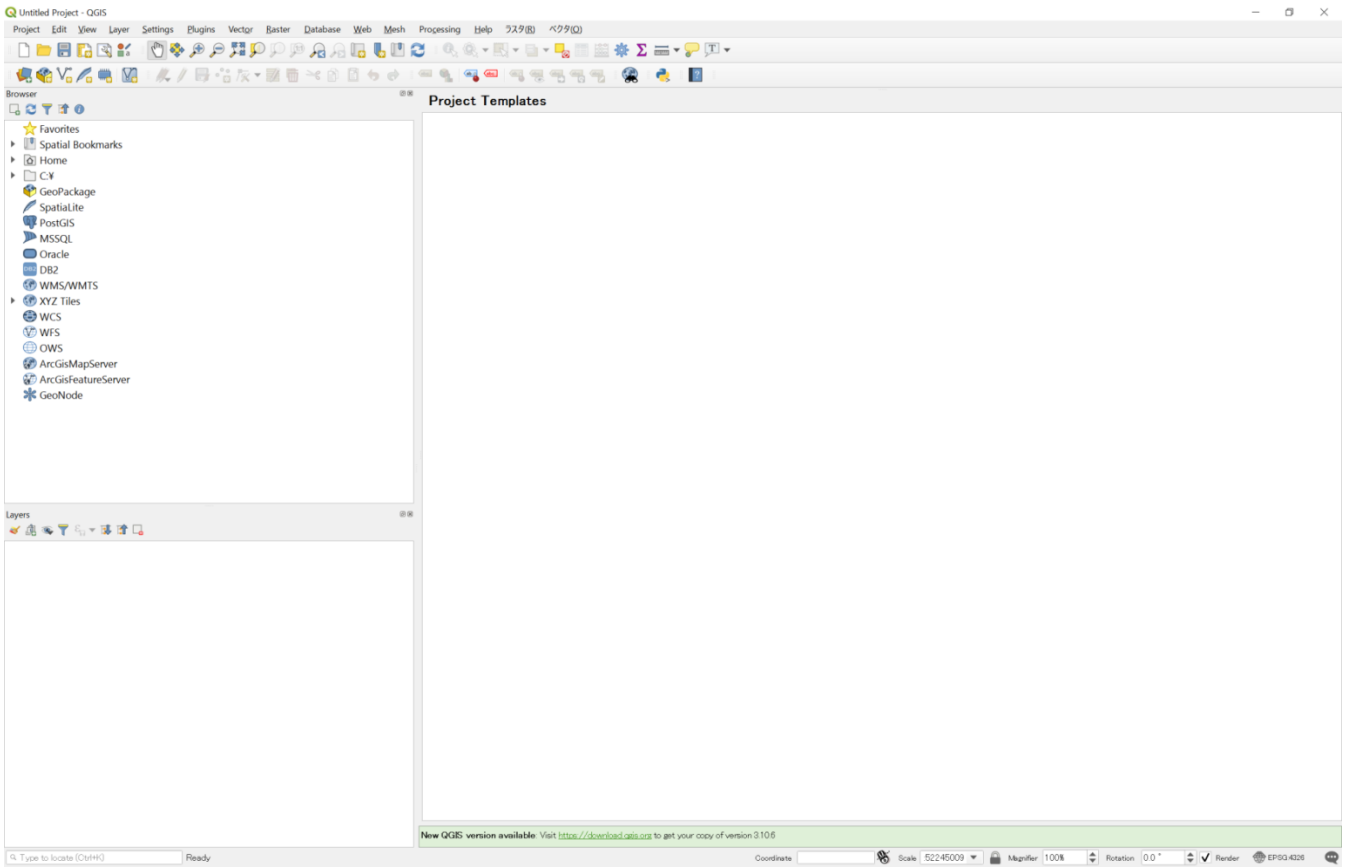
Imaging procedure for GCOM-C(SHIKISAI) product by using QGIS

STEP.3 Read the data with QGIS

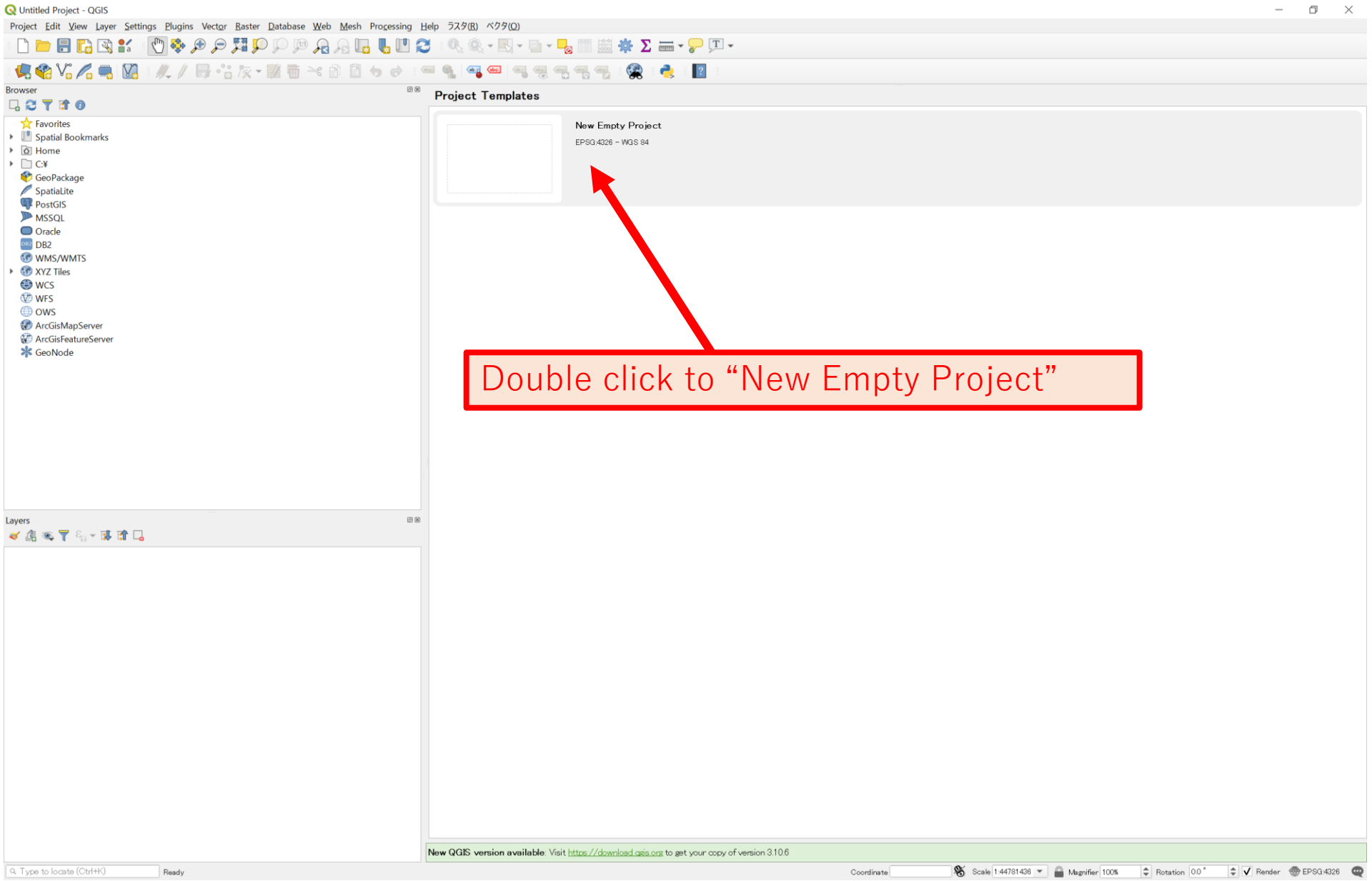
STEP.4 Convert pixel data (digital value) to sea surface temperature

