

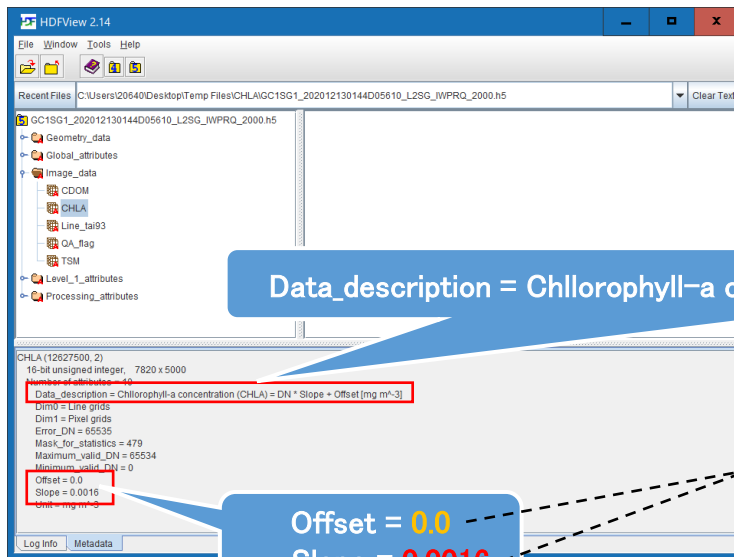
Display of Chlorophyll-a Concentration

Update Jan 27, 2023

【Chlorophyll-a Concentration】

The concentration of the green pigment in phytoplankton in surface water.

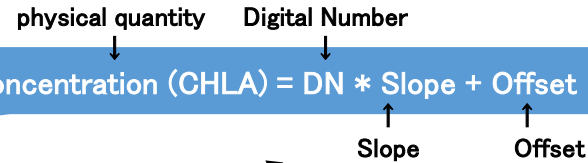
(1) Conversion formula to observed value ... Used on P.3 and P.8



$$\text{Data_description} = \text{Chlorophyll-a concentration (CHLA)} = \text{DN} * \text{Slope} + \text{Offset} [\text{mg m}^{-3}]$$

