

Format Conversion Tool
Operation Manual for Users

Ver. 7.0
07/09/2024

Changes and status paragraphs

Revision	Date	Modified or added paragraphs	Reason for change
1.0	10/03/2016	Creation	-
1.1	18/03/2016	6.3	Wrote KMZ output file format specification.
1.2	14/06/2016	2,4.5	Wrote the output conditions of the KMZ.
2.0	26/11/2016	2	Wrote the Binary Format of GPM product, which is available to convert into other formats. Wrote the GCOM-W product. It is available to convert into NetCDF format. Condition to convert was changed.
2.0	26/11/2016	4.2	Wrote the manual about colorbar setting screen.
2.0	26/11/2016	4.5	Wrote the button to set colorbar.
2.0	26/11/2016	4.6	Wrote the explanation about colorbar setting screen.
2.0	26/11/2016	6.1	Wrote NetCDF format which is outputted.
2.0	26/11/2016	6.3.2	Wrote the output setting parameters.
2.0	26/11/2016	8.1.1	Wrote “GSMaP Daily Rainfall in 0.25、0.1-deg(Binary)” to GPM product.
2.0	26/11/2016	8.2	Wrote colorbar.
2.0	26/11/2016	-	Moved Section 8.1 to Appendix A.
2.0	26/11/2016	-	Moved Section 8.2 to Appendix B.
3.0	20/6/2017	4.5 Figure.5	Wrote “DPR Daily L3” KuNS product which is outputted.
3.0	20/6/2017	4.1	Changed the version of the tool.
3.0	20/6/2017	4.2, 4.3	Corrected of errors. 「Run」 was changed to 「Exec」.
3.1	21/7/2017	4.1	Changed the version of the tool.
3.1	21/7/2017	-	We have released the data format conversion tool v3.1 to solve a bug of memory leak in trying GSmAP binary data conversion.
3.1	21/7/2017	Appendix B 1.1.4	Corrected of errors. 「GSMaP Monthly L3」 was changed to 「DPR Monthly L3」
3.2	29/7/2019	6.3.3	Fixed the linked URL
3.3	24/9/2019	5.1, 5.2	Fixed the linked URL
4.0	12/3/2020	1	Added AQUA product and NetCDF format to description.
4.0	12/3/2020	2	Aqua products added to target products.
4.0	12/3/2020	4.1	Changed the version of the tool.
4.0	12/3/2020	4.1,4.2,4.3,4.5	Added a modified screen with the addition of Aqua products.
4.0	12/3/2020	5.1,5.2	Modify the link destination with the addition of Aqua products.
4.0	12/3/2020	6.1	Modify the output file with the addition of

			Aqua products.
4.0	12/3/2020	6.2,6.3	With the addition of Aqua products, modify GeoTIFF output specifications and KMZ output specifications.
4.0	12/3/2020	7.1,7.2	With the addition of Aqua products, modify the use cases in the image viewer and GIS software.
5.0	29/3/2021	1	Added GCOM-C products as tools.
5.0	29/3/2021	Table 1	Added GCOM-C products to the list of products to be converted.
5.0	29/3/2021	3	Removed Windows 8 from supported OS.
5.0	29/3/2021	4.1	Change the version of the tool. v4.0→v5.0
5.0	29/3/2021	4.2⑥	Added a note about the output of GCOM-C products.
5.0	29/3/2021	5.1	Added the source of input files for GCOM-C products.
5.0	29/3/2021	5.2	Added the link destination of the input file format of GCOM-C products.
5.0	29/3/2021	6.1	Added the output file name of GCOM-C product.
5.0	29/3/2021	6.2.1 Table 12	Added the output specifications of the header part of GCOM-C products.
5.0	29/3/2021	6.2.2	Added the output specifications of the data part of GCOM-C products.
5.0	29/3/2021	7	Added use cases for GCOM-C products.
6.0	28/10/2021	4.1	Change the version of the tool due to the version upgrade (V7) of the GPM / DPR product. v5.0→v6.0
7.0	27/09/2024	3	Added Windows 11 to the list of supported operating systems.
7.0	27/09/2024	4.1	Changed the tool version to support Windows 11. V6.0→v7.0

1. Introduction	1
2. Conversion target products	2
3. Supported operating systems (OSs)	2
4. Operation description	3
4.1 Basic procedures of the Format Conversion Tool	3
4.2 Format conversion process (basic)	5
4.3 Main screen	9
4.4 Folder selection screen.....	10
4.5 Options screen	11
4.6 Colorbar setting screen.....	16
4.7 Help screen	17
5. Input file.....	18
5.1 List of URL to get input files	18
5.2 List of URL written about input file format.....	18
6. Output file	18
6.1 Output file name	18
6.2 GeoTIFF Output Specification	19
6.2.1 GeoTIFF header part output specification	19
6.2.2 GeoTIFF data part output specification	24
6.3 KMZ output specification	24
6.3.1 KML output specification.....	24
6.3.2 TIFF Output specification	25
6.4 NetCDF Output specification	26
7. Examples of using Format Conversion Tool	27
7.1 Use by GIS Software.....	27
7.2 Use by GIS Software.....	28

1. Introduction

This documentation explains how to use Format Conversion Tool.

Format Conversion Tool is used to convert Binary Format data such as HDF5/HDF4 to GeoTIFF format data and KMZ format data and NetCDF format data.

HDF Format is used for many JAXA's satellite products such as GPM, GCOM-W, AQUA, JASMES, GCOM-C.

HDF format is also used for satellite data. Because multidimensional arrays and database-like tables can be nested in HDF file. It is useful to handle data.

However, it is needed to install some softwares or libraries for reading HDF product, so it is too hard for the general user to use HDF product (Fig. 1).

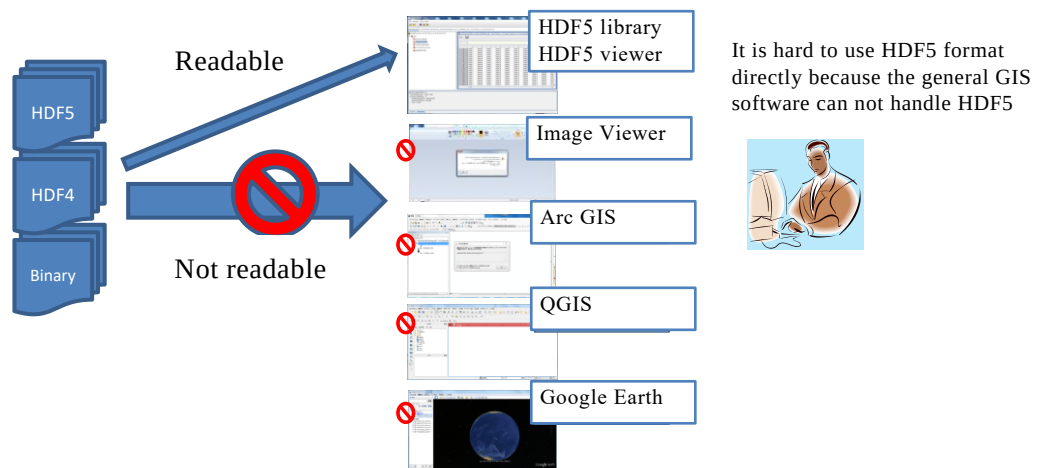


Fig. 1 HDF Data Handling without Format Conversion

User get to use GPM products in GeoTIFF or KMZ or NetCDF to view, edit or analyze the GIS information by using GIS software such as ArcGIS, QGIS, Google Earth and Image Viewers. If user use Format Conversion tool, GPM Data can be used more fields (Fig. 2).

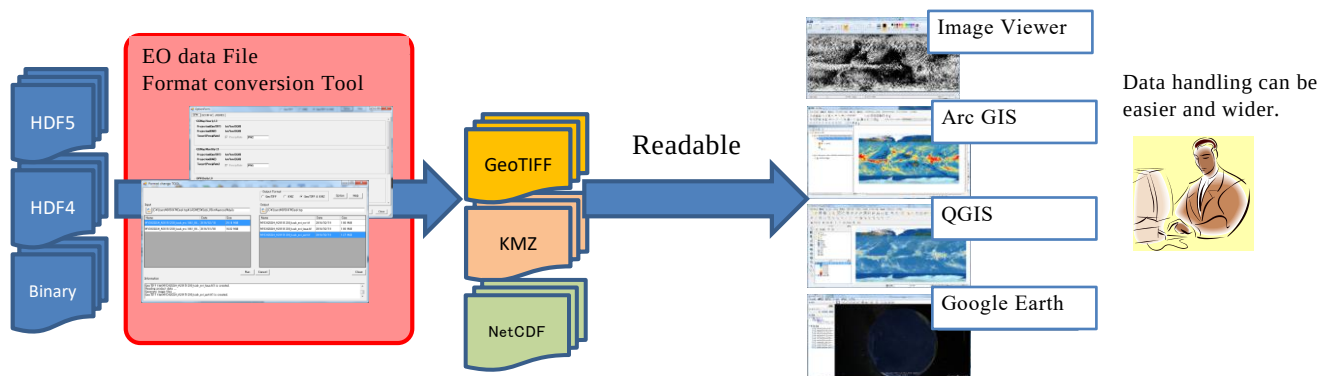


Fig. 2 Expanding Data Utilization after Format Conversion

2. Conversion target products

The conversion target products are listed in Table 1.

Table 1 List of conversion target products

Target products *1	Input format	Output format
GPM products	HDF5 Binary	GeoTIFF
		KMZ
GCOM-W products	HDF5	GeoTIFF
		TIFF + TEXT *2
		KMZ
		NetCDF
JASMES products	HDF4 Binary	GeoTIFF
		KMZ
AQUA products	HDF5	GeoTIFF
		TIFF + TEXT *2
		KMZ
		NetCDF
GCOM-C products	HDF5	GeoTIFF

*1 The details of conversion target products are written in appendix A.

*2 It is available only L1 and L2 product.

3. Supported operating systems (OSs)

The OSs supported by the Format Conversion Tool are listed below.

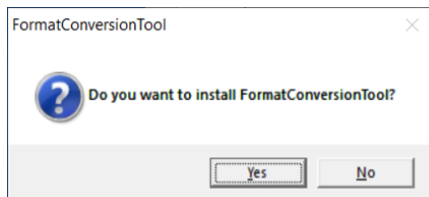
- Windows 11, Windows 10

4. Operation description

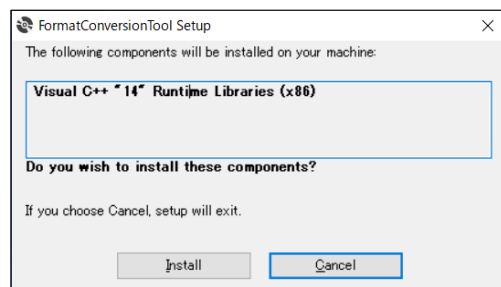
The basic procedures of the Format Conversion Tool are listed in “4.1,” quick explanation of Format conversion process(basic) are listed in “4.2” and detailed explanations of each screen are listed in “4.3–4.6.”

