

# GeoTIFF conversion of "Shikisai image" (SGLI Standard Data/JASMES format)

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- Introducing how to convert "Shikisai image" of JASMES format to GeoTIFF using GDAL command and parameters.

The processing method differs in the following target areas.

- around Japan (250m)
- Global map(5km)

**【Case 1】** around Japan(250m)

- Ocean / Chlorophyll a concentration (CHLA) image ----- p.2

**【Case 2】** Global map(5km)

- Ocean / Sea surface temperature (SST) image ----- p.4

If you download JASMES SGLI data, please register on following site.

<https://www.eorc.jaxa.jp/JASMES/registration.html>

# 【Case 1】 around Japan(250m) Ocean / Chlorophyll a concentration (CHLA) image

Introducing an example of GeoTIFF conversion of around Japan (250m) / ocean / chlorophyll a concentration (CHLA).

## Acquisition of product information

### 1) Get SD array name

The following is an example using OSGeo4W Shell which is installed when QGIS is installed on Windows.

Move to the directory where the image data is saved and enter the file name after the gdalinfo command as shown below to get the SD array name.

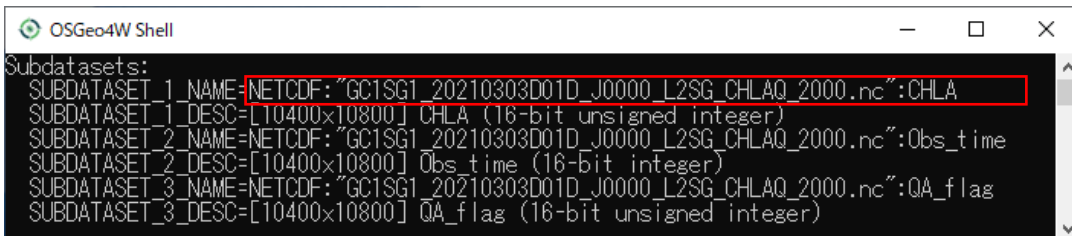
On Linux, it can be used in terminal applications, but GDAL must be installed.



```
C:\Users\¥\Documents¥Data2>gdalinfo GC1SG1_20210303D01D_J0000_L2SG_CHLAQ_2000.nc
```

netCDF file name

Use the information in the red frame of SUBDATASET\_1\_NAME at the bottom of the displayed information.



```
Subdatasets:
SUBDATASET_1_NAME=NETCDF:GC1SG1_20210303D01D_J0000_L2SG_CHLAQ_2000.nc:CHLA
SUBDATASET_1_DESC=[10400x10800] CHLA (16-bit unsigned integer)
SUBDATASET_2_NAME=NETCDF:GC1SG1_20210303D01D_J0000_L2SG_CHLAQ_2000.nc:Obs_time
SUBDATASET_2_DESC=[10400x10800] Obs_time (16-bit integer)
SUBDATASET_3_NAME=NETCDF:GC1SG1_20210303D01D_J0000_L2SG_CHLAQ_2000.nc:QA_flag
SUBDATASET_3_DESC=[10400x10800] QA_flag (16-bit unsigned integer)
```

