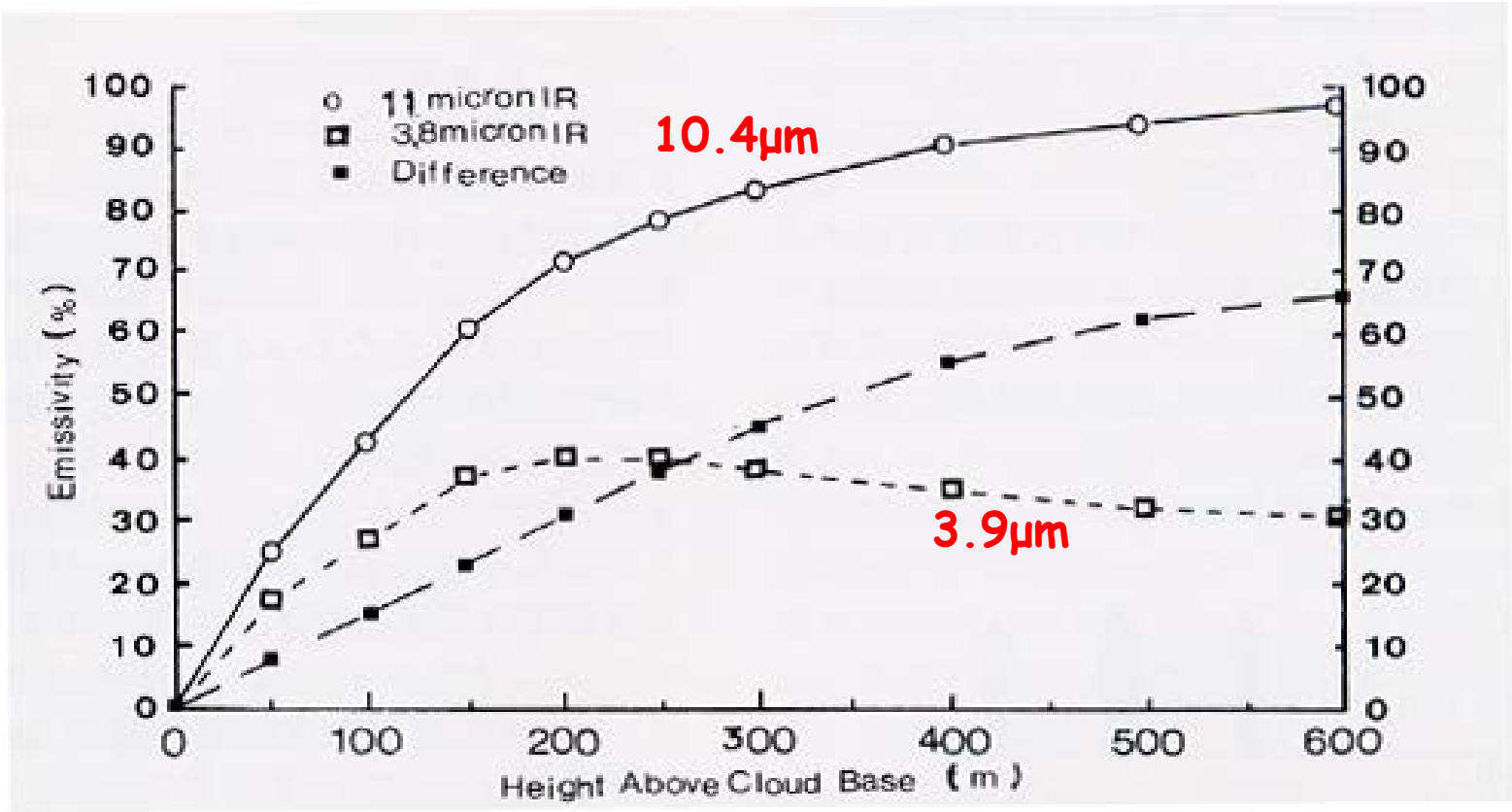
$< 0$   
White

$= 0$   
Gray

$> 0$   
Black

# Emissivity of I4 (3.9μm)

3.9μm channel:  
Lower emissivity of water cloud → apparently looks colder!!

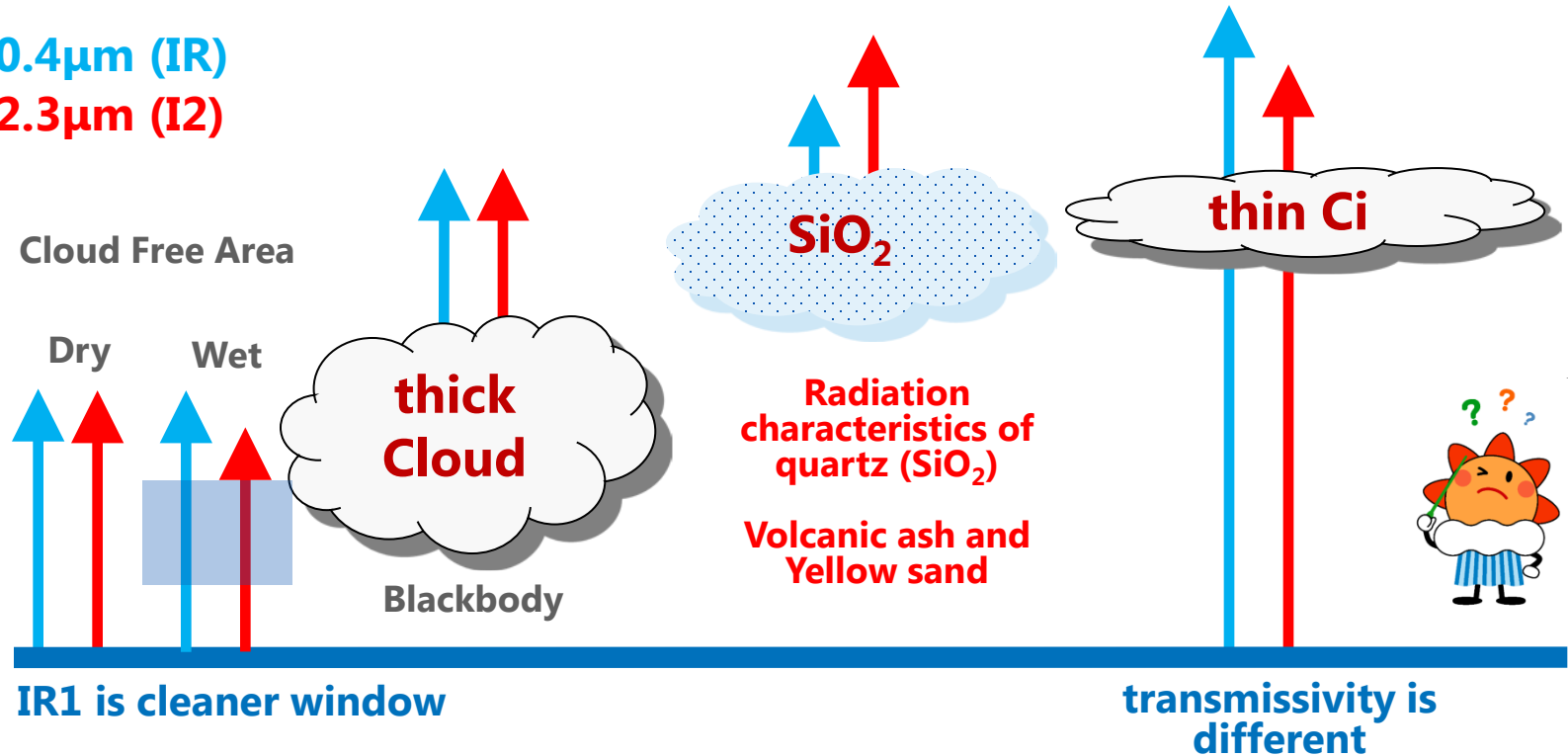


Emissivity of Sc (cloud water content: 0.1g/m<sup>3</sup>) (Ellrod, 1995)

# Volcanic Ash

# Infrared Difference Imagery (IR – I2) SP1

10.4 $\mu\text{m}$  (IR)  
12.3 $\mu\text{m}$  (I2)

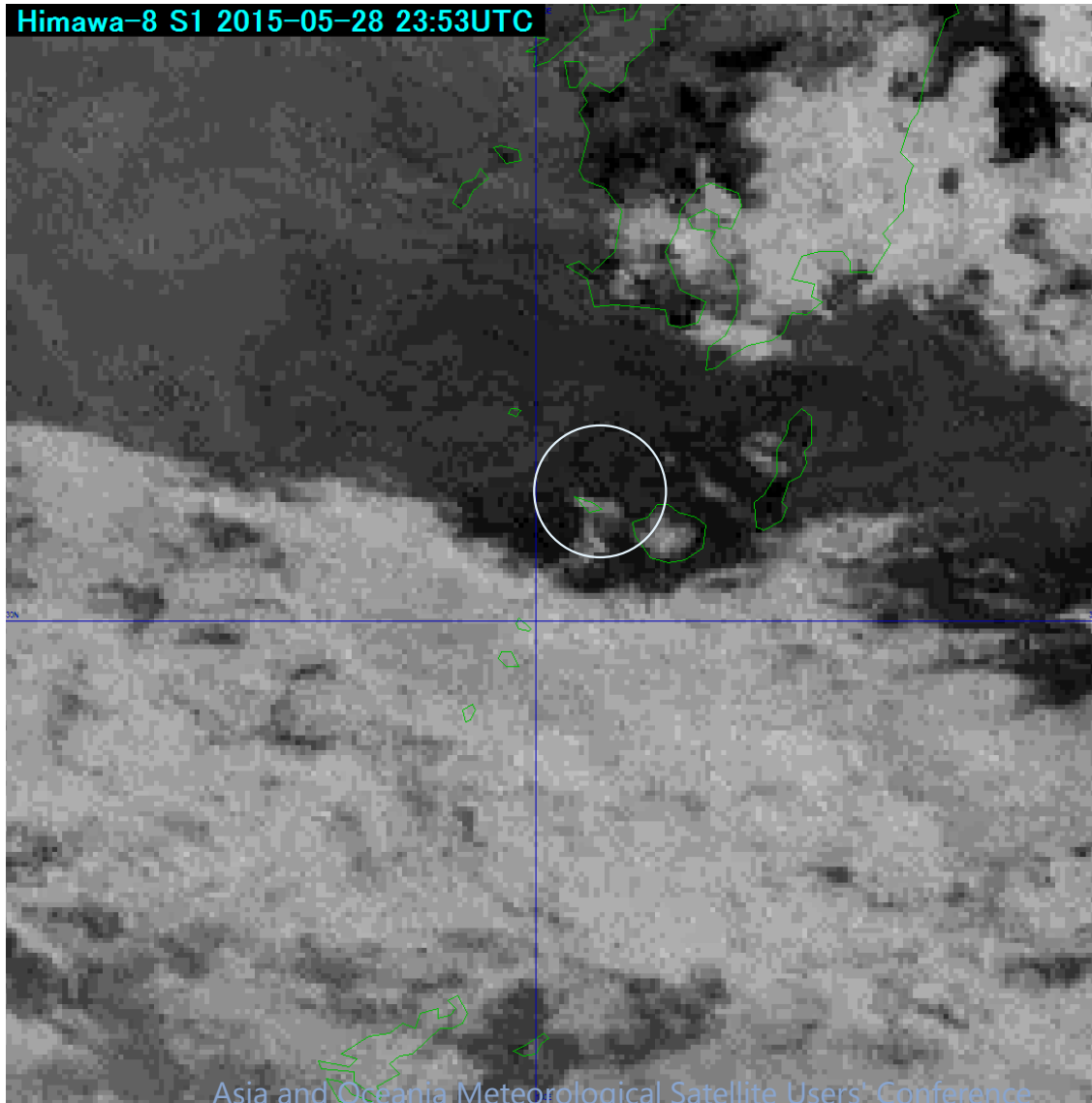


IR-I2 (10.4–12.3 $\mu\text{m}$ ) is

$\approx 0$  positive =0 negative positive  
( gray black light gray **white** black )

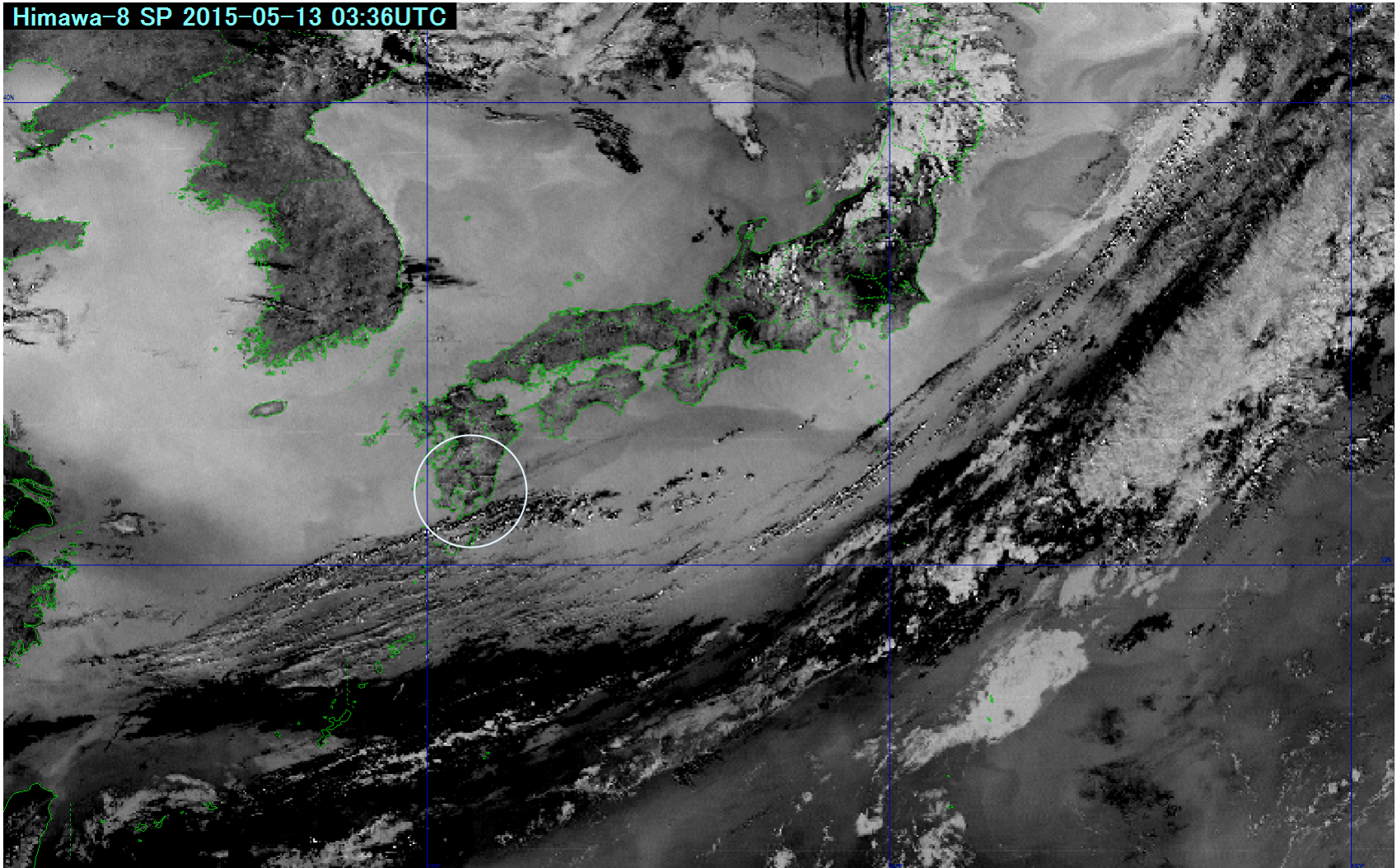
# Volcanic Ash of Kuchinoerabujima

Difference images (10.4 $\mu\text{m}$  – 12.3 $\mu\text{m}$  images )



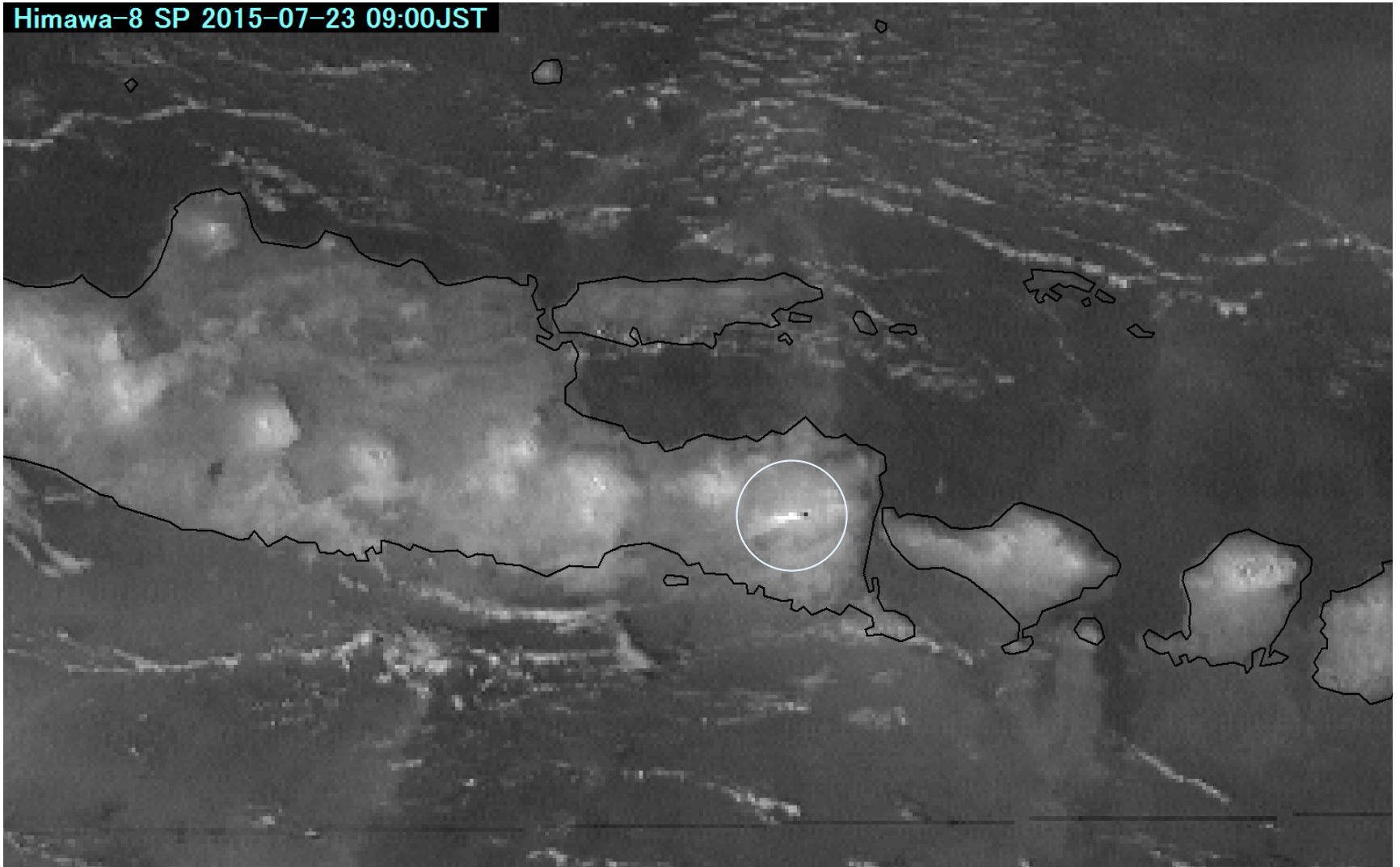
# Volcanic Ash of Sakurajima

Difference images (10.4 $\mu\text{m}$  – 12.3 $\mu\text{m}$  images )