$$\text{Offset} = 0.0$$

$$\text{Slope} = 0.0016$$



$$\text{Physical Quantity (CHLA)} = \text{Digital Number (DN)} * 0.0016 + 0.0$$

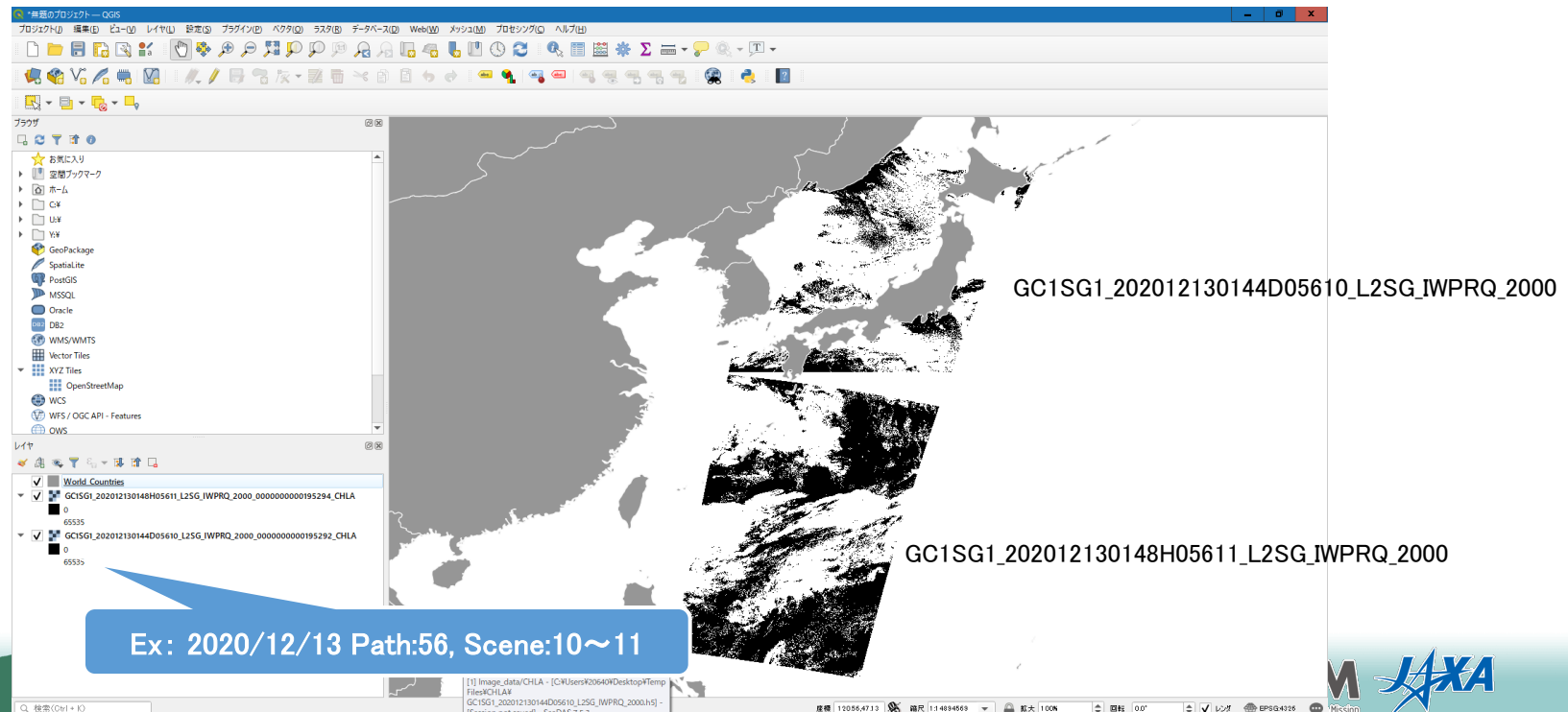
<HDFview>
 → from image_data/CHLA
 Attribute (metadata)

Display of Chlorophyll-a Concentration (QGIS)

Dec 22, 2020

(2) Display using Log Sclae (1/5)

- ① Convert CHLA data to GeoTIFF format.
 - > Convert with G-Portal (<https://gportal.jaxa.jp/gpr/>)
 - > Convert with GDAL (<https://shikisai.jaxa.jp/faq/faq0001.html>)
 - > Convert with Tool (<https://shikisai.jaxa.jp/faq/faq0105.html>)
- ② Input to QGIS the converted GeoTIFF file



Ex: 2020/12/13 Path:56, Scene:10~11

Display of Chlorophyll-a Concentration (QGIS)

Dec 22, 2020

(2) Display using Log Scale (2/5)

- ③ Conversion to physical quantity
Use a “raster calculator”.

CHLA is recommended to be displayed on a logarithmic scale, so calculations here use common logarithms.

< Reference >
Shikisai Portal FAQ No.25

- ① Press “log10”
- ② Click data (layer)
- ③ Press “*”
- ④ input “0.0016”
- ⑤ Press “)”
- ⑥ Press “OK”

log10
(“GC1SG1_202012130144D05610_L2SG_IWPRQ_2000_0000000000195292_CHLA@1” * 0.0016)

Display of Chlorophyll-a Concentration (QGIS)

