



How to display **R****G****B** imagery by SATAID

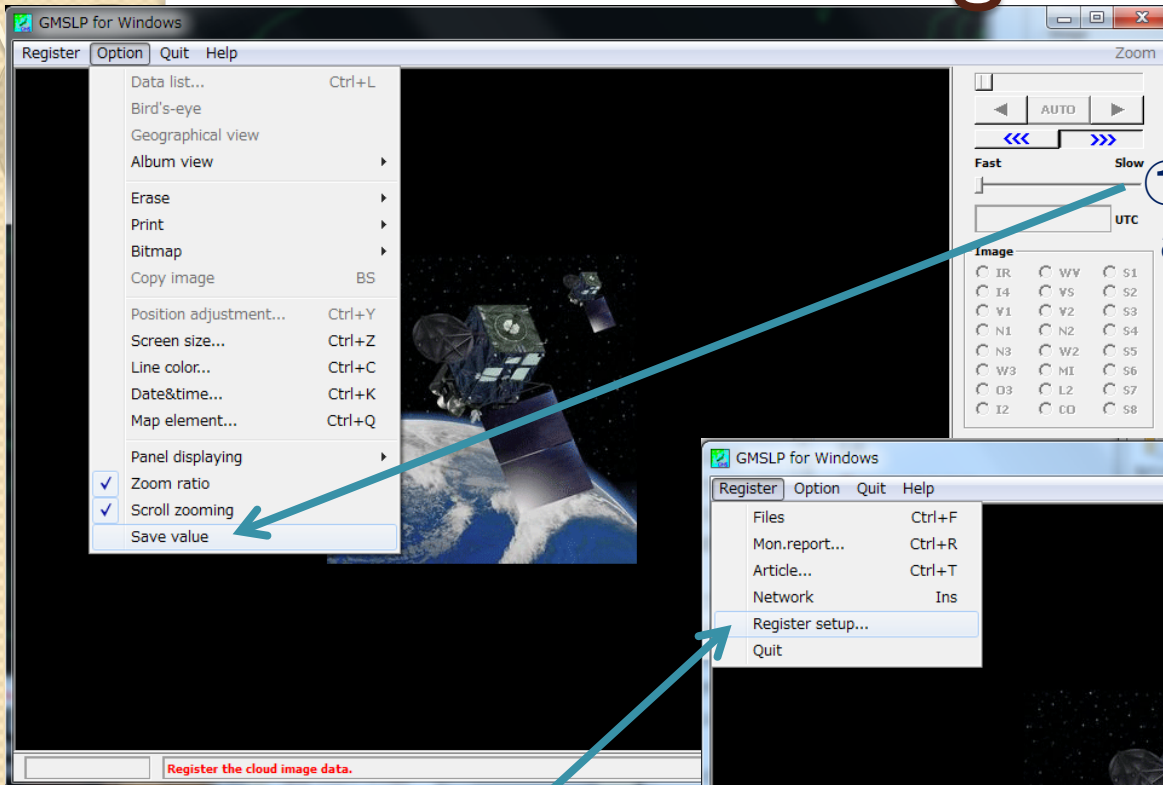
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Ver. 2015110500

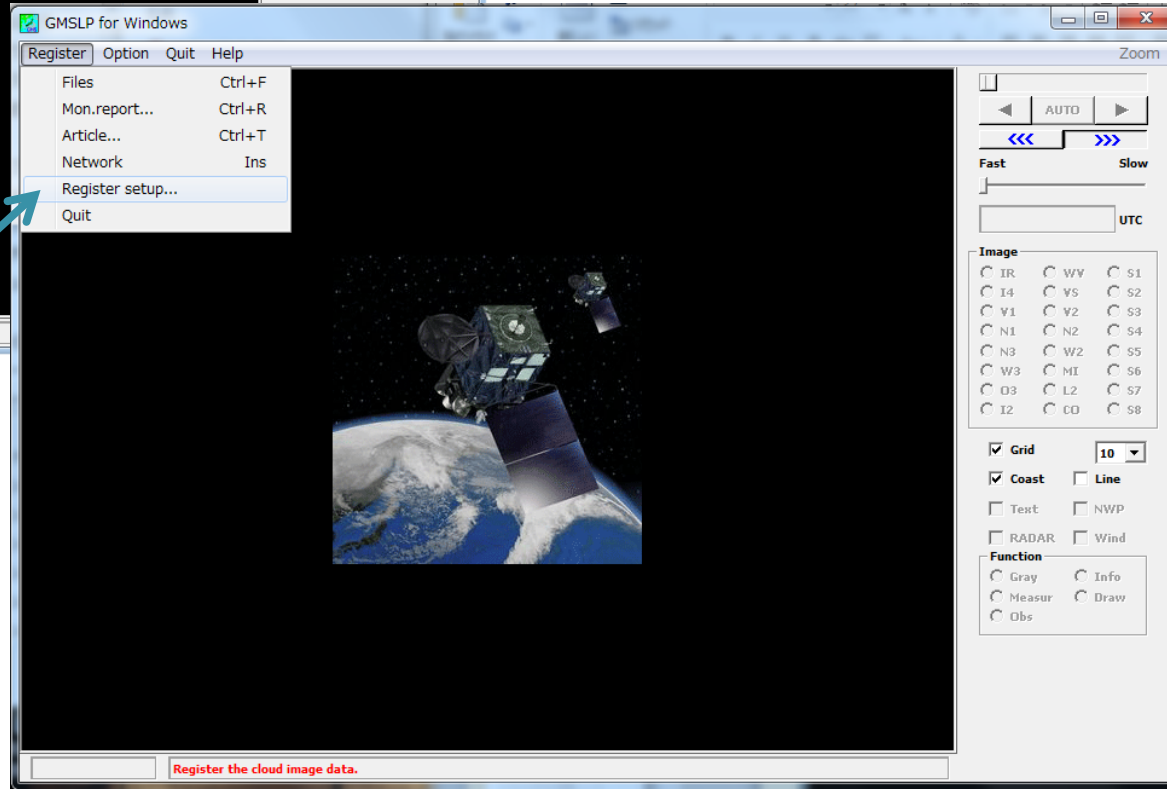
RGB imagery on SATAID

- SATAID software has a function of overlapping colored satellite images.
 - The function including RGB imagery has enhanced in latest version.
- Note that difference images for composite and appropriate configuration settings are required to display RGB imagery on SATAID.

Initial Configuration



① Make sure of the check mark at "Save value" of option.



② Hold down Ctrl key and select "Register setup".

Initial Configuration

Make sure of the check mark at “Diff”.
If no check mark, the difference images don't create by SATAID.

• Settings of difference images(S1 ~ S8)
Settings of upper and lower ranges
(kelvin or albedo)

• Settings of loading images
Settings of upper and lower ranges
Images of respective bands are identified by two-character short-name. (IR, N1, W2 etc.)

After doing above settings, close SATAID once.