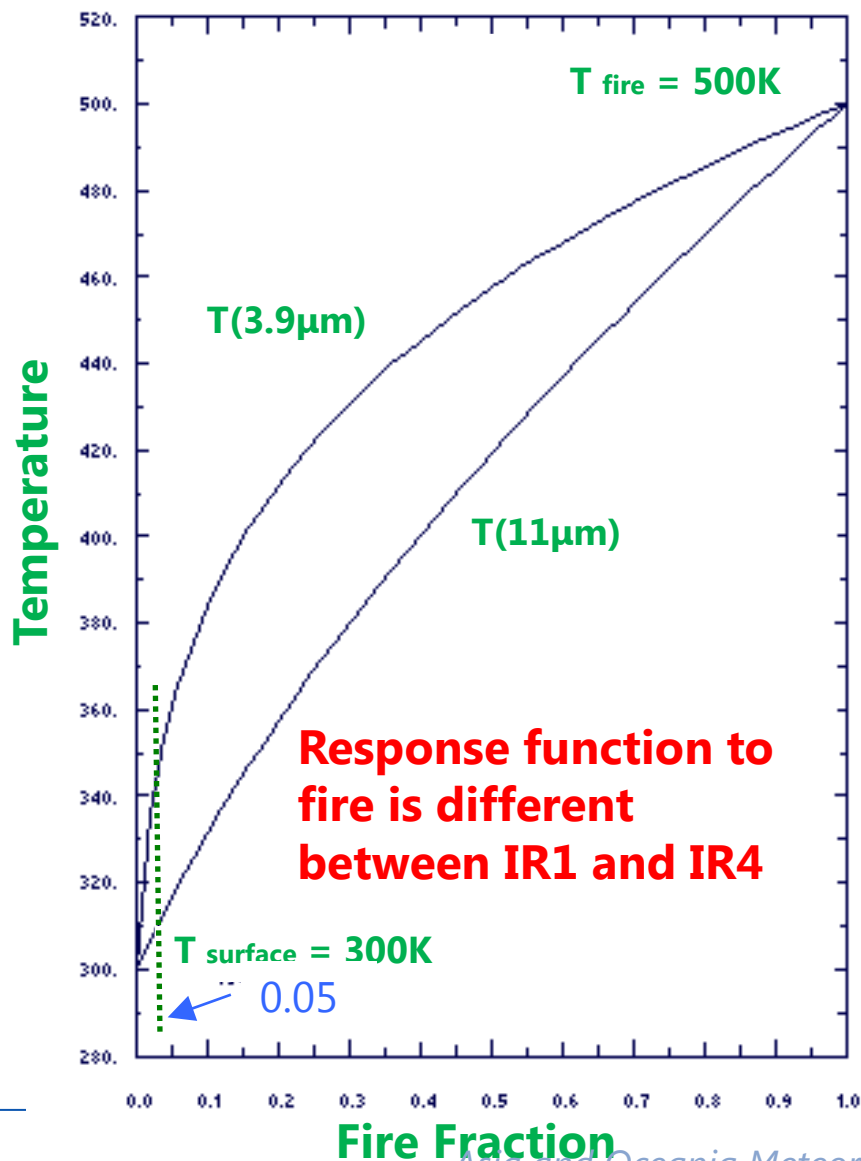
# Volcanic Ash of Mt. Merapi Indonesia

Difference images (10.4 $\mu\text{m}$  – 12.3 $\mu\text{m}$  images )

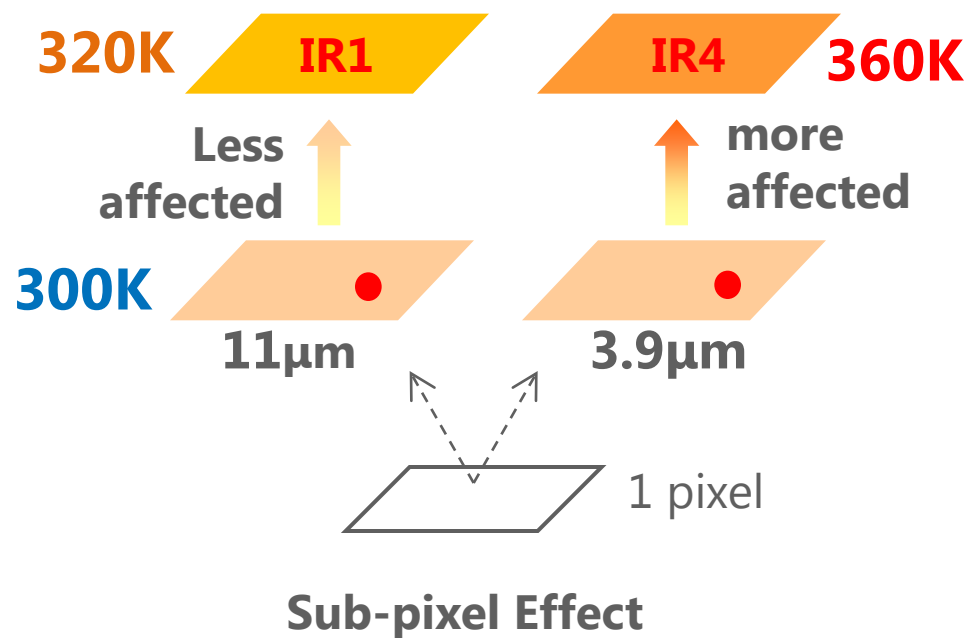




# Fire Detection with I4 (3.9 $\mu\text{m}$ )



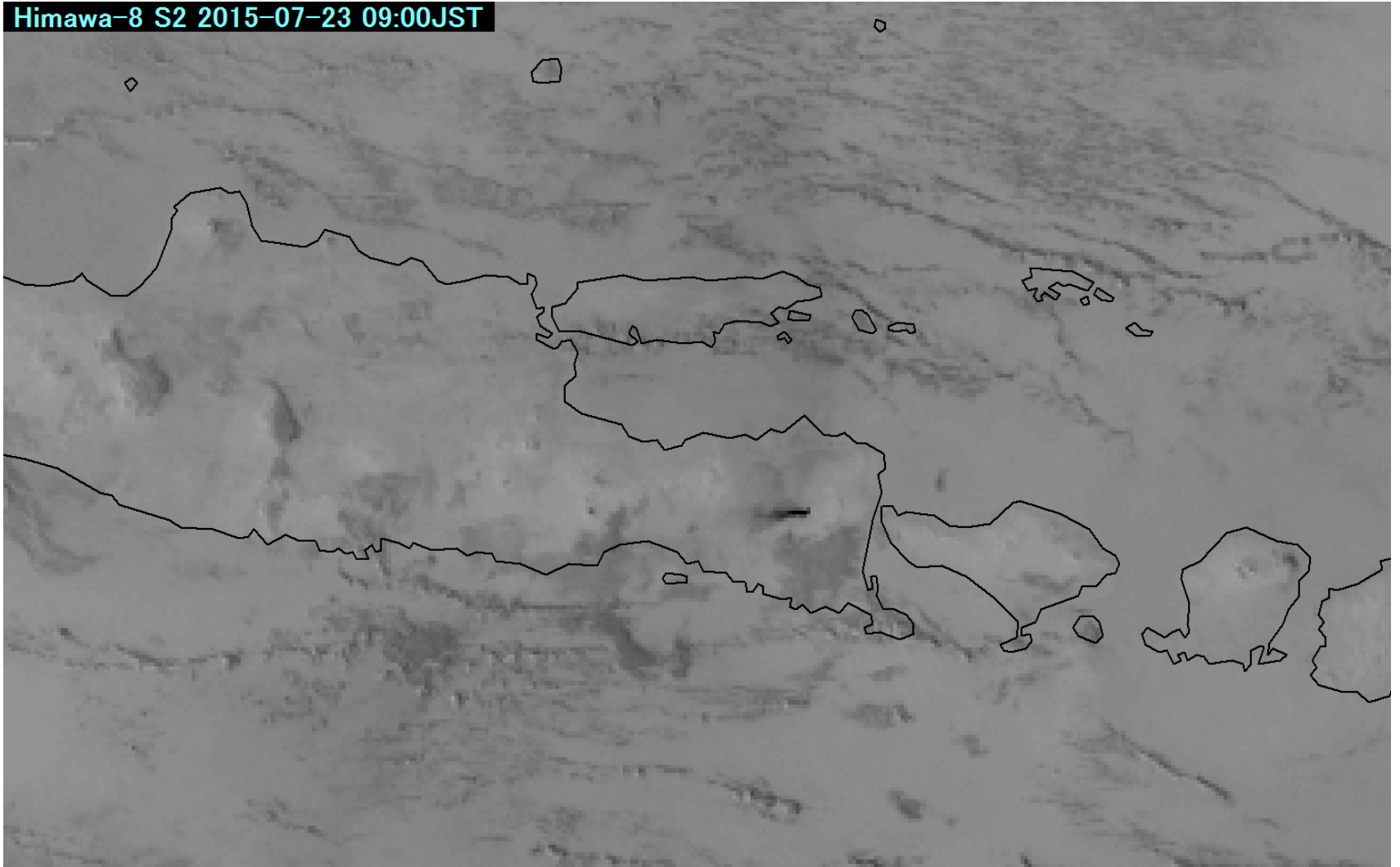
If only 5% of the pixel is 500K  
- 11 $\mu\text{m}$  looks about 320 K  
- 3.9 $\mu\text{m}$  looks about 360 K



# Volcanic Ash of Merapi Mt. Indonesia

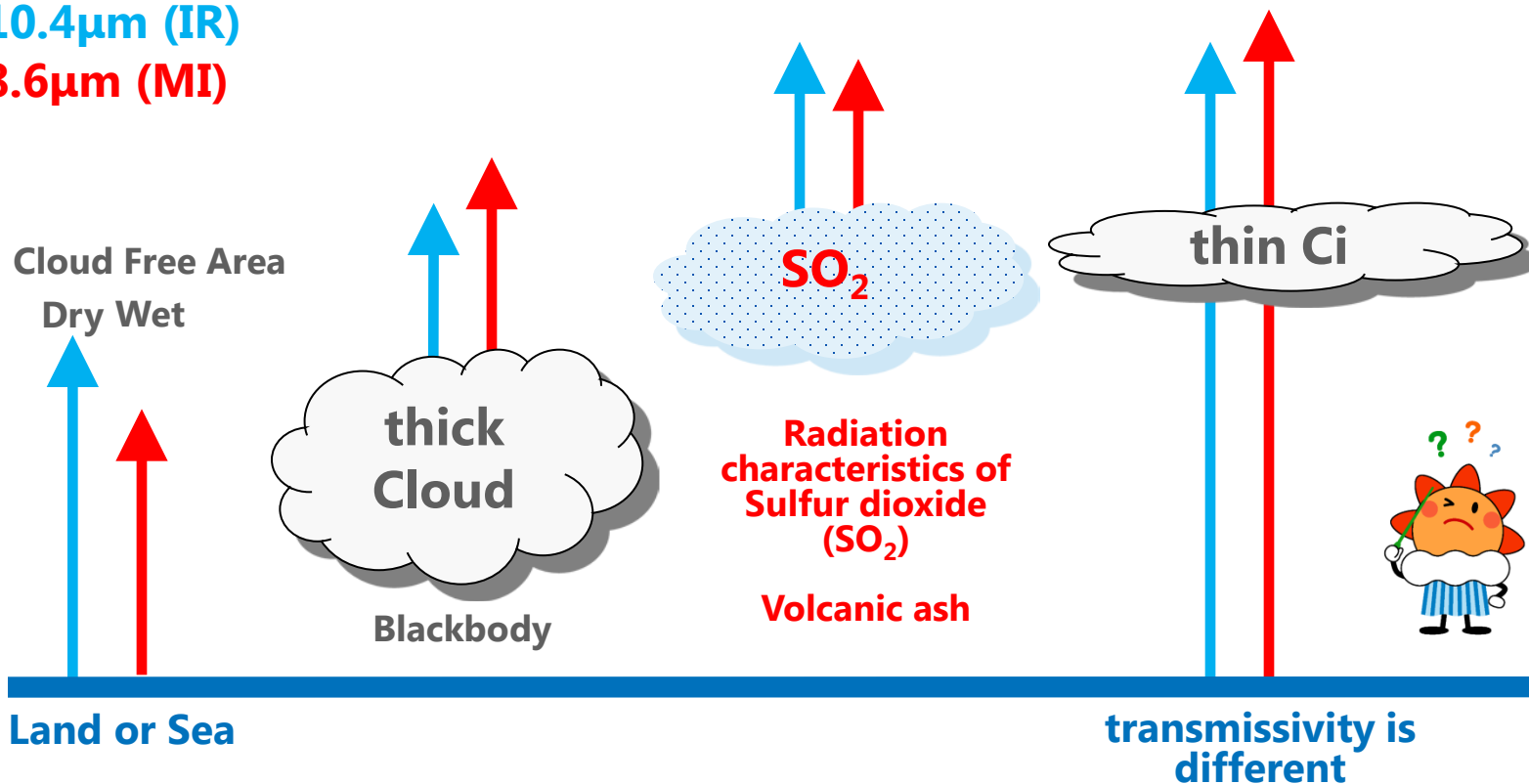
Difference images (3.9 $\mu\text{m}$  – 10.4 $\mu\text{m}$  images )

Himawa-8 S2 2015-07-23 09:00JST



# Infrared Difference Imagery (IR – MI) SP5

10.4 $\mu$ m (IR)  
8.6 $\mu$ m (MI)



IR-MI (10.4–8.6 $\mu$ m) is

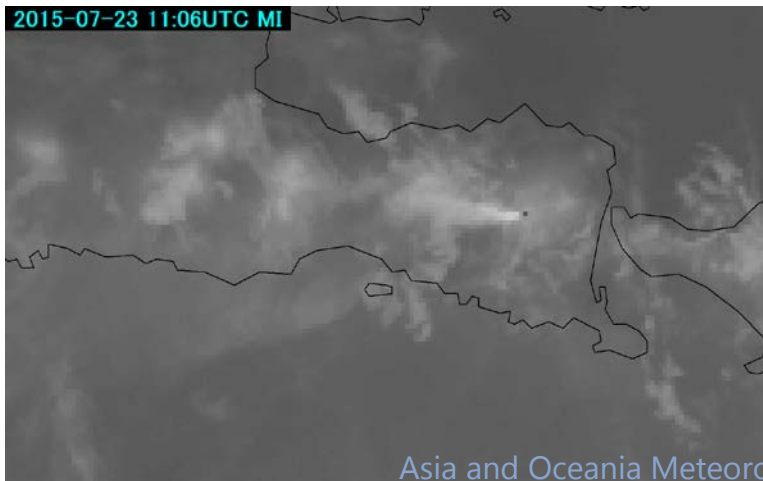
positive	negative	0~Positive	negative
( black	white	<b>light gray</b>	white )

# Volcanic Ash of Merapi Mt. Indonesia

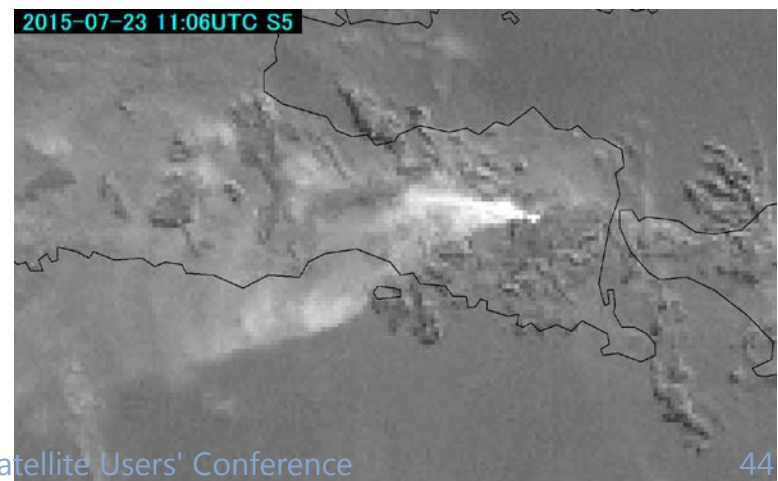
(July 23<sup>th</sup> 2015)

- MI is more absorbed by SO<sub>2</sub> than other channels.
- Volcanic ash can be detected using MI because they contain SO<sub>2</sub>.
- You can detect volcanic ash more clear by using difference image (IR-MI).