4.1 Basic procedures of the Format Conversion Tool

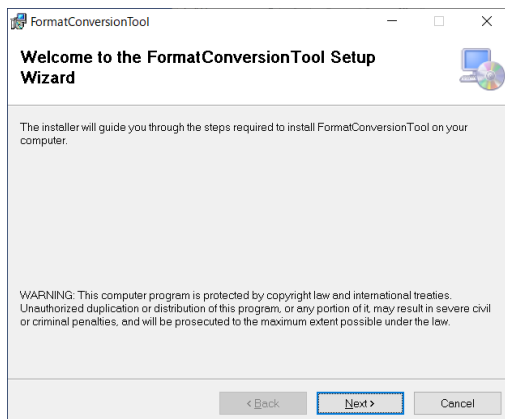
- ① Execute FormatConversionTool_Setup v7.0.exe
- ② Click “Yes” button on the following page.



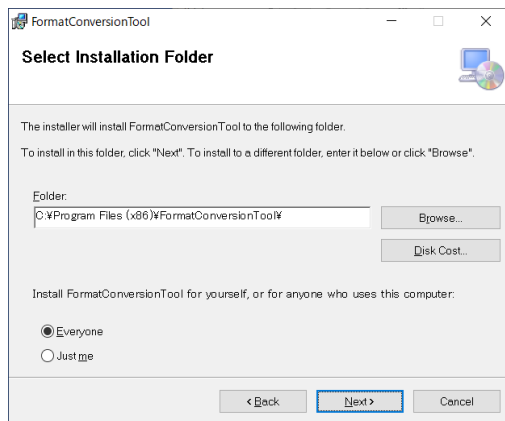
- ③ If .NET Framework, Visual C++ 14 Runtime Libraries(v142) is not installed, the following dialog is displayed. Click the "Install" button. You may need to restart after installation.



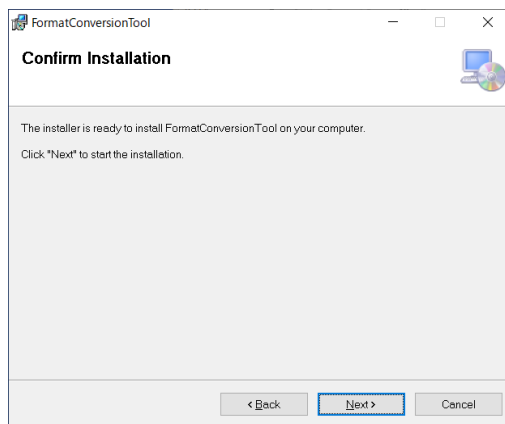
- ④ Click “Next” button on Setup Wizard page.(When restarting, it is necessary to perform ①.)



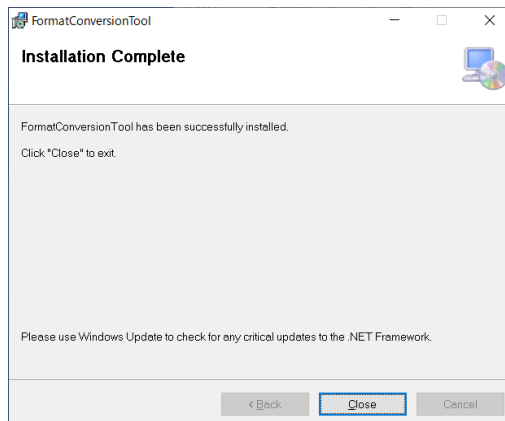
- ⑤ Click “Next” button on Select Installation Folder page.



- ⑥ Click “Next” button on Confirm Installation page.



- ⑦ Click “Close” button on Installation Complete page.

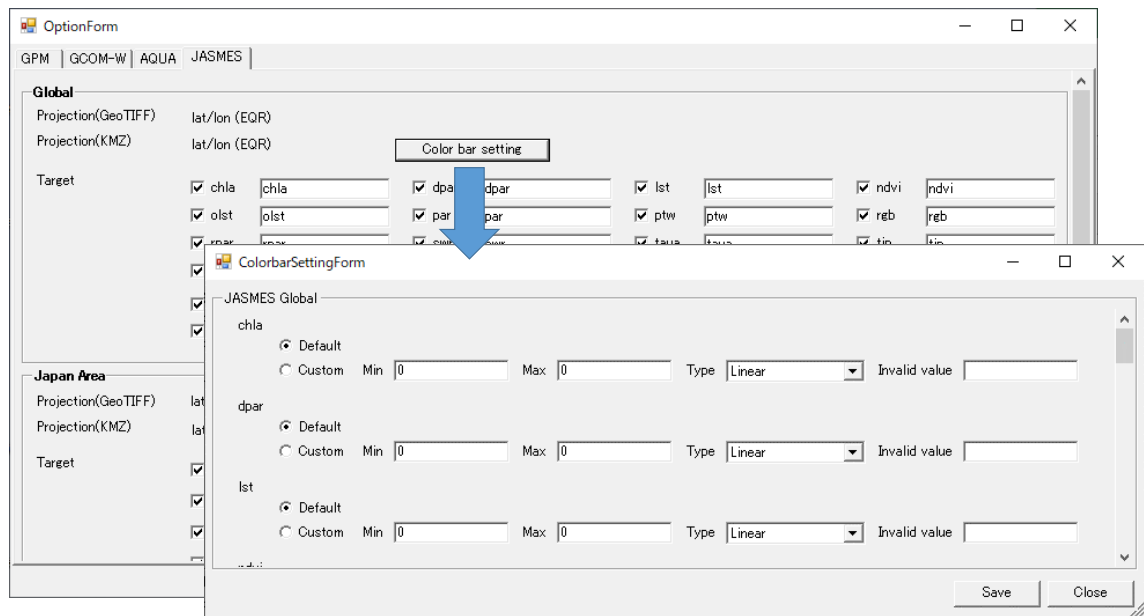


- ① Run FormatConversionTool.exe and launch this tool.

-
- The screenshot shows the Windows taskbar on the left with various application icons. A blue arrow points to the 'FormatConversionTool.exe' icon, which is labeled '新規' (New). The main window is the 'Format Conversion Tool' application. It has a title bar with standard Windows window controls. The interface includes an 'Input' section with a file selection icon and a text field, and an 'Output' section with a similar icon and text field. Below these are two large, empty rectangular areas for file lists, each with columns for 'Name', 'Date', and 'Size'. To the right of the output area is an 'Output Format' section with checkboxes for 'GeoTIFF', 'KMZ', 'TIFF+TEXT', and 'NetODF', along with 'Option' and 'Help' buttons. At the bottom of the window are 'Exec', 'Cancel', and 'Close' buttons. A status bar at the very bottom contains three download icons and an 'HP Client Security' icon.

-
- The screenshot displays the 'Format Conversion Tool' interface. At the top, the 'Output Format' section has 'GeoTIFF' selected. Below this, the 'OptionForm' dialog box is open, showing various configuration options for different data sources. The 'AMSR2 L3 Geophysical Data' section is highlighted with a red border, and a red arrow points to the 'Select Geophysical Prefix' label. The 'OptionForm' dialog also includes sections for 'GPM' and 'AMSR' data, each with their own set of options and a 'Color bar setting' button. The 'Input' and 'Output' fields at the top of the main window are empty, and the 'Option' button in the top right corner is highlighted with a blue arrow pointing to the 'OptionForm' dialog.

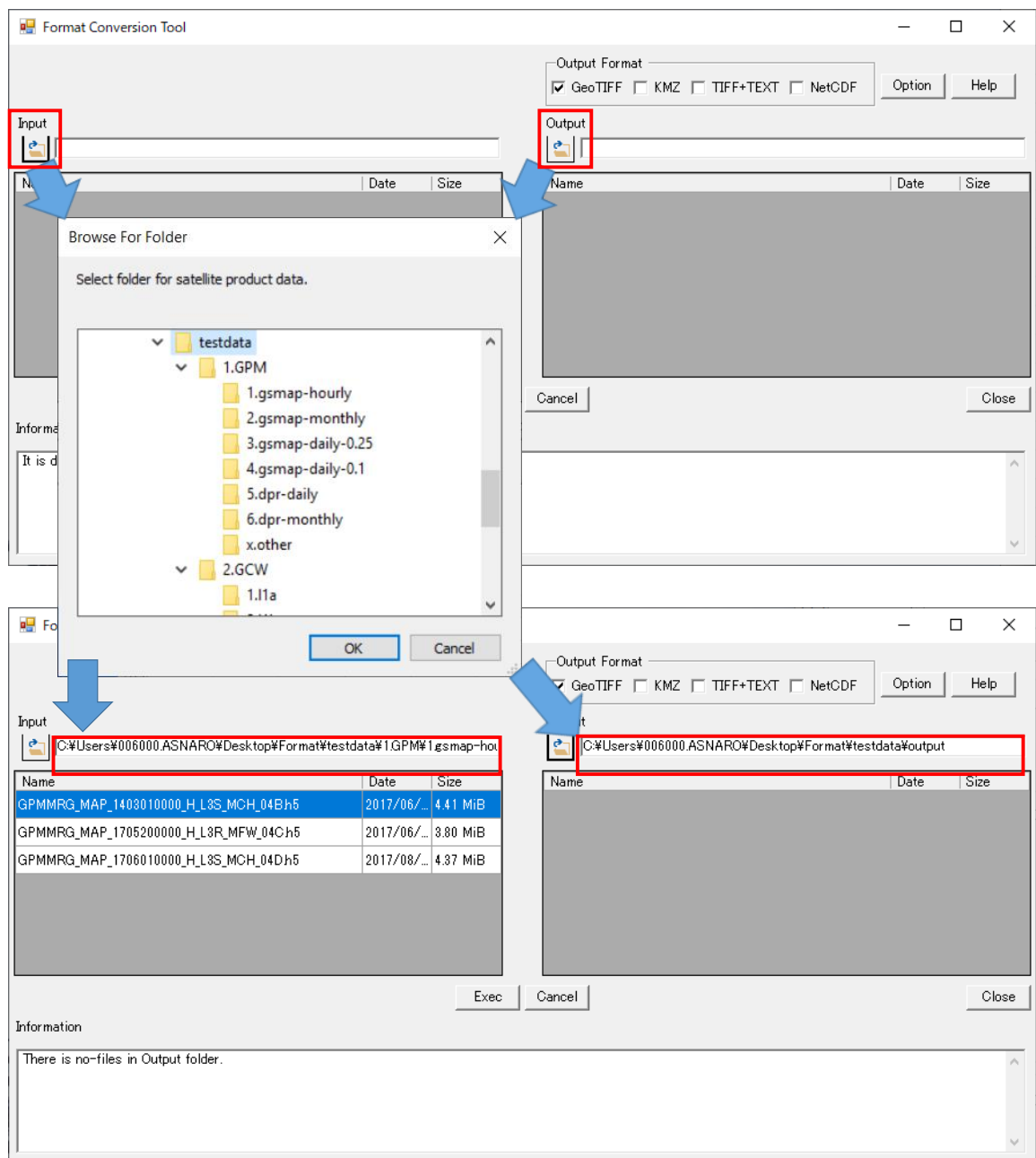
- ③ Press the “Colorbar Setting” button in the Option and input the parameter of colorbar when it is outputted as KMZ format.
It is possible to omit.