Reference: Abbreviations on SATAID(for Himawari-8)

	Short name	Long name	Band number	Wave length	
Band01	V1	VIS1	B01	0.46 μm	“First” visible
Band02	V2	VIS2	B02	0.51 μm	“Second” visible
Band03	VS	VIS3	B03	0.64 μm	“Third” and “traditional” visible
Band04	N1	NIR1	B04	0.86 μm	“First” near infrared
Band05	N2	NIR2	B05	1.6 μm	“Second” near infrared
Band06	N3	NIR3	B06	2.3 μm	“Third” near infrared
Band07	I4	SWIR	B07	3.9 μm	Short wave IR
Band08	WV	WV1	B08	6.2 μm	“First” and “traditional” water vapor
Band09	W2	WV2	B09	6.9 μm	“Second” water vapor
Band10	W3	WV3	B10	7.3 μm	“Third” water vapor
Band11	M1	MWIR	B11	8.6 μm	Medium wave IR
Band12	O3	O3	B12	9.6 μm	Ozone
Band13	IR	LWIR1	B13	10.4 μm	“First” long wave IR or “traditional” IR
Band14	L2	LWIR2	B14	11.2 μm	“Second” long wave IR
Band15	I2	LWIR3	B15	12.4 μm	“Third” long wave IR or “traditional second” IR
Band16	CO	CO2	B16	13.3 μm	CO2

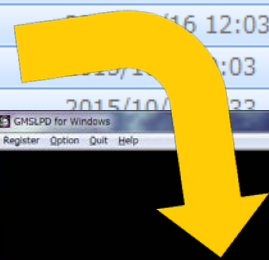
Throw the data into SATAID!

gmslpd_ver300 2015/10/16 19:05

- ini 2015/10/16 19:05
- OBSdat
- SATAID
- EXTMARK6.BMP 2
- EXTMARK7.BMP 2
- EXTMARK8.BMP 2
- Gmslpd.chm 2
- Gmslpd.exe 2
- GMSLPD.INI
- GMSLPD.V

GS151016.Z00	2015/10/16 13:20	Z00 ファイル	9,493 KB
N_ir_20151016.z0000	2015/10/16 9:03	Z0000 ファイル	3,698 KB
N_ir_20151016.z0030	2015/10/16 9:33	Z0030 ファイル	3,707 KB
N_ir_20151016.z0100	2015/10/16 10:03	Z0100 ファイル	3,717 KB
N_ir_20151016.z0130	2015/10/16 10:33	Z0130 ファイル	3,740 KB
N_ir_20151016.z0200	2015/10/16 11:03	Z0200 ファイル	3,770 KB
N_ir_20151016.z0230	2015/10/16 11:33	Z0230 ファイル	3,800 KB
N_ir_20151016.z0300	2015/10/16 12:03	Z0300 ファイル	3,821 KB
N_mi_20151016.z0000	2015/10/16 12:03	Z0000 ファイル	3,659 KB
N_mi_20151016.z0030	2015/10/16 12:03	Z0030 ファイル	3,668 KB
N_mi_20151016.z0100			
N_mi_20151016.z0130			
N_mi_20151016.z0200			
N_mi_20151016.z0230			
N_mi_20151016.z0300			
N_o3_20151016.z0000			
N_o3_20151016.z0030			
N_o3_20151016.z0100			
N_o3_20151016.z0130			
N_o3_20151016.z0200			
N_o3_20151016.z0230			
N_o3_20151016.z0300			
N_o1_20151016.z0000			

Throw all data!



GMSLPD for Windows
Register Option Quit Help

GMSLP DVORAK
for Windows
Copyright (C) 1996 JMA

- gmslpd.
- ini
- OBSdat
- SATAID
- animeG

Register the cloud image data.

GMSLPD for Windows
Register Option Quit Help

GMSLP DVORAK
for Windows
Copyright (C) 1996 JMA

Grid [10] Line
Count []
Text [] Word
Function
Copy [] Info
Measure [] Draw
Erase [] TC

Register the cloud image data.

How to display RGB (Airmass)

- Airmass RGB recipe by EUMETSAT

R : WV(6.2) – WV3(7.3) -25.0 ~ 0.0 [K] Gamma = 1.0

G : O3(9.6) – IR(10.8) -40.0 ~ 5.0 [K] Gamma = 1.0

B : WV(6.2) 243 ~ 208 [K] Gamma = 1.0

Let's try to make Airmass RGB on SATAID!

How to display RGB (Airmass)

- Set up the difference images by “Register setup”.
(In this example, S4 and S6 are assigned to WV-W3 and O3-IR respectively.)

S4 : WV-W3 (B08 - B10)
Upper : 0.0 Lower : -25.0

S6 : O3-IR (B12 - B13)
Upper : 5.0 Lower : -40.0

Setup of register

Strict Confirm
 Ignore Delete
 Name Economy*
 Diff. State
 10 min Dif(m) 1
 Dummy 0 h Reduce NWP
 Term 24 h

S4 8 bits
 Shift F10
1.00 x WV - 1.00 x W3
Upper : 0.00 Lower : -25.00

Ch0 Shift F2 Temp Kelvin
Upper : 321.01 Lower : 225.49 K
Ident : IR Name : IR

NWP1 Upper
Label : RSM&UP Prefix : UP

Setup of register

Strict Confirm
 Ignore Delete
 Name Economy*
 Diff. State
 10 min Dif(m) 1
 Dummy 0 h Reduce NWP
 Term 24 h

S6 8 bits
 Shift F12
1.00 x O3 - 1.00 x IR
Upper : 5.00 Lower : -40.00

Ch0 Shift F2 Temp Kelvin
Upper : 321.01 Lower : 225.49 K
Ident : IR Name : IR

NWP1 Upper
Label : RSM&UP Prefix : UP

How to display RGB (Airmass)

The screenshot shows the GMSLP software interface. The main window displays a satellite image titled "Himawa-8 WV 24/09/2015 23:25UTC". A "Gray scale setting" dialog box is open, showing "Low : -65.15" and "High : -30.15" with "OK", "Cancel", and "Initial" buttons. A red arrow points from the "Initial" button to the "Initial" tab in the "Gray" section of the control panel. The control panel on the right has "WV" selected in the "Image" list and "Gray" selected in the "Function" list. A red arrow points from the "WV" selection to the "WV (Band08)" text on the right. Another red arrow points from the "Gray" selection to the "Select 'Gray'" text on the right. A third red arrow points from the "Initial" tab to the "Initial" text on the right. A fourth red arrow points from the "Initial" button to the "Initial" text on the right. A white text box in the bottom left of the image area contains the following text:

④ Set up as below then press "OK".
Low: 208.00K (-65.15°C)
High: 243.00K (-30.15°C)

At the bottom of the window, a red text box says: "Change the gray scale by controlling brightness and contrast."

① Select "WV (Band08)"

② Select "Gray"

③ Hold down Ctrl key and press "Initial".

How to display RGB (Airmass)

Himawa-8 S4 24/09/2015 20:55UTC

Gray scale setting

Low : -25.00 -C

High : 0.00 -C

OK

Cancel

Initial

Zoom

AUTO

Fast Slow

24/09/2015 20:55 UTC

Image

IR WV S1

I4 V5 S2

V1 V2 S3

N1 N2 S4

N3 W2 S5

W3 MI S6

O3 L2 S7

I2 CO S8

Grid 10

Coast Line

Text NWP

RADAR Wind

Function

Gray Info

Measur Draw

Obs

Gray

Revs Color Initial

Brit

Cntr

Change the gray scale by controlling brightness and contrast.