8.6μm(MI)

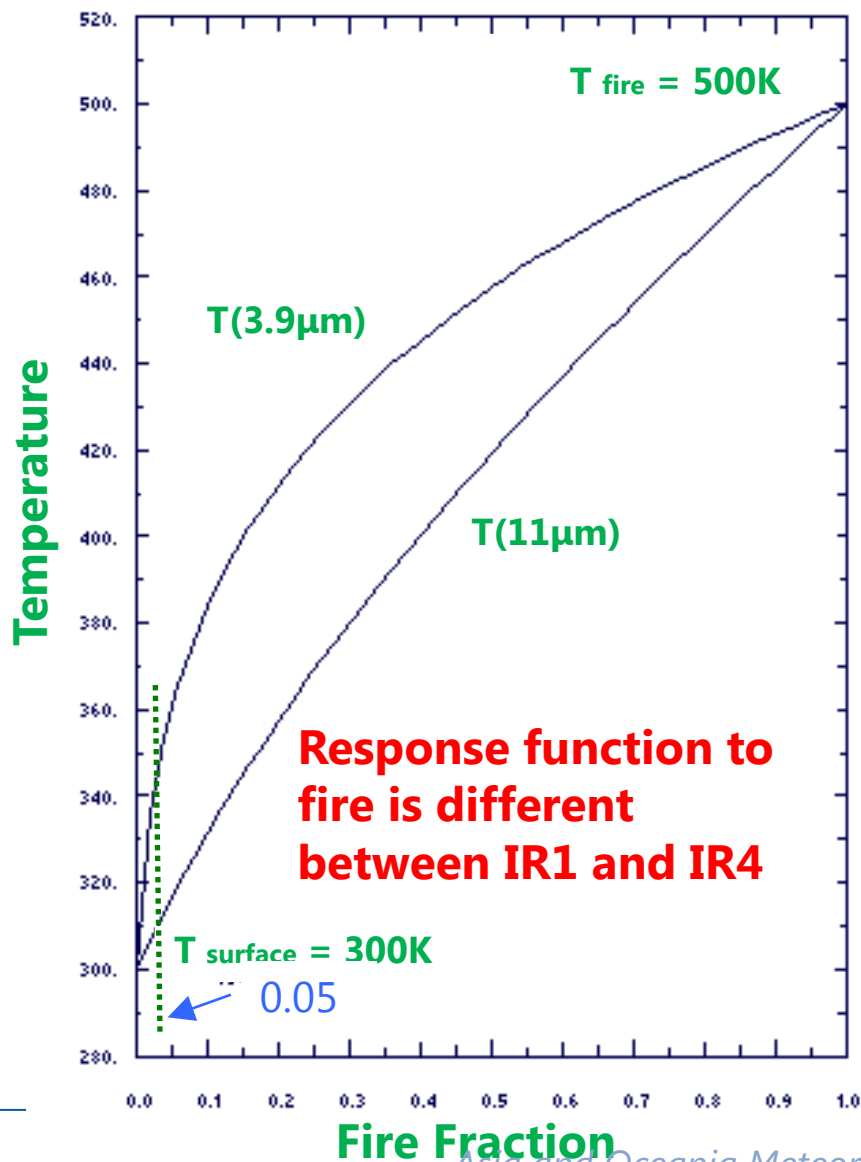


10.4μm (IR)-8.6μm (MI)  
difference image



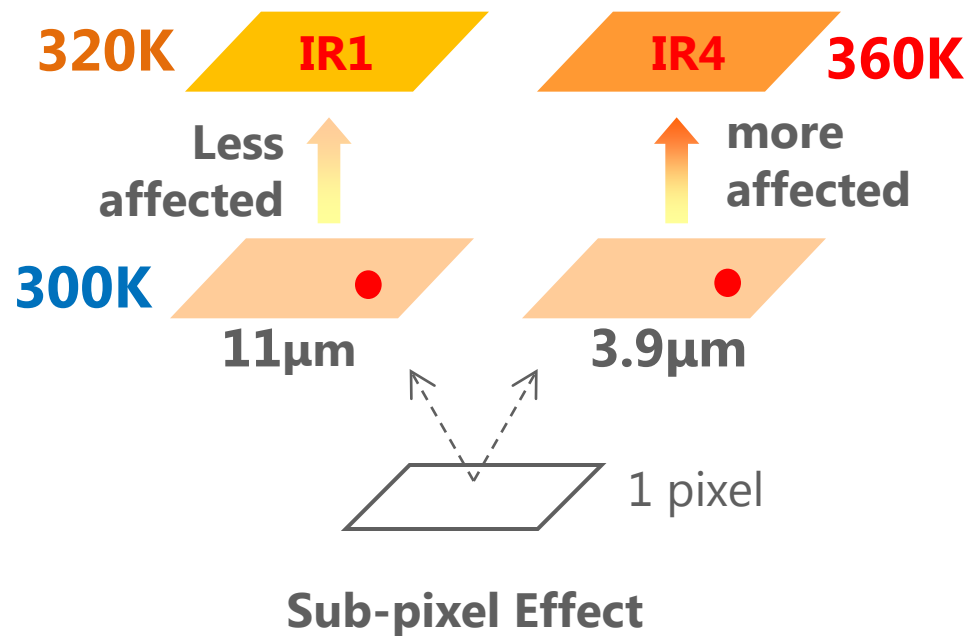
# Forest Fire

# Fire Detection with I4 (3.9 $\mu\text{m}$ )



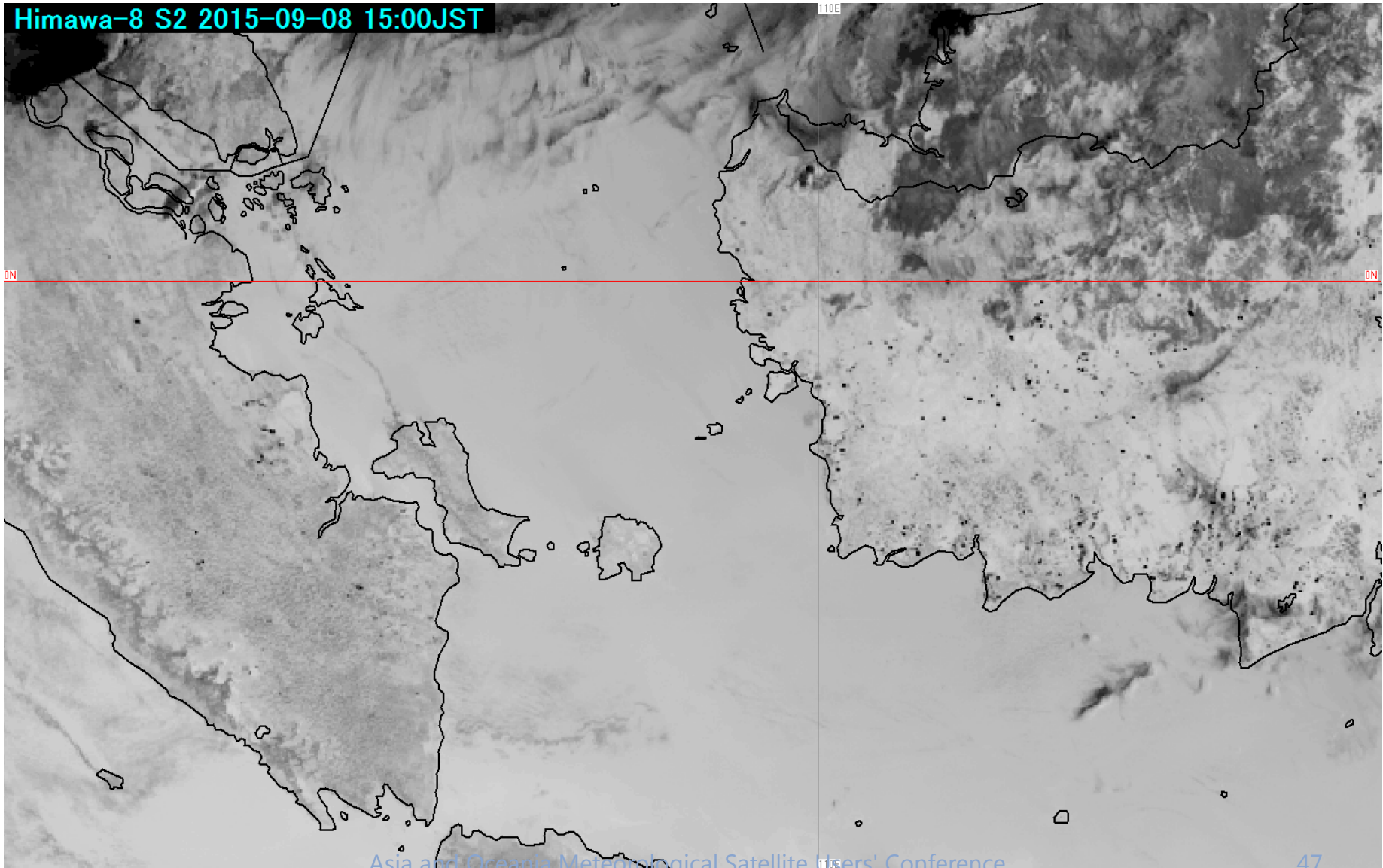
**If only 5% of the pixel is 500K**

- 11 $\mu\text{m}$  looks about 320 K
- 3.9 $\mu\text{m}$  looks about 360 K



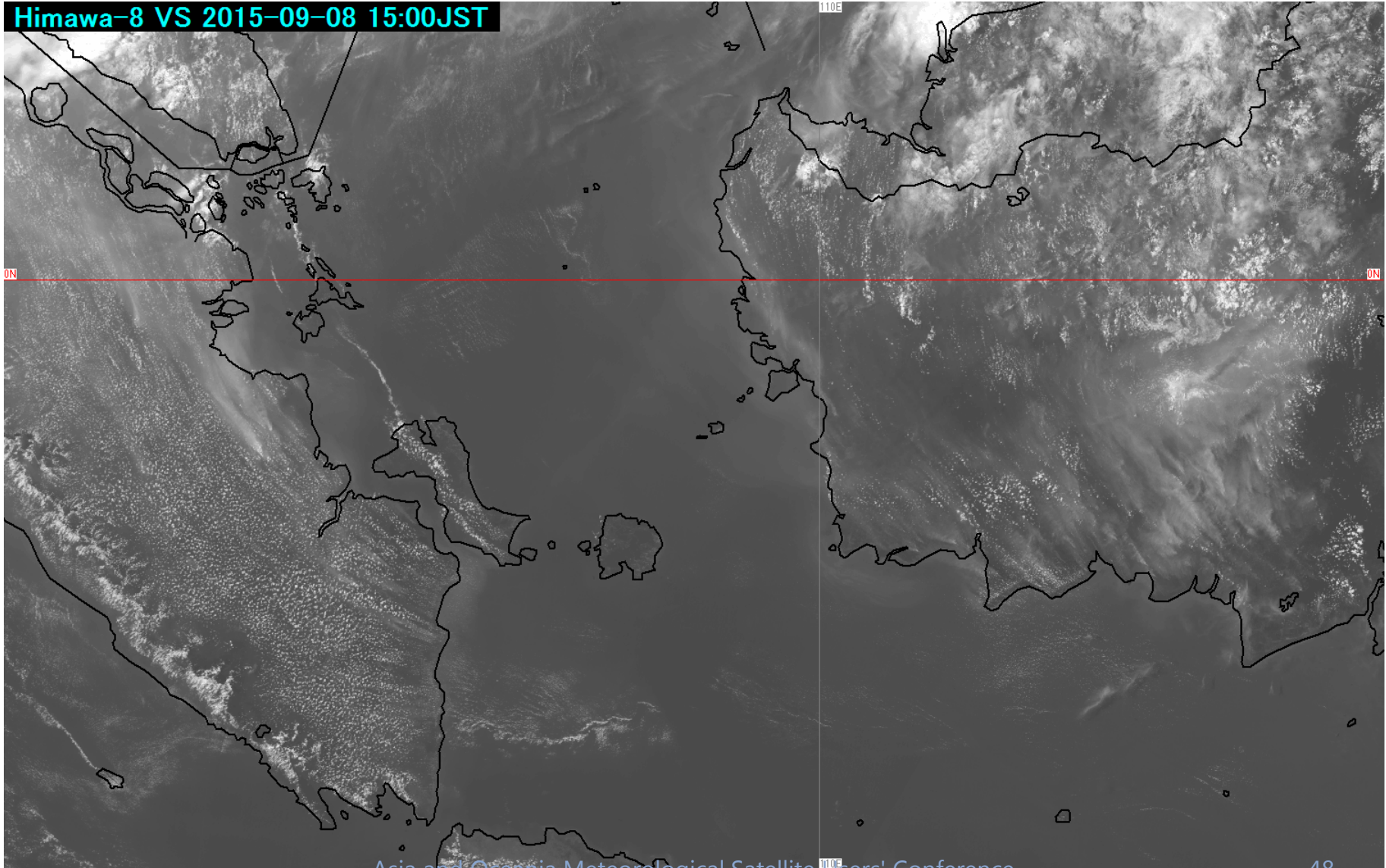
# Forest fire hot spot in Indonesia

Difference images (3.9 $\mu\text{m}$  – 10.4 $\mu\text{m}$  images )



# Forest fires and smoke in Indonesia

VS images

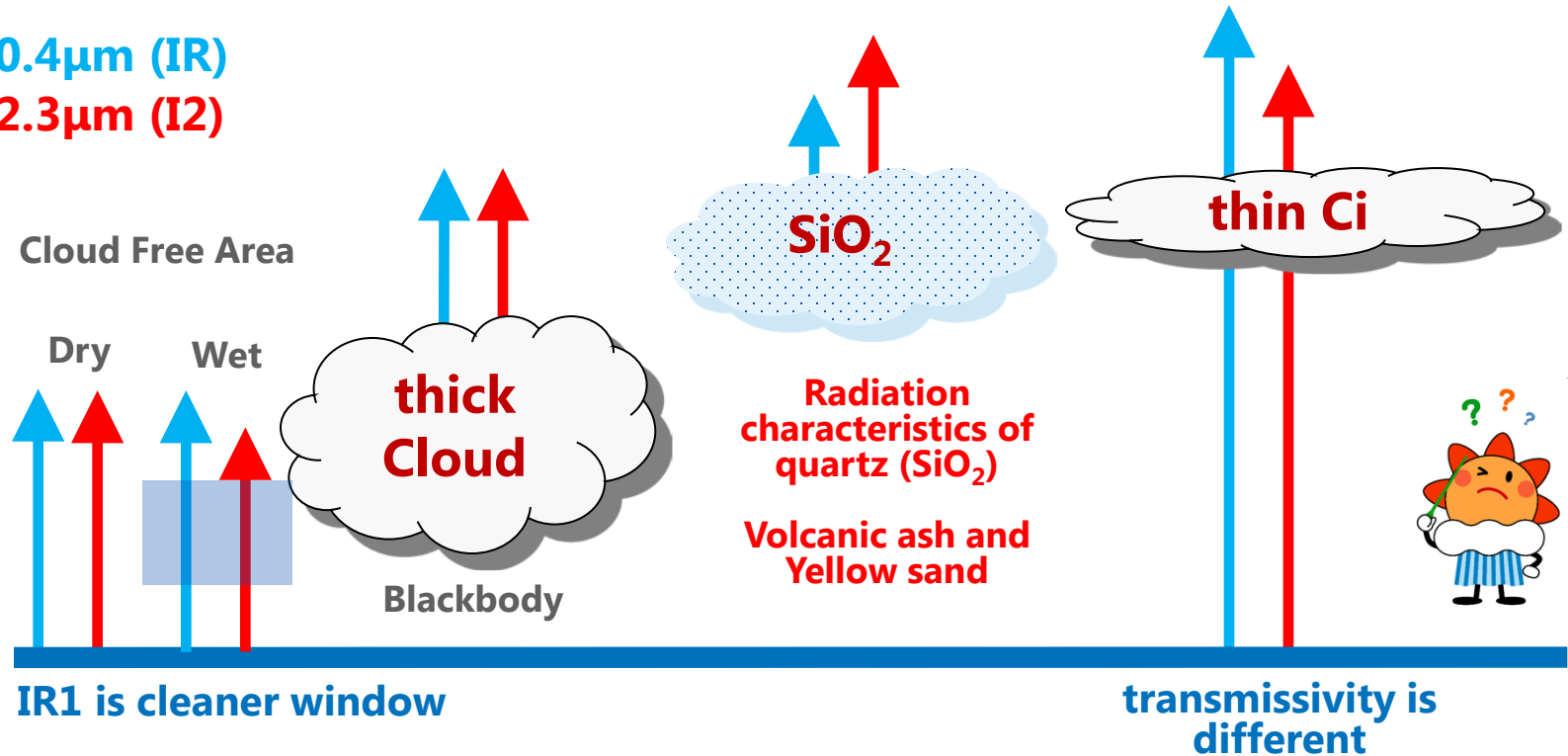




# Yellow Sand

# Infrared Difference Imagery (IR – I2) SP1

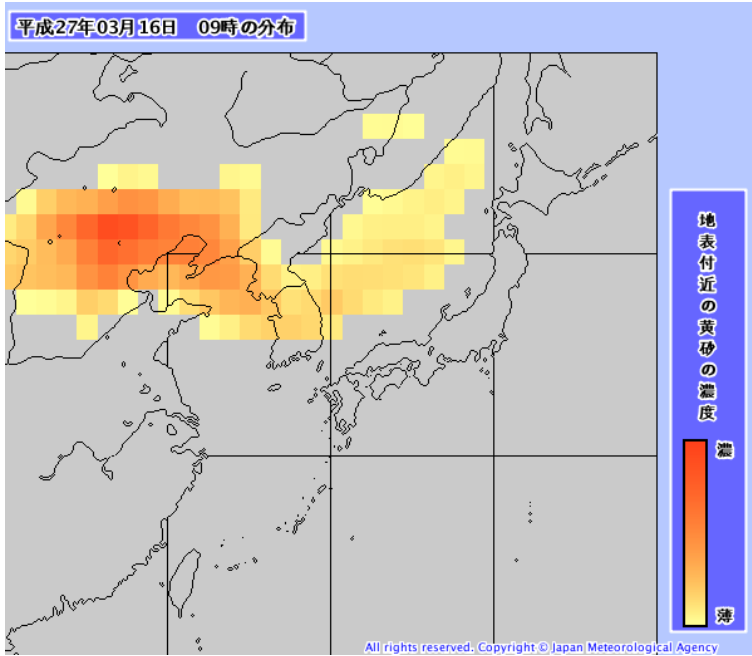
10.4 $\mu\text{m}$  (IR)  
12.3 $\mu\text{m}$  (I2)



IR-I2 (10.4–12.3 $\mu\text{m}$ ) is

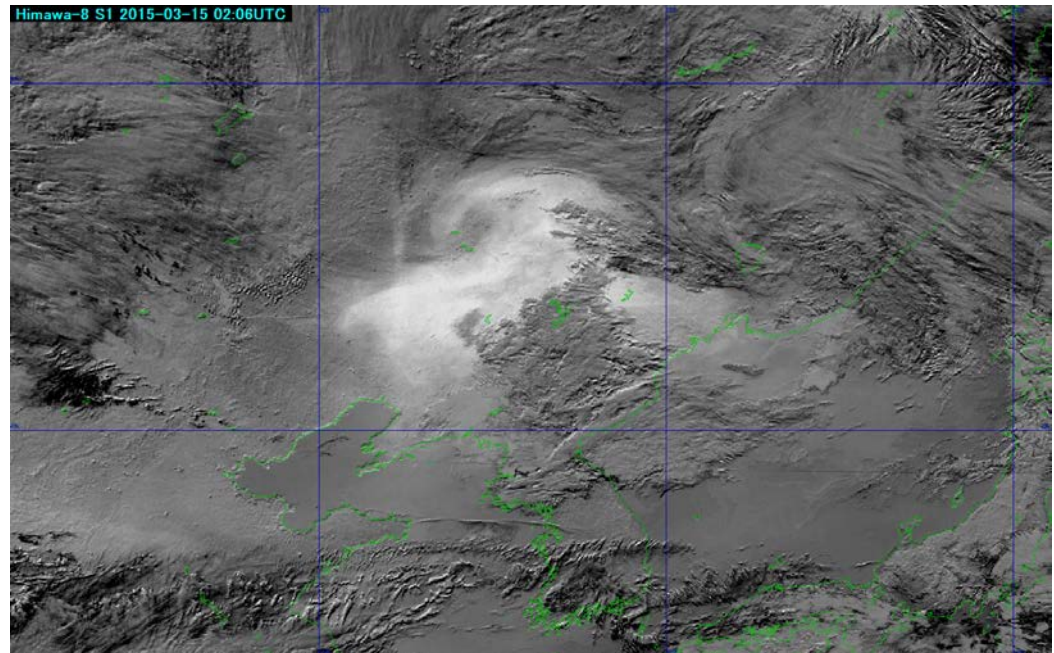
$\approx 0$    positive    $= 0$                       negative                      positive  
( gray   black   light gray                      **white**                      black )