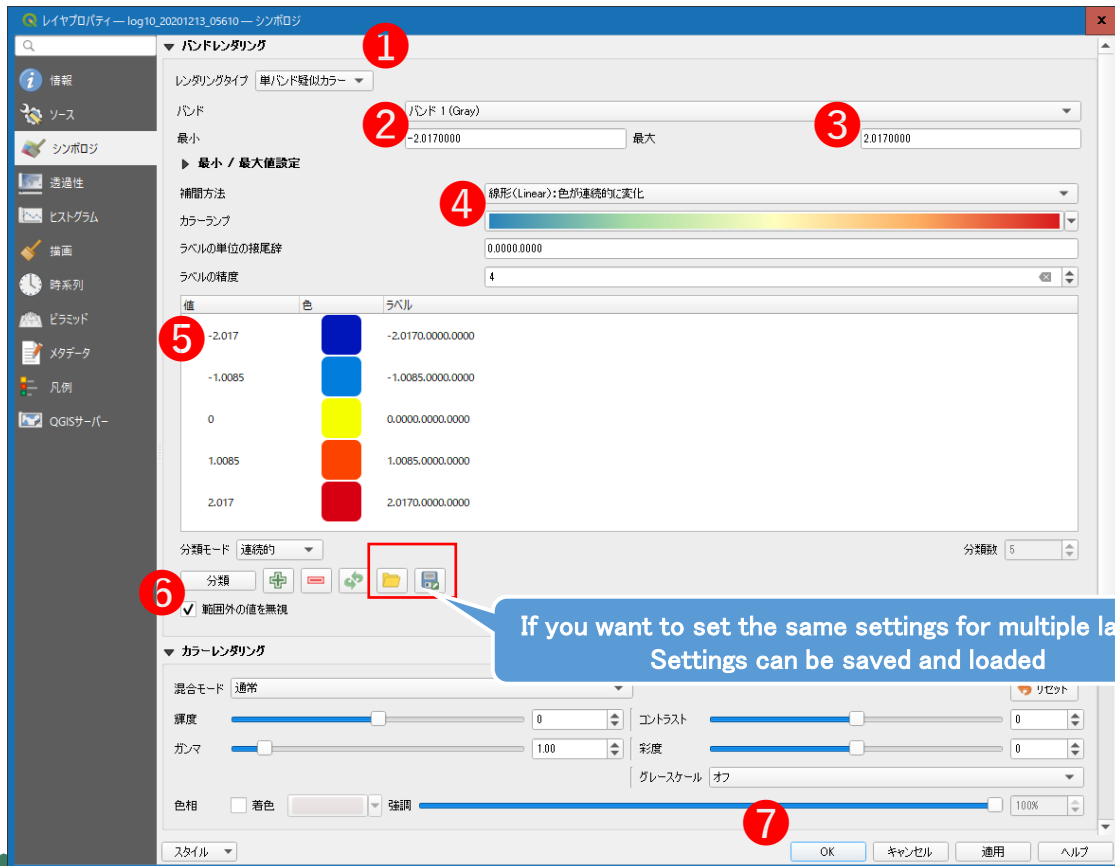
Dec 22, 2020

(2) Display using Log Sclae (3/5)

④ Color correction

Set the display method, display range, and color tone.

Select the layer (scene) you want to set and open "Layer Properties".



- ① Select "Single Band Pseudo Color"
- ② Set the minimum value → Enter "-2.017"
- ③ Set maximum value → Enter "2.017"
- ④ Select "spectral" and "color bar inversion"
- ⑤ Set the color pallet
- ⑥ Check "Ignore out-of-range values"
- ⑦ Press "OK"

* Do this for the layer you want to display.