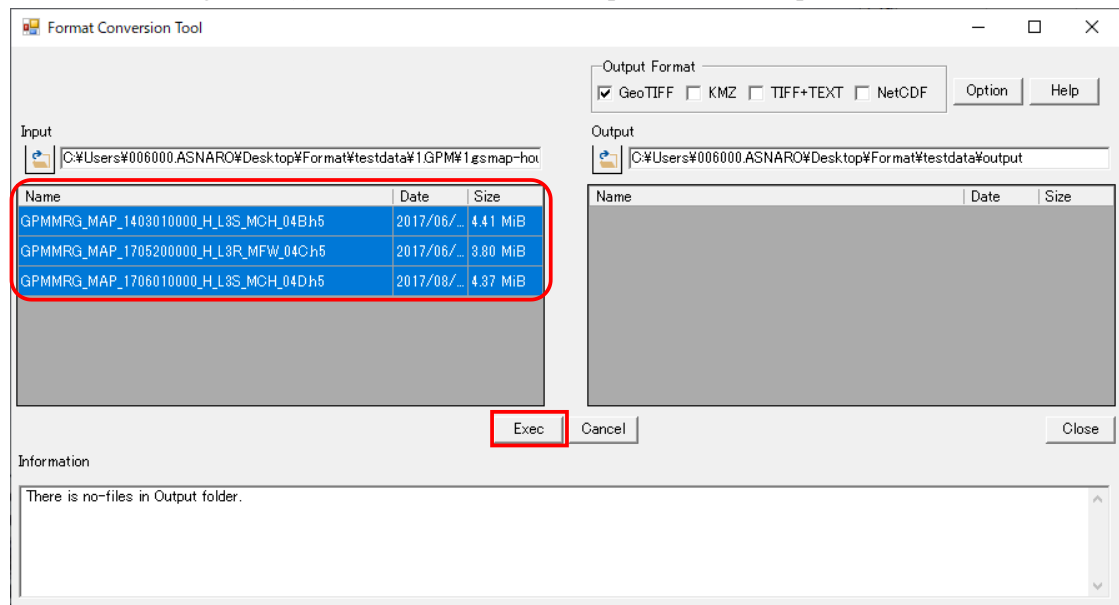
- ④ In the main screen, select the output format (GeoTIFF, KMZ, TIFF+TEXT or NetCDF).



- ⑤ In the main screen, select the input/output folders.

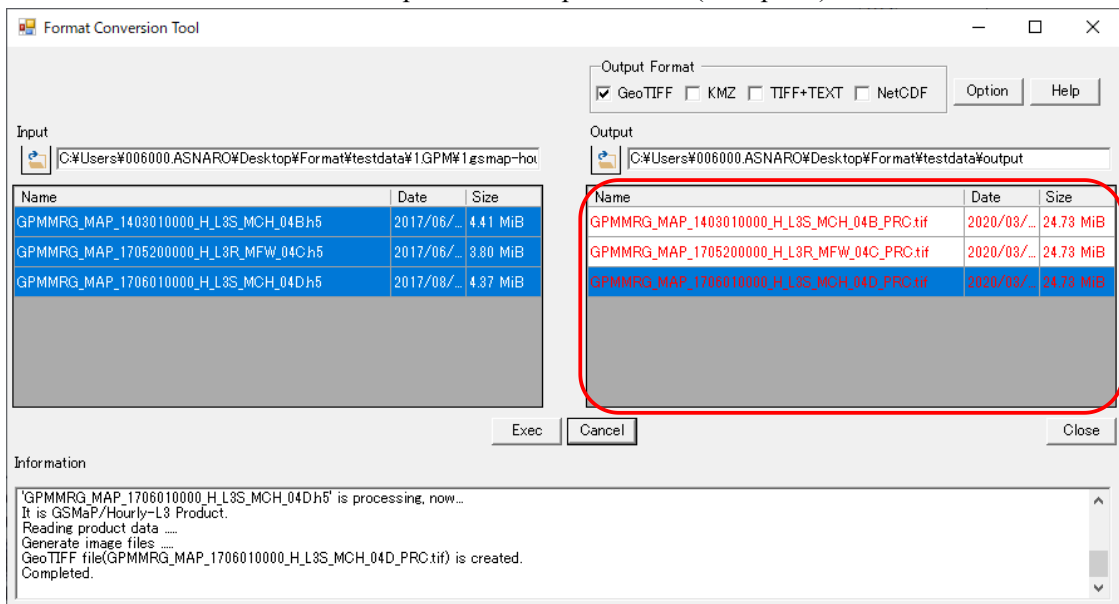


- ⑥ Select conversion target file(s) from the main screen input file list and press “Exec”



- * For GCOM-C products, it takes time to output the file due to its large size. Please wait until complete is displayed in Information. You can shorten the output time by narrowing down the Target on the options screen.

- ⑦ The converted format files will be output to the output folder. (Complete)



4.3 Main screen

This is the screen for executing format conversions according to the selected mode.

Select the input file, the output format, and the output folder and pressing the Exec button. The converted format file will be output to the output folder.

A screenshot of the main screen is shown in Fig. 3, and descriptions of screen elements are listed in Table 2.

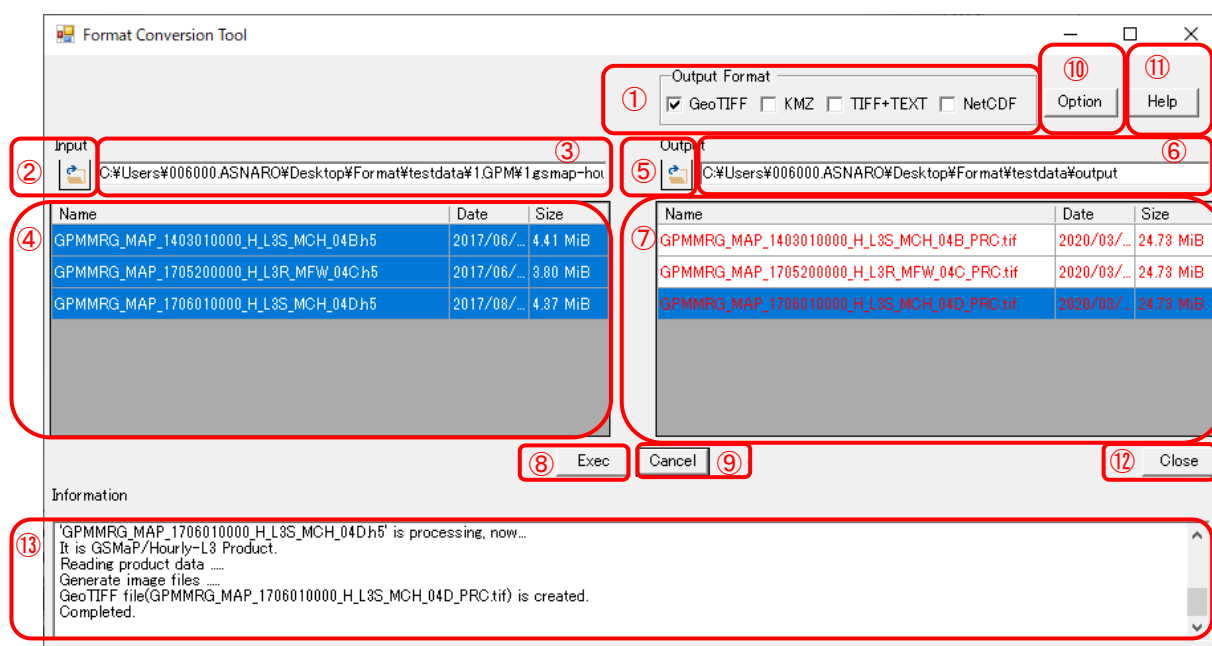


Fig. 3 Screenshot of the main screen

Table 2 Main screen elements

No.	Name	Description
1	Output format selection checkbox	Selects the output file format (GeoTIFF, KMZ, TIFF+TEXT or NetCDF).
2	Input folder selection button	Opens the folder selection screen.
3	Input folder box	Displays the folder path selected in the folder selection screen.
4	Input file list	It is possible to add to the list by dragging and dropping. Multiple files can also be selected using Shift and Ctrl. Displays a list of files in the selected folder path.
5	Output folder selection button	Opens the folder selection screen.
6	Output folder box	Displays the folder path selected in the folder selection screen.
7	Output file list	It is possible to perform conversions by dragging and dropping from the list of input files. It is possible to change file name by choosing file. Displays a list of files in the selected folder. (Black) Displays the output files created after conversion. (Red)
8	Exec button	Runs the conversion process. Outputs converted files to the output folder based on the input file and output format.
9	Cancel button	Stops the conversion process.
10	Options button	Opens the options screen.
11	Help button	Displays the help screen.
12	Close button	Exits tool.
13	Information box	Displays the activity log and errors.

4.4 Folder selection screen

This is the screen for selecting folders. The selected folder will be reflected in the main screen's input folder and output folder.

A screenshot of the folder selection screen is shown in Fig. 4, and descriptions of screen elements are listed in Table 3.

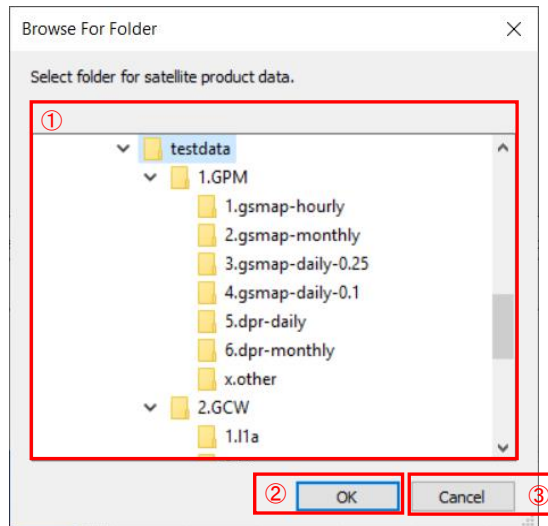


Fig. 4 A screenshot of the folder selection screen

Table 3 Folder selection screen elements

No.	Name	Description
1	Folder selection box	Selects the output folder.
2	OK button	Closes the folder selection screen. Select the main screen input/output folder box to display the folder path, and all files contained in that path will be displayed as a list of input/output files.
3	Cancel button	Closes the folder selection screen.

4.5 Options screen

This screen is for setting the output file projection method, physical quantity, and physical quantity prefix (end character string of output file). When executing a conversion from the main screen, the format conversion process is run according to the settings in this screen.

Screenshots of the options screen are shown in Fig. 5, Fig. 6, Fig. 7, Fig. 8 and descriptions of screen elements are listed in Table 4.

The screenshot shows the 'OptionForm' dialog box with the 'GPM' tab selected. The dialog is divided into four sections: 'GSMap Hourly L3', 'GSMap Monthly L3', 'DPR Daily L3', and 'DPR Monthly L3'. Each section contains settings for projection (GeoTIFF and KMZ), color bar settings, and target physical quantities (PrecipRate, DPRMS, KuNS, KaMS, KaHS, DPRMS, KuMS). The 'GPM' tab is highlighted with a red box and labeled 1. The 'GSMap Hourly L3' section has three red boxes: 2 for 'Projection(GeoTIFF)', 3 for 'Projection(KMZ)', and 4 for 'Color bar setting'. The 'Target(PrecipRate)' section has a red box labeled 5 for the 'PrecipRate' checkbox and another labeled 6 for the 'PRC' text field. The 'DPR Daily L3' section has a red box labeled 7 for the 'Save' button and another labeled 8 for the 'Close' button. The 'DPR Monthly L3' section has a red box labeled 8 for the 'Close' button.