# Yellow sand (Difference image)



Yellow sand forecast

10.5 $\mu\text{m}$  (IR) -12.3 $\mu\text{m}$  (I2)





# Quick-Guide

for SATAID

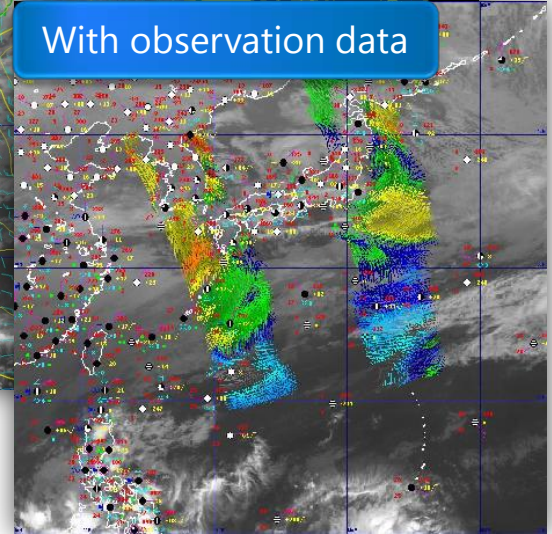
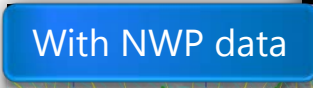
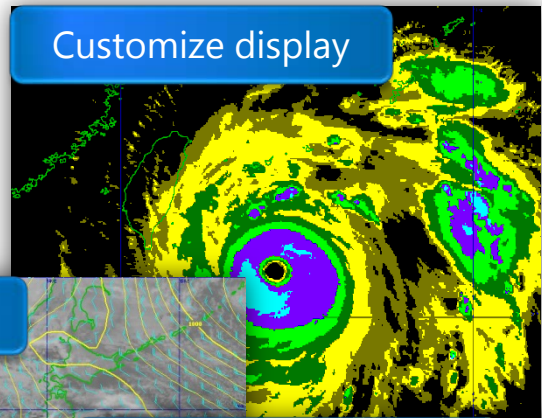
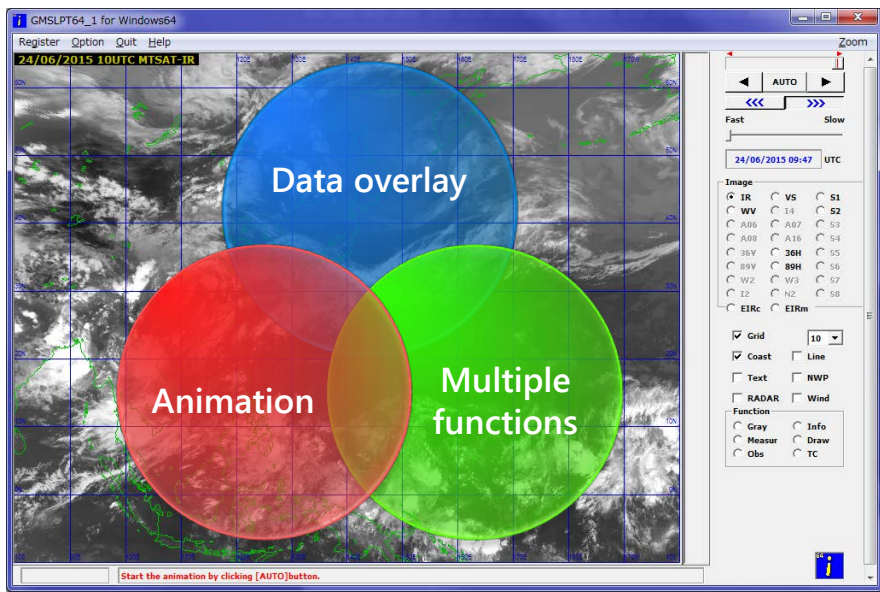
*RSMC Tokyo – Typhoon Center*  
Japan Meteorological Agency

2015/11/13



# What's SATAID?

SATAID (**SAT**ellite **A**nimation and **I**nteractive **D**iagnosis) is a sophisticated display software visualizing meteorological information in multiple dimensions (spatial and temporal), which assists forecasters to analyze and monitor continually weather parameters and phenomena for better meteorological services.





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- ✓ Download data with "WIS Downloader"

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- ✓ Display coast/grid line

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# 1. Install SATAID and Download Data

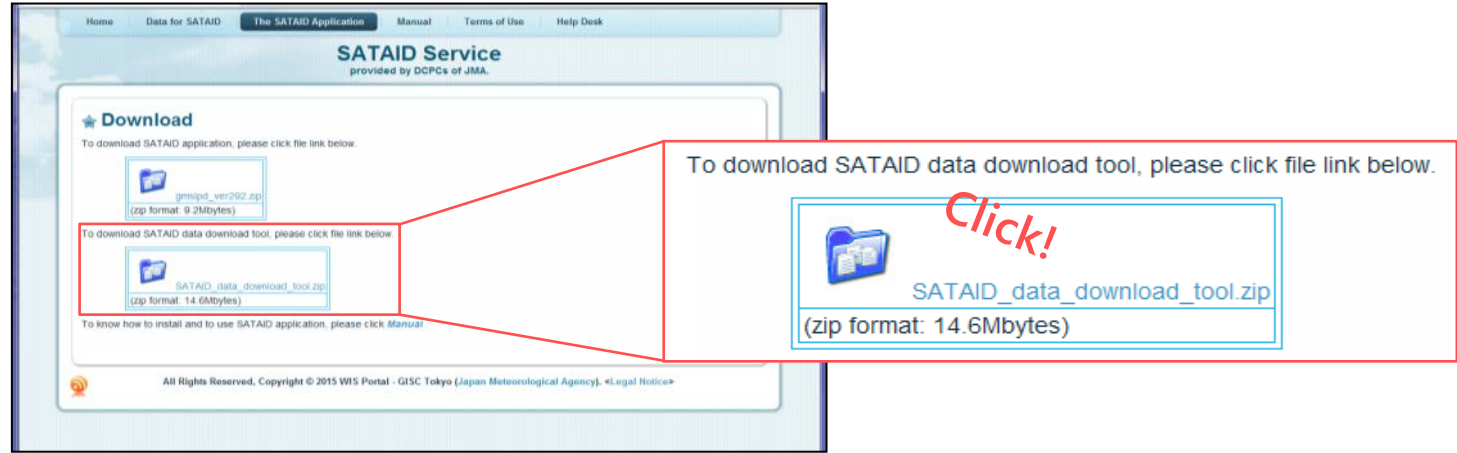
---



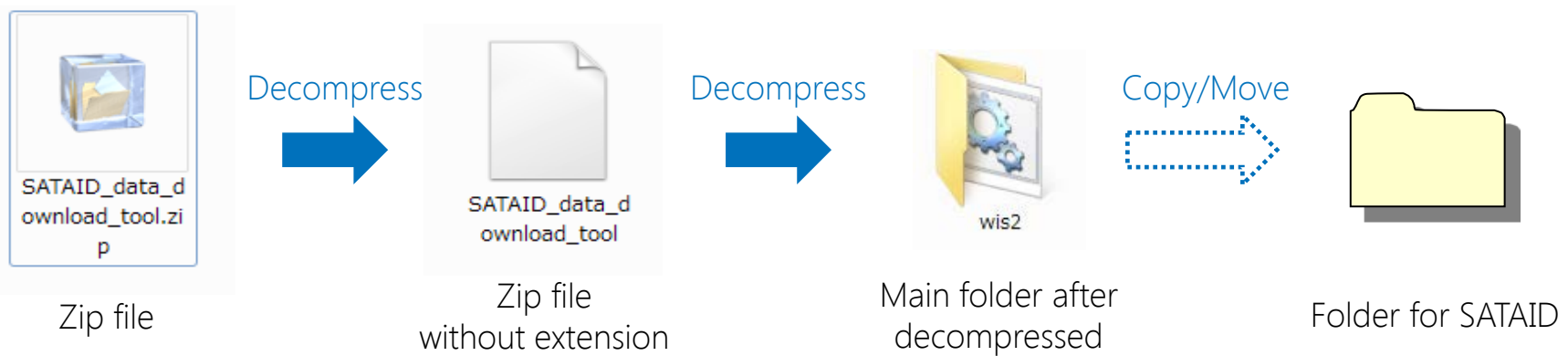
# Install SATAID

- ① Download "**SATAID\_data\_download\_tool.zip**" from SATAID Service website (ID/Password will be required)

<http://www.wis-jma.go.jp/cms/sataid/app/download/>



- ② Decompress the zip file and copy/move the folder into your choice of folder







# Download data with "WIS Downloader"

Download and install SATAID

If you already have "WIS.ini" file, you can read it by putting it in the "wis2" folder before STEP1.

\*Please back up the file since it is overwritten when you make a new initial file with "MakeIniFile.hta".

**STEP1: Make "WIS.ini" file with "MakeIniFile.hta"**

**STEP2: Download data and activate SATAID application with "MakeIniFile.hta"**

**Start SATAID  
(Automatically activated)**



# Download data with "WIS Downloader"

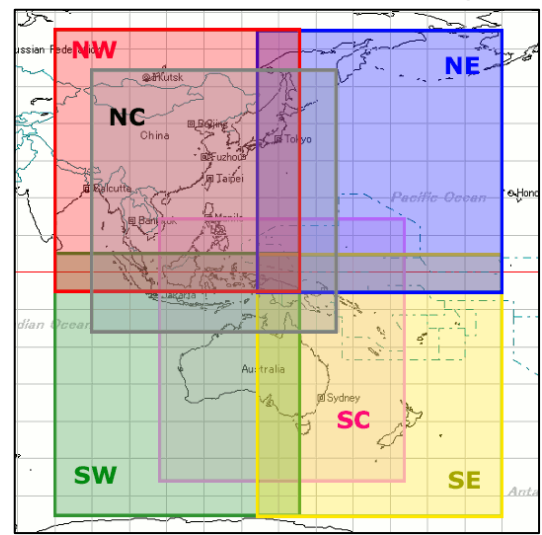
## ① Make an initial file for WIS Downloader

\* If you already have "WIS.ini" file, you can read it by clicking "Read" button.

### "MakeIniFile.hta" file

## (1) Image Area Settings

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



## (2) Other Settings

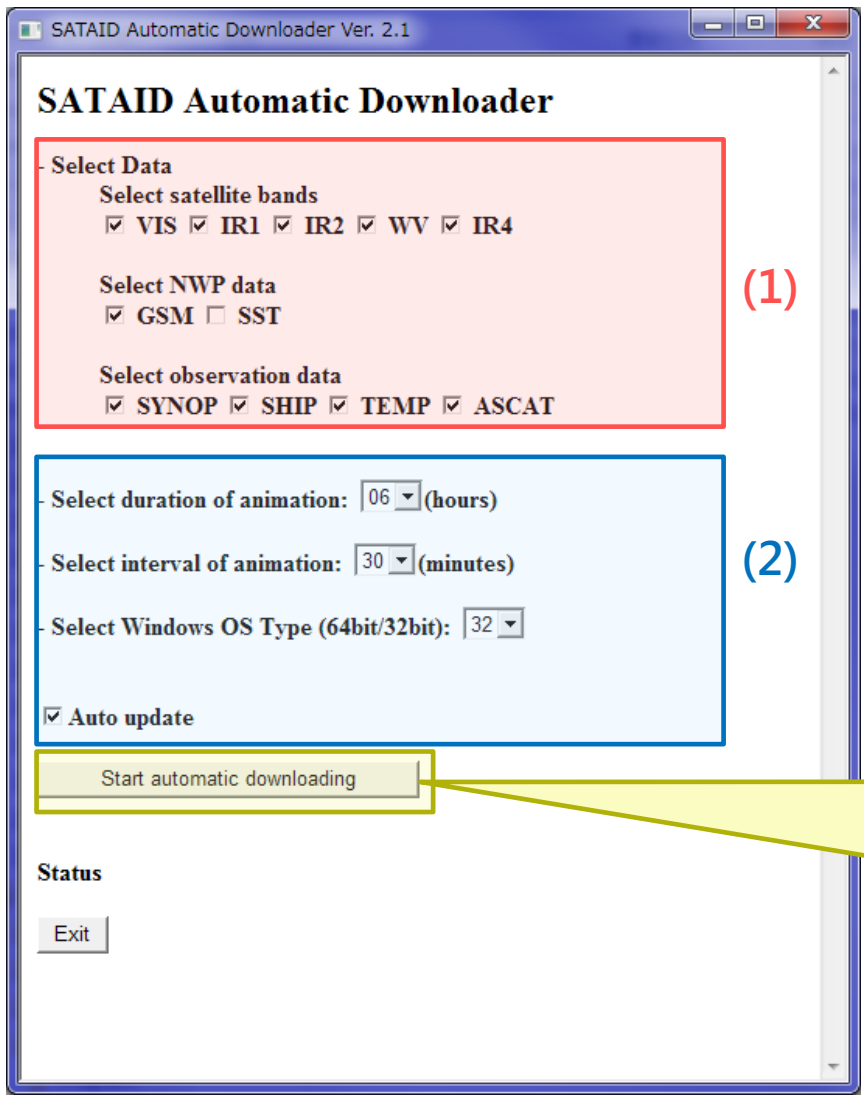
- ✓ Time difference from UTC
- ✓ Duration of file deleting
- ✓ WIS-ID, Password
- ✓ Proxy



# Download data with "WIS Downloader"

## ② Download data from WIS server

\* Please close SATAID program (GMSLPD) before using SATAID Automatic Downloader.



### (1) Select Data

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

### (2) Set up details

- ✓ Duration of animation time
- ✓ Interval of animation time\*
- ✓ OS type (32/64bit)
- ✓ Auto-update function

\* You may need to select short animation time if you select 10-min intervals depending on your PC memory capacity.

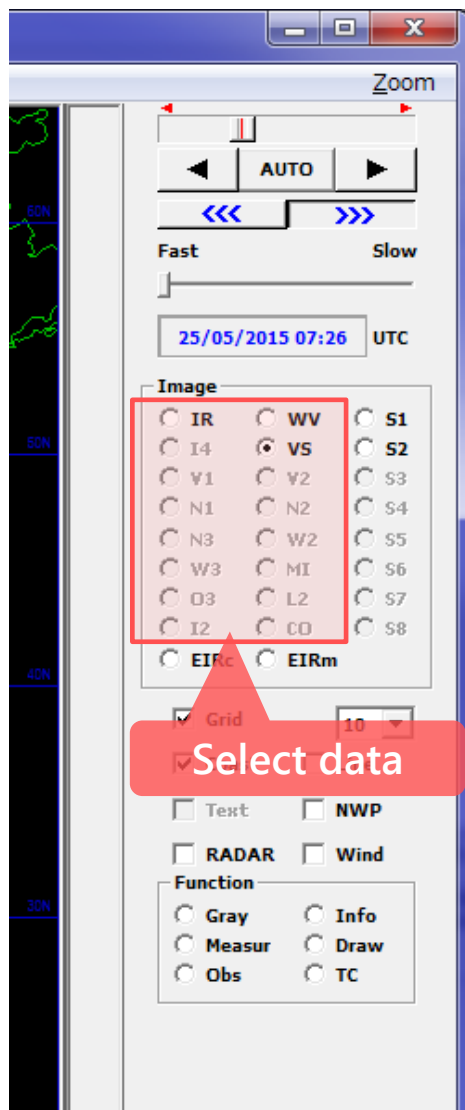
After downloading data, SATAID will be automatically activated.