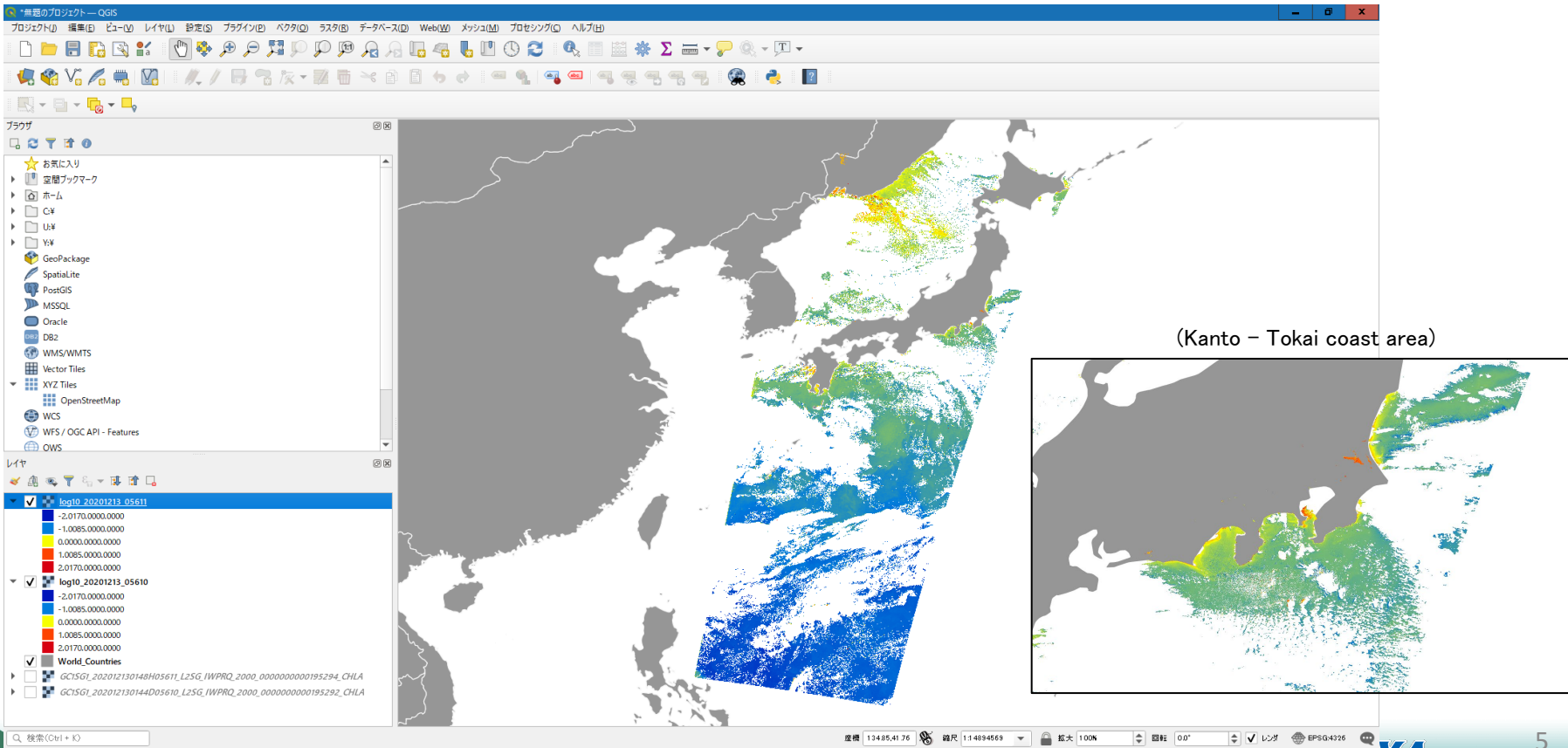
Display of Chlorophyll-a Concentration (QGIS)

Dec 22, 2020

(2) Display using Log Sclae (4/5)

⑤ Display of input/setting results

The operation results from ① to ④ are displayed. In the display range (-2.017 to 2.017), high values (close to red) indicate locations with high chlorophyll-a concentrations.



Display of Chlorophyll-a Concentration (QGIS)

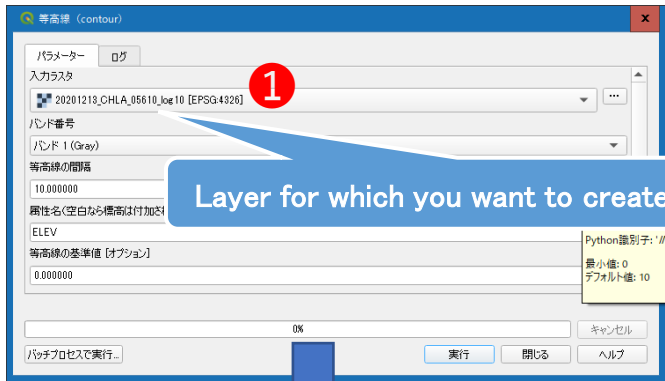
Jan 8, 2021

(2) Display using Log Sclae (5/5)