Section	Option	Value
GSMap Hourly L3	Projection(GeoTIFF)	lat/lon (EQR)
	Projection(KMZ)	lat/lon (EQR)
	Target(PrecipRate)	☒ PrecipRate
GSMap Monthly L3	Projection(GeoTIFF)	lat/lon (EQR)
	Projection(KMZ)	lat/lon (EQR)
	Target(PrecipRate)	☒ PrecipRate
DPR Daily L3	Target(PrecipRate)	☒ DPRMS Ascending
	Target(PrecipRate)	☒ KuNS Ascending
	Target(PrecipRate)	☒ DPRMS Descending
	Target(PrecipRate)	☒ KuNS Descending
DPR Monthly L3	Target(PrecipRate)	☐ KuNS stratiform
	Target(PrecipRate)	☐ KaMS stratiform
	Target(PrecipRate)	☐ KaHS stratiform
	Target(PrecipRate)	☐ DPRMS stratiform
	Target(PrecipRate)	☐ KuMS stratiform
	Target(PrecipRate)	☐ KuNS convective
	Target(PrecipRate)	☐ KaMS convective
	Target(PrecipRate)	☐ KaHS convective
	Target(PrecipRate)	☐ DPRMS convective
	Target(PrecipRate)	☐ KuMS convective
	Target(PrecipRate)	☒ KuNS all
	Target(PrecipRate)	☐ KaMS all

Fig. 5 Screenshot of options screen (GPM tab)

OptionForm

GPM [GCOM-W] AQUA JASMES ①

AMSR2 L1A Observation Count/L1B Brightness Temperature

② Projection(GeoTIFF) lat/lon (EQR)

③ Projection(KMZ) lat/lon (EQR)

④ Color bar setting

⑤ Target

☒ 6.9GHz_H	6.9GHz_H ⑥	☒ 6.9GHz_V	6.9GHz_V	☒ 7.3GHz_H	7.3GHz_H	☒ 7.3GHz_V	7.3GHz_V
☒ 10.7GHz_H	10.7GHz_H	☒ 10.7GHz_V	10.7GHz_V	☒ 18.7GHz_H	18.7GHz_H	☒ 18.7GHz_V	18.7GHz_V
☒ 23.8GHz_H	23.8GHz_H	☒ 23.8GHz_V	23.8GHz_V	☒ 36.5GHz_H	36.5GHz_H	☒ 36.5GHz_V	36.5GHz_V
☒ 89.0GHz-A_H	89.0GHz-A_H	☒ 89.0GHz-A_V	89.0GHz-A_V	☒ 89.0GHz-B_H	89.0GHz-B_H	☒ 89.0GHz-B_V	89.0GHz-B_V

AMSR2 L1R Brightness Temperature

Projection(GeoTIFF) lat/lon (EQR)

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

reso06	☒ 6.9GHz_H	r06_6.9GHz_H	☒ 6.9GHz_V	r06_6.9GHz_V	☒ 7.3GHz_H	r06_7.3GHz_H	☒ 7.3GHz_V	r06_7.3GHz_V
	☒ 10.7GHz_H	r06_10.7GHz_H	☒ 10.7GHz_V	r06_10.7GHz_V	☒ 18.7GHz_H	r06_18.7GHz_H	☒ 18.7GHz_V	r06_18.7GHz_V
	☒ 23.8GHz_H	r06_23.8GHz_H	☒ 23.8GHz_V	r06_23.8GHz_V	☒ 36.5GHz_H	r06_36.5GHz_H	☒ 36.5GHz_V	r06_36.5GHz_V
	☒ 89.0GHz_H	r06_89.0GHz_H	☒ 89.0GHz_V	r06_89.0GHz_V				
reso10	☒ 10.7GHz_H	r10_10.7GHz_H	☒ 10.7GHz_V	r10_10.7GHz_V	☒ 18.7GHz_H	r10_18.7GHz_H	☒ 18.7GHz_V	r10_18.7GHz_V
	☒ 23.8GHz_H	r10_23.8GHz_H	☒ 23.8GHz_V	r10_23.8GHz_V	☒ 36.5GHz_H	r10_36.5GHz_H	☒ 36.5GHz_V	r10_36.5GHz_V
	☒ 89.0GHz_H	r10_89.0GHz_H	☒ 89.0GHz_V	r10_89.0GHz_V				
reso23	☒ 18.7GHz_H	r23_18.7GHz_H	☒ 18.7GHz_V	r23_18.7GHz_V	☒ 23.8GHz_H	r23_23.8GHz_H	☒ 23.8GHz_V	r23_23.8GHz_V
	☒ 36.5GHz_H	r23_36.5GHz_H	☒ 36.5GHz_V	r23_36.5GHz_V	☒ 89.0GHz_H	r23_89.0GHz_H	☒ 89.0GHz_V	r23_89.0GHz_V
reso36	☒ 36.5GHz_H	r36_36.5GHz_H	☒ 36.5GHz_V	r36_36.5GHz_V	☒ 89.0GHz_H	r36_89.0GHz_H	☒ 89.0GHz_V	r36_89.0GHz_V
original	☒ 89.0GHz-A_H	r89_89GHz-A_H	☒ 89.0GHz-A_V	r89_89GHz-A_V	☒ 89.0GHz-B_H	r89_89GHz-B_H	☒ 89.0GHz-B_V	r89_89GHz-B_V

AMSR2 L2 High resolution Geophysical Data

Projection(GeoTIFF) lat/lon (EQR)

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ RPC for 89A	PRC_89A	☒ RPC for 89B	PRC_89B
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AMSR2 L2 Low resolution Geophysical Data

Projection(GeoTIFF) lat/lon (EQR)

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ TPW	TPW	☒ CLW	CLW	☒ SSW	SSW	☒ SST_STD	SST_STD
☒ SST_RSR	SST_RSR	☒ SND	SND	☒ SND_SWE	SND_SWE	☒ SMC	SMC
☒ SIC	SIC						

AMSR2 L3 Brightness Temperature

② Projection(GeoTIFF) ☒ lat/lon (EQR) ☐ polar stereo North and South

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ BT H	BT_H	☒ BT V	BT_V
--	------	--	------

AMSR2 L3 Geophysical Data

Projection(GeoTIFF) ☒ lat/lon (EQR) ☐ polar stereo North and South

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ TPW	TPW	☒ CLW	CLW	☒ PRC	PRC	☒ SSW	SSW
☒ SST_STD	SST_STD	☒ SST_RSR	SST_RSR	☒ SND	SND	☒ SND_SWE	SND_SWE
☒ SMC	SMC	☒ SIC	SIC				

⑦ Save ⑧ Close

Fig. 6 Screenshot of options screen (GCOM-W tab)

OptionForm

GPM | GCOM-W | AQUA | JASMES ①

Global

② Projection(GeoTIFF) lat/lon (EQR)

③ Projection(KMZ) lat/lon (EQR)

④ Color bar setting

⑤ Target

☒ chla ⑥ ☒ dpar ☒ lst ☒ ndvi

☒ olst ☒ par ☒ ptw ☒ rgb

☒ rpar ☒ swr ☒ taua ☒ tip

☒ uva ☒ uvb ☒ wf ☒ wst

☒ snwcf_ghrm5c(cs_flg_tpf) ☒ snwcf_ghrm5c(Surface_Flag)

☒ snwcf_mds10c(cs_flg_tpf) ☒ snwcf_mds10c(Surface_Flag)

Japan Area

Projection(GeoTIFF) lat/lon (EQR)

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ alph ☒ chla ☒ dpar ☒ ndvi

☒ olst ☒ par ☒ ptw ☒ rgb

☒ rpar ☒ swr ☒ taua ☒ tip

☒ uva ☒ uvb ☒ wf ☒ wst

☒ snwcf(cs_flg_tpf) ☒ snwcf(Surface_Flag)

Thailand Area

Projection(GeoTIFF) lat/lon (EQR)

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ chla ☒ dpar ☒ ndvi ☒ olst

☒ par ☒ ptw ☒ rgb ☒ rpar

☒ swr ☒ taua ☒ tip ☒ uva

☒ uvb ☒ wf ☒ wst

Gobi Desert Area

Projection(GeoTIFF) lat/lon (EQR)

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target(aerosol)

☒ rcr ☒ taua ☒ aot

⑦ Save Close ⑧

Fig. 7 Screenshot of options screen (JASMES tab)

OptionForm

GPM | GCOM-W | **AQUA** | JASMES | ①

AMSRE-L1B Brightness Temperature

② Projection(GeoTIFF) lat/lon (EQR)
③ Projection(KMZ) lat/lon (EQR)

④ Color bar setting

⑤ Target

☒ 6.9GHz_H	6.9GHz_H ⑥	☒ 6.9GHz_V	6.9GHz_V	☒ 7.3GHz_H	7.3GHz_H	☒ 7.3GHz_V	7.3GHz_V
☒ 10.7GHz_H	10.7GHz_H	☒ 10.7GHz_V	10.7GHz_V	☒ 18.7GHz_H	18.7GHz_H	☒ 18.7GHz_V	18.7GHz_V
☒ 23.8GHz_H	23.8GHz_H	☒ 23.8GHz_V	23.8GHz_V	☒ 36.5GHz_H	36.5GHz_H	☒ 36.5GHz_V	36.5GHz_V
☒ 89.0GHz-A_H	89.0GHz-A_H	☒ 89.0GHz-A_V	89.0GHz-A_V	☒ 89.0GHz-B_H	89.0GHz-B_H	☒ 89.0GHz-B_V	89.0GHz-B_V

AMSRE-L1R Brightness Temperature

Projection(GeoTIFF) lat/lon (EQR)
Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

reso06	☒ 6.9GHz_H	r06_6.9GHz_H	☒ 6.9GHz_V	r06_6.9GHz_V	☒ 7.3GHz_H	r06_7.3GHz_H	☒ 7.3GHz_V	r06_7.3GHz_V
	☒ 10.7GHz_H	r06_10.7GHz_H	☒ 10.7GHz_V	r06_10.7GHz_V	☒ 18.7GHz_H	r06_18.7GHz_H	☒ 18.7GHz_V	r06_18.7GHz_V
	☒ 23.8GHz_H	r06_23.8GHz_H	☒ 23.8GHz_V	r06_23.8GHz_V	☒ 36.5GHz_H	r06_36.5GHz_H	☒ 36.5GHz_V	r06_36.5GHz_V
	☒ 89.0GHz_H	r06_89.0GHz_H	☒ 89.0GHz_V	r06_89.0GHz_V				
reso10	☒ 10.7GHz_H	r10_10.7GHz_H	☒ 10.7GHz_V	r10_10.7GHz_V	☒ 18.7GHz_H	r10_18.7GHz_H	☒ 18.7GHz_V	r10_18.7GHz_V
	☒ 23.8GHz_H	r10_23.8GHz_H	☒ 23.8GHz_V	r10_23.8GHz_V	☒ 36.5GHz_H	r10_36.5GHz_H	☒ 36.5GHz_V	r10_36.5GHz_V
	☒ 89.0GHz_H	r10_89.0GHz_H	☒ 89.0GHz_V	r10_89.0GHz_V				
reso23	☒ 18.7GHz_H	r23_18.7GHz_H	☒ 18.7GHz_V	r23_18.7GHz_V	☒ 23.8GHz_H	r23_23.8GHz_H	☒ 23.8GHz_V	r23_23.8GHz_V
	☒ 36.5GHz_H	r23_36.5GHz_H	☒ 36.5GHz_V	r23_36.5GHz_V	☒ 89.0GHz_H	r23_89.0GHz_H	☒ 89.0GHz_V	r23_89.0GHz_V
reso36	☒ 36.5GHz_H	r36_36.5GHz_H	☒ 36.5GHz_V	r36_36.5GHz_V	☒ 89.0GHz_H	r36_89.0GHz_H	☒ 89.0GHz_V	r36_89.0GHz_V
original	☒ 89.0GHz-A_H	r89_89.0GHz-A_H	☒ 89.0GHz-A_V	r89_89.0GHz-A_V	☒ 89.0GHz-B_H	r89_89.0GHz-B_H	☒ 89.0GHz-B_V	r89_89.0GHz-B_V