## 2. Display and Control Satellite Images

---



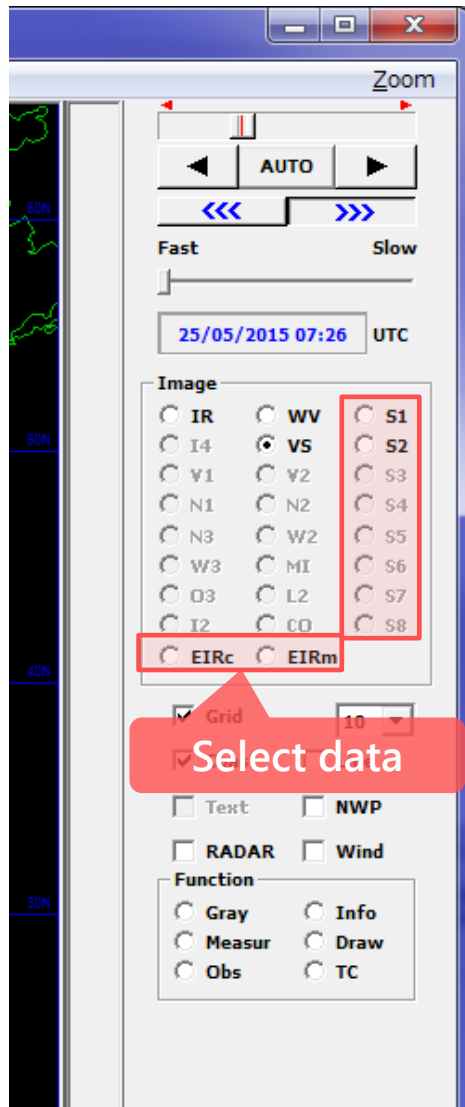
# Select satellite images



Band		Wavelength [μm]	Spatial Resolution
V1	Visible	0.46	1Km
V2		0.51	1Km
VS		0.64	0.5Km
N1	Near Infrared	0.86	1Km
N2		1.6	2Km
N3		2.3	2Km
I4	Infrared	3.9	2Km
WV		6.2	2Km
W2		7.0	2Km
W3		7.3	2Km
MI		8.6	2Km
O3		9.6	2Km
IR		10.4	2Km
L2		11.2	2Km
I2		12.3	2Km
CO		13.3	2Km



# Select satellite images



## ◆ Calculated Images

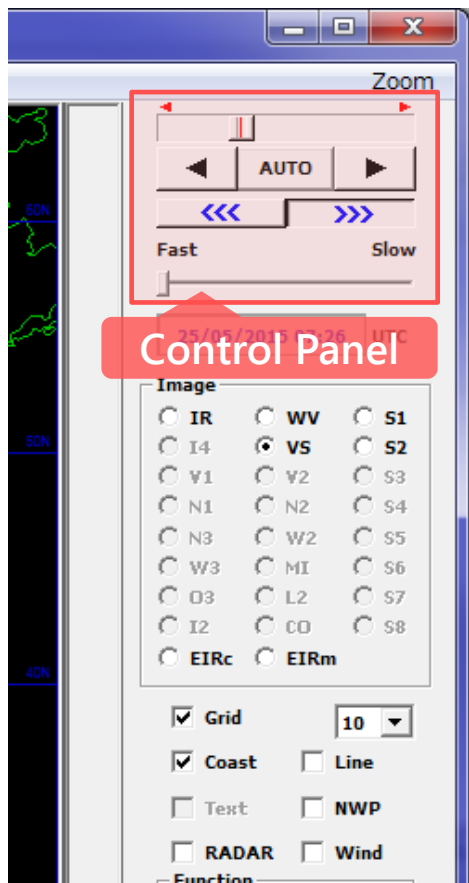
- "S1": Differential images 1 (IR – I2)
- "S2": Differential images 2 (I4 – IR)

## ◆ Colored Images

- "EIRc": Colored enhanced infrared images
- "EIRm": Monochrome enhanced infrared images



# Control animation



Drag and change duration of animation (first/last image)

Start/Stop Animation



Display the previous image



Display the next image



Play in reverse sequence



Play in normal sequence



Adjust the animation speed

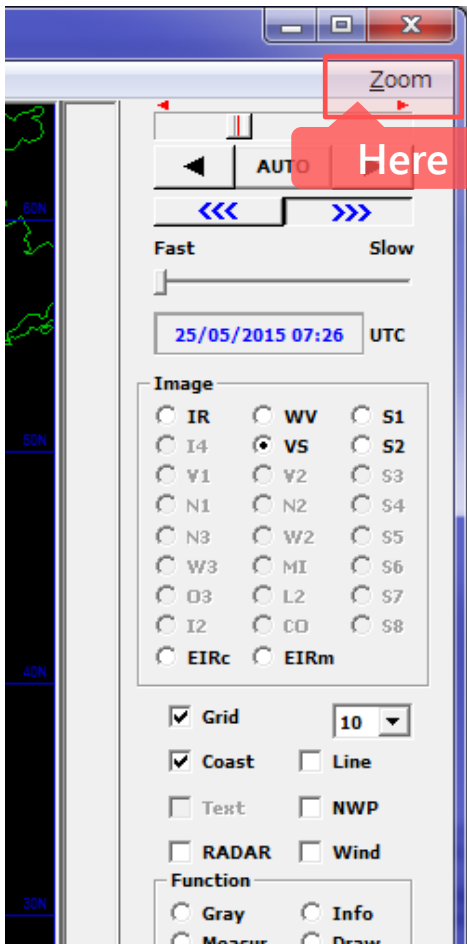
## Tips

" " + or

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









# Zoom in/out



## ◆ Method 1



- Display enlarged area  
Click [Zoom] button and drag area
- Back to whole image  
Click [Normal] button

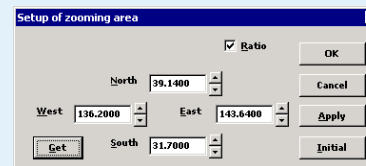
## ◆ Method 2

- Zoom in : "  " + "  " + "  Left-Click"
- Zoom out : "  " + "  " + "  Right-Click"

### Tips

You can digitally designate area with longitude/latitude information

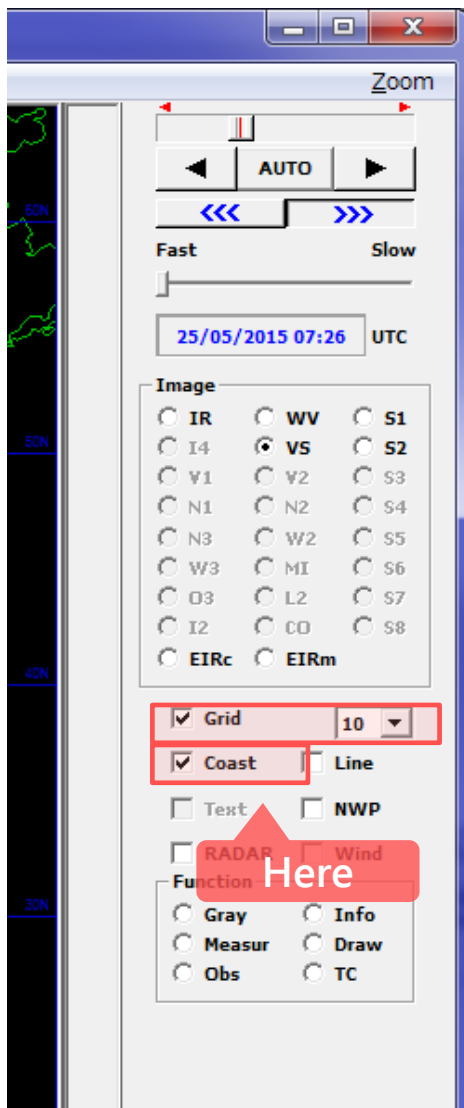
"  " + "  " + [Zoom]







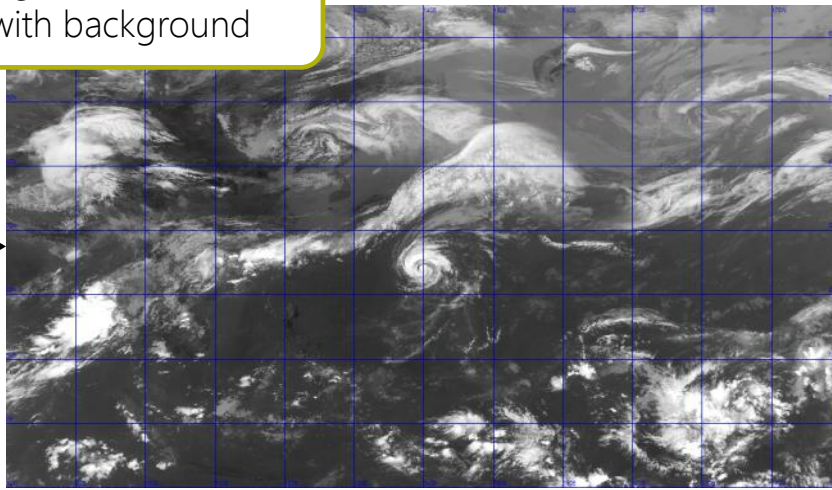
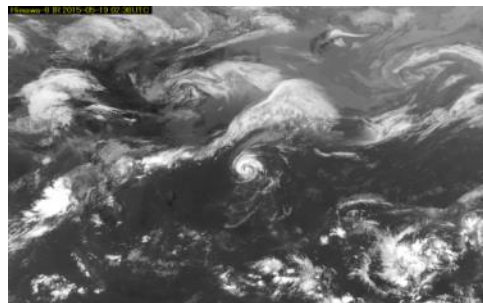
# Display coast/grid line



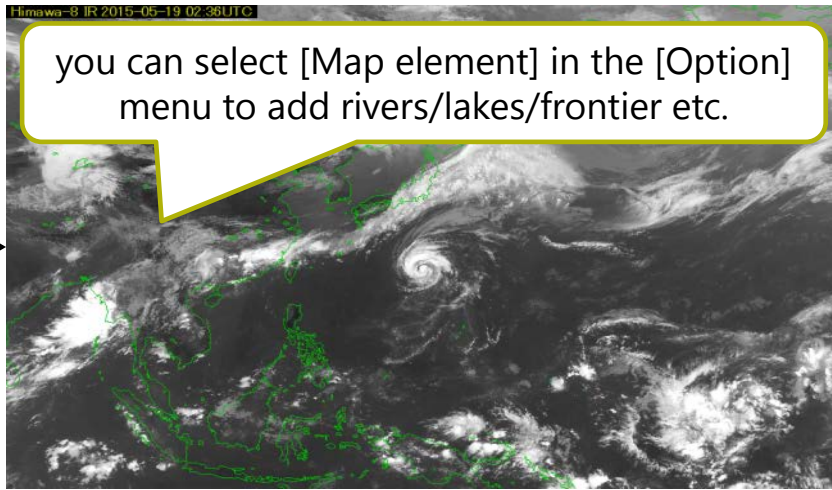
Check with [Ctrl] key: larger fonts  
Check with [Shift] key: with background

Check!

Select intervals of latitude/longitude



Check!



you can select [Map element] in the [Option] menu to add rivers/lakes/frontier etc.

You can change colors of these lines by selecting [Line color] in the [Option] menu

## 3.Display NWP Data

---



# Display NWP data

## Available NWP data

1. Check NWP -> pop up window

2. Select elements

3. Push "Exec" button to display

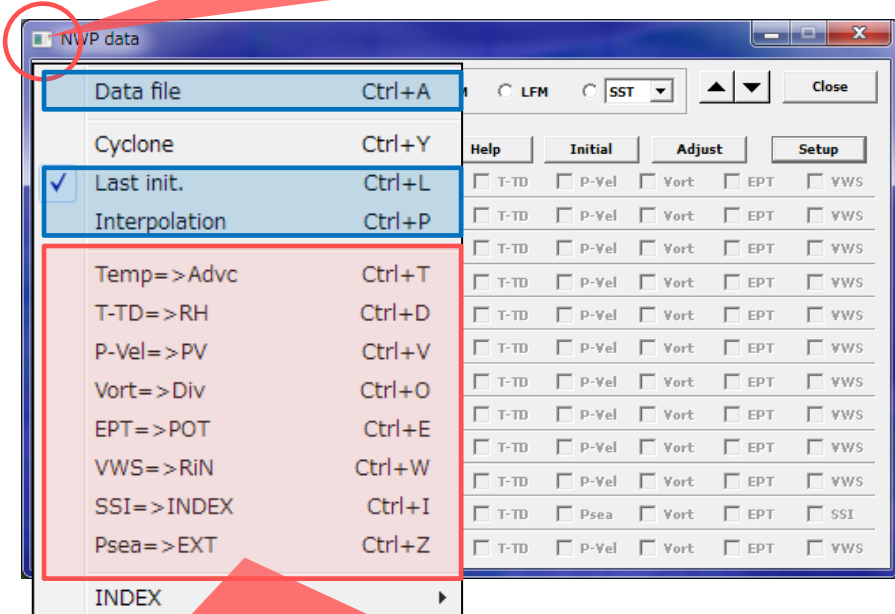
Shrink/extend window

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 <sup>-6</sup> /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 <sup>-6</sup> /s
POT	Potential temperature	K
RiN	Richardson number	-
CAPE	Convective available potential energy	J/kg
PV	Potential vorticity	0.1PVU
Avor	Absolute vorticity	10 <sup>-6</sup> /s
Adv	Temperature advection	10 <sup>-6</sup> /s/h
Vadv	Relative vorticity advection	0.1°C/h
SH	Specific humidity	0/1g/kg
EXT	Extra element (diff. between levels)	undefined



# Change elements

1. Click upper-left corner of the window  
-> Pop up the menu



2. You can change elements in the panel

## Tips

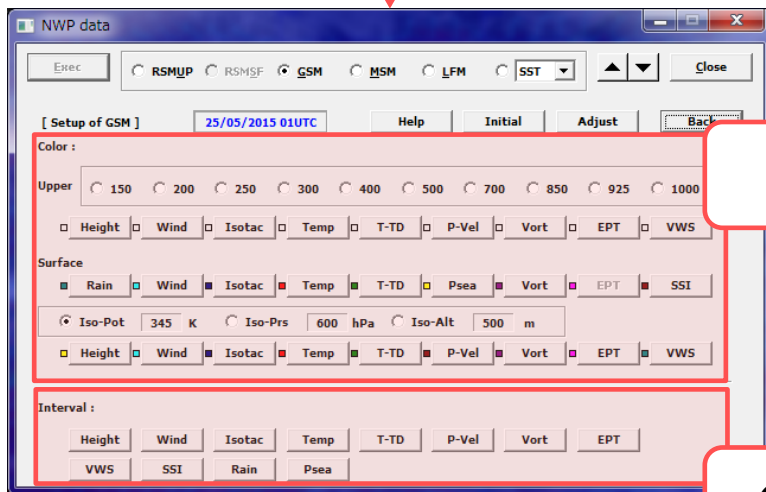
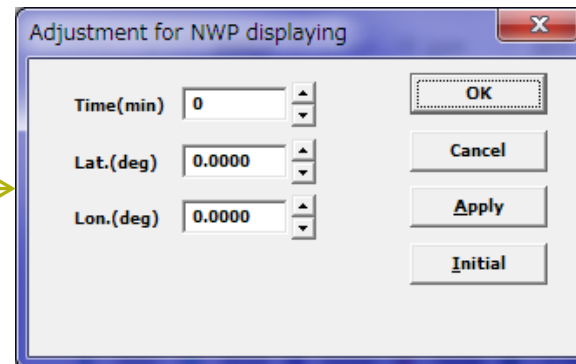
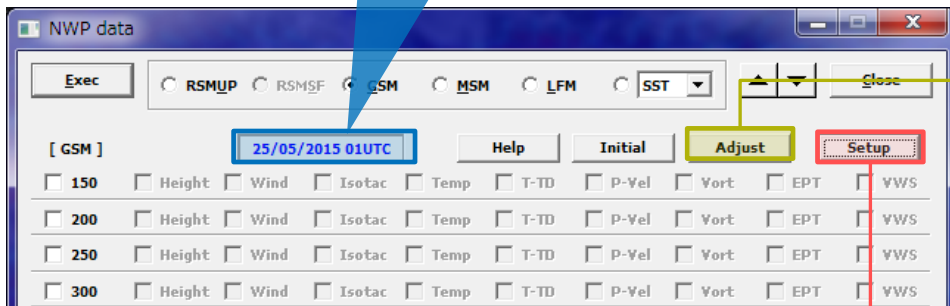
- When the [Data file] is clicked, CSV file of selected NWP elements is output.
- When the [Last init.] is NOT selected, the earliest initial NWP data is displayed.
- When the [Interpolation] is selected, forecast fields between forecast time can be interpolated and displayed (i.e. if Interpolation is NOT selected, NWP data is shown only every 6 hours).

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 <sup>-6</sup> /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 <sup>-6</sup> /s
POT	Potential temperature	K
RiN	Richardson number	-
CAPE	Convective available potential energy	J/kg
PV	Potential vorticity	0.1PVU
Avor	Absolute vorticity	10 <sup>-6</sup> /s
Advc	Temperature advection	10 <sup>-6</sup> /s/h
Vadv	Relative vorticity advection	0.1°C/h
SH	Specific humidity	0/1g/kg
EXT	Extra element (diff. between levels)	undefined



# Change color/line-type/hatch-pattern

Initial time



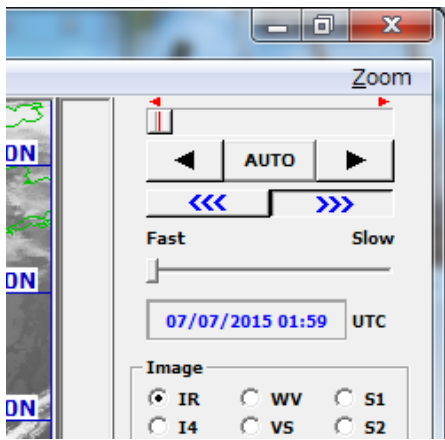
Change color

Change intervals



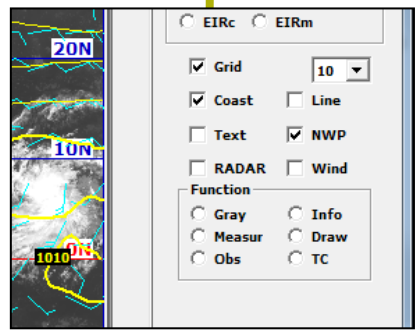


# Display forecast value

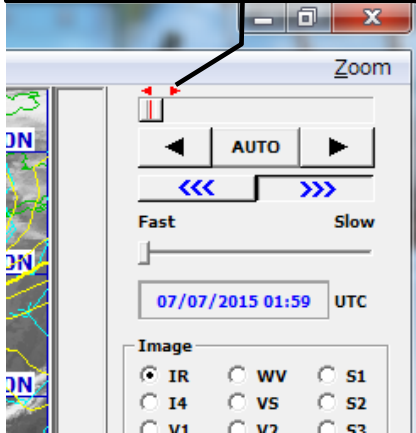


Before

Open NWP menu

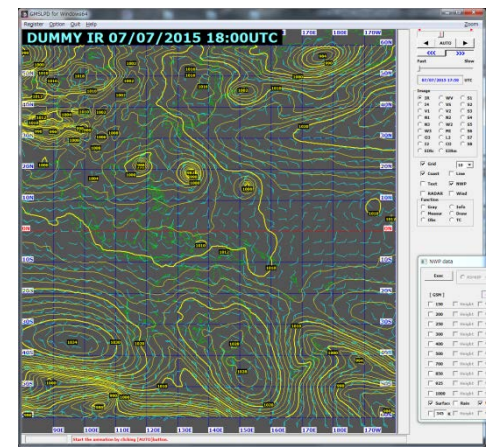
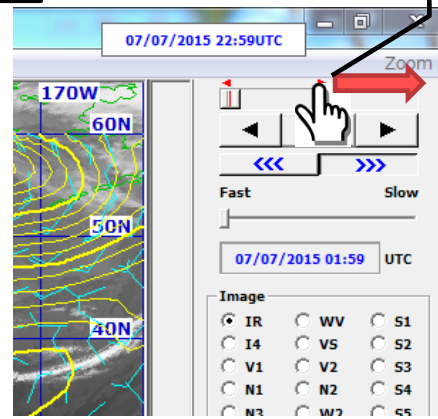


The red arrow becomes shorter



After

If you drag the red arrow to the right side, forecast-time becomes selectable.



During displaying forecast time data, satellite image isn't displayed.



# Display SST data

Zoom

Fast Slow

UTC

Image

- IR
- IR2
- WV
- IR4
- WV2
- EIR-C
- VS
- VS2
- SP
- S2
- VS3
- EIR-M

Grid **Check**

Coast

Text

Radar

Function

- Gray
- Meas
- Obs
- Info
- Draw
- TC

NWP

NWP data

Exec:  RSMUP  RSM5F  GSM  MSM  LFM  SST

Initial Setup

4bytes float Endian:  Big  Little

Latit.: Corner(deg) 65.0000 Interval(deg) 0.2500 Numbers 281

Longi.: Corner(deg) 80.0000 Interval(deg) 0.2500 Numbers 481

Invalid -999.0000 Reference -273.1500 Scale 1.0000 Offset 0 (bytes)

File D:\...pSATAID\SATAID\IMAGE\SST\SST20150618.F32

Zoom

Fast Slow

17/06/2015 17:14 UTC

Image

- IR
- WV
- A08
- 36V
- 89V
- W2
- 12
- EIRc
- VS
- I4
- A07
- A16
- 36H
- 89H
- W3
- N2
- EIRm
- S1
- S2
- S3
- S4
- S5
- S6
- S7
- S8

Grid 10

Coast

Text

RADAR

Function

- Gray
- Measur
- Obs
- Info
- Draw
- TC

Obs

- Synop
- AWS
- LIDEN
- WPR
- Track

64.840N 118.960E Select an item of observation data.