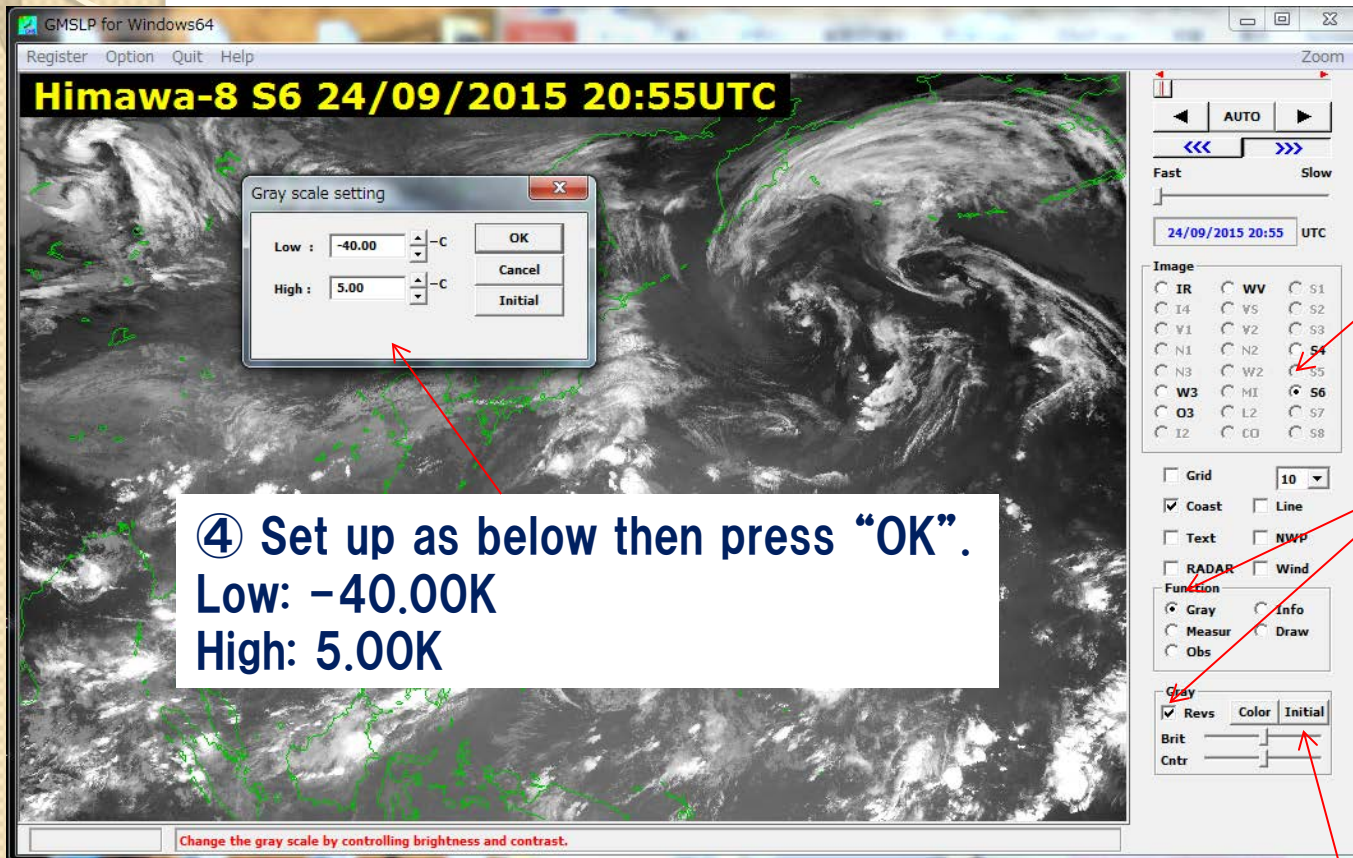
① Select S4

② Select "Gray" and check "Revs"

④ Set up as below then press "OK".
Low: -25.00K
High: 0.00K

③ Hold down Ctrl key and press "Initial".

How to display RGB (Airmass)



① Select S6

② Select "Gray" and check "Revs"

④ Set up as below then press "OK".
Low: -40.00K
High: 5.00K

③ Hold down Ctrl key and press "Initial".

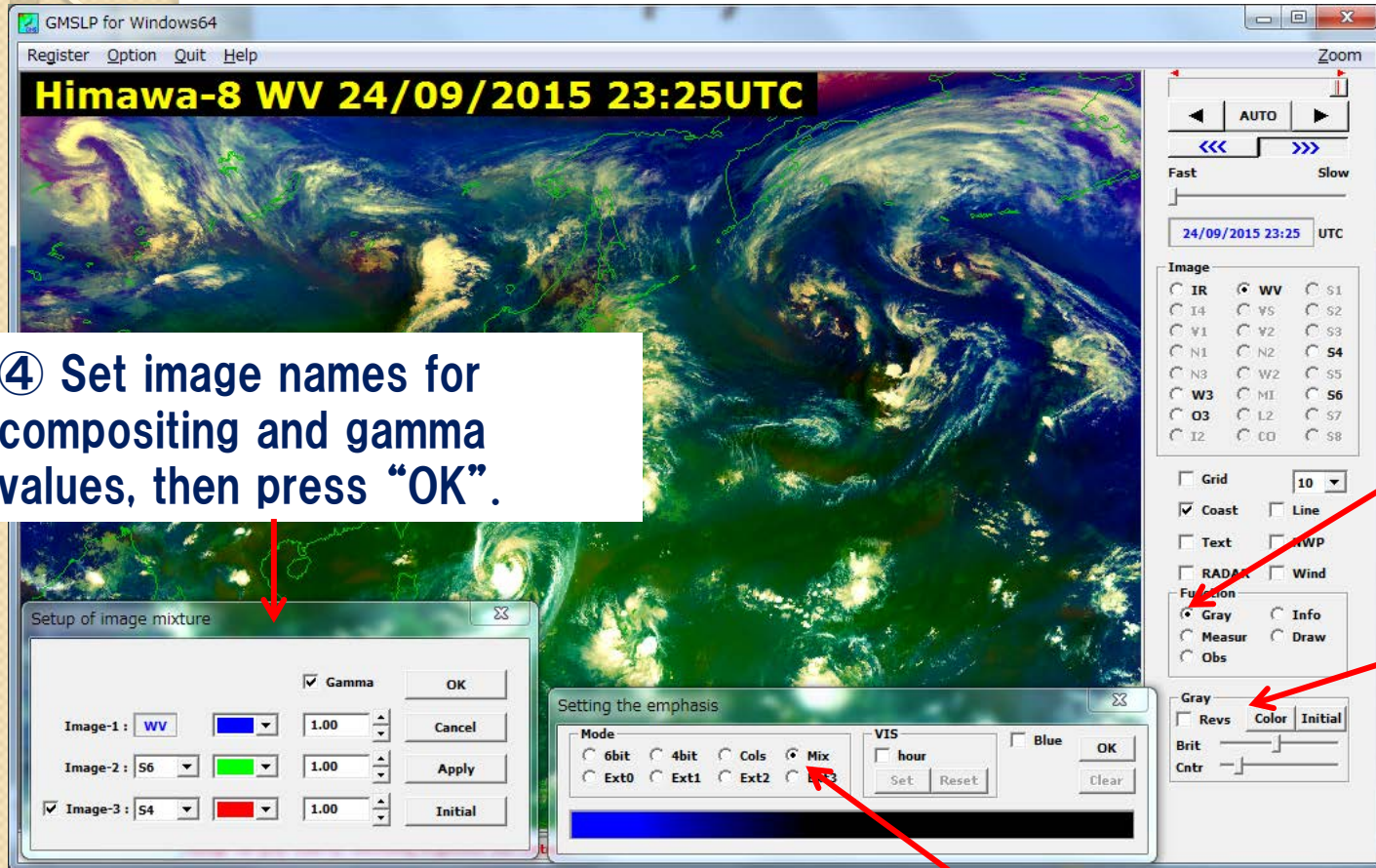
How to display RGBs

④ Set image names for compositing and gamma values, then press “OK”.