# 【Case 1】 around Japan(250m) Ocean / Chlorophyll a concentration (CHLA) image

## GeoTIFF conversion / reprojection

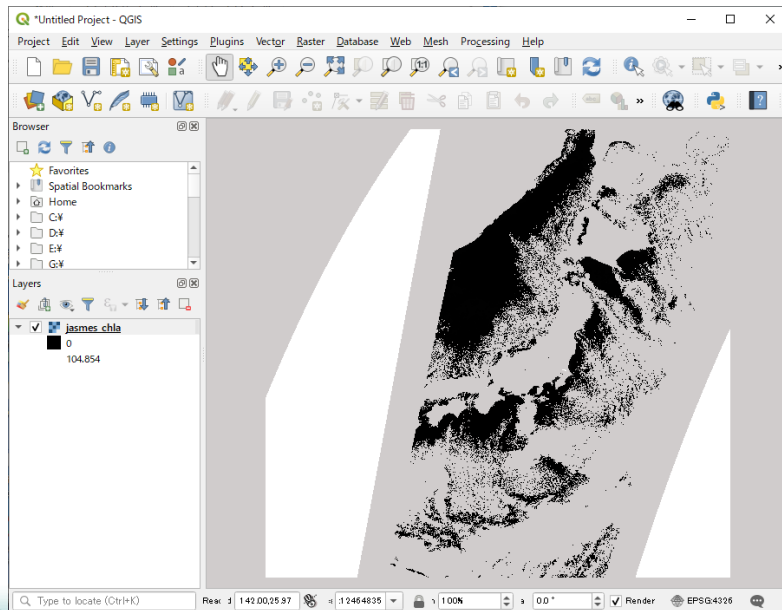
### 2) GeoTIFF conversion

Using the information of SUBDATASET\_1\_NAME in the red frame of 1) as the input file name, use the gdal\_translate command to perform GeoTIFF conversion as shown below.

```
OSGeo4W Shell
C:\Users\¥¥\Documents\Data2>gdal_translate -of GTiff -a_srs EPSG:4326 NETCDF:"GC1SG
1_20210303D01D_J0000_L2SG_CHLAQ_2000.nc":CHLA jsmes_chla.tif
```

Labels in the image:  
 - Output file format: -of GTiff  
 - Input file reference coordinate system: -a\_srs EPSG:4326  
 - Input file name: NETCDF:"GC1SG1\_20210303D01D\_J0000\_L2SG\_CHLAQ\_2000.nc":CHLA  
 - Output file name: jsmes\_chla.tif

### < Output file display example in QGIS >



## 【Case 2】 Global map(5km) Ocean / Sea surface temperature (SST) image

Introducing an example of GeoTIFF conversion of global map(250m) / ocean / sea surface temperature (SST).  
 Product information acquisition 1) SD sequence name acquisition is the same as image 1.

### Acquisition of product information

#### 1) Get SD array name

The following is an example using OSGeo4W Shell which is installed when QGIS is installed on Windows.

Move to the directory where the image data is saved and enter the file name after the gdalinfo command as shown below to get the SD array name.

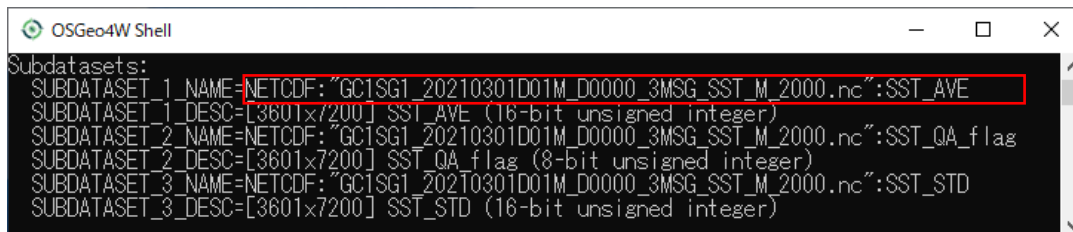
On Linux, it can be used in terminal applications, but GDAL must be installed.



```
C:\Users¥ ¥Documents¥Data2>gdalinfo GC1SG1_20210301D01M_D0000_3MSG_SST_M_2000.nc
```

netCDF file name

Use the information in the red frame of SUBDATASET\_1\_NAME at the bottom of the displayed information.



```
Subdatasets:
SUBDATASET_1_NAME=NETCDF:"GC1SG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_AVE
SUBDATASET_1_DESC=[3601x7200] SST_AVE (16-bit unsigned integer)
SUBDATASET_2_NAME=NETCDF:"GC1SG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_QA_flag
SUBDATASET_2_DESC=[3601x7200] SST_QA_flag (8-bit unsigned integer)
SUBDATASET_3_NAME=NETCDF:"GC1SG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_STD
SUBDATASET_3_DESC=[3601x7200] SST_STD (16-bit unsigned integer)
```

## 【Case 2】 Global map(5km) Ocean / Sea surface temperature (SST) image

The image on the JASMES format(SGLI standard Data) is centered at 180 degrees longitude, but here it is converted to an image centered at 0 degrees longitude.

In QGIS "Custom Projection" settings, 180 degrees longitude is displayed as the center of the image. As a reference, we will introduce a conversion example with the center image at 180 degrees longitude at the end.