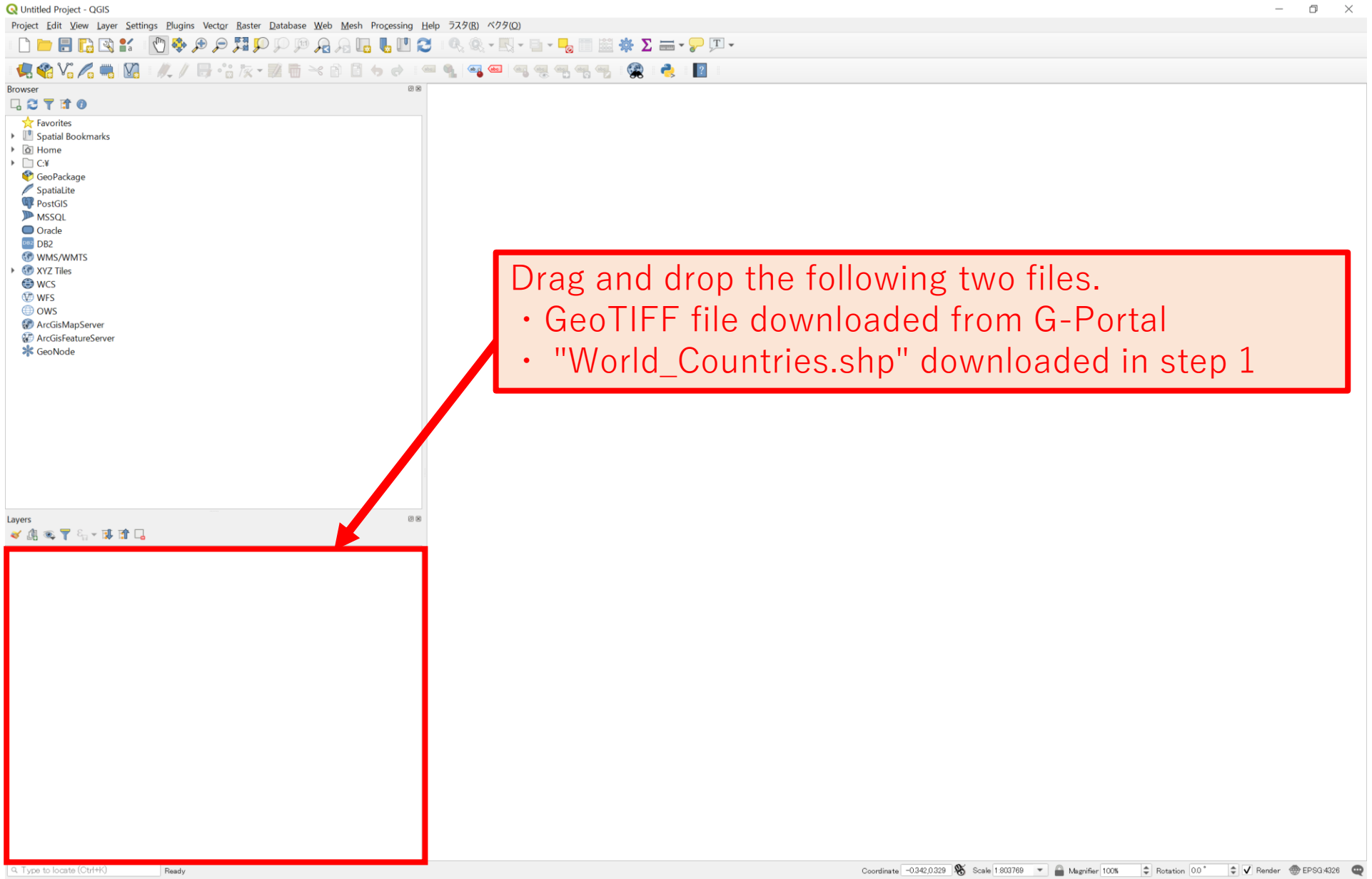
STEP.3　Read the data with QGIS

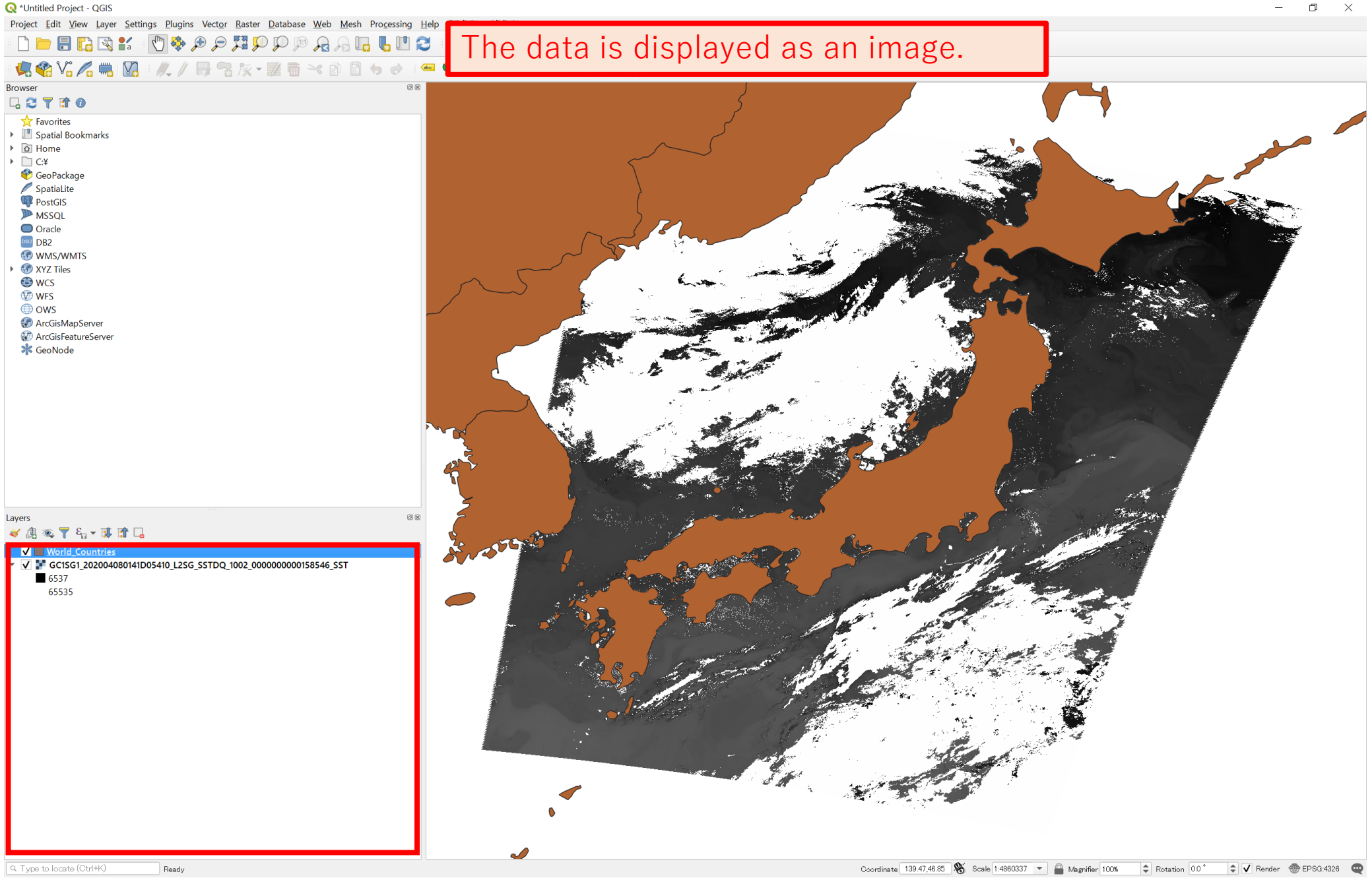
1 . Start QGIS.
(As an example, QGIS version 3.10 is used for explanation, so the screen layout may be slightly different depending on the version you are using.)



※ Please refer to the last page of "STEP 6 Adjust the image and save it as your own data" for installing QGIS.


Untitled Project - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help ラスタ(R) ベクタ(O)
Browser
Favorites
Spatial Bookmarks
Home
C:¥
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
WCS
WFS
OWS
ArcGisMapServer
ArcGisFeatureServer
GeoNode
Layers
Project Templates
New Empty Project
EPSG:4326 - WGS 84
Double click to “New Empty Project”
New QGIS version available: Visit https://download.qgis.org to get your copy of version 3.10.6
Type to locate (Ctrl+K)
Ready
Coordinate
Scale 1:44781436
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326


Untitled Project - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help ラスタ(R) ベクタ(O)
Browser
Favorites
Spatial Bookmarks
Home
C:¥
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
WCS
WFS
OWS
ArcGisMapServer
ArcGisFeatureServer
GeoNode
Layers
Drag and drop the following two files.
・GeoTIFF file downloaded from G-Portal
・ "World_Countries.shp" downloaded in step 1
Type to locate (Ctrl+K)
Ready
Coordinate
Scale
Magnifier
Rotation
Render
EPSG:4326