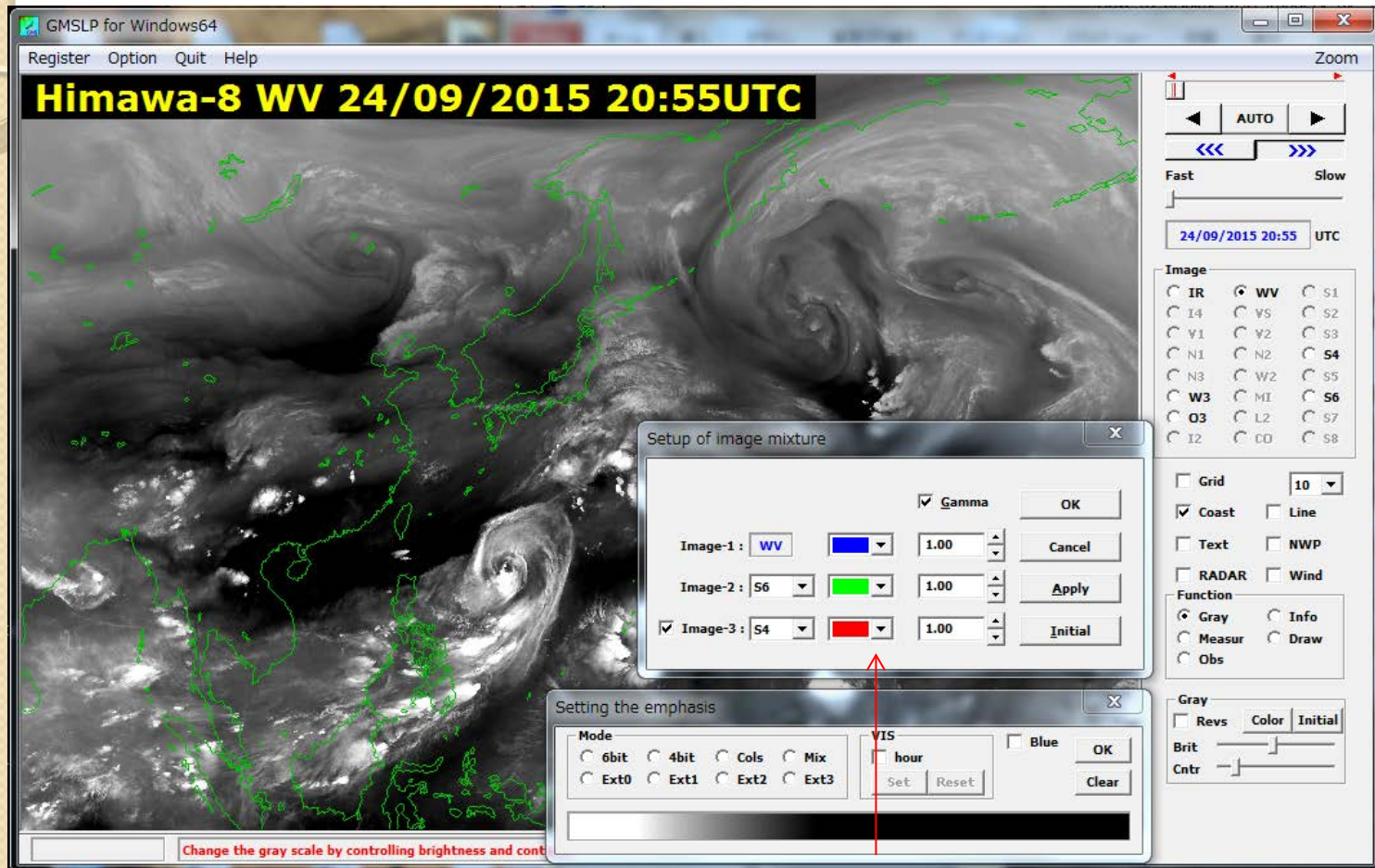
① Select “Gray”.

② Press “Color”.

③ Hold down Ctrl key and select “Mix”.



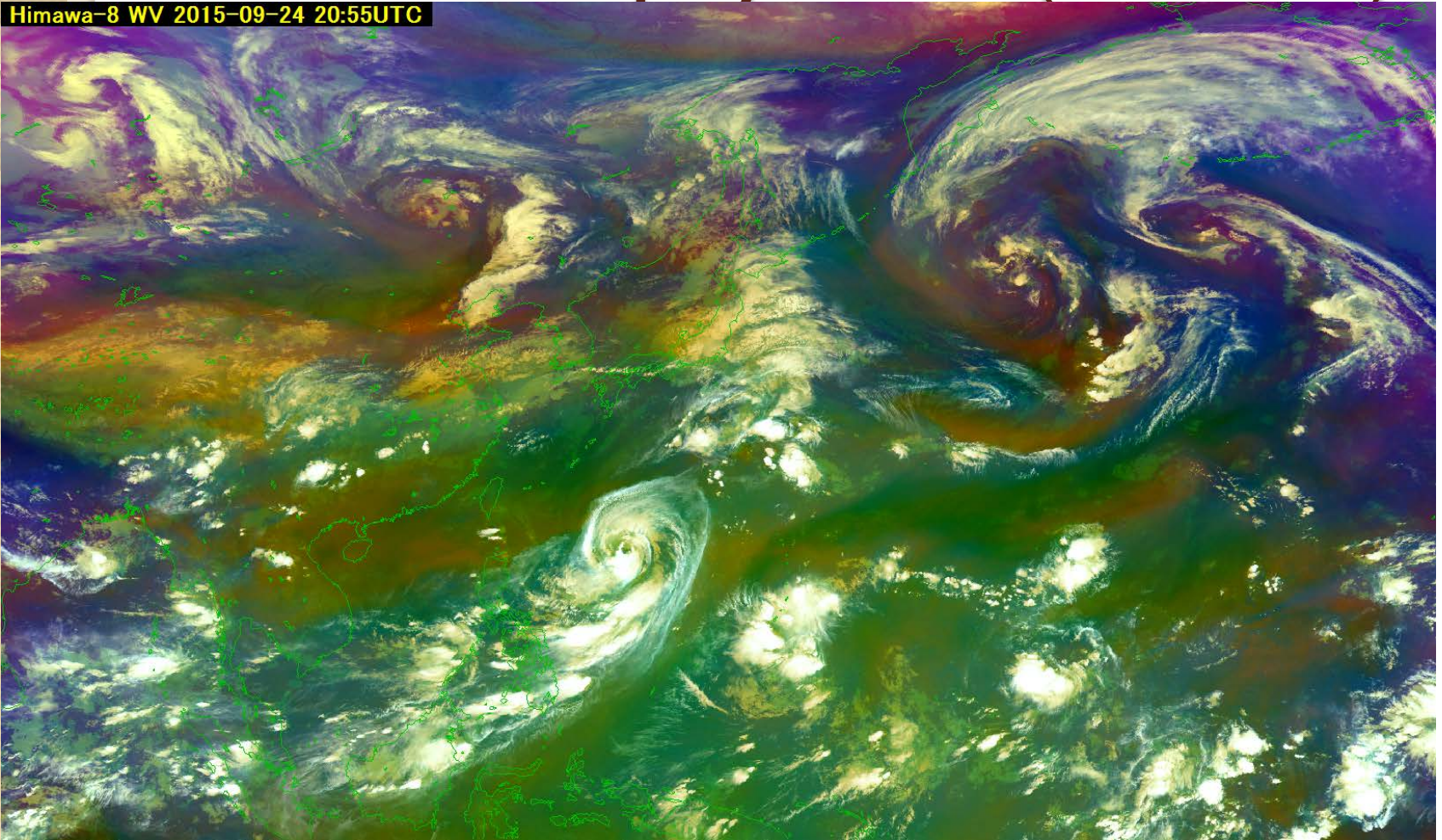
How to display RGB (Airmass)