### GeoTIFF conversion / reprojection

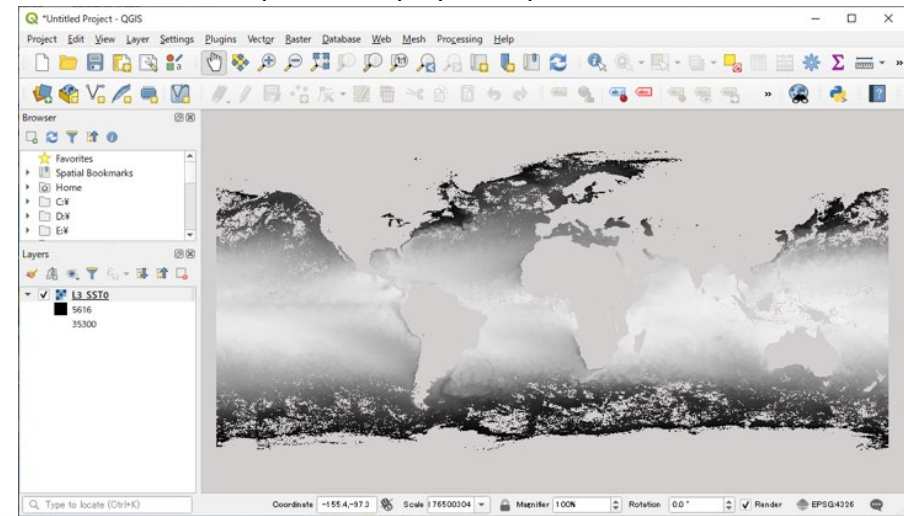
#### 2) GeoTIFF conversion

Using the information of SUBDATASET\_1\_NAME in the red frame of 1) as the input file name, use the gdalwarp command to perform GeoTIFF conversion as shown below.

```
OSGeo4W Shell
C:\Users\%...%\Documents\Data2>gdalwarp -of Gtiff -s_srs "+proj=longlat +ellps=WGS84 +lon_warp=180"
-t_srs EPSG:4326 -te -180 -90 180 90 NETCDF:"GCTSG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_AVE
L3_SST0.tif
```

Output file format: Gtiff  
 Input file reference coordinate system: "+proj=longlat +ellps=WGS84 +lon\_warp=180"  
 Clarified that it straddles 180 degrees: -te -180 -90 180 90  
 Output file name: L3\_SST0.tif  
 Output file reference coordinate system and output range: EPSG:4326  
 Input file name: NETCDF:"GCTSG1\_20210301D01M\_D0000\_3MSG\_SST\_M\_2000.nc":SST\_AVE

< Output file display example in QGIS >



✂ It is necessary to recalculate the physical quantity.

Get add\_offset and scale\_factor from the gdalinfo information of "SST\_AVE" and calculate using the QGIS raster calculator.

```
OSGeo4W Shell
C:\Users\%...%\Documents\Data2>gdalinfo NETCDF:"GCTSG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_AVE
```

Input file name

```
OSGeo4W Shell
SST_AVE#add_offset=-10
SST_AVE#long_name=Average of SST parameter (Equal Rectangular projection: Global)
SST_AVE#missing_value=65535
SST_AVE#scale_factor=0.0012000001
SST_AVE#units=degree
SST_AVE#valid_max=65531
SST_AVE#valid_min=0
```

# 【Case 2】 Global map(5km) Ocean / Sea surface temperature (SST) image

GeoTIFF conversion / reprojection

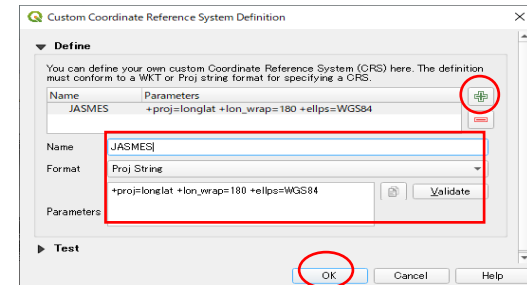
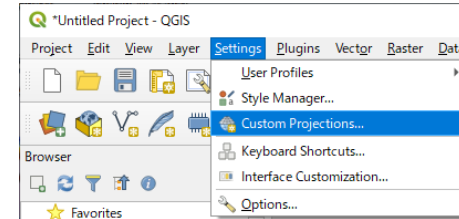
## 3) Custom projection settings

Select "Custom Projection" from the toolbar on the QGIS screen.