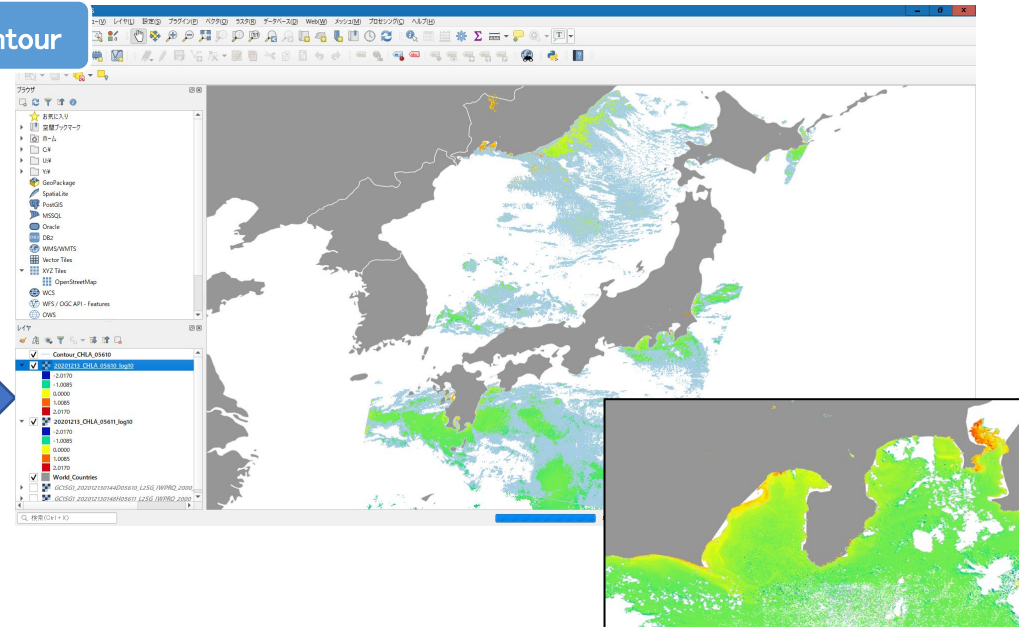
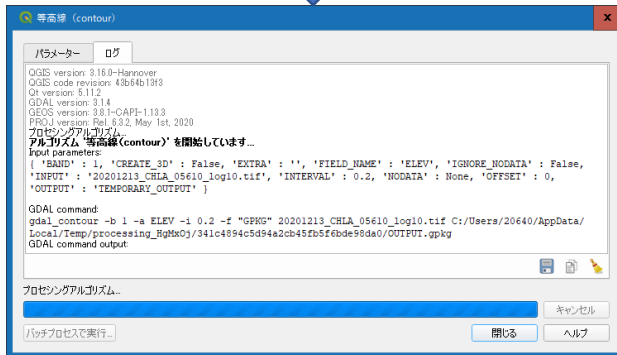
⑥ Contour

Select "Raster" > "Extract" > "Contour" from the menu.

Select the layer (①) for which you want to create the contour and execute.