## 4. Display Observation Data

---





# Display SYNOP/SHIP/TEMP data

Normal

Fast Slow

25/05/2015 03:26 UTC

Image

IR  WV  S1  
 I4  VS  S2  
 V1  V2  S3  
 N1  N2  S4  
 N3  W2  S5  
 W3  MI  S6  
 O3  L2  S7  
 I2  CO  S8  
 EIRc  EIRm

Grid 10  
 Coast  Line  
 Text  NWP  
 RADAR  Wind

Function

Gray  Info  
 Measur  Draw  
 Obs  TC

Obs

Synop  WDR  
 AWS  Track  
 LIDEN

Select "Surf"

Synop data

Synop

Surf  1000  
 925  850  
 700  500  
 400  300  
 250  200  
 150  100

Close

Vert

Temp  
 Pote  
 Wind  
 Stab

Cond Select Color

Path: D:\ANDATA Browse

SYNOP/SHIP

47678 HACHIOJIMA  
Pos.: 33.10N 139.80E Alt.: 80m

07/08/2002 00UTC

Pressure: 1014.3 hPa  
 Wind: WSW 8 kt  
 Temp.: 28.6 °C  
 Total: 3/8  
 Clouds(LMH): 200  
 Weather: \*

Tendency: +0.1 hPa  
 Visibility: 20.0 km  
 Dew-point: 25.0 °C  
 Low-level: 3/8  
 Past:

48.860N 149.760E Display surface obser

Select "1000"- "100"

Synop data

Synop

Surf  1000  
 925  850  
 700  500  
 400  300  
 250  200  
 150  100

Close

Vert

Temp  
 Pote  
 Wind  
 Stab

Cond Select Color

Path: D:\ANDATA Browse

TEMP

47909 NAZE  
Pos.: 28.40N 129.60E Alt.: 295m

07/08/2002 00UTC

Temp. Dew-point temp.

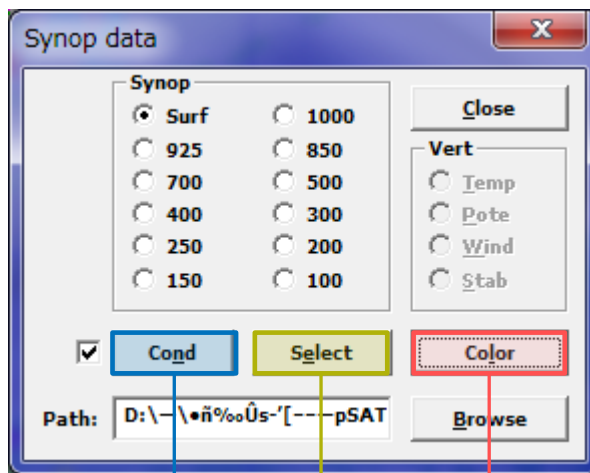
Click each site on the display to open these windows

Fast Slow

29.000N 144.240E Display upper observation data.



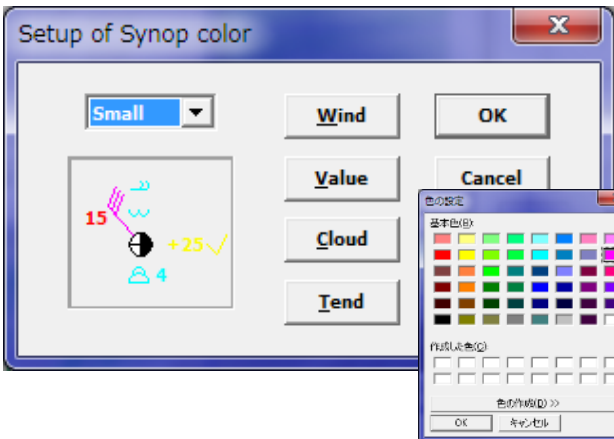
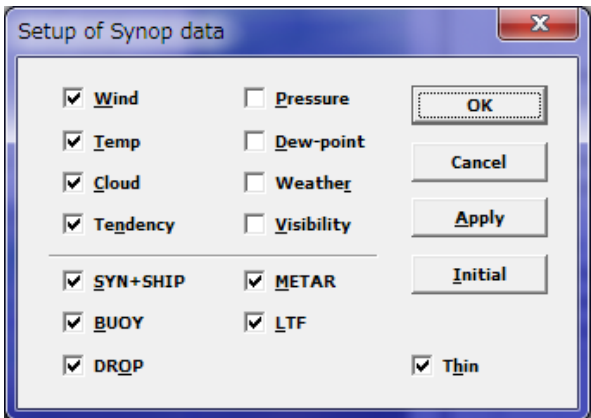
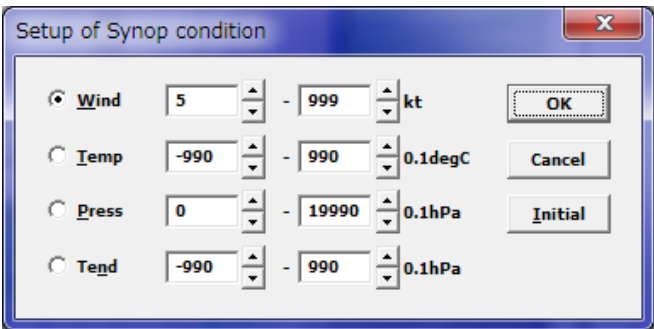
# Display SYNOP/SHIP/TEMP data



Set threshold for display data

Select displayed element

Set symbol color





# Display ASCAT data

Normal

Fast Slow

25/05/2015 03:26 UTC

Image

IR  WV  S1  
 I4  VS  S2  
 V1  V2  S3  
 N1  N2  S4  
 N3  W2  S5  
 W3  MI  S6  
 O3  L2  S7  
 I2  CO  S8  
 EIRc  EIRm

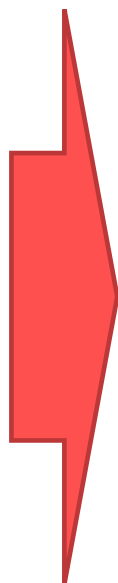
Grid 10  
 Contour  
 Text  NWP  
 RADAR  Wind

Function

Gray  Info  
 Measur  Draw  
 Obs  TC

Obs

Synop  WPR  
 AWS  Track  
 LIDEN



GMSLPT64\_1 for Windows64

Register Option Quit Help

Fast Slow

17/06/2015 23:14 UTC

Image

IR  VS  S1  
 WV  I4  S2  
 A06  A07  S3  
 A08  A16  S4  
 36V  36H  S5  
 89V  89H  S6  
 W2  W3  S7  
 I2  N2  S8  
 EIRc  EIRm

Grid 10  
 Coast  Line  
 Text  NWP  
 RADAR  Wind

Function

Gray  Info  
 Measur  Draw  
 Obs  TC

Cloud motion wind data

Wind

Upper  Col  
 Lower  Col  
 Vapor  Col  
 Ext-1 50 Col  
 Ext-2 50 Col  
 Ext-3 50 Col  
 Ext-4 50 Col

Cond  
 Altitude  
 Barb

Setup

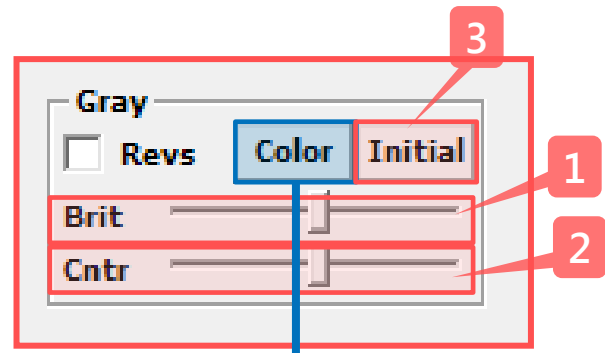
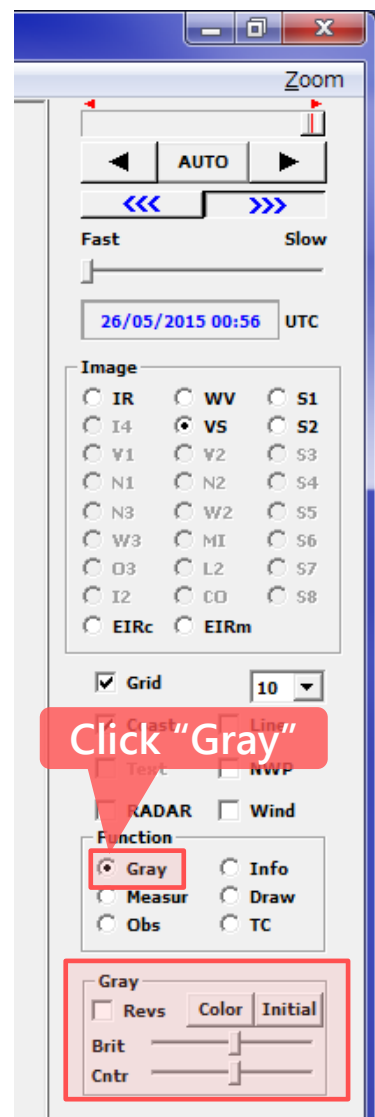
Path: D:\...\n%0Us-[---pSATAID Browse

## 5. Customize Display

---

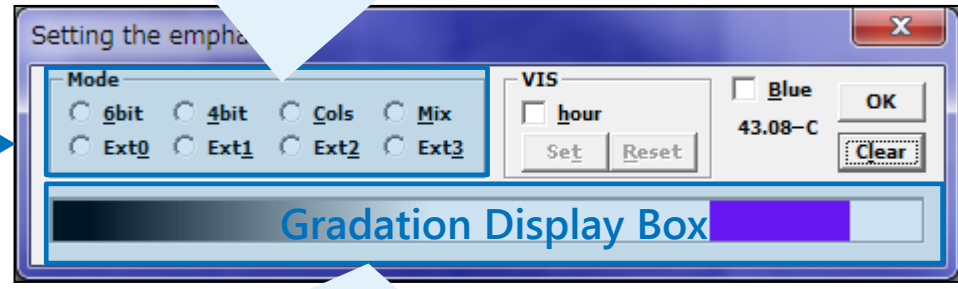


# Adjust gradation and color enhancement



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

Select radio button and change the grayscale



- Select emphasized range  
click two points
- Clear emphasized range  
Right-clicking on 1st point and left-clicking on 2nd to clear the emphasized area.



# Adjust Gradation



Click on display to adjust gradation

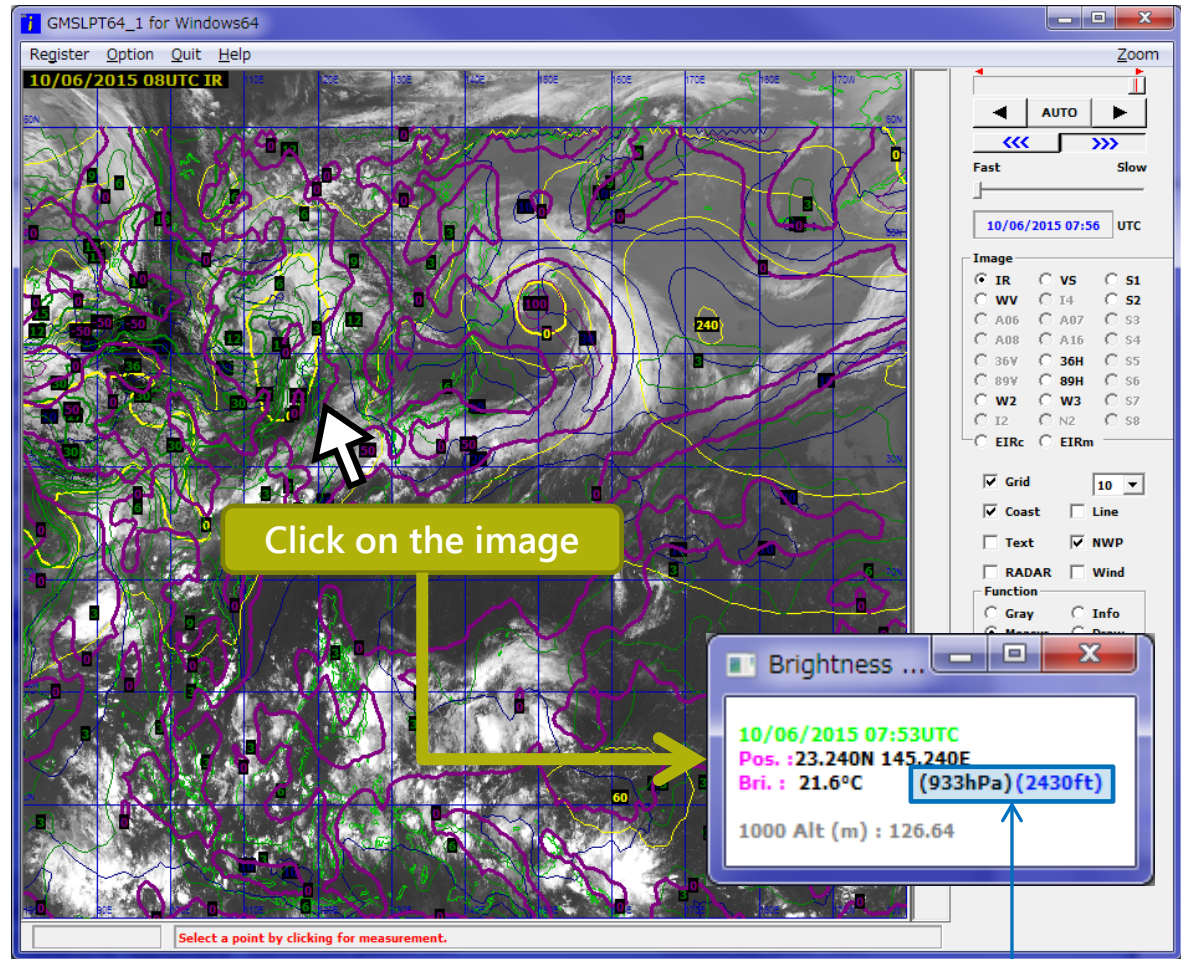
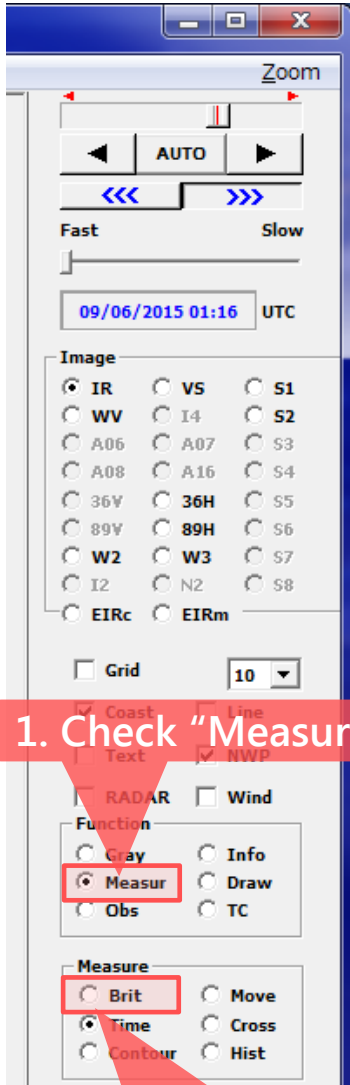
Change the gray scale by controlling brightness and contrast.

# 6. Data Measurement

---



# Brightness measurement



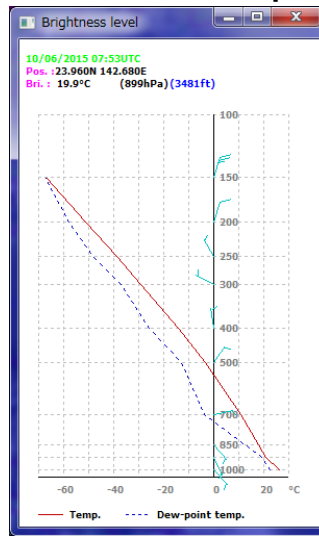
When NWP data is displayed, estimated altitude is displayed



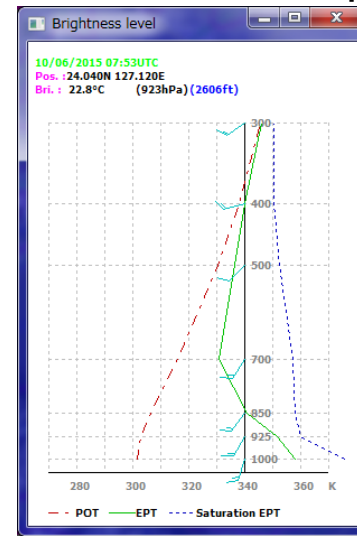


# Brightness measurement

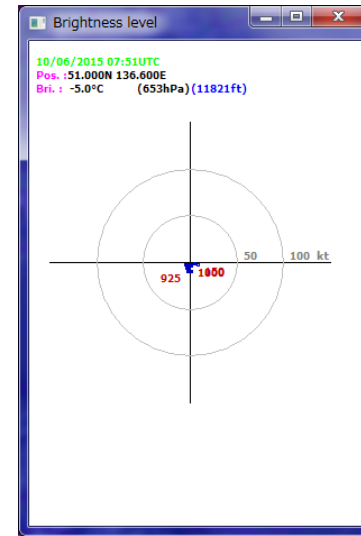
### Vert.1 (Air temp.)