Overlap images
S4 as red, S6 as green and WV as blue
All gamma values: 1.0

How to display RGB (Airmass)

Himawa-8 WV 2015-09-24 20:55UTC



**Airmass image by SATAID!
Are you OK?**

Reference: Interpretation of Colors for “Airmass”

Thick,
high-level clouds

Thick,
mid-level clouds

Thick,
low-level clouds
(low latitude)

Thick,
low-level clouds
(high latitude)

JET

Cold Airmass

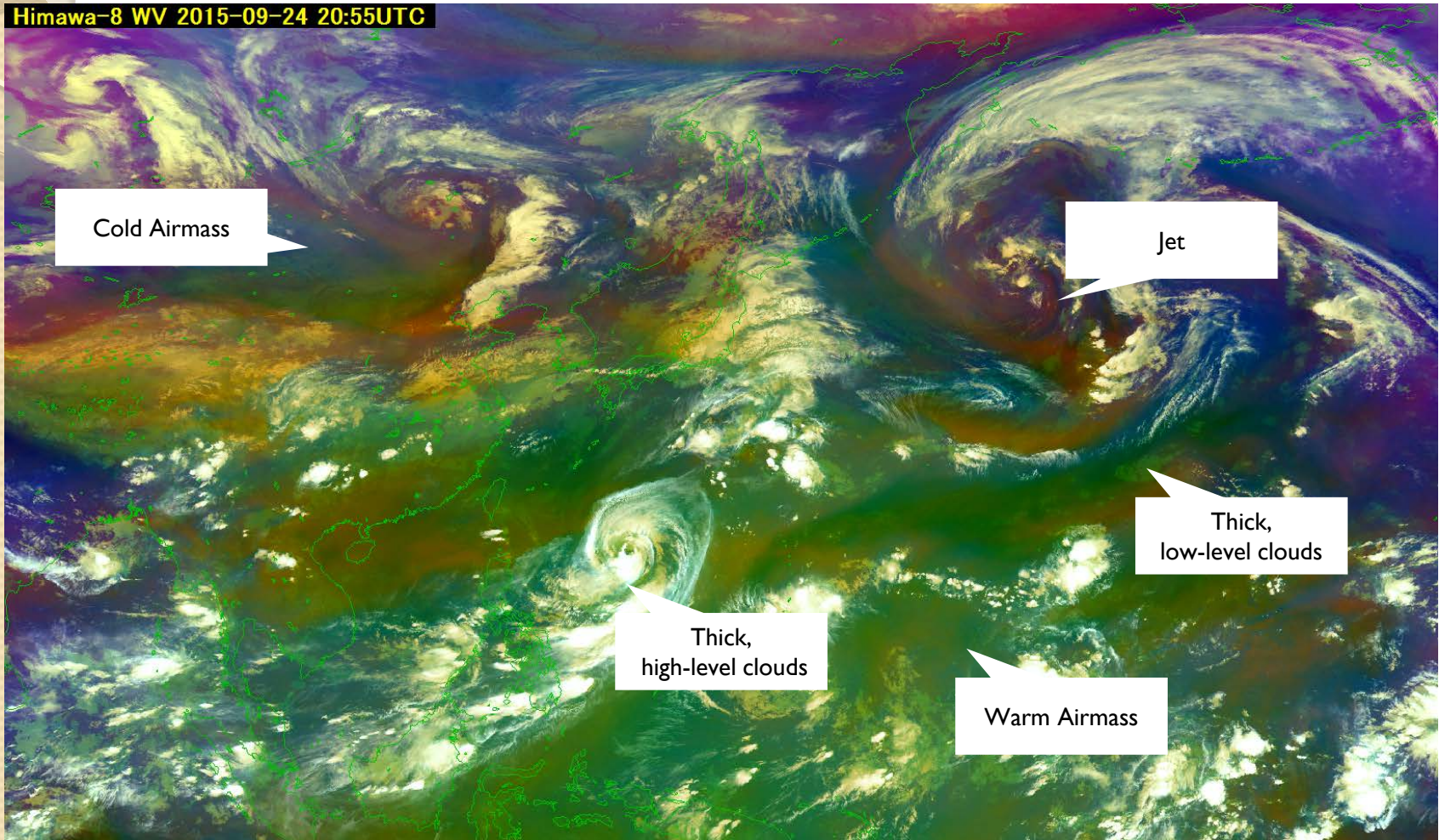
Warm Airmass
(High humidity
at upper tropopause)

Warm Airmass
(low humidity
at upper tropopause)

Example of interpretation

For details, MSC/JMA VLab support site: Himawari RGB Training Library
http://www.data.jma.go.jp/mscweb/en/VRL/VLab_RGB/RGBImage.html

Himawa-8 WV 2015-09-24 20:55UTC



Thick, high-level clouds	Thick, mid-level clouds	Thick, low-level clouds (low latitude)	Thick, low-level clouds (high latitude)
JET	Cold Airmass	Warm Airmass (High humidity at upper tropopause)	Warm Airmass (low humidity at upper tropopause)

How to display RGB (Dust)

- Dust RGB recipe by EUMETSAT

R : $I2(12.0) - IR(10.8)$ -4.0 ~ 2.0 [K] Gamma = 1.0

G : $IR(10.8) - MI(8.6)$ 0.0 ~ 15.0 [K] Gamma = 2.5

B : $IR(10.8)$ 261 ~ 289 [K] Gamma = 1.0

Let's try to make Dust RGB on SATAID!

How to display RGB (Dust)

- Set up the difference images by “Register setup”.
(In this example, S1 and S5 are assigned to IR-I2 and IR-MI respectively.)

S1 : IR-I2 (B15 - B13)
Upper : 2.0 Lower : -4.0

Setup of register

Strict Confirm Ignore Delete Economy* State

OK Cancel Initial

10 min Dif(m) 1

Dummy 0 h Reduce NWP

Term 24 h

S1 Shift F7 8 bits

1.00 x IR - 1.00 x I2

Upper : 4.00 Lower : -2.00

Ch0 Shift F2 Temp Kelvin

Upper : 289.33 Lower : 260.94 K

Ident : IR Name : IR

NWP1 Upper

Label : RSM&UP Prefix : UP

S5 : IR-MI (B13 - B11)
Upper : 15.0 Lower : 0.0

Setup of register

Strict Confirm Ignore Delete Economy* State

OK Cancel Initial

10 min Dif(m) 1

Dummy 0 h Reduce NWP

Term 24 h

S5 Shift F11 8 bits

1.00 x IR - 1.00 x MI

Upper : 15.00 Lower : 0.00

Ch0 Shift F2 Temp Kelvin

Upper : 289.33 Lower : 260.94 K

Ident : IR Name : IR

NWP1 Upper

Label : RSM&UP Prefix : UP

How to display RGB (Dust)

Himawa-8 IR 24/09/2015 21UTC

Gray scale setting

Low : -12.15 C

High : 15.85 C

OK

Cancel

Initial

④ Set up as below then press "OK".
Low: 261.00K (-12.15°C)
High: 289.00K (15.85°C)

Change the gray scale by controlling brightness and contrast.

① Select "IR" (Band13)
"L2" (Band14) is also OK

② Select "Gray"
and check "Revs"

③ Hold down Ctrl key
and press "Initial".

How to display RGB (Dust)

① Select "S1"

② Select "Gray"

③ Hold down Ctrl key and press "Initial".