AMSRE-L2 High resolution Geophysical Data

Projection(GeoTIFF) lat/lon (EQR)
Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ RPC for 89A	PRC_89A	☒ RPC for 89B	PRC_89B
---	---------	---	---------

AMSRE-L2 Low resolution Geophysical Data

Projection(GeoTIFF) lat/lon (EQR)
Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ TPW	TPW	☒ CLW	CLW	☒ SSW	SSW	☒ SST_STD	SST_STD
☒ SST_RSR	SST_RSR	☒ SND	SND	☒ SND_SWE	SND_SWE	☒ SMC	SMC
☒ SIC	SIC						

AMSRE-L3 Brightness Temperature

② Projection(GeoTIFF) ☒ lat/lon (EQR) ☐ polar stereo North and South

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ BT H	BT_H	☒ BT V	BT_V
--	------	--	------

AMSRE-L3 Geophysical Data

Projection(GeoTIFF) ☒ lat/lon (EQR) ☐ polar stereo North and South

Projection(KMZ) lat/lon (EQR)

Color bar setting

Target

☒ TPW	TPW	☒ CLW	CLW	☒ PRC	PRC	☒ SSW	SSW
☒ SST_STD	SST_STD	☒ SST_RSR	SST_RSR	☒ SND	SND	☒ SND_SWE	SND_SWE
☒ SMC	SMC	☒ SIC	SIC				

⑦ Save ⑧ Close

Fig. 8 Screenshot of options screen (AQUA tab)

OptionForm

GPM | GCOM-W | AQUA | JASMES | GCOM-C | ①

GCOM-C L1B VNR

Projection(GeoTIFF) lat/lon (EQR) ②

Target ⑤

☒ Land_warner_flag	Land_warner_flag	☒ Lt_VN01	Lt_VN01	☒ Lt_VN02	Lt_VN02
☒ Lt_VN03	Lt_VN03	☒ Lt_VN04	Lt_VN04	☒ Lt_VN05	Lt_VN05
☒ Lt_VN06	Lt_VN06 ⑥	☒ Lt_VN07	Lt_VN07	☒ Lt_VN08	Lt_VN08
☒ Lt_VN09	Lt_VN09	☒ Lt_VN10	Lt_VN10	☒ Lt_VN11	Lt_VN11
☒ QA_flag	QA_flag				

GCOM-C L1B POL

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ Land_warner_flag	Land_warner_flag	☒ Lt_P1_0	Lt_P1_0	☒ Lt_P1_m60	Lt_P1_m60
☒ Lt_P1_p60	Lt_P1_p60	☒ Lt_P2_0	Lt_P2_0	☒ Lt_P2_m60	Lt_P2_m60
☒ Lt_P2_p60	Lt_P2_p60	☒ Lt_P101	Lt_P101	☒ Lt_P102	Lt_P102
☒ Lt_PQ01	Lt_PQ01	☒ Lt_PQ02	Lt_PQ02	☒ Lt_PU01	Lt_PU01
☒ Lt_PU02	Lt_PU02	☒ QA_flag	QA_flag		

GCOM-C L1B IRS

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ Land_warner_flag	Land_warner_flag	☒ Lt_SW01	Lt_SW01	☒ Lt_SW02	Lt_SW02
☒ Lt_SW03	Lt_SW03	☒ Lt_SW04	Lt_SW04	☒ Lt_T101	Lt_T101
☒ Lt_T102	Lt_T102	☒ QA_flag	QA_flag		

GCOM-C L2 NWLR

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ NELR_380	NWLR_380	☒ NWLR_412	NWLR_412	☒ NWLR_443	NWLR_443
☒ NWLR_490	NWLR_490	☒ NWLR_530	NWLR_530	☒ NWLR_565	NWLR_565
☒ NWLR_670	NWLR_670	☒ PAR	PAR	☒ QA_flag	QA_flag
☒ TAU_A_670	TAUA_670	☒ TAU_A_865	TAUA_865		

GCOM-C L2 IWPR

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ CDOM	CDOM	☒ CHLA	CHLA	☒ QA_flag	QA_flag
☒ TSM	TSM				

GCOM-C L2 SST

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ Cloud_probability	Cloud_probability	☒ QA_flag	QA_flag	☒ SST	SST
---	-------------------	---	---------	---	-----

GCOM-C L2 LTOA

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ Land_warner_flag	Land_warner_flag	☒ Lt_P1_0	Lt_P1_0	☒ Lt_P1_m60	Lt_P1_m60
☒ Lt_P1_p60	Lt_P1_p60	☒ Lt_P2_0	Lt_P2_0	☒ Lt_P2_m60	Lt_P2_m60
☒ Lt_P2_p60	Lt_P2_p60	☒ Lt_P101	Lt_P101	☒ Lt_P102	Lt_P102
☒ Lt_PQ01	Lt_PQ01	☒ Lt_PQ02	Lt_PQ02	☒ Lt_PU01	Lt_PU01
☒ Lt_PU02	Lt_PU02	☒ Lt_SW01	Lt_SW01	☒ Lt_SW02	Lt_SW02
☒ Lt_SW03	Lt_SW03	☒ Lt_SW04	Lt_SW04	☒ Lt_T101	Lt_T101
☒ Lt_T102	Lt_T102	☒ Lt_VN01	Lt_VN01	☒ Lt_VN02	Lt_VN02
☒ Lt_VN03	Lt_VN03	☒ Lt_VN04	Lt_VN04	☒ Lt_VN05	Lt_VN05
☒ Lt_VN06	Lt_VN06	☒ Lt_VN07	Lt_VN07	☒ Lt_VN08	Lt_VN08
☒ Lt_VN08P	Lt_VN08P	☒ Lt_VN09	Lt_VN09	☒ Lt_VN10	Lt_VN10
☒ Lt_VN11	Lt_VN11	☒ Lt_VN11P	Lt_VN11P	☒ QA_flag	QA_flag

GCOM-C L2 RSRF

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ Angstrom	Angstrom	☒ Land_warner_flag	Land_warner_flag	☒ PAR	PAR
☒ QA_flag	QA_flag	☒ Rs_P101	Rs_P101	☒ Rs_P102	Rs_P102
☒ Rs_SW01	Rs_SW01	☒ Rs_SW02	Rs_SW02	☒ Rs_SW03	Rs_SW03
☒ Rs_SW04	Rs_SW04	☒ Rs_VN01	Rs_VN01	☒ Rs_VN02	Rs_VN02
☒ Rs_VN03	Rs_VN03	☒ Rs_VN04	Rs_VN04	☒ Rs_VN05	Rs_VN05
☒ Rs_VN06	Rs_VN06	☒ Rs_VN07	Rs_VN07	☒ Rs_VN08	Rs_VN08
☒ Rs_VN08P	Rs_VN08P	☒ Rs_VN09	Rs_VN09	☒ Rs_VN10	Rs_VN10
☒ Rs_VN11	Rs_VN11	☒ Rs_VN11P	Rs_VN11P	☒ SWR	SWR
☒ Tau_500	Tau_500	☒ Tb_T101	Tb_T101	☒ Tb_T102	Tb_T102

GCOM-C L2 LST

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ E01	E01	☒ E02	E02	☒ LST	LST
☒ QA_flag	QA_flag				

GCOM-C L2 CLFG

Projection(GeoTIFF) lat/lon (EQR)

Target

☒ Cloud_flag	Cloud_flag				
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⑦ Save Close ⑧

Fig. 9 Screenshot of options screen (GCOM-C tab)

Table 4 Options screen elements

No.	Name	Description
1	Select product tab	Select the product (GPM, GCOM-W, AQUA, JASMES or GCOM-C) to set options for.
2	GeoTIFF output projection	Select the projection method (parallel latitude/longitude projection, polar stereo projection) for when exporting GeoTIFF. When selecting polar stereo projection, select the target output area (northern & southern hemispheres, northern hemisphere, or southern hemisphere).
3	KMZ output projection	L3 product is only available for KML output. When outputting KMZ, it is parallel latitude/longitude projection only.
4	Colorbar setting button.	Colorbar setting screen is opened.
5	Output physical quantity	Select the physical quantity considered the output target.
6	Output physical quantity prefix	Enter a prefix for each physical quantity. The character string set here is used to name output files. Output file name: input file (no extension) + prefix + .tif OR .kmz
7	Save button	Save the parameter you inputted in option screen and close the screen.
8	Close button	Closes the screen.

4.6 Colorbar setting screen.

This screen is used to output as colored KMZ file.

Colorbar is needed for colored KMZ file.

If you choose Default parameter, recommended setting is inputted.

If you choose Custom parameter, you can input the parameter you want to use.

Screenshots of the colorbar setting screen is shown in Fig. 10 and descriptions of screen elements are listed in Table 5.