### Vert.2 (Potential temp.)



### Vert.3 (wind)



Click upper-left of window

Print Ctrl+P  
Bitmap Ctrl+O  
Copy BS  
Kelvin Ctrl+K  
Sync view Ctrl+Y  
Adjust size Ctrl+J  
Vert.1(Temp)  
Vert.2(Pote)  
Vert.3(Wind)  
Vert.4(Stab)  
Vert.5(Traj)  
Shift setup Ctrl+E

### Vert.4 (Stability)

Time	Lat	Lon	Temp	Pressure	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	

### Vert.5 (Trajectory)

10/06/2015 07:51UTC  
Pos.: 51.000N 136.600E  
Bri.: -5.0°C (653hPa)(11821ft)

SSI : 5.7 (°C)  
LI : 6.6 (°C)  
KI : 24.1 (°C)  
IT : 42.9 (°C)  
SWEAT: 2  
CAPE: 0 (J/kg)  
CIN : 454 (J/kg)



# Movement (vector) measurement

Zoom

Fast Slow

09/06/2015 01:16 UTC

Image

- IR  VS  S1
- WV  I4  S2
- A06  A07  S3
- A08  A16  S4
- 36V  36H  S5
- 89V  89H  S6
- W2  W3  S7
- I2  N2  S8
- EIRc  EIRm

Grid 10

Coast Line

Text  NWP

RADAR  Wind

Function

- Gray  Info
- Measur  Draw
- Obs  TC

Measure

- Brit  Move
- Time  Cross
- Contour  Hist

1. Check "Measure"

2. Check "Move"

Select the first point in the first image

Change time

Select the second point in the next image

Movement vector is automatically calculated

23/06/2015 23:36UTC  
 1st : 41.360N 139.960E  
 24/06/2015 02:36UTC  
 End : 40.520N 140.720E  
 Dist.: 113km ( 61NM)  
 Dire.: 145° (SE)  
 Speed: 20KT

Movement speed is also calculated



# Time-series measurement

Zoom

Fast Slow

09/06/2015 01:16 UTC

Image

IR  VS  S1  
 WV  I4  S2  
 A06  A07  S3  
 A08  A16  S4  
 36V  36H  S5  
 89V  89H  S6  
 W2  W3  S7  
 I2  N2  S8  
 EIRc  EIRm

Grid 10  
 Coast  Line

RADAR  Wind

Function

Gray  Info  
 Measur  Draw  
 Obs  TC

Measure

Brit  Move  
 Time  Cross  
 Contour  Hist

1. Check "Measur"

2. Check "Time"

GMSLPT64\_1 for Windows64

Register Option Quit Help

10/06/2015 09UTC S2

Zoom

Fast Slow

10/06/2015 08:56 UTC

Image

IR  VS  S1  
 WV  I4  S2  
 A06  A07  S3  
 A08  A16  S4  
 36V  36H  S5  
 89V  89H  S6  
 W2  W3  S7  
 I2  N2  S8  
 EIRc  EIRm

Time series

09/06/2015 03:52UTC  
10/06/2015 08:52UTC  
Pos.: 135.520N 121.920E

hPa

1000  
925  
850  
700  
600  
500  
400  
300  
200  
150

04 06 08 10 12 14 16 18 20 22 24 06 08 UTC

10

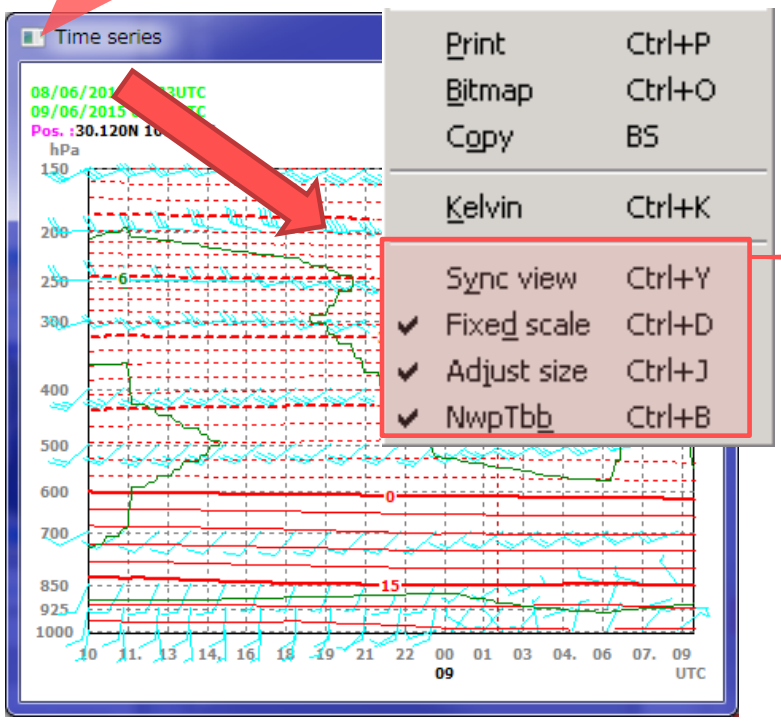
Start the animation by clicking [AUTO] button.

Click on the image



# Time-series measurement

Click upper-left of window



## Sync view:

Data in the graph are updated in sync 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 is shown.



# Cross-sectional measurement

Zoom

Fast Slow

09/06/2015 01:16 UTC

Image

IR  VS  S1  
 WV  I4  S2  
 A06  A07  S3  
 A08  A16  S4  
 36V  36H  S5  
 89V  89H  S6  
 W2  W3  S7  
 I2  N2  S8  
 EIRc  EIRm

Grid 10

Coast  Line

RADAR  Wind

Function

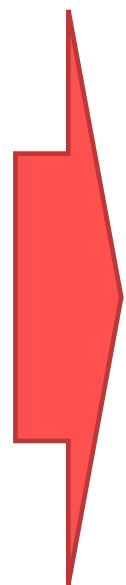
Gray  Info  
 Measur  Draw  
 Obs  TC

Measure

Brit  Move  
 Time  Cross  
 Contour  Hist

1. Check "Measure"

2. Check "Cross"



GMSLPT64\_1 for Windows64

Register Option Quit Help

10/06/2015 09UTC S2

Zoom

Fast Slow

10/06/2015 08:56 UTC

Image

IR  VS  S1  
 WV  I4  S2  
 A06  A07  S3  
 A08  A16  S4  
 36V  36H  S5  
 89V  89H  S6  
 W2  W3  S7  
 I2  N2  S8  
 EIRc  EIRm

Grid

Drag and define a cross section

Cross section

10/06/2015 08:56UTC  
 1st : 48.240N 103.400E  
 End : 29.000N 118.760E

hPa

150  
200  
250  
300  
400  
500  
600  
700  
850  
925  
1000

45N 40N 35N 30N

Start the animation by clicking [AUTO] button.



# Isoline (contour)

Zoom

AUTO

Fast Slow

09/06/2015 01:16 UTC

Image

<input checked="" type="radio"/> IR	<input type="radio"/> VS	<input type="radio"/> S1
<input type="radio"/> WV	<input type="radio"/> I4	<input type="radio"/> S2
<input type="radio"/> A06	<input type="radio"/> A07	<input type="radio"/> S3
<input type="radio"/> A08	<input type="radio"/> A16	<input type="radio"/> S4
<input type="radio"/> 36V	<input type="radio"/> 36H	<input type="radio"/> S5
<input type="radio"/> 89V	<input type="radio"/> 89H	<input type="radio"/> S6
<input type="radio"/> W2	<input type="radio"/> W3	<input type="radio"/> S7
<input type="radio"/> I2	<input type="radio"/> N2	<input type="radio"/> S8
<input type="radio"/> EIRc	<input type="radio"/> EIRm	

Grid 10

Coast  Line

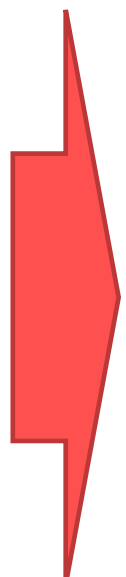
RADAR  Wind

Function

<input type="radio"/> Gray	<input type="radio"/> Info
<input checked="" type="radio"/> Measur	<input type="radio"/> Draw
<input type="radio"/> Obs	<input type="radio"/> TC

Measure

<input type="radio"/> Brit	<input type="radio"/> Move
<input checked="" type="radio"/> Time	<input type="radio"/> Cross
<input checked="" type="radio"/> Contour	<input type="radio"/> Hist



GMSLPT64\_1 for Windows64

Register Option Quit Help

Normal

AUTO

Fast Slow

09/06/2015 09:56 UTC

Image

<input checked="" type="radio"/> IR	<input type="radio"/> VS	<input type="radio"/> S1
<input type="radio"/> WV	<input type="radio"/> I4	<input type="radio"/> S2
<input type="radio"/> A06	<input type="radio"/> A07	<input type="radio"/> S3
<input type="radio"/> A08	<input type="radio"/> A16	<input type="radio"/> S4
<input type="radio"/> 36V	<input type="radio"/> 36H	<input type="radio"/> S5
<input type="radio"/> 89V	<input type="radio"/> 89H	<input type="radio"/> S6
<input type="radio"/> W2	<input type="radio"/> W3	<input type="radio"/> S7
<input type="radio"/> I2	<input type="radio"/> N2	<input type="radio"/> S8
<input type="radio"/> EIRc	<input type="radio"/> EIRm	

Grid 10

Coast  Line

Text  NWP

RADAR  Wind

Contour line

09/06/2015 09:56UTC

1st : 41.200N 138.240E

End : 32.960N 156.520E

IR (°C)

48.040N 135.120E Select a region by dragging for measurement.

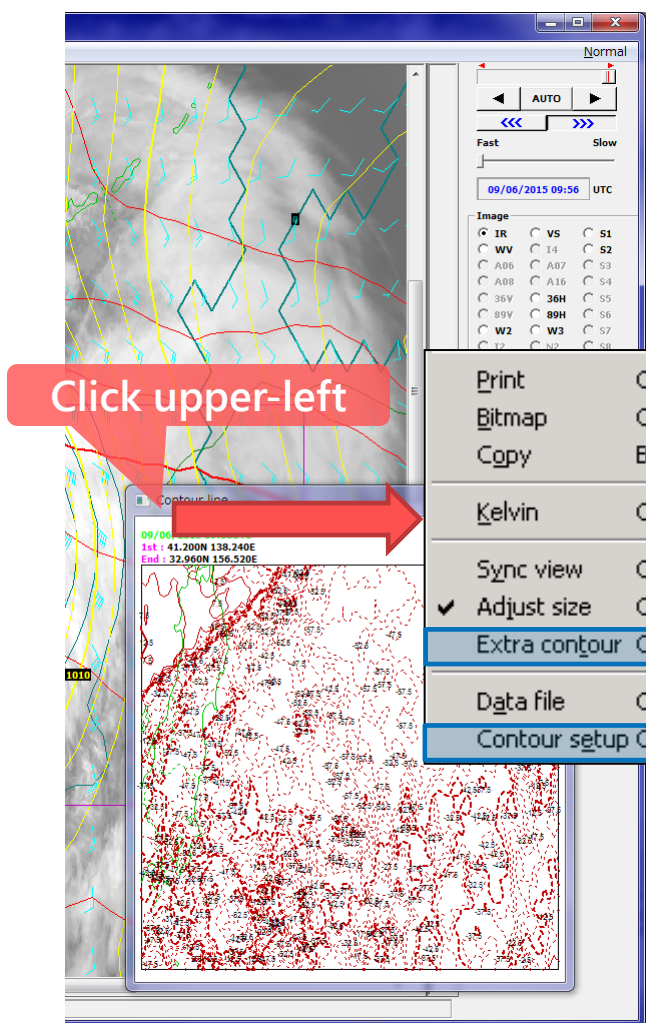
Drag and specify a rectangular area

1. Check "Measure"

2. Check "Contour"



# Isoline (contour)



Click upper-left

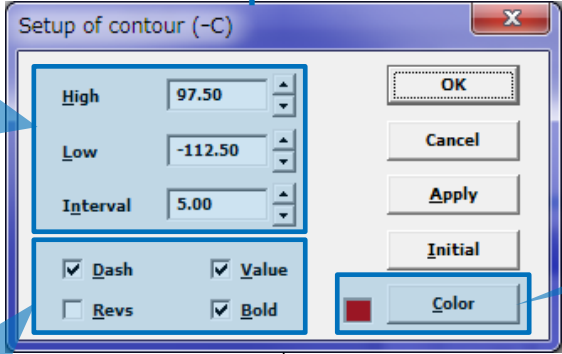
Select upper/lower value and interval

Select line type

Select color

Select hatch pattern

## Set up counter

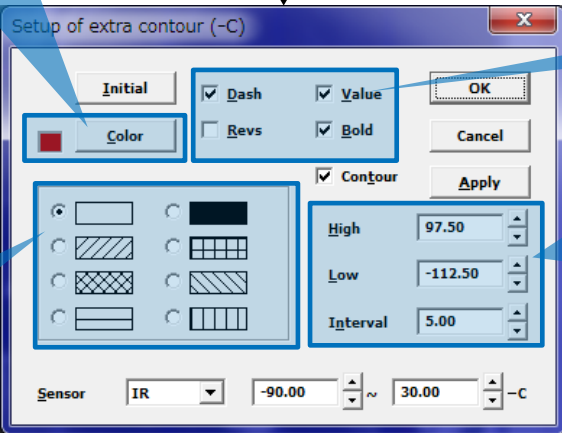


Select color

NO (= without hatch pattern)

Checked  
"Extra contour"?

YES (= with hatch pattern)



Select line type

Select upper/lower value and interval



# Histogram

Zoom

AUTO

Fast Slow

09/06/2015 01:16 UTC

Image

IR  VS  S1

WV  I4  S2

A06  A07  S3

A08  A16  S4

36V  36H  S5

89V  89H  S6

W2  W3  S7

I2  N2  S8

EIRc  EIRm

Grid 10

Coast  Line

RADAR  Wind

Function

Gray  Info

Measur  Draw

Obs  TC

Measure

Brit  Move

Time  Cross

Contour  Hist

1. Check "Measur"

2. Check "Hist"

GMSLPT64\_1 for Windows64

Register Option Quit Help

Normal

AUTO

Fast Slow

09/06/2015 09:56 UTC

Image

IR  VS  S1

WV  I4  S2

A06  A07  S3

A08  A16  S4

36V  36H  S5

89V  89H  S6

W2  W3  S7

I2  N2  S8

EIRc  EIRm

Grid 10

Coast  Line

Text  NWP

RADAR  Wind

Function

Gray  Info

Measur  Draw

Obs  TC

Move

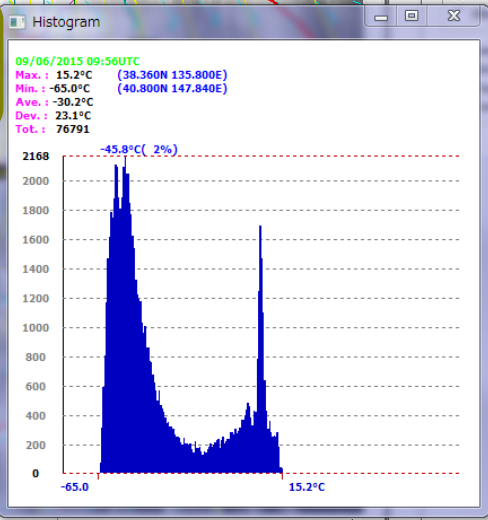
Cross

Hist

47.960N 145.000E Select a region by polygon and W-clicking for measurement.

Last one: double-click

Click some points on the display and specify a polygonal area

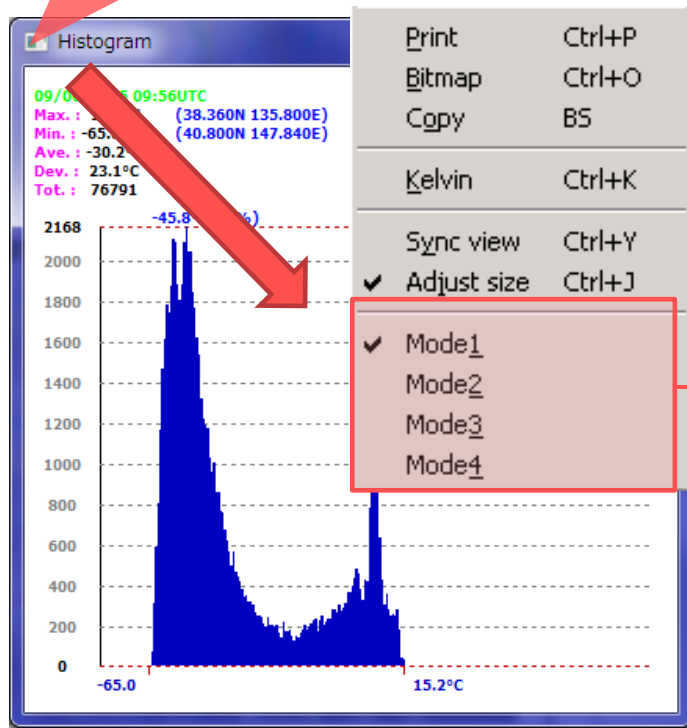




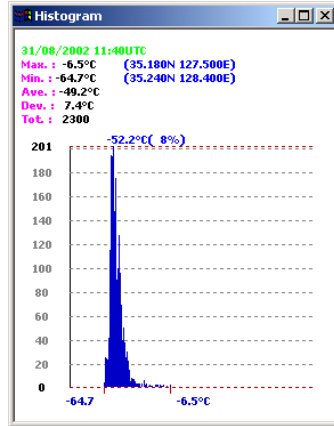


# Histogram

Click upper-left of window

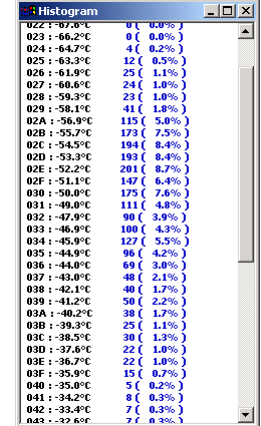


## Mode1



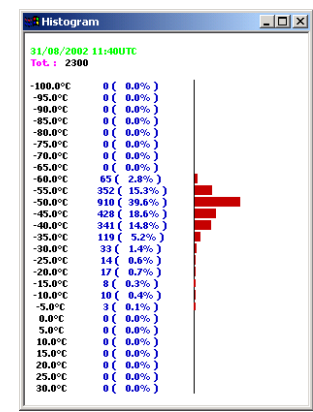
Statistical values and a histogram are shown.

## Mode2



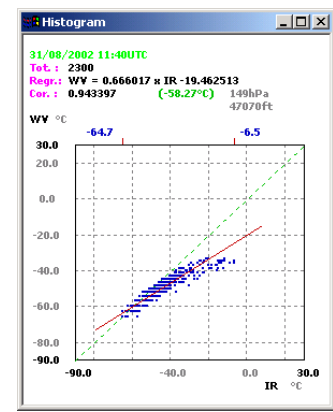
Brightness degrees (temp. for IR and reflectivity for VIS channel) are shown as numerical values.