Himawa-8 SP 24/09/2015 21UTC

Gray scale setting

Low : -2.00 -C

High : 4.00 -C

OK

Cancel

Initial

④ Set up as below then press "OK".
Low: -2.00K
High: 4.00K

Change the gray scale by controlling brightness and contrast.

Zoom

AUTO

Fast Slow

24/09/2015 20:55 UTC

Image

IR WV S1

I4 V5 S2

V1 V2 S3

N1 N2 S4

N3 W2 S5

W3 MI S6

O3 L2 S7

I2 EO S8

Grid 10

Coast Line

Text NWP

RADAR Wind

Function

Gray Info

Measur Draw

Obs

Gray

Revs Color Initial

Brit

Cntr

How to display RGB (Dust)

① Select "S5"

② Select "Gray" and check "Revs"

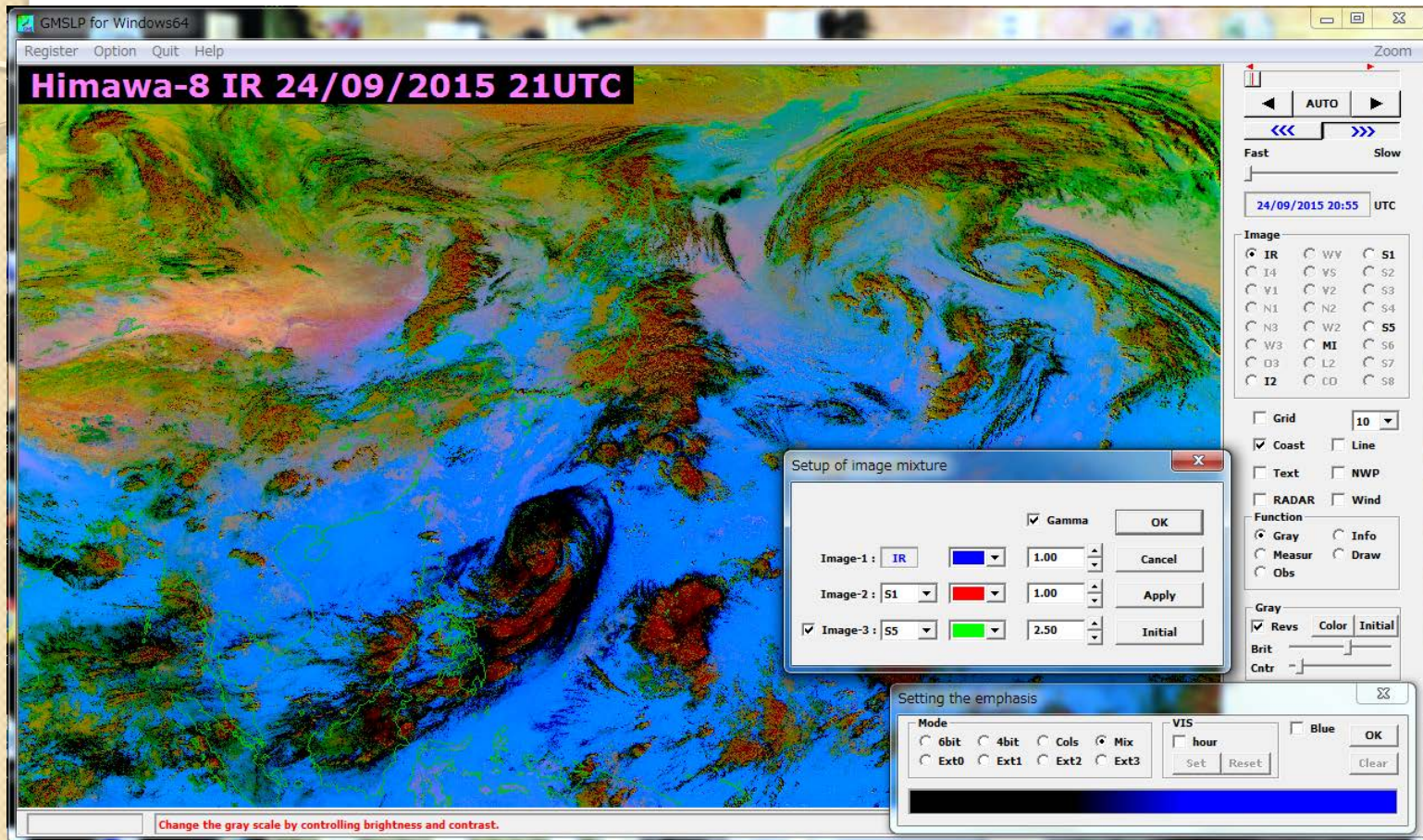
③ Hold down Ctrl key and select "Initial".

The screenshot shows the GMSLP for Windows64 interface. The main window displays a satellite image titled "Himawa-8 S5 24/09/2015 21UTC". A "Gray scale setting" dialog box is open, showing "Low : 0.00" and "High : 15.00". The "Revs" checkbox is checked, and the "Initial" button is highlighted. The control panel on the right shows the "Image" section with "S5" selected and "Gray" checked. The "Function" section has "Revs" checked and "Initial" selected. A red arrow points from the "Initial" button in the dialog box to the "Initial" button in the control panel.

④ Set up as below then press "OK".
Low: 0.00K
High: 15.00K

Change the gray scale by controlling brightness and contrast.

How to display RGB (Dust)