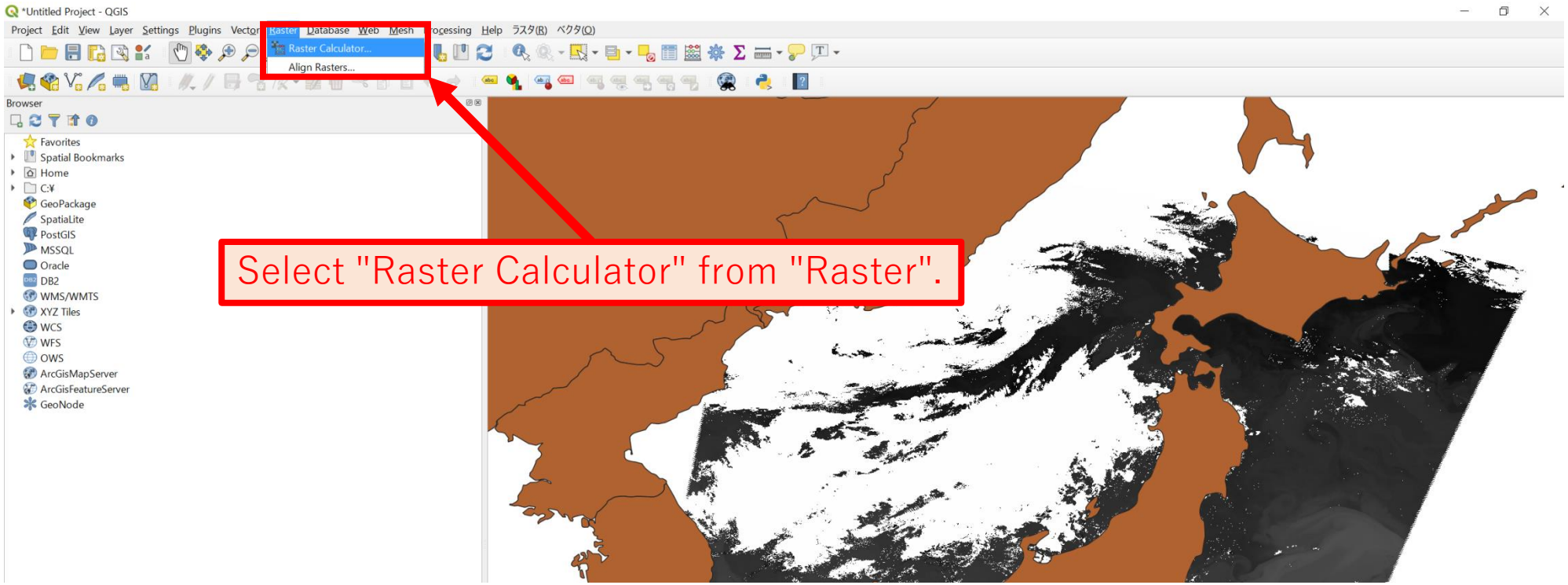

*Untitled Project - QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
The data is displayed as an image.
Browser
Favorites
Spatial Bookmarks
Home
C:¥
GeoPackage
SpatiaLite
PostGIS
MSSQL
Oracle
DB2
WMS/WMTS
XYZ Tiles
WCS
WFS
OWS
ArcGisMapServer
ArcGisFeatureServer
GeoNode
Layers
World_Countries
GC1SG1_202004080141D05410_L2SG_SSTDQ_1002_0000000000158546_SST
6537
65535
Type to locate (Ctrl+K)
Ready
Coordinate 139.47,46.85
Scale 1:4860337
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

STEP.4　Convert pixel data (digital value) to sea surface temperature

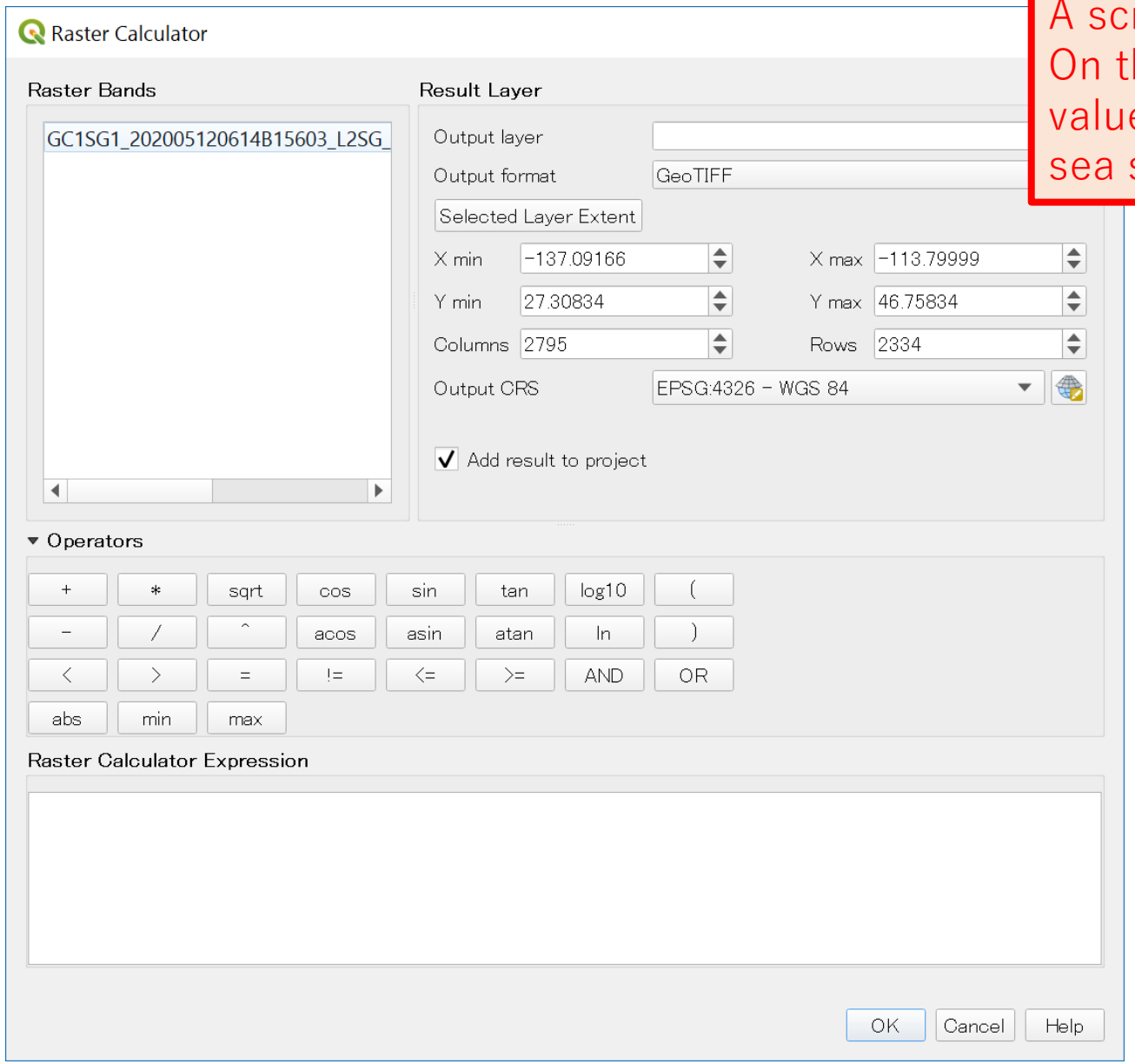
As it explained in STEP2, the value stored in each pixel of GeoTIFF file is a digital number (DN). To convert this value to Sea Surface Temperature (SST), You need to calculate according to the following formula:

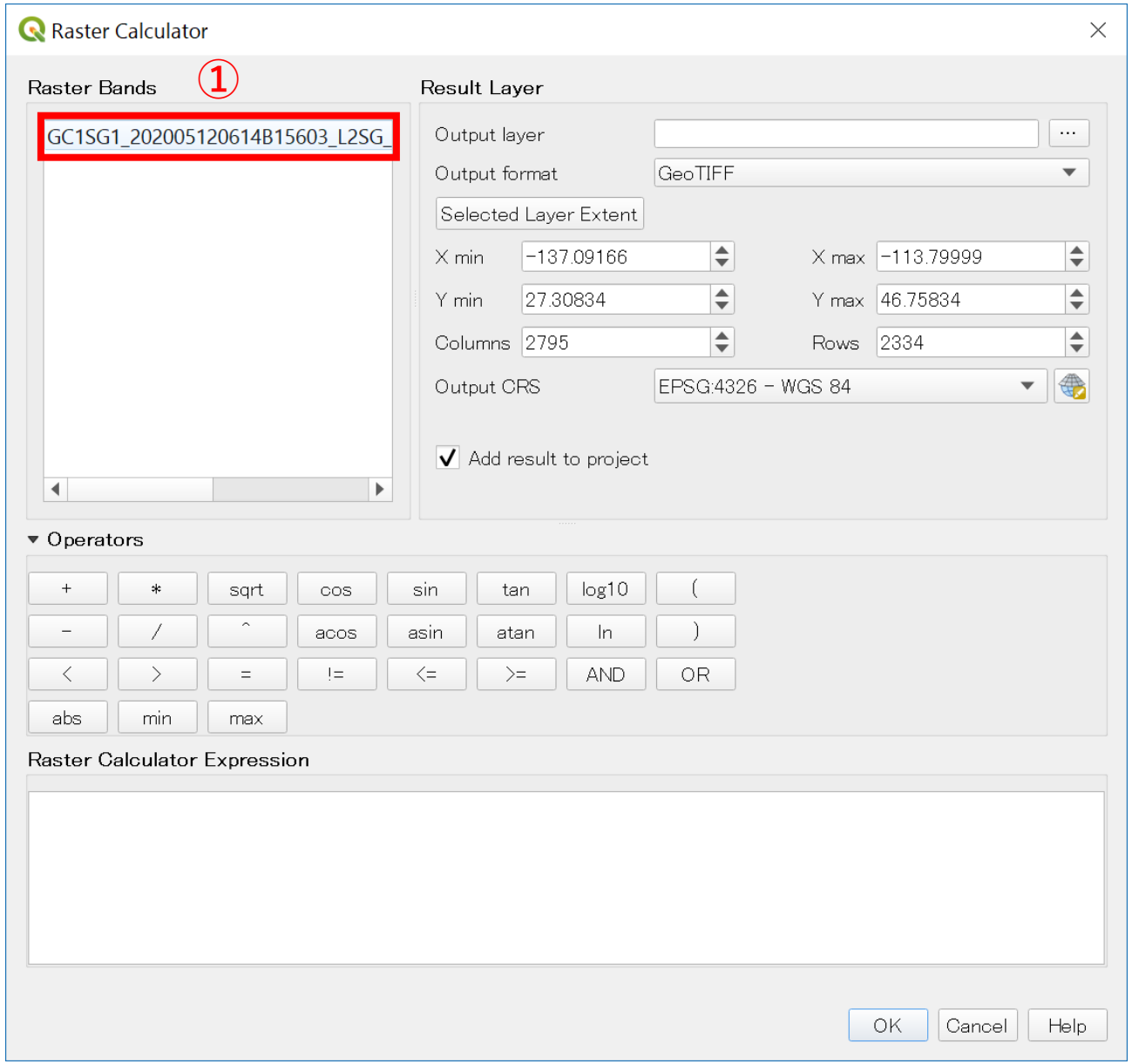
$$SST(degree) = DN \times 0.0012 - 10$$

This chapter describes how to use the "Raster Calculator", which is the calculation function of QGIS.