Contour line layer creation result

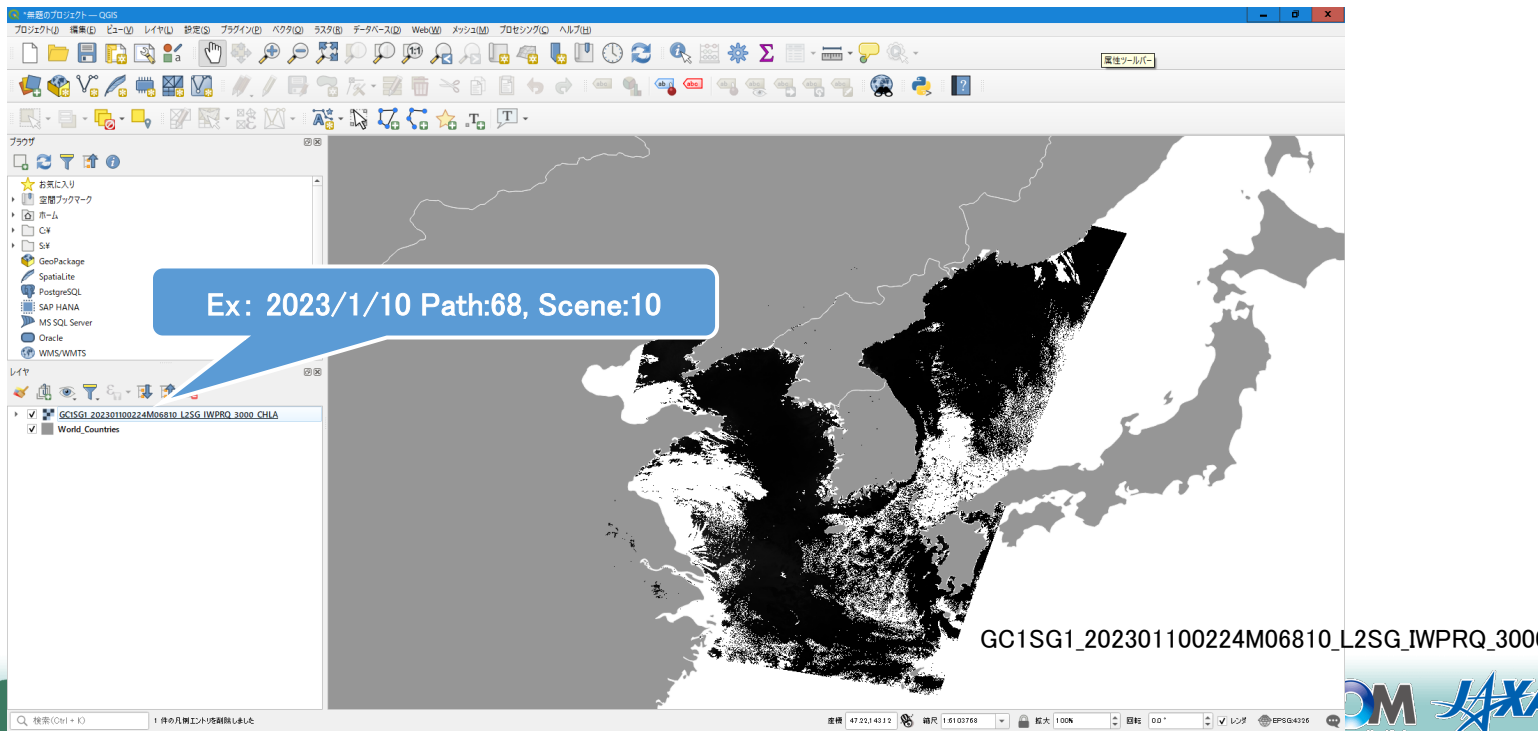


Display of Chlorophyll-a Concentration (QGIS)

Jan 27, 2023

(3) Display by physical quantity (1/4)

- ① Convert CHLA data to GeoTIFF format.
 - > Convert with G-Portal (<https://gportal.jaxa.jp/gpr/>)
 - > Convert with GDAL (<https://shikisai.jaxa.jp/faq/faq0001.html>)
 - > Convert with Tool (<https://shikisai.jaxa.jp/faq/faq0105.html>)
- ② Input to QGIS the converted GeoTIFF file



Display of Chlorophyll-a Concentration (QGIS)

Jan 27, 2023

(3) Display by physical quantity (2/4)

③ Conversion to physical quantity

Use a “raster calculator”.

Display settings using physical quantities are performed.

([Ref] <https://shikisai.jaxa.jp/faq/faq0128.html>)

The screenshot shows the QGIS Raster Calculator dialog box. The interface is in Japanese. A blue callout bubble points to the 'output file name' field, which contains 'ISG1_202301100224M06810_L2SG_IWPRQ_3000_CHLA_cal.tif'. A red circle '1' is next to the layer list on the left. A red circle '2' is next to the '演算子' (Operator) section. A blue callout bubble contains the formula: "GC1SG1_202301100224M06810_L2SG_IWPRQ_3000_CHLA@1" * 0.0016. A red circle '3' is next to the formula input field. A red circle '4' is next to the 'OK' button.