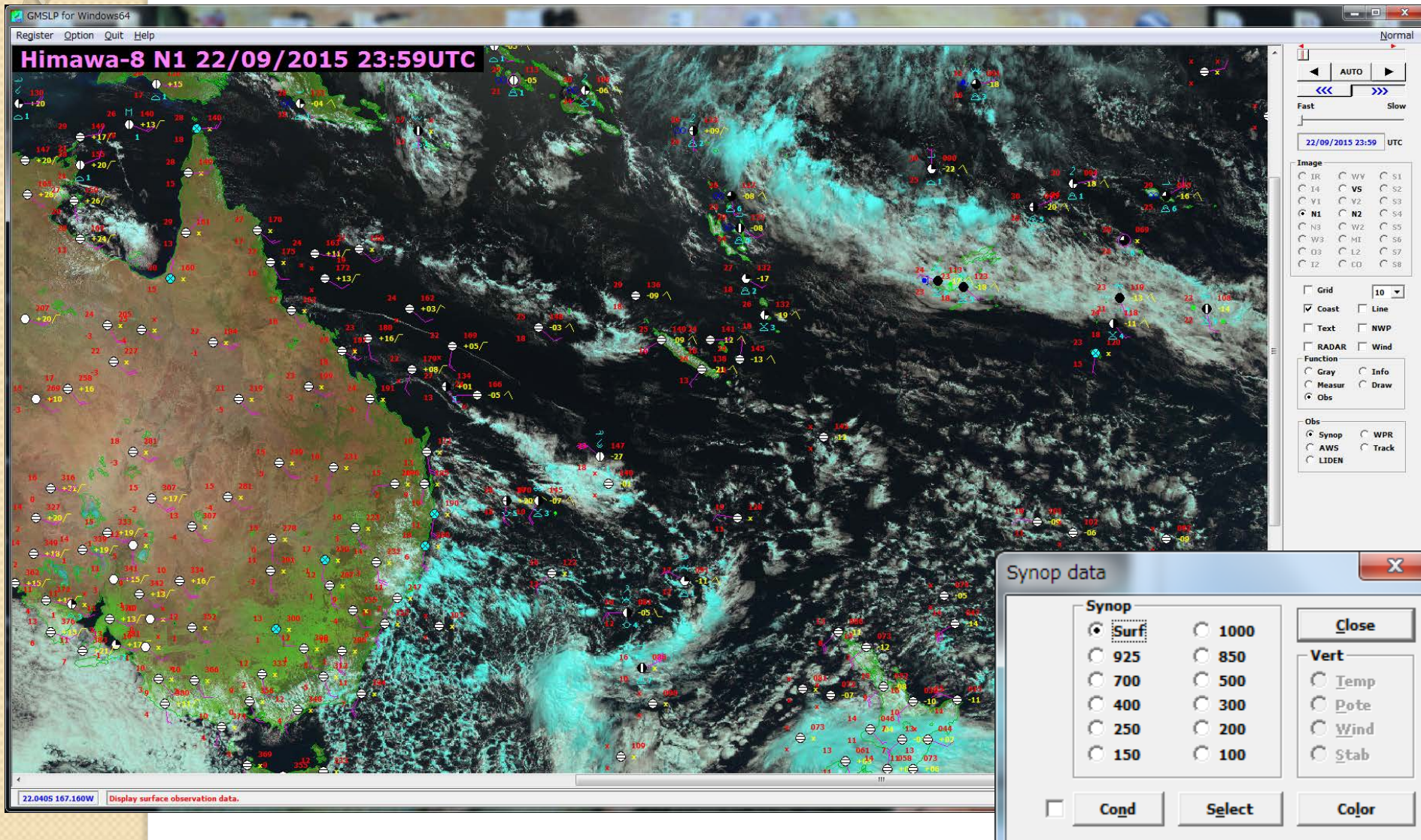


Overlap images

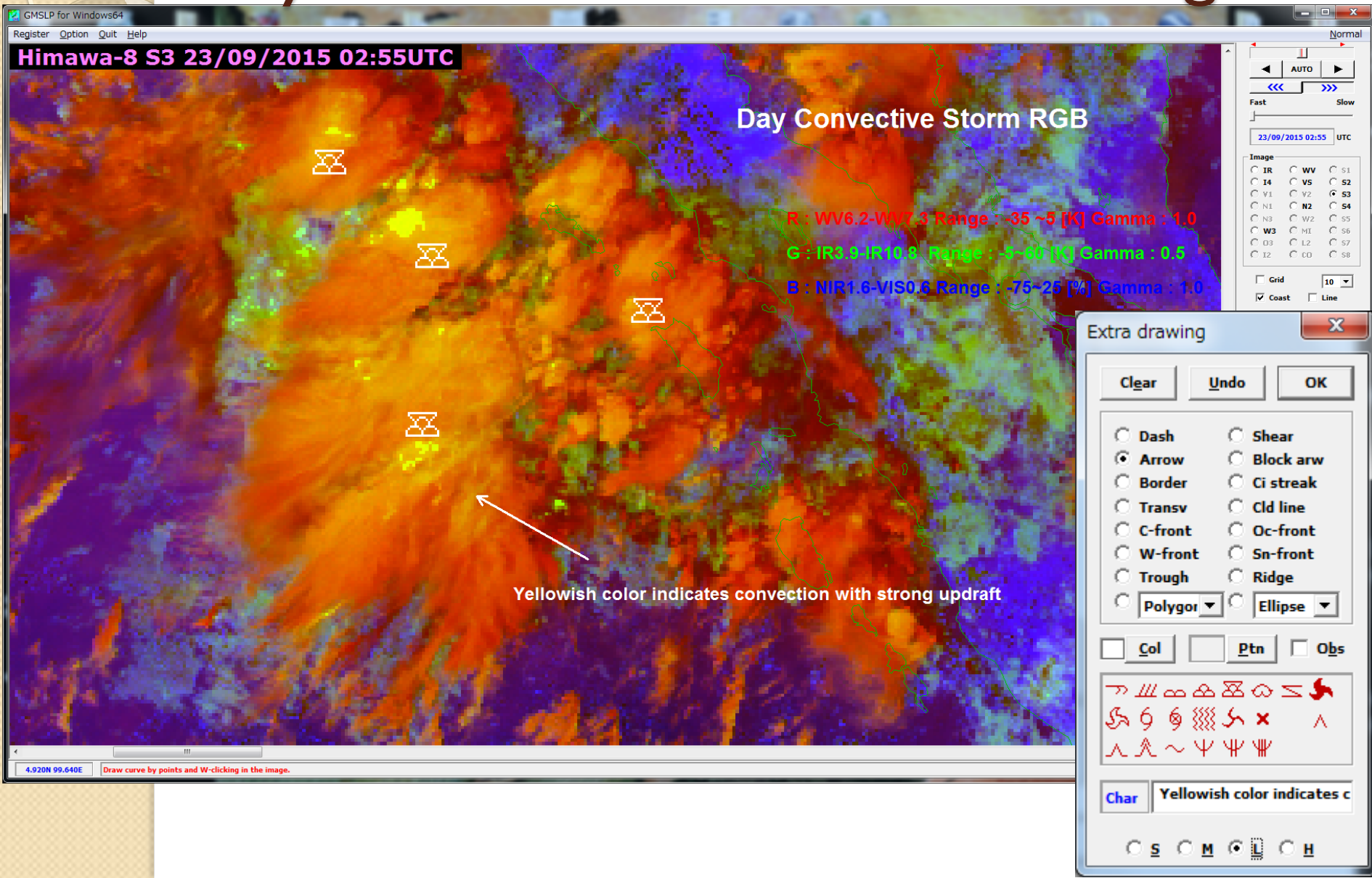
S1 as red, S5 as green and IR as blue

Gamma values for red and blue: 1.0, green:2.5

Display example : Natural colors + SYNOP



Display example : Day convective storms + drawing



Reference:

How to create animated GIF by SATAID

Sample gif anime >>



The screenshot shows the GMSLP for Windows64 application window. The main display area shows a satellite map of a region with a large storm system. The 'Option' menu is open, and the 'Bitmap' submenu is also open, with 'Output animated GIF' selected. The interface includes a menu bar (Register, Option, Quit, Help), a toolbar with navigation and zoom controls, and a right-hand panel with various settings like 'Image' (IR, WV, S1, etc.), 'Grid', 'Coast', 'Text', 'RADAR', 'Wind', 'Function' (Gray, Info, Measur, Draw, Obs), and 'Gray' (Revs, Color, Initial, Brit, Cntr).

Select “Option”→”Bitmap”→”Output animated GIF”, then save the gif format file.
Note that the video quality is not high.

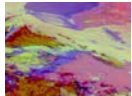
Change the gray scale by controlling brightness and contrast.



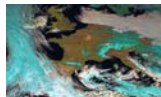
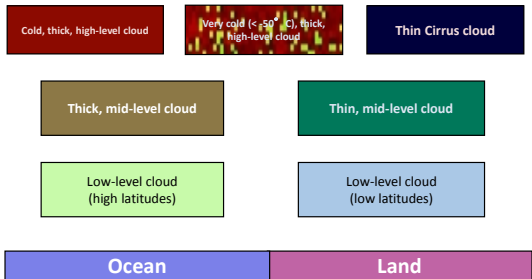
All you can do is practice!

Thank you!