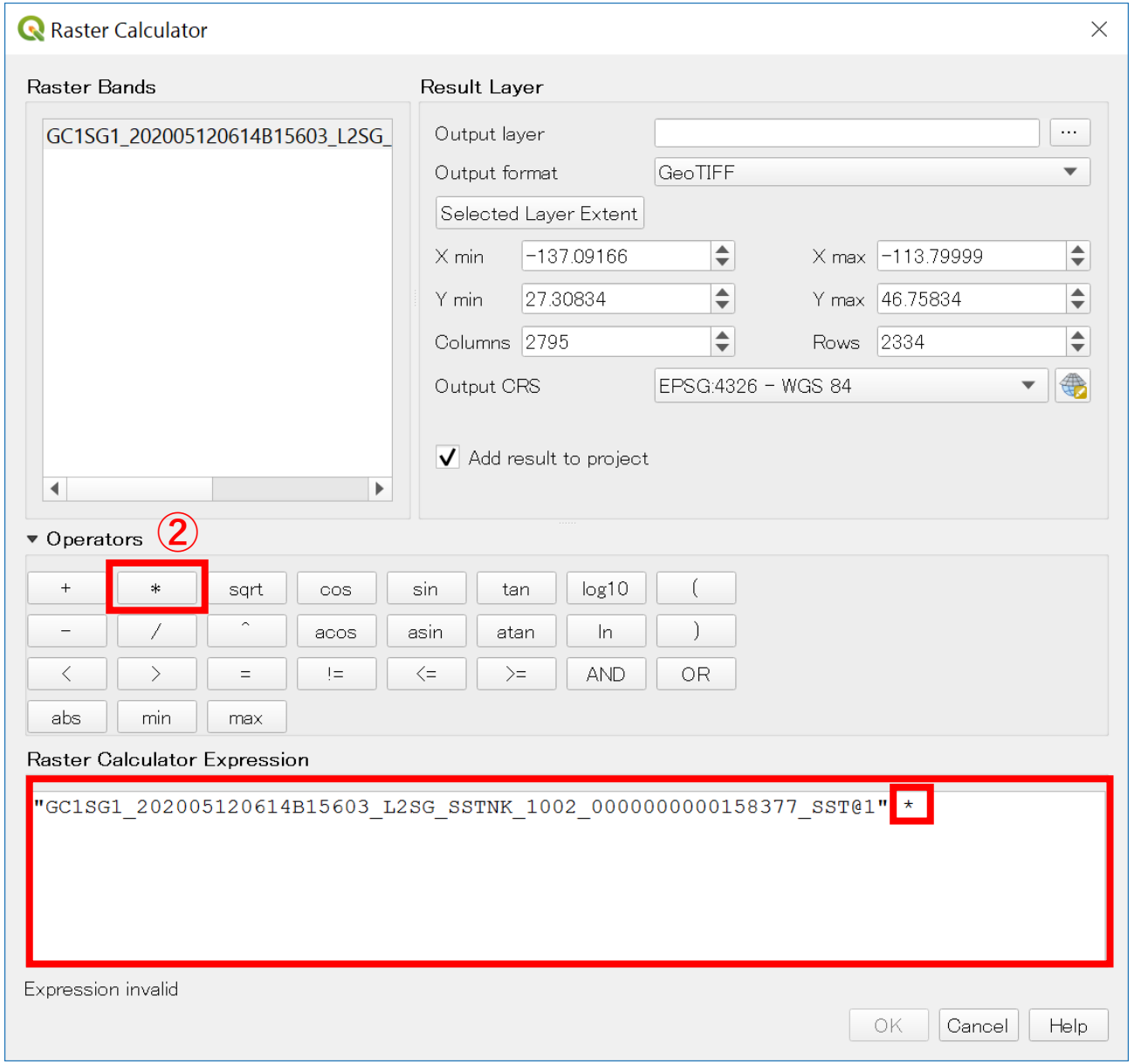


A screen like this will open.
On this screen, create a formula to convert the values contained in the data into the values of sea surface temperature.