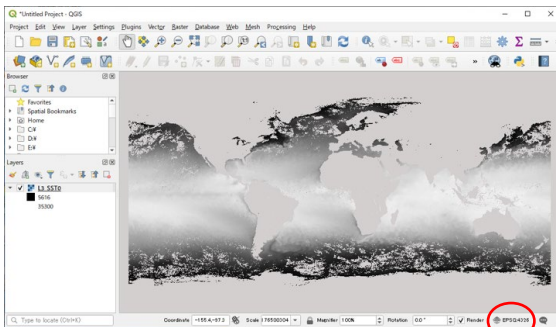
Settings > Custom Projection

Click the "+" button in the red circle at the right end of the "Custom Coordinate Reference System Definition" screen. Set the Name, Format and Parameters as follows, and click the "OK" button at the bottom.

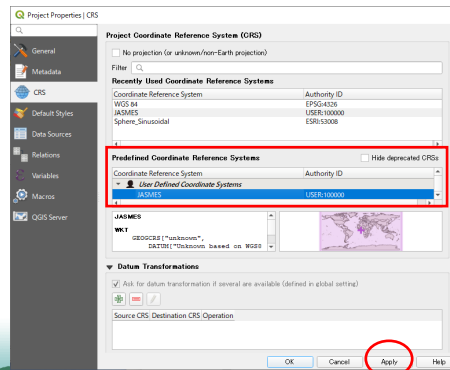
- Name : JASMES [Give it any name]
- Format : Select "Proj String"
- Parameters : +proj=longlat +lon\_wrap=180 +ellps=WGS84



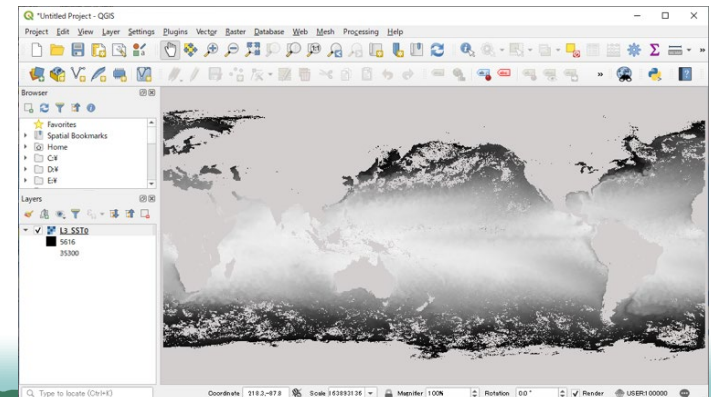
Click inside the red circle at the bottom right of the screen.



Select the coordinate system set in "User-Defined Coordinate Systems" in the red frame below. Here, select JASMES above, Click Apply at the bottom.



< After changing the coordinate system >



## 【Case 2】 Global map(5km) Ocean / Sea surface temperature (SST) image

<Reference>

### 1) GeoTIFF conversion (Longitude center 180 degrees)

GeoTIFF conversion is performed with the `gdal_translate` command as shown below, using the acquired SD array name `SUBDATASET_1_NAME` information as the input file name.

```

OSGeo4W Shell
C:\Users\¥\Documents\Data2>gdal_translate -of GTiff -a_srs "+proj=longlat +lon_wrap=180
+ellps=WGS84" NETCDF:"GC1SG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_AVE_L3_SST180.tif
  
```

Output file format: `-of GTiff`  
 Input file reference coordinate system: `-a_srs "+proj=longlat +lon_wrap=180 +ellps=WGS84"`  
 Clarified that it straddles 180 degrees: `+lon_wrap=180`  
 Input file name: `NETCDF:"GC1SG1_20210301D01M_D0000_3MSG_SST_M_2000.nc":SST_AVE_L3_SST180.tif`  
 Output file name: `SST180.tif`

\* It may not be possible to read with other tools or superimpose with a map vector.  
Longitude display in QGIS is 0-360 degrees.

< Output file display example in QGIS >