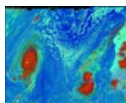
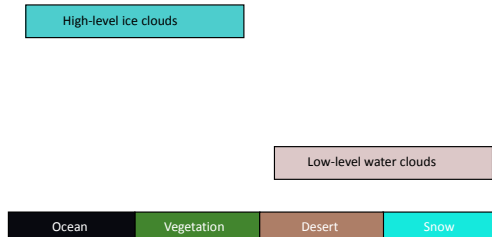
RGB color interpretations



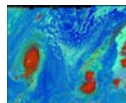
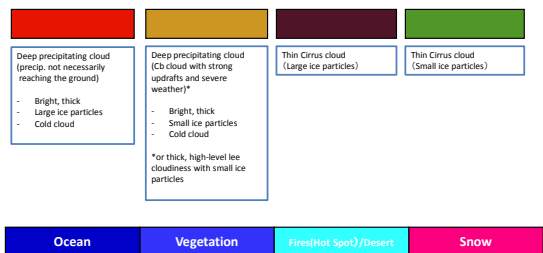
Night Microphysics



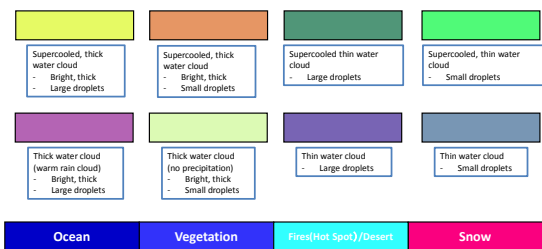
Natural Colors



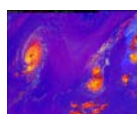
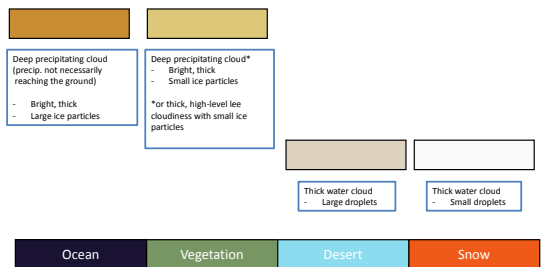
Day Microphysics #1



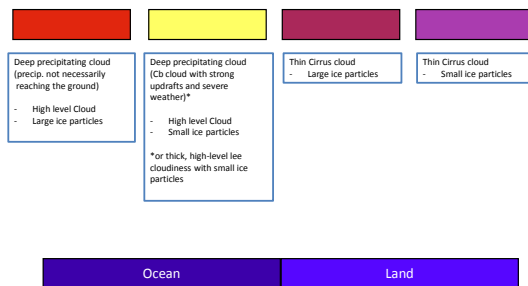
Day Microphysics #2



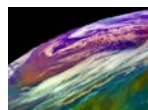
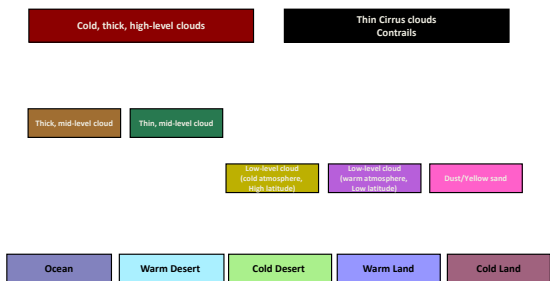
Day Snow-Fog



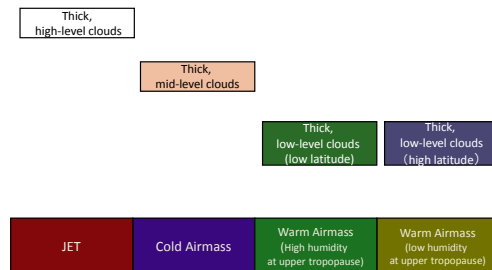
Day Convective Storms (Day Convection)



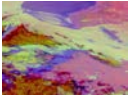
Dust



Airmass

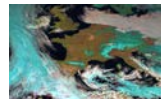


RGB recipes (EUMETSAT recipes)



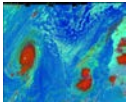
Night Microphysics

R : IR12.0 – IR10.8 (default S1 on SATAID)
Range : -4~2 [K] Gamma : 1.0
G : IR10.8 – IR3.9 (default S2 on SATAID)
Range : 0~10[K] Gamma : 1.0
B : IR10.8 (reverse on SATAID)
Range : 243~293[K] Gamma : 1.0



Natural Colors

R : NIR1.6
Range : 0~100 [%] Gamma : 1.0
G : VIS0.8
Range : 0~100 [%] Gamma : 1.0
B : VIS0.6
Range : 0~100 [%] Gamma : 1.0



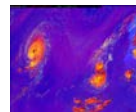
Day Microphysics

R : VIS0.8
Range : 0~100 [%] Gamma : 1.0
G : IR3.9 Solar reflectance component (reverse on SATAID)
Range : 0~60[%] Gamma : 2.5 (summer)
Range : 0~25[%] Gamma : 1.5 (winter)
B : IR10.8 (reverse on SATAID)
Range : 203~323[K] Gamma : 1.0



Day Snow-Fog

R : VIS0.8
Range : 0~100 [%] Gamma : 1.7
G : NIR1.6
Range : 0~70 [%] Gamma : 1.7
B : IR3.9 Solar reflectance component (reverse on SATAID)
Range : 0~30 [%] Gamma : 1.7



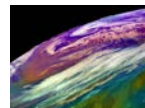
Day Convective Storms
(Day Convection)

R : WV6.2-WV7.3
Range : -35~5 [K] Gamma : 1.0
G : IR3.9-IR10.8 (reverse on SATAID)
Range : -5~60 [K] Gamma : 0.5
B : NIR1.6-VIS0.6 (reverse on SATAID)
Range : -75~25 [%] Gamma : 1.0



Dust

R : IR12.0-IR10.8 (default S1 on SATAID)
Range : -4~2 [K] Gamma : 1.0
G : IR10.8-IR8.7 (reverse on SATAID)
Range : 0~15 [K] Gamma : 2.5
B : IR10.8 (reverse on SATAID)
Range : 261~289 [K] Gamma : 1.0



Airmass

R : WV6.2-WV7.3 (reverse on SATAID)
Range : -25~0 [K] Gamma : 1.0
G : IR9.7-IR10.8 (reverse on SATAID)
Range : -40~5 [K] Gamma : 1.0
B : WV6.2
Range : 243~208 [K] Gamma : 1.0

List of multi-spectral bands

Channel	Himawari-8/ -9	MTSAT-1R/-2	MSG	Physical Properties	
1	0.46 μm /B01/V1			vegetation, aerosol B	Visible
2	0.51 μm /B02/V2			vegetation, aerosol G	
3	0.64 μm /B03/VS	0.68 μm	0.635 μm	low cloud, fog R	
4	0.86 μm /B04/N1		0.81 μm	vegetation, aerosol	Near Infrared
5	1.6 μm /B05/N2		1.64 μm	cloud phase	
6	2.3 μm /B06/N3			particle size	
7	3.9 μm /B07/I4	3.7 μm	3.92 μm	low cloud, fog, forest fire	Infrared
8	6.2 μm /B08/WV	6.8 μm	6.25 μm	mid- and upper level moisture	
9	6.9 μm /B09/W1			mid- level moisture	
10	7.3 μm /B10/W3		7.35 μm	mid- and upper level moisture	
11	8.6 μm /B11/MI		8.70 μm	cloud phase, SO ₂	
12	9.6 μm /B12/O3		9.66 μm	ozone content	
13	10.4 μm /B13/IR	10.8 μm	10.8 μm	cloud imagery, information of cloud top	
14	11.2 μm /B14/L2			cloud imagery, sea surface temperature	
15	12.4 μm /B15/I2	12.0 μm	12.0 μm	cloud imagery, sea surface temperature	
16	13.3 μm /B16/CO		13.4 μm	cloud top height	

Note: List of Himawari-8/ -9 indicates central wavelengths/ band number/ short name on SATAID