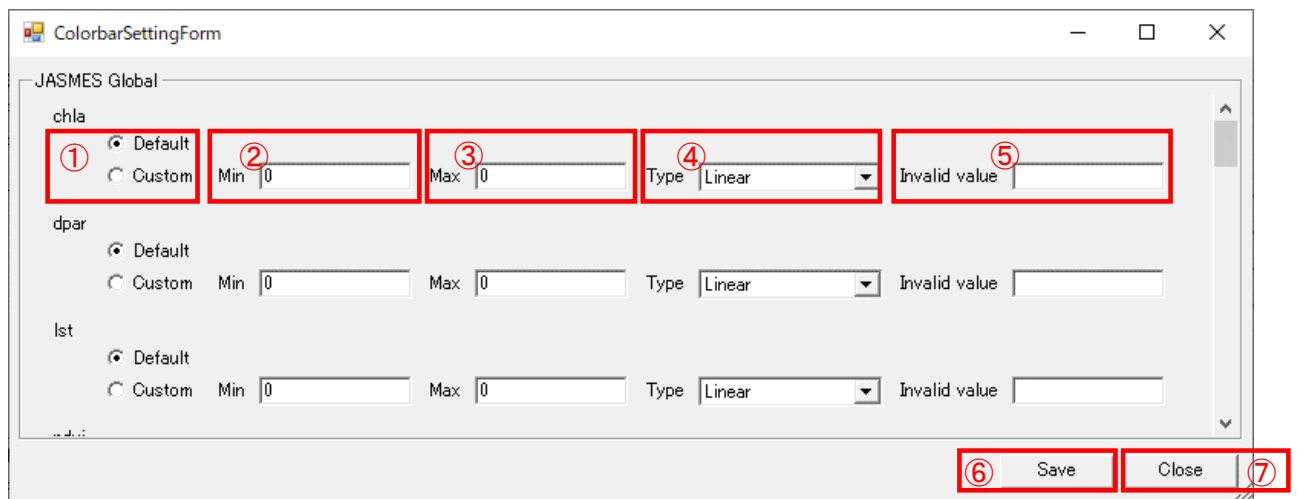


Fig. 10 Colarbar setting screen

Table 5 Colarbar setting screen elements

No.	Name	Description
1	Choose colobar type	You can choose colorbar type. There are two types, Default or Custom. If you choose Default parameter, recommended setting is inputted. (Appendix B)

No.	Name	Description
		If you choose Custom parameter, you can input the parameter of No.2, No.3 and No.4 in elements you want to use.
2	Minimum value of Custom colorbar	You can input the minimum value of Custom colorbar.
3	Maximum value of Custom colorbar	You can input the maximum value of Custom colorbar.
4	Choose Custom colorbar type	You can input Custom colorbar type. There are two types, Linear or Log.
5	Invalid value of Custom colorbar	You can input invalid value, which is used as transparency on map. You can use multiple values by using “,” character. Ex) When you set -3000、 -10、 3000 as Invalid values. -3000,-10,3000 You can input successive invalid values by using ‘_’ character. Ex) When you set less than -3000, -10 and more than 3000 as Invalid values. -3000_-10_3000
6	Save button	Save the parameter you inputted and close the screen.
7	Close button	Close the screen.

4.7 Help screen

This screen explains basic operation procedures for this tool.

A screenshot of the help screen is show in Fig. 11.

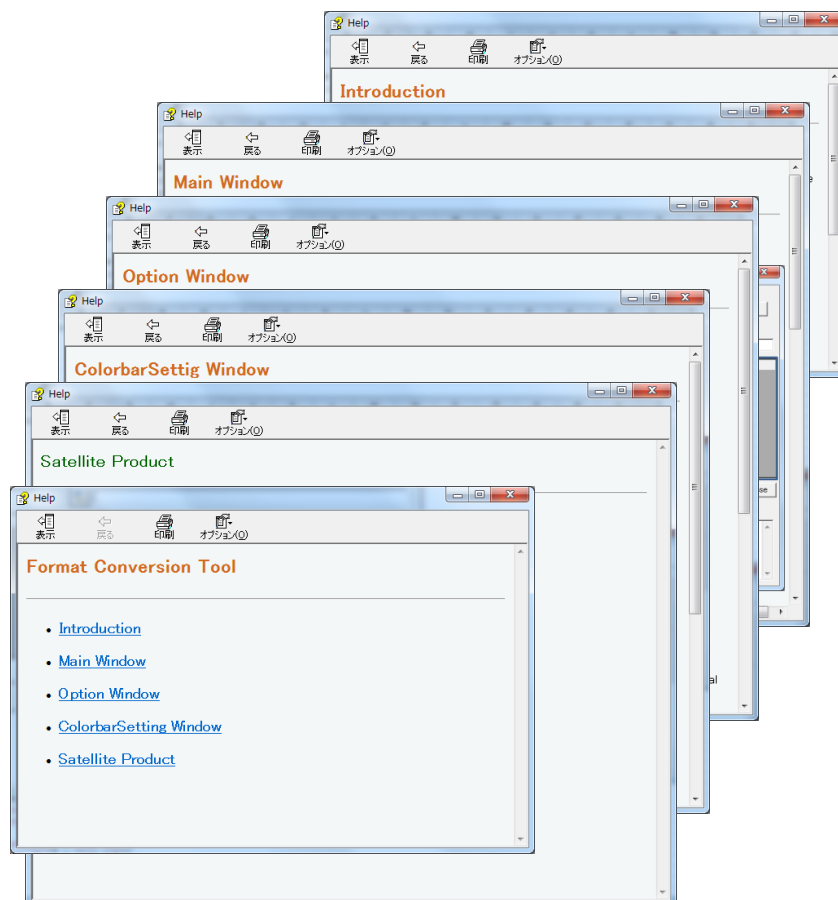


Fig. 11 A screenshot of the help screen

5. Input file

5.1 List of URL to get input files

- GPM Product
G-Portal: <https://gportal.jaxa.jp/gpr/>
- GCOM-W Product
G-Portal: <https://gportal.jaxa.jp/gpr/>
- JASMES Product
JASMES: <http://kuroshio.eorc.jaxa.jp/JASMES/index.html>
- AQUA Product
G-Portal: <https://gportal.jaxa.jp/gpr/>
- GCOM-C Product
G-Portal: <https://gportal.jaxa.jp/gpr/>

5.2 List of URL written about input file format

- GPM Product
<https://www.eorc.jaxa.jp/GPM/en/archives.html>
- GCOM-W Product
<https://gportal.jaxa.jp/gpr/information/tool/#GCOM-W1>
- JASMES Product
http://kuroshio.eorc.jaxa.jp/JASMES/doc_index_j.html
- AQUA Product
<https://gportal.jaxa.jp/gpr/information/tool/#AQUA>
- GCOM-C Product
<https://shikisai.jaxa.jp>

6. Output file

6.1 Output file name

The following is displayed concerning the naming conventions for output file names.

- GeoTIFF
 - Parallel latitude/longitude projection

GPM, GCOM-W L3, JASMES, AQUA L3

(Input file name [not extension]) _ (Physical quantity prefix) .tif

GCOM-W L1, L2, AQUA L1, L2, GCOM-C

(Input file name [not extension]) _ (Physical quantity prefix) _proj.tif

- Polar stereo projection Northern Hemisphere

(Input file name [not extension]) _ (Physical quantity prefix) _N.tif

- Polar stereo projection Southern Hemisphere

(Input file name [not extension]) _ (Physical quantity prefix) _S.tif

➤ TIFF + TEXT

- Parallel latitude/longitude projection

(Input file name [not extension]) _ (Physical quantity prefix) .tif

(Input file name [not extension]) .txt

➤ KMZ

- Parallel latitude/longitude projection

(Input file name [not extension]) _ (Physical quantity prefix) .kmz

➤ NetCDF

- Parallel latitude/longitude projection

(Input file name [not extension]) _ (Physical quantity prefix) .nc

- Polar stereo projection

(Input file name [not extension]) _ (Physical quantity prefix) .nc

* Physical quantity prefix : it is inputted parameters on Options screen (reference to Fig. 5 ⑥, Fig. 6 ⑥, Fig. 7 ⑥, Fig. 8 ⑥).

6.2 GeoTIFF Output Specification

6.2.1 GeoTIFF header part output specification

A) GPM product

Tag names and parameters about GeoTIFF Header part of GPM product are written on Table 6.

Table 6 List of tag names and parameters about GeoTIFF header part of GPM product

No.	Tag name	Parameter
1	TIFFTAG ImageWidth	Pixel
2	TIFFTAG ImageLength	Line
3	TIFFTAG BitsPerSample	32
4	Compression	Uncompressed
5	TIFFTAG PhotometricInterpretation	BlackIsZero
6	TIFFTAG SamplesPerPixel	1
7	TIFFTAG SampleFormat	Floating Point
8	ModelPixelScaleTag	GSMaP Hourly L3 : 0.1, 0.1, 0.0 GSMaP Monthly L3 : 0.1, 0.1, 0.0

No.	Tag name	Parameter
		DPR Daily L3 : 0.25, 0.25, 0.0 DPR Monthly L3 : 0.25, 0.25, 0.0
9	ModelTiePointTag	GSMaP Hourly L3 : 0.0, 0.0, 0.0, -180.0, 90.0, 0.0 GSMaP Monthly L3 : 0.0, 0.0, 0.0, -180.0, 90.0, 0.0 DPR Daily L3 : 0.0, 0.0, 0.0, -180.0, 67.0, 0.0 DPR Monthly L3 : 0.0, 0.0, 0.0, -180.0, 67.0, 0.0
10	GTModelTypeGeoKey	ModelTypeGeographic
11	GTRasterTypeGeoKey	RasterPixelIsArea
12	GeographicTypeGeoKey	GCS_WGS_84
13	GeogAngularUnitsGeoKey	Angular_Degree

B) GCOM-W product

Tag names and parameters about GeoTIFF Header part of GCOM-W product are written on Table 7 and Table 8.

Table 7 List of tag names and parameters about GeoTIFF header part of GCOM-W product
(parallel latitude/longitude projection)

No.	Tag name	Parameter
1	TIFFTAG_ImageWidth	Pixel
2	TIFFTAG_ImageLength	Line
3	BitsPerSample	16
4	Compression	Uncompressed
5	TIFFTAG_PhotometricInterpretation	BlackIsZero
6	TIFFTAG_SamplesPerPixel	1
7	TIFFTAG_SampleFormat	L1A : Signed Integer L1B : Unsigned Integer L1R : Unsigned Integer L2 High resolution : Signed Integer L2 Low resolution : Signed Integer L3 Brightness Temperature : Unsigned Integer L3 Geophysical Data : Signed Integer
8	ModelPixelScaleTag	L1A : 0.1, 0.1, 0.0 L1B : 0.1, 0.1, 0.0 L1R : 0.1, 0.1, 0.0 L2 High resolution : 0.1, 0.1, 0.0 L2 Low resolution : 0.1, 0.1, 0.0 L3 Brightness Temperature : 0.1, 0.1, 0.0 L3 Geophysical Data : 0.25, 0.25, 0.0
9	ModelTiePointTag	0.0, 0.0, 0.0, -180.0, 90.0, 0.0
10	GTModelTypeGeoKey	ModelTypeGeographic
11	GTRasterTypeGeoKey	RasterPixelIsArea
12	GeographicTypeGeoKey	GCS_WGS_84
13	GeogGeodeticDatumGeoKey	Datum_WGS84
14	GeogAngularUnitsGeoKey	Angular_Degree
15	GeogEllipsoidGeoKey	Ellipse_WGS_84

Table 8 List of tag names and parameters about GeoTIFF header part of GCOM-W product
(polar stereo projection)

No.	Tag name	Parameter
1	TIFFTAG_ImageWidth	Pixel
2	TIFFTAG_ImageLength	Line

No.	Tag name	Parameter
3	BitsPerSample	16
4	TIFFTAG_Compression	Uncompressed
5	TIFFTAG_PhotometricInterpretation	BlackIsZero
6	TIFFTAG_SamplesPerPixel	1
7	TIFFTAG_SampleFormat	Brightness Temperature : Unsigned Integer Geophysical Data : Signed Integer
8	GTModelTypeGeoKey	ModelTypeProjected
9	GTRasterTypeGeoKey	RasterPixelIsArea
10	GTCT CitationGeoKey	Brightness Temperature North : NSIDC Sea Ice Polar Stereographic North Brightness Temperature South : NSIDC Sea Ice Polar Stereographic South See Ice Concentration North : NSIDC Sea Ice Polar Stereographic North See Ice Concentration South : NSIDC Sea Ice Polar Stereographic South Snow Depth North : JAXA Snow Depth Polar Stereographic North
11	GeogCitationGeoKey	Unspecified datum based upon the Hughes 1980 ellipsoid
12	GeogSemiMajorAxisGeoKey	6378273.0
13	GeogSemiMinorAxisGeoKey	6356889.449
14	ProjLinearUnitsGeoKey	Linear Meter
15	ProjOriginLatGeoKey	Brightness Temperature North : 70.0 Brightness Temperature South : -70.0 See Ice Concentration North : 70.0 See Ice Concentration South : -70.0 Snow Depth North : 70.0
16	ProjFalseEastingGeoKey	0.0
17	ProjFalseNorthingGeoKey	0.0
18	ProjScaleAtOriginGeoKey	1.0
19	ProjStraightVertPoleLongGeoKey	Brightness Temperature North : -45.0 Brightness Temperature South : 0.0 See Ice Concentration North : -45.0 See Ice Concentration South : 0.0 Snow Depth North : 90.0