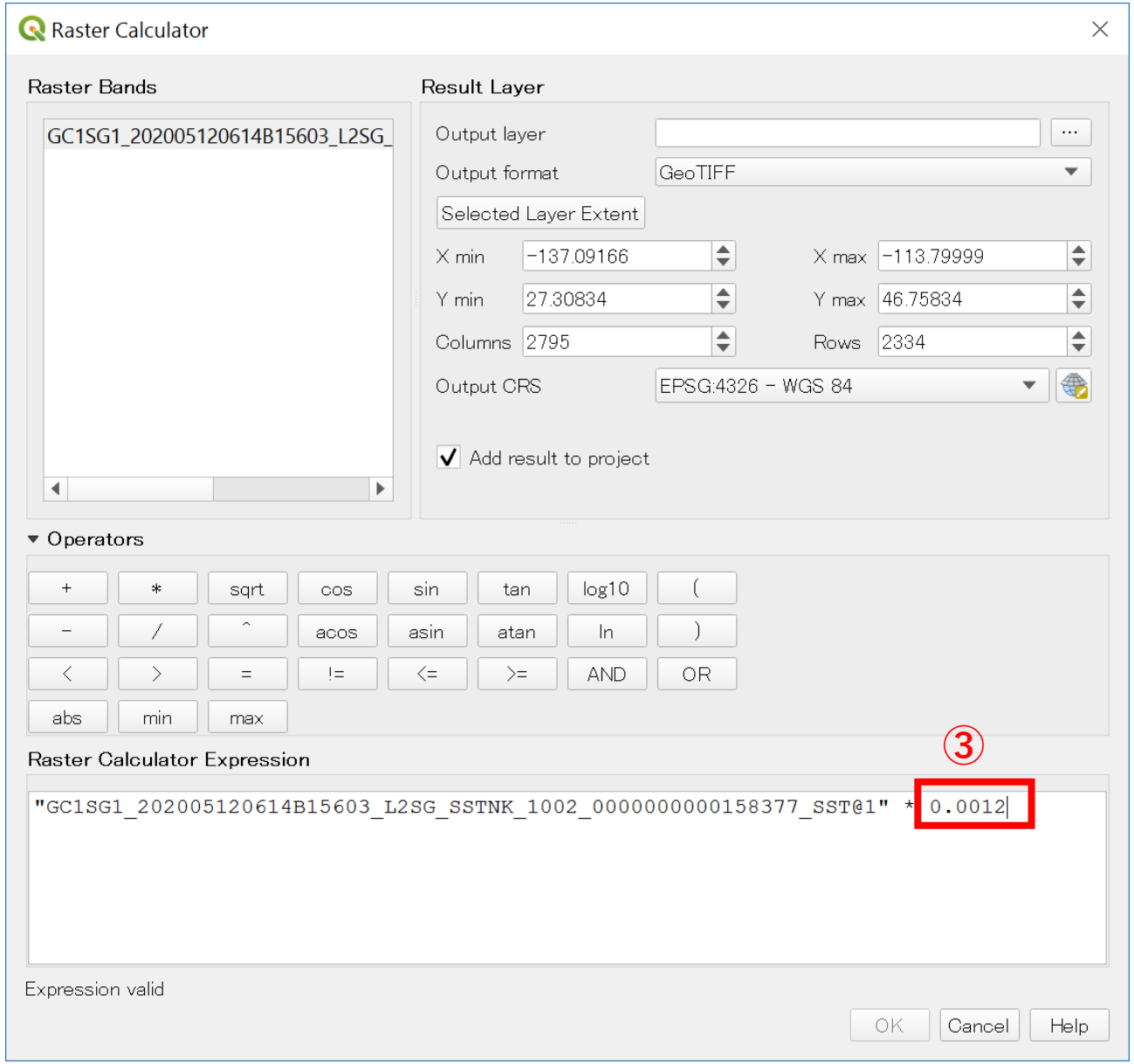




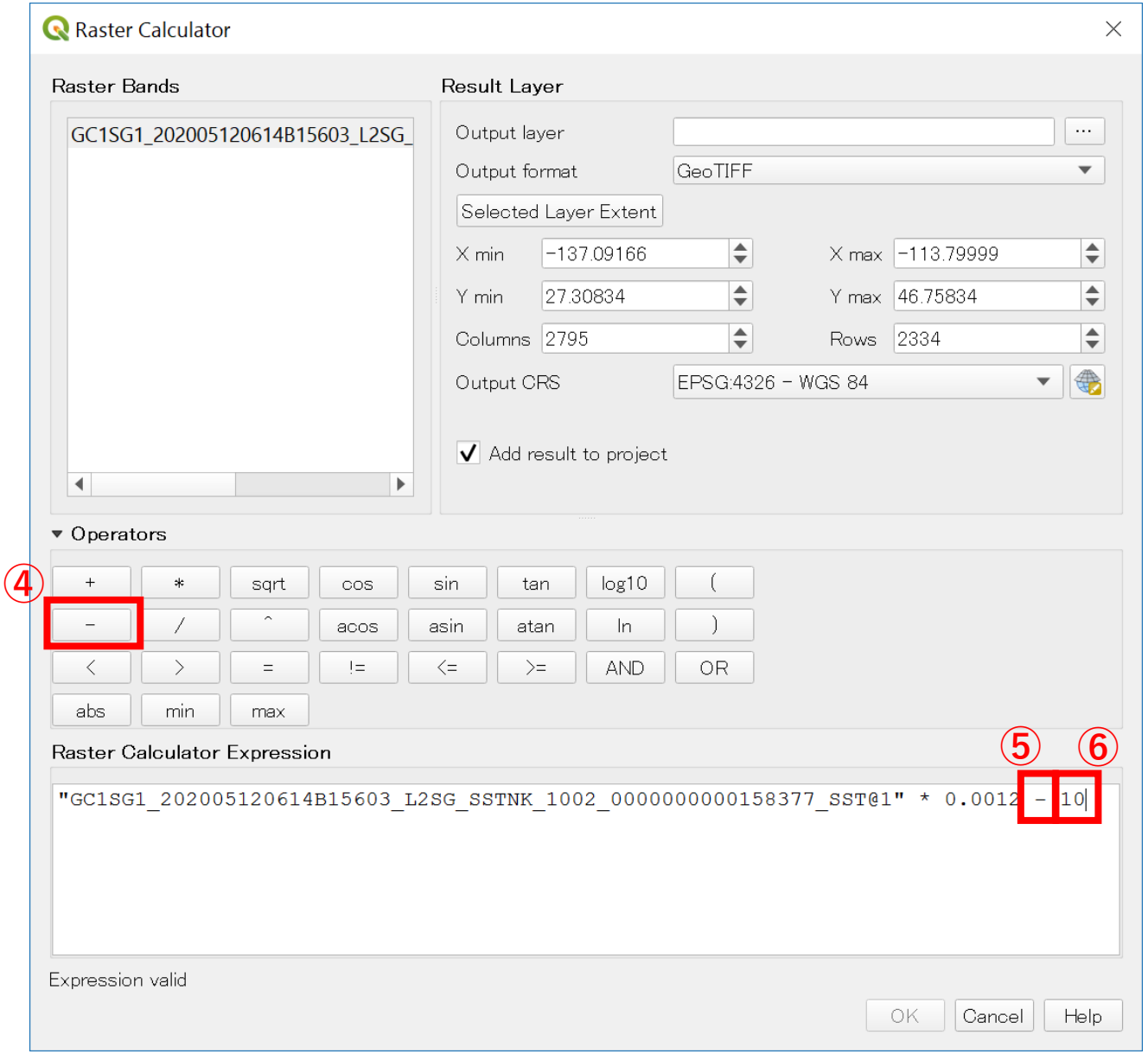
①Double-click the file name in the “Raster Bands" frame.