① Click data (layer)
② Press “*”
③ input “0.0016”
④ Press “OK”

“GC1SG1_202301100224M06810_L2SG_IWPRQ_3000_CHLA@1” * 0.0016

Display of Chlorophyll-a Concentration (QGIS)

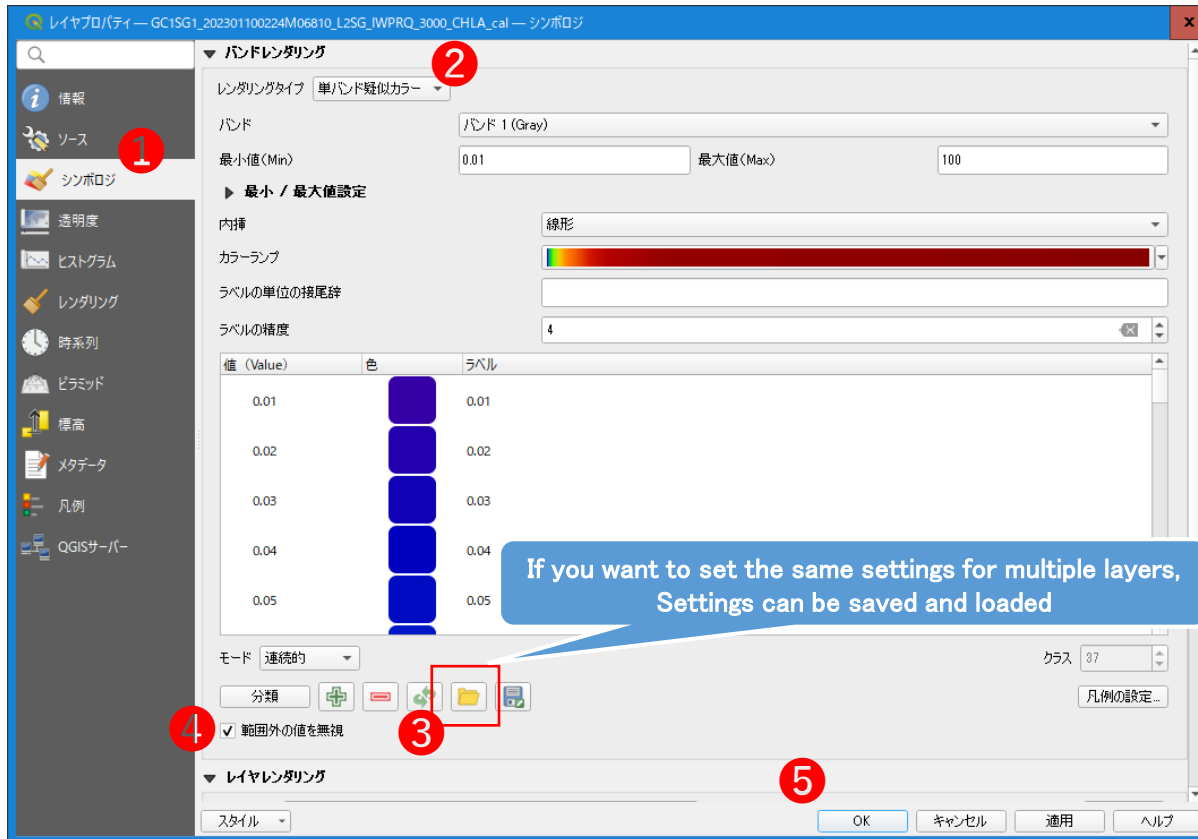
Jan 27, 2023

(2) Display by physical quantity (3/4)

④ Color correction

Set the display method, display range, and color tone.

Select the layer (scene) you want to set and open "Layer Properties".



- ① Select "symbology"
- ② Select "Single Band Pseudo Color"
- ③ Select label setting file (*)
- ④ Check "Ignore out-of-range values"
- ⑤ Press "OK"

(*) [Label setting file] the FAQ "Please tell us the display settings of the Shikisai images published on JASMES. (https://shikisai.jaxa.jp/faq/faq0128_j.html)" Please refer to the Excel available from → For chlorophyll-a concentration, edit and use the sheet "Palette_CHLA".

<How to edit the Label setting file>

- 1) Delete the first line (title)
- 2) Delete the last 3 lines (B, N, F)
- 3) Add "255" to column E
- 4) Copy the contents of column A to column F
- 5) Save with any file name in csv format → Go to ③

Display of Chlorophyll-a Concentration (QGIS)

Jan 27, 2023

(3) Display by physical quantity (4/4)

⑤ Display of input/setting results

The operation results from ① to ④ are displayed. In the display range (0 to 100), high values (close to red) indicate locations with high chlorophyll-a concentrations.