C) JASMES product

Tag names and parameters about GeoTIFF Header part of JASMES product are written on Table 9

Table 9 List of tag names and parameters about GeoTIFF header part of JASMES product
(parallel latitude/longitude projection)

No.	Tag name	parameter
1	TIFFTAG_ImageWidth	Pixel
2	TIFFTAG_ImageLength	Line
3	TIFFTAG_BitsPerSample	rgb : 8,8,8 wf, snwcfr_ghrm5c, snwcfr_ghrm10c, snwcfr : 8 Others : 32
4	TIFFTAG_Compression	Uncompressed
5	TIFFTAG_PhotometricInterpretation	rgb : RGB Others : BlackIsZero
6	TIFFTAG_SamplesPerPixel	rgb : 3 Others : 1
7	TIFFTAG_SampleFormat	rgb : Unsigned Integer, Unsigned Integer, Unsigned Integer wf, snwcfr_ghrm5c, snwcfr_ghrm10c, snwcfr : Unsigned Integer Others : Floating Point
8	ModelPixelScaleTag	360/Pixel,180/Line,0
9	ModelTiePointTag	Global : 0.0, 0.0, 0.0, -180.025, 90.025, 0.0 Japan Area : 0.0, 0.0, 0.0, 122.995, 50.005, 0.0

No.	Tag name	parameter
		Thai Area : 0.0, 0.0, 0.0, 89.995, 25.005, 0.0 Gobi Desert : 0.0, 0.0, 0.0, 74.975, 50.025, 0.0
10	GTModelTypeGeoKey	ModelTypeGeographic
11	GTRasterTypeGeoKey	RasterPixelIsArea
12	GeographicTypeGeoKey	GCS WGS 84
13	GeogAngularUnitsGeoKey	Angular Degree

D) AQUA product

Tag names and parameters about GeoTIFF Header part of AQUA product are written on Table 10 and Table 11.

Table 10 List of tag names and parameters about GeoTIFF header part of AQUA product (parallel latitude/longitude projection)

No.	Tag name	Parameter
1	TIFFTAG ImageWidth	Pixel
2	TIFFTAG ImageLength	Line
3	BitsPerSample	16
4	Compression	Uncompressed
5	TIFFTAG PhotometricInterpretation	BlackIsZero
6	TIFFTAG SamplesPerPixel	1
7	TIFFTAG_SampleFormat	L1B : Unsigned Integer L1R : Unsigned Integer L2 High resolution : Signed Integer L2 Low resolution : Signed Integer L3 Brightness Temperature : Unsigned Integer L3 Geophysical Data : Signed Integer
8	ModelPixelScaleTag	L1B : 0.1, 0.1, 0.0 L1R : 0.1, 0.1, 0.0 L2 High resolution : 0.1, 0.1, 0.0 L2 Low resolution : 0.1, 0.1, 0.0 L3 Brightness Temperature : 0.1, 0.1, 0.0 L3 Geophysical Data : 0.25, 0.25, 0.0
9	ModelTiePointTag	0.0, 0.0, 0.0, -180.0, 90.0, 0.0
10	GTModelTypeGeoKey	ModelTypeGeographic
11	GTRasterTypeGeoKey	RasterPixelIsArea
12	GeographicTypeGeoKey	GCS WGS 84
13	GeogGeodeticDatumGeoKey	Datum WGS84
14	GeogAngularUnitsGeoKey	Angular Degree
15	GeogEllipsoidGeoKey	Ellipse WGS 84

Table 11 List of tag names and parameters about GeoTIFF header part of AQUA product (polar stereo projection)

No.	Tag name	Parameter
1	TIFFTAG ImageWidth	Pixel
2	TIFFTAG ImageLength	Line
3	BitsPerSample	16
4	TIFFTAG Compression	Uncompressed
5	TIFFTAG PhotometricInterpretation	BlackIsZero
6	TIFFTAG SamplesPerPixel	1
7	TIFFTAG_SampleFormat	Brightness Temperature : Unsigned Integer Geophysical Data : Signed Integer

No.	Tag name	Parameter
8	GTModelTypeGeoKey	ModelTypeProjected
9	GTRasterTypeGeoKey	RasterPixellsArea
10	UTCitationGeoKey	Brightness Temperature North : NSIDC Sea Ice Polar Stereographic North Brightness Temperature South : NSIDC Sea Ice Polar Stereographic South See Ice Concentration North : NSIDC Sea Ice Polar Stereographic North See Ice Concentration South : NSIDC Sea Ice Polar Stereographic South Snow Depth North : JAXA Snow Depth Polar Stereographic North
11	GeogCitationGeoKey	Unspecified datum based upon the Hughes 1980 ellipsoid
12	GeogSemiMajorAxisGeoKey	6378273.0
13	GeogSemiMinorAxisGeoKey	6356889.449
14	ProjLinearUnitsGeoKey	Linear_Meter
15	ProjOriginLatGeoKey	Brightness Temperature North : 70.0 Brightness Temperature South : -70.0 See Ice Concentration North : 70.0 See Ice Concentration South : -70.0 Snow Depth North : 70.0
16	ProjFalseEastingGeoKey	0.0
17	ProjFalseNorthingGeoKey	0.0
18	ProjScaleAtOriginGeoKey	1.0
19	ProjStraightVertPoleLongGeoKey	Brightness Temperature North : -45.0 Brightness Temperature South : 0.0 See Ice Concentration North : -45.0 See Ice Concentration South : 0.0 Snow Depth North : 90.0

E) GCOM-C product

Tag names and parameters about GeoTIFF Header part of GCOM-C product are written on Table 12.

Table 12 List of tag names and parameters about GeoTIFF header part of GCOM-C product (parallel latitude/longitude projection)

No.	Tag name	Parameter
1	TIFFTAG_ImageWidth	Pixel
2	TIFFTAG_ImageLength	Line
3	BitsPerSample	8 16
4	Compression	Uncompressed
5	TIFFTAG_PhotometricInterpretation	BlackIsZero
6	TIFFTAG_SamplesPerPixel	1
7	TIFFTAG_RowsPerStrip	1
8	TIFFTAG_SampleFormat	Unsigned Integer
9	ModelPixelScaleTag	Set the size in the model space of 1 pixel (varies depending on the image)
10	ModelTiePointTag	Set the superposition point of raster image information and geographic coordinate information (varies depending on the image)
11	GTModelTypeGeoKey	ModelTypeGeographic
12	GTRasterTypeGeoKey	RasterPixellsArea
13	GeographicTypeGeoKey	GCS WGS 84
14	GeoCitationGeoKey	WGS 84
15	GeogAngularUnitsGeoKey	Angular Degree
16	GeogSemiMajorAxisGeoKey	6378137.0
17	GeogInvFlatteningGeoKey	298.257223563

6.2.2 GeoTIFF data part output specification

Output product type is the same as appendixA. Supplement (Details of conversion target products).

A) GPM product

Output data parameters are the same as Input data type such as scale and factors.

B) GCOM-W product

Output data parameters are the same as Input data type such as scale factors.

C) JASMES product

Output data parameters about rgb、wf、snwcf_ghrm5c、snwcf_ghrm10c and snwcf are the same as Input data type such as scale and factor. Other than those above product are set as float type by using slope and offset parameters.

But if non-tolerance is in input data, output data parameter is set -10.

D) AQUA product

Output data parameters are the same as Input data type such as scale factors.

E) GCOM-C product

Output data parameters are the same as Input data type such as scale factors.

6.3 KMZ output specification

KMZ file is consisted of KML file and TIFF file.

6.3.1 KML output specification

A) GPM product

Tag names and Parameters about GPM product's KML file are written on Table 13.

Table 13 List of tag names and parameters about GPM product's KML file

No.	Tag name	Parameter
1	kml- GroundOverlay-name	TIFF file name (Not extension)
2	kml- GroundOverlay-Icon-href	TIFF file path
3	kml- GroundOverlay-LatLonBox-north	GSMaP Hourly L3 : 90.000000 GSMaP Monthly L3 : 90.000000 DPR Daily L3 : 67.000000 DPR Monthly L3 : 67.000000
4	kml- GroundOverlay-LatLonBox-south	GSMaP Hourly L3 : -90.000000 GSMaP Monthly L3 : -90.000000 DPR Daily L3 : -67.000000 DPR Monthly L3 : -67.000000
5	kml- GroundOverlay-LatLonBox-east	180.000000
6	kml- GroundOverlay-LatLonBox-west	-180.000000

B) GCOM-W product

Tag names and Parameters about GCOM-W product's KML file are written on Table 14.

Table 14 List of tag names and parameters about GCOM-W product's KML file

No.	Tag name	Parameter
1	kml- GroundOverlay-name	TIFF file name (Not extension)
2	kml- GroundOverlay-Icon-href	TIFF file path
3	kml- GroundOverlay-gx:LatLonQuad-coordinates	Lower left coordinate (-180.00,-90.00,0.0) Lower right coordinate (180.00,-90.00,0.0) Upper left coordinates (180.00,90.00, ,0.0) Upper right coordinates (-180.00,90.00,0.0)

C) JASMES product

Tag names and Parameters about JASMES product's KML file are written on Table 15.

Table 15 List of tag names and parameters about JASMES product's KML file

No.	Tag name	Parameter
1	kml- GroundOverlay-name	TIFF file name (Not extension)
2	kml- GroundOverlay-Icon-href	TIFF file path
3	kml- GroundOverlay-LatLonBox-north	Global : 90.025000 Japan Area : 50.005000 Thailand Area : 25.005000 Gobi Desert : 50.025000
4	kml- GroundOverlay-LatLonBox-south	Global : -90.025000 Japan Area : 23.995000 Thailand Area : -5.005000 Gobi Desert : 26.975000
5	kml- GroundOverlay-LatLonBox-east	Global : 359.975000 Japan Area : 150.005000 Thailand Area : 120.005000 Gobi Desert : 147.025000
6	kml- GroundOverlay-LatLonBox-west	Global : -0.025000 Japan Area : 122.995000 Thailand Area : 89.995000 Gobi Desert : 74.975000

D) AQUA product

Tag names and Parameters about AQUA product's KML file are written on Table 16.