(Then, it will be displayed in the "Formula" box below.)



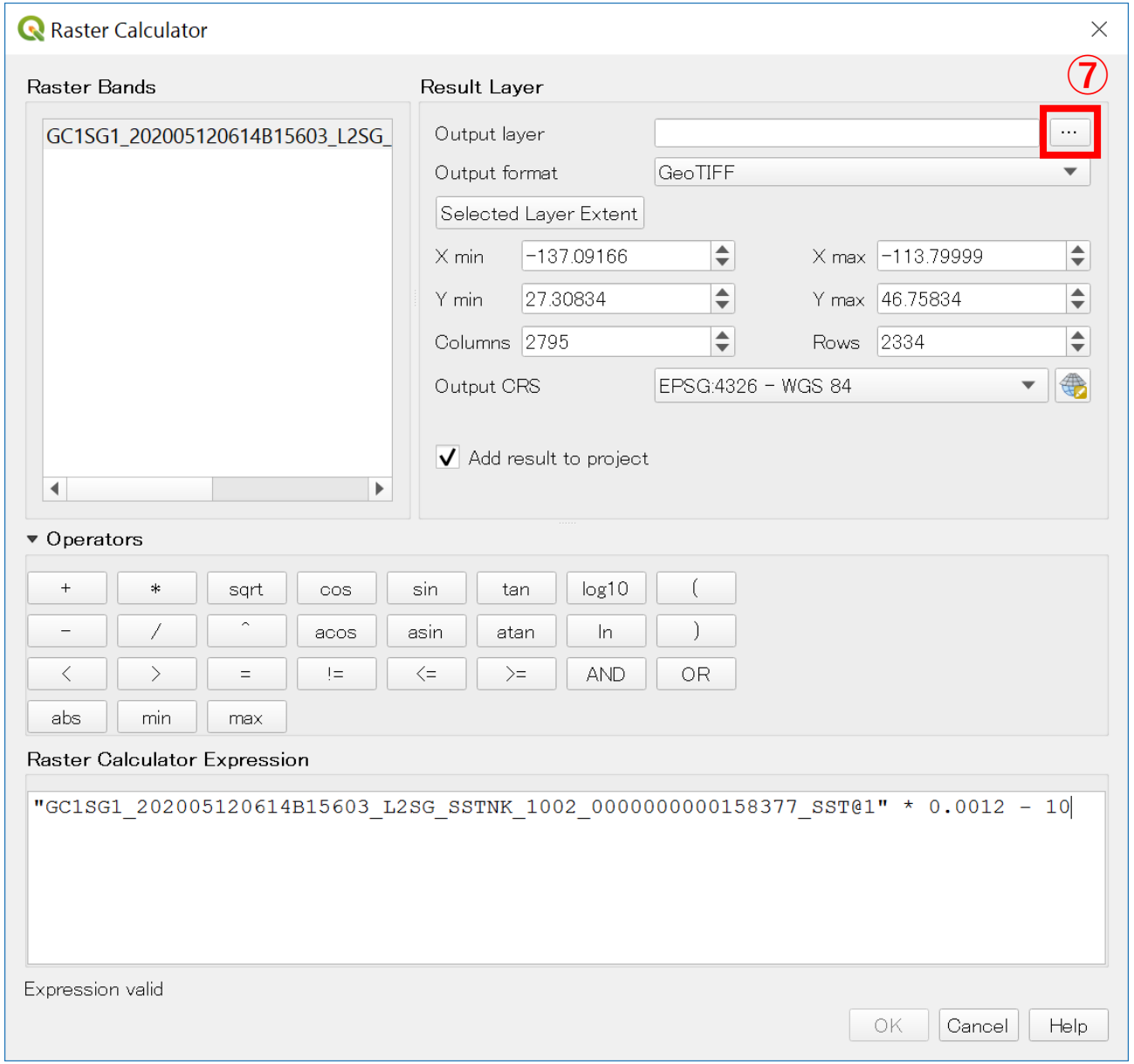
②Click the "*" button. (Then, it will be displayed in the "Formula" box below.)