## Mode3



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

## Mode4



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

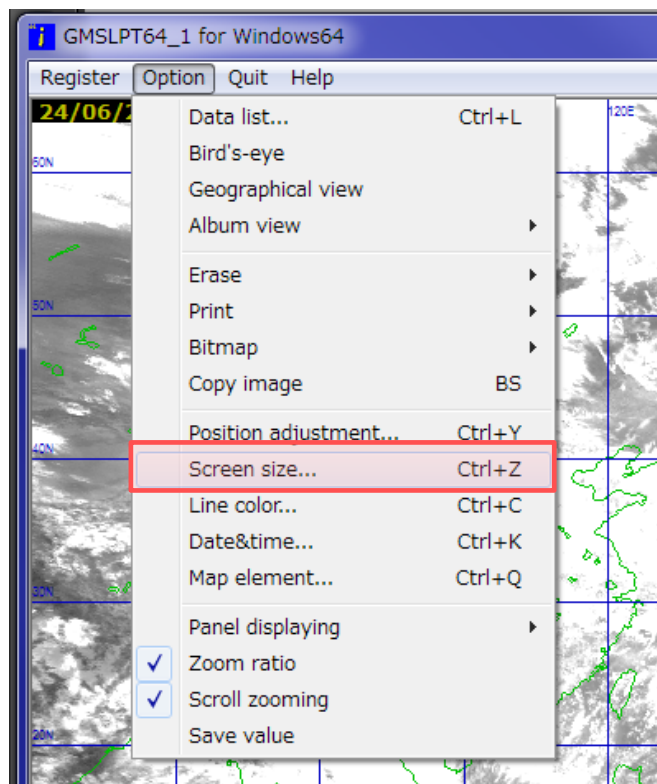
# 7. Other Functions

---

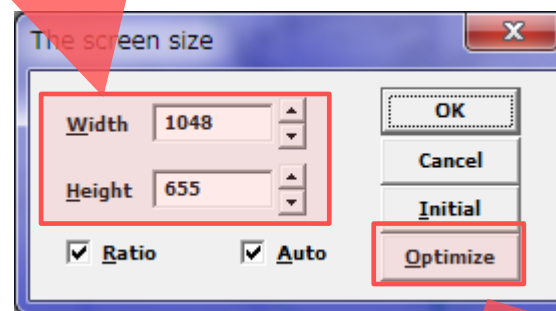


# Change window size

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



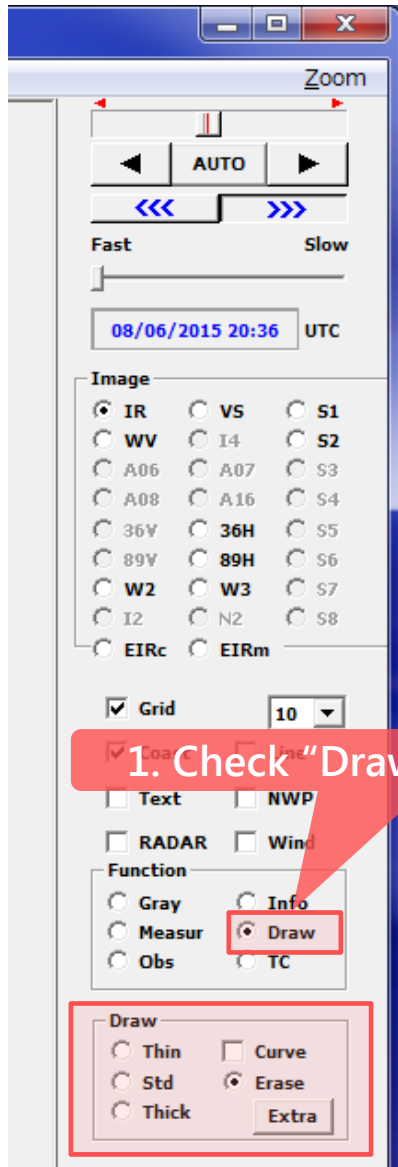
You can adjust the window size with the width and height (pixel)



The window size is automatically adjusted to fit your display.



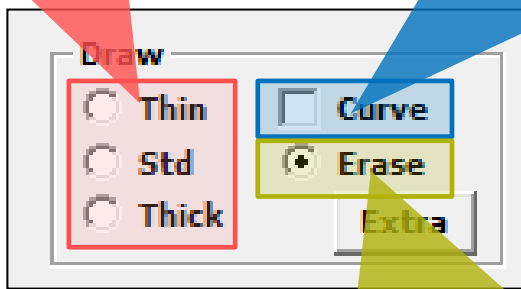
# Drawings



**Freehand drawing**  
 Select width of line  
 \* Deselect the [curve] checkbox

**Spline drawing**

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



**Partial erasing**

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

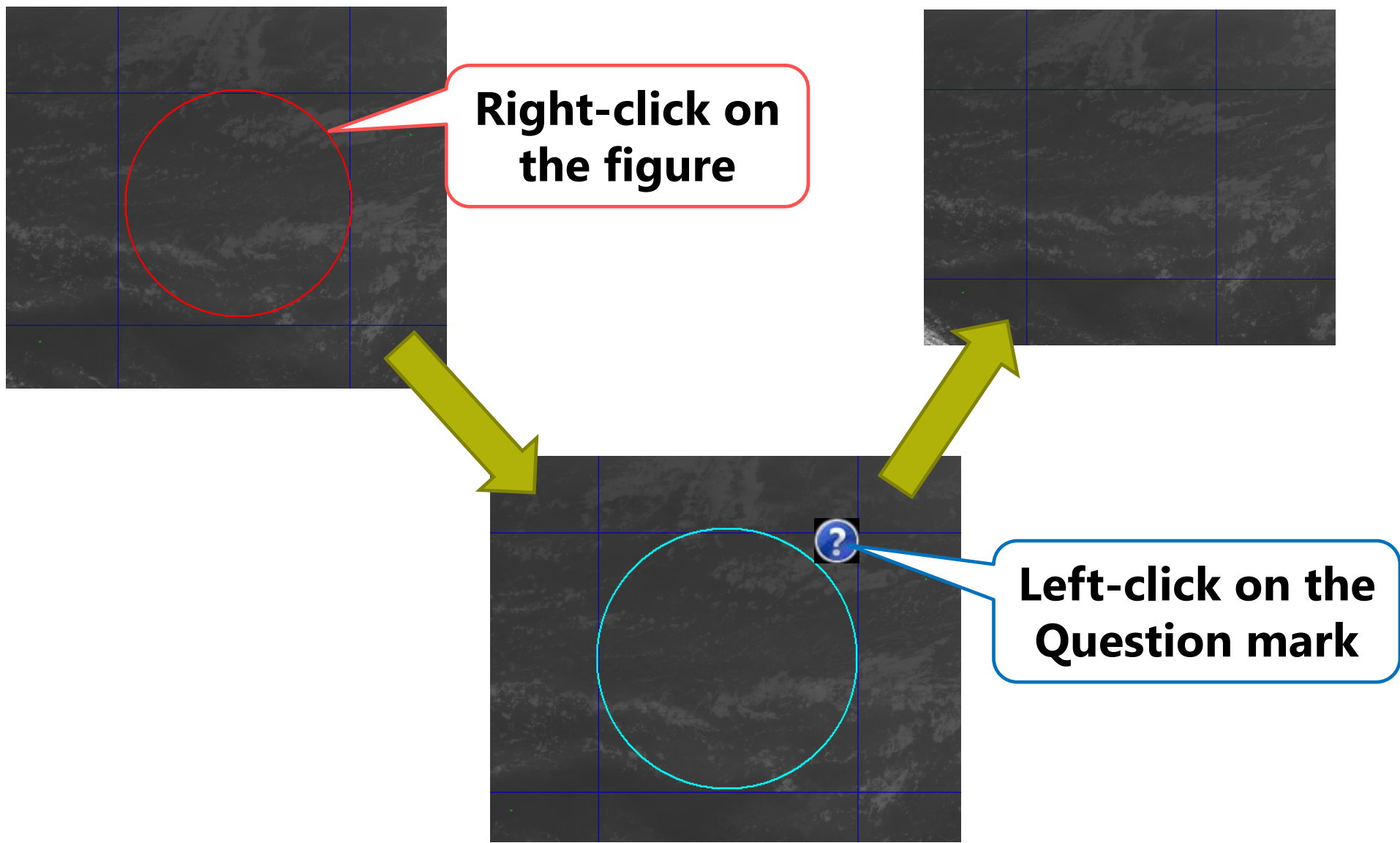
1. Check "Draw"

## Tips

When neither [Curve] nor [Erase] is selected, freehand drawing is available.

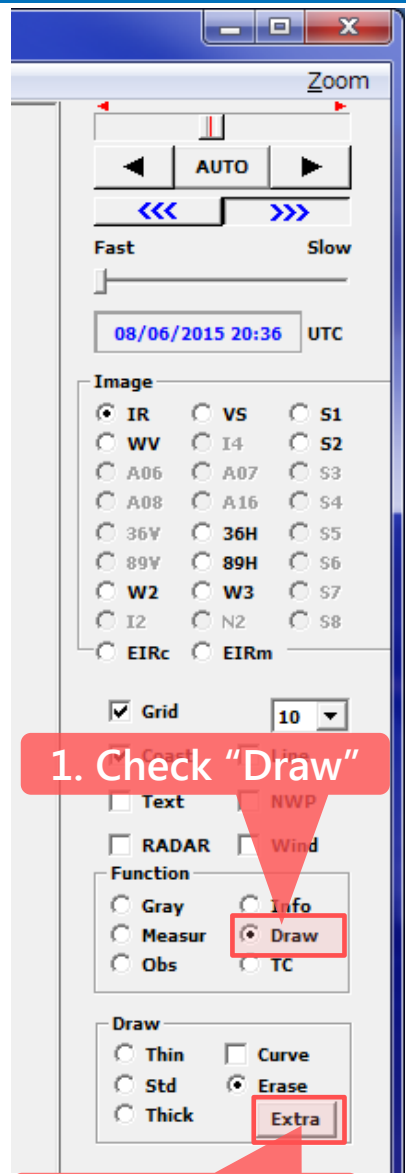


# How to Delete the drawn figure



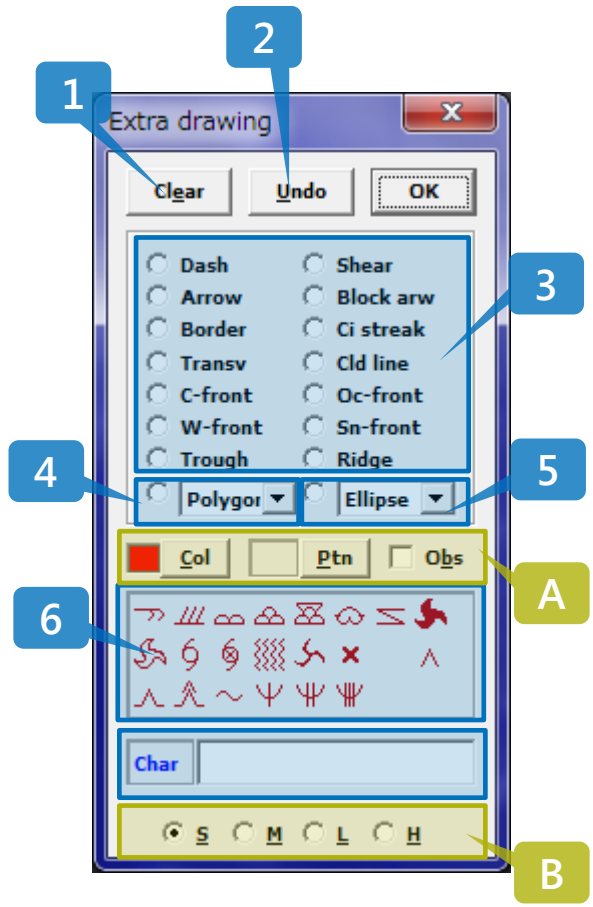


# Drawings



1. Check "Draw"

2. Click "Extra"



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 drawn in the same way as spline drawings.  
*\*You can click the [Sn-front] button while holding down the [Ctrl] key to draw a stationary front in red and blue.*
4. Draw polygons, closed curves, or cloud rims, which can be drawn in the same way as spline drawings. These figures can be changed the color and filled with a hatched pattern.
5. Draw ellipses, circles, or flex oval. You can change the color and fill with a hatched pattern.
6. Paste cloud form symbols or vortex center symbols (Drag a symbol to a point where it is to be pasted. The symbol size can be changed and the symbol can be reversed left to right by dropping the symbol with pressing the [Ctrl] key)
7. Paste character strings (Drag [Char] to a point where it is to be pasted. The character size can be changed)
8. Paste wind barbs (Drag [Char] to a point where it is to be pasted after inputting "WIND ddd(direction in 360 deg.),fff(velocity)". The wind barb size can be changed)



# Drawings



1 2 3 4 5 6 7 8



9 10 11 12 13 14 15



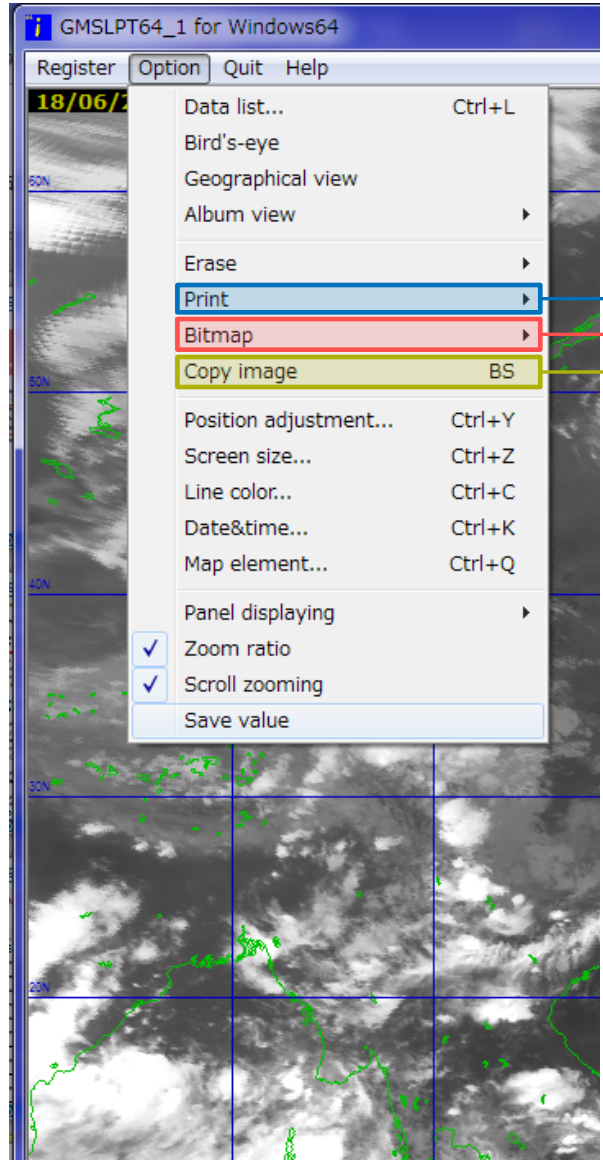
16 17 18 19 20 21

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

12	Waved cloud (Mountain wave)
13	Low-level vortex (Meso $\beta$ -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



# Output images



Print image	Ctrl+P
Print screen	Ctrl+H
Page setup...	Ctrl+U

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

Output bitmap	Ctrl+O
Output serial bitmaps	
Output animated GIF	

- Output bitmap: Output the current image as a bitmap file
- Output serial bitmaps: Output the images as a bitmap file
- Output animated GIF: Output the images as a Gif animation

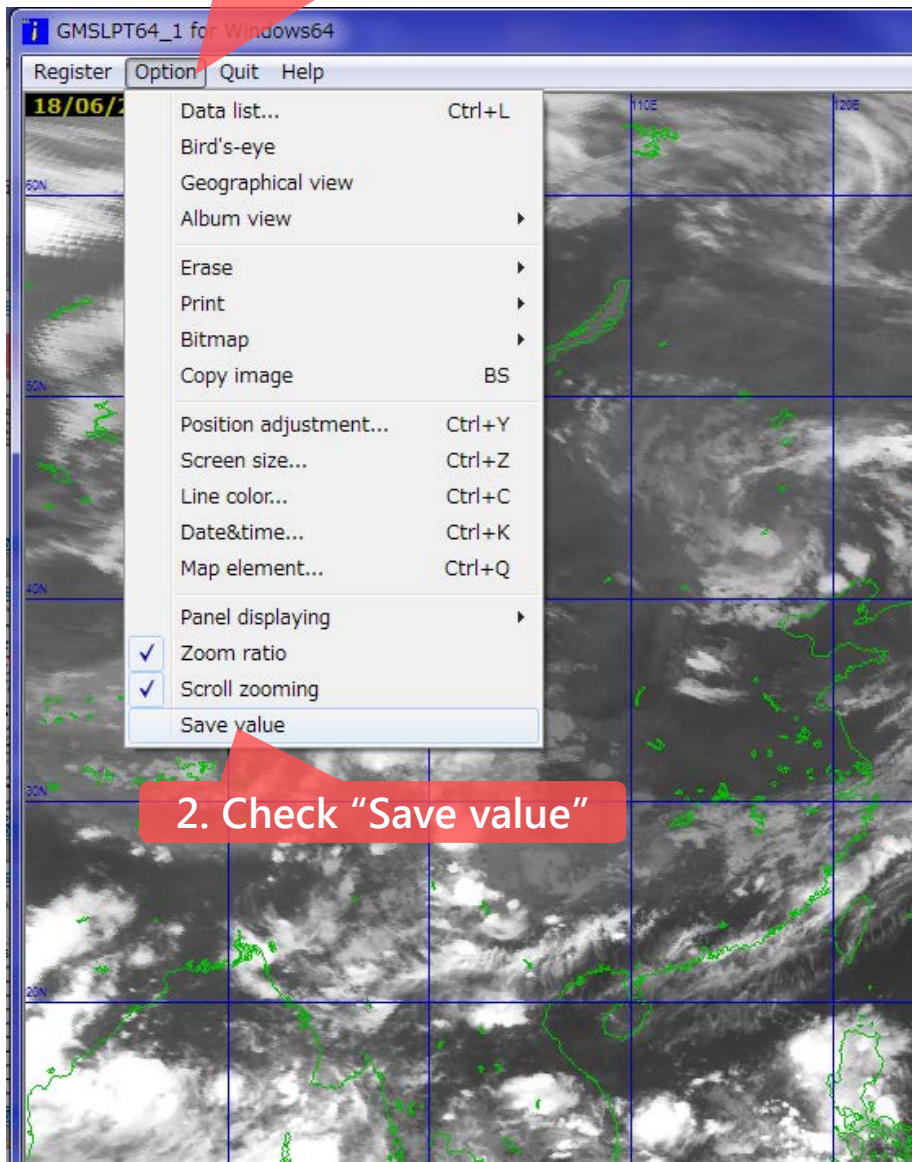
Copy the current image to the clipboard





# Save your settings

1. Select "Option"



2. Check "Save value"

If you check "save value", your various settings will be saved in the initial value file found in the directory same as the program when you terminate the program.

These settings will be used as the initial values at the next startup.

Various settings to be saved include

- Animation speed
- Shows/hides latitude/longitude lines
- Intervals at which latitude/longitude lines are displayed
- Shows/hides coastlines
- Shows/hides drawings
- Screen size
- Line colors
- Grayscales set separately for image types

...etc.