Table 16 List of tag names and parameters about AQUA product's KML file

No.	Tag name	Parameter
1	kml- GroundOverlay-name	TIFF file name (Not extension)
2	kml- GroundOverlay-Icon-href	TIFF file path
3	kml- GroundOverlay-gx:LatLonQuad-coordinates	Lower left coordinate (-180.00,-90.00,0.0) Lower right coordinate (180.00,-90.00,0.0) Upper left coordinates (180.00,90.00, ,0.0) Upper right coordinates (-180.00,90.00,0.0)

6.3.2 TIFF Output specification

Output data type is the same as appendixA. Supplement (Details of conversion target products).

A) GPM Product

Inputted parameter on data part is converted into RGB by using colorbar on appendixB

B) GCOM-W Product

Inputted Parameter on data part is converted into RGB by using colorbar on appendixB

C) JASMES product

Inputted Parameter on data part is calculated by using slope parameter and offset parameter and converted into RGB by using colorbar.

D) AQUA Product

Inputted Parameter on data part is converted into RGB by using colorbar on appendixB

6.4 NetCDF Output specification

Output specification of NetCDF is written in the following pdf file of chapter 5.

https://gportal.jaxa.jp/gpr/assets/mng_upload/GCOM-W/format_guide_e.pdf

7. Examples of using Format Conversion Tool

7.1 Use by GIS Software

GeoTIFF format data is readable as image data by popular viewers such as the Paint and the photo viewer. This image data is easy for editing itself and uploading SNS.

- Use case of viewing and editing GPM product

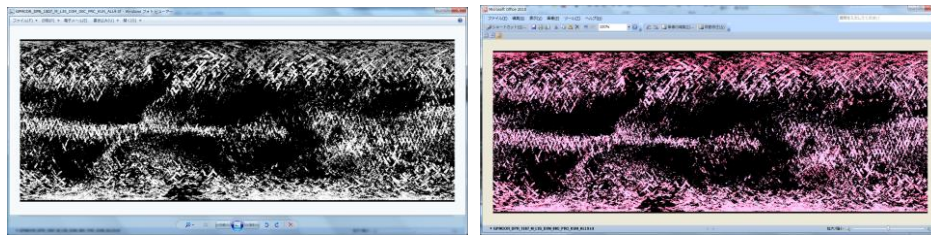


Fig. 12 Example of viewing and editing GPM Data by Viewers

- Use case of viewing and editing GCOM-W, AQUA product, GCOM-C product

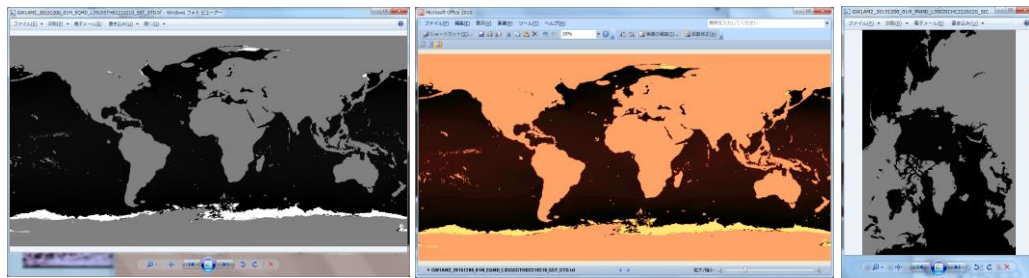


Fig. 13 Example of viewing and editing GCOM-W, AQUA, GCOM-C Data by Viewers

- Use case of viewing and editing JASMES product

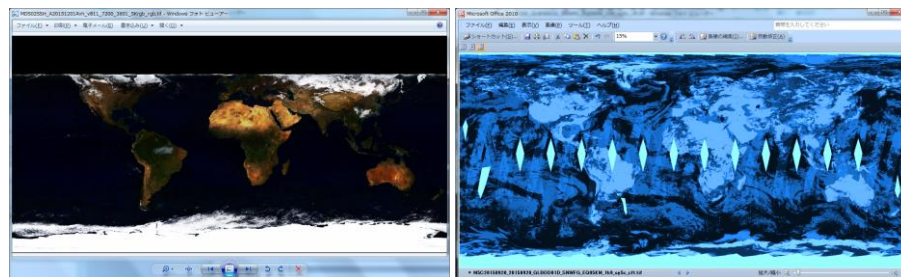


Fig. 14 Example of viewing and editing JASMES Data by Viewers

7.2 Use by GIS Software

Users can view, edit and analyze GPM product by using popular GIS software such as ArcGIS and QGIS more easily.

It is easily to refer the GeoTIFF precipitation data by mapping on world map, analyze and edit values of data.

KMZ format file is used for Google Earth.

➤ Reference of GPM product

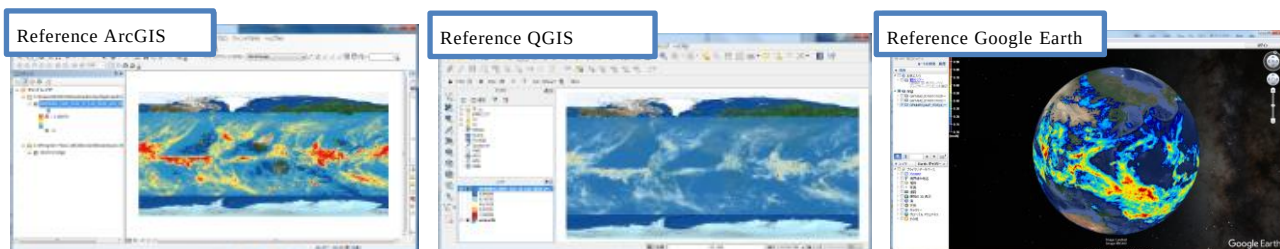


Fig. 15 GPM product using by GIS software

➤ Reference of GCOM-W, AQUA, GCOM-C product

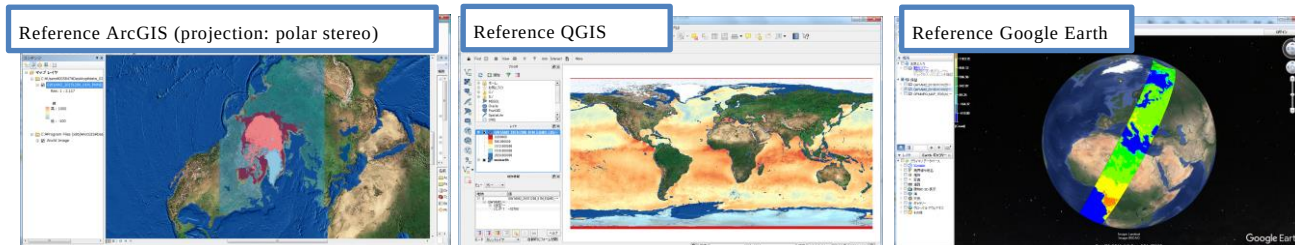


Fig. 16 Reference of GCOM-W, AQUA, GCOM-C product using by GIS software

➤ Reference of JASMES product

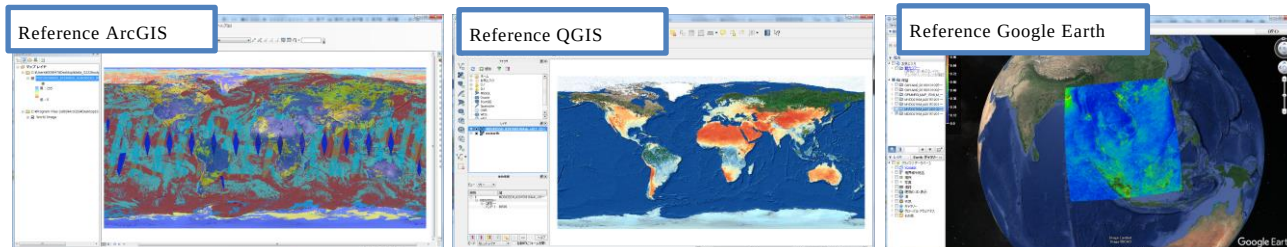


Fig. 17 Reference of JASMES product using by GIS software

- Use GIS software to analyze and edit GPM product.

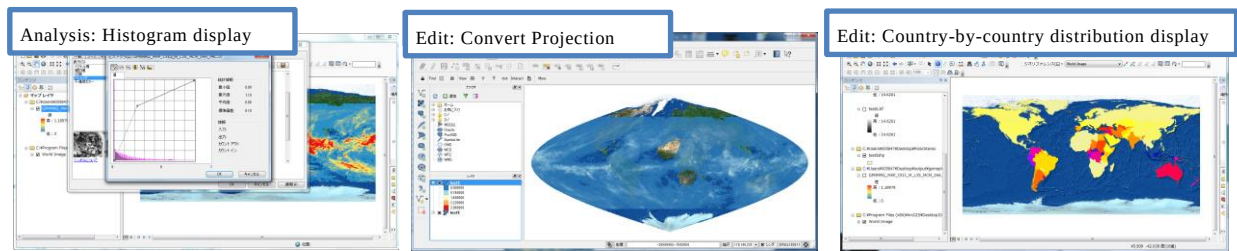


Fig. 18 Case of analyzing and editing GPM product by using GIS software

- Use GIS software to analyze and distribute GCOM-W, AQUA, GCOM-C product.

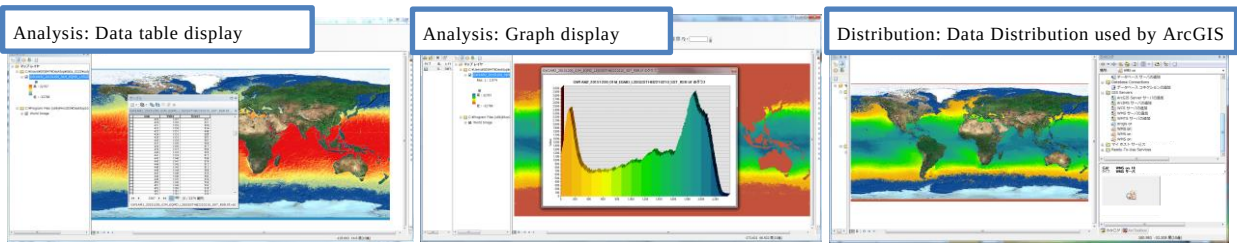


Fig. 19 Case of analyzing and distributing GCOM-W, AQUA, GCOM-C product by using GIS software

- Use GIS software to analyze and edit JASMES product.

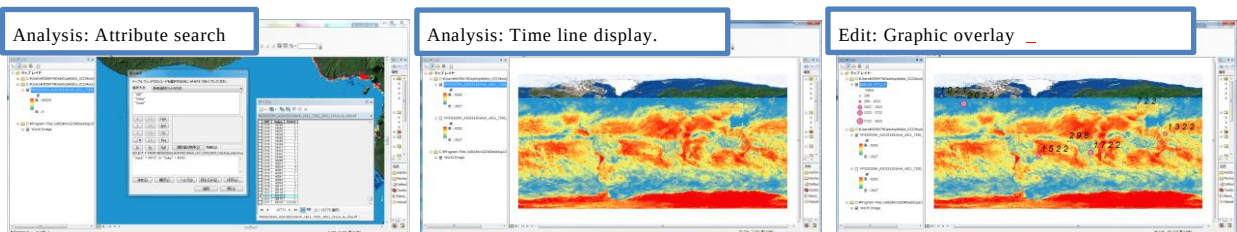


Fig. 20 Case of analyzing and distributing JASMES product by using GIS software