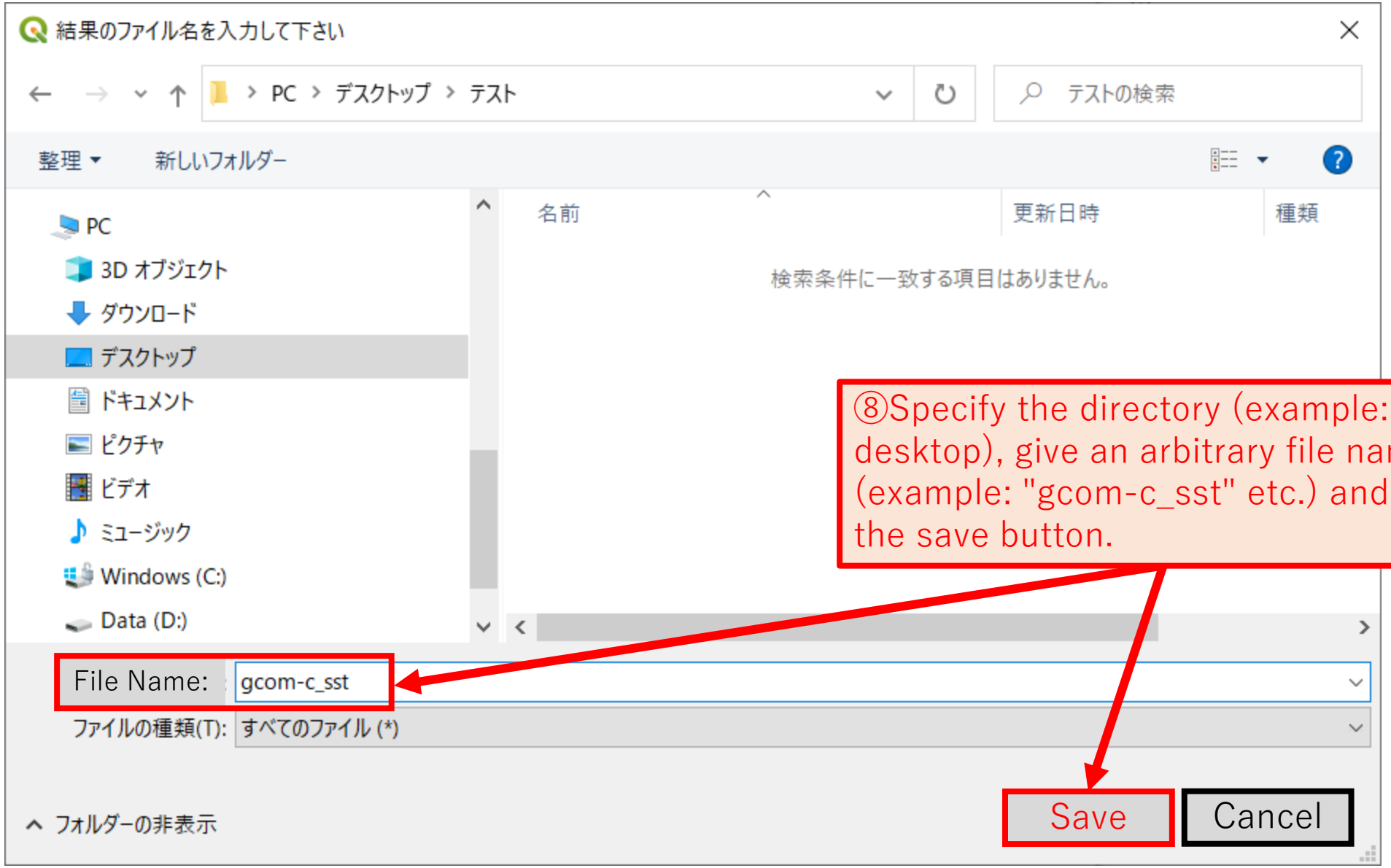
③Place the cursor on the right side of "*" and click. Then, it will be ready for input, so enter "0.0012".



④Click the "-" button.
⑤When "-" is displayed in the "Expression" field, click the right side of the expression once to make it ready for input.
⑥Enter "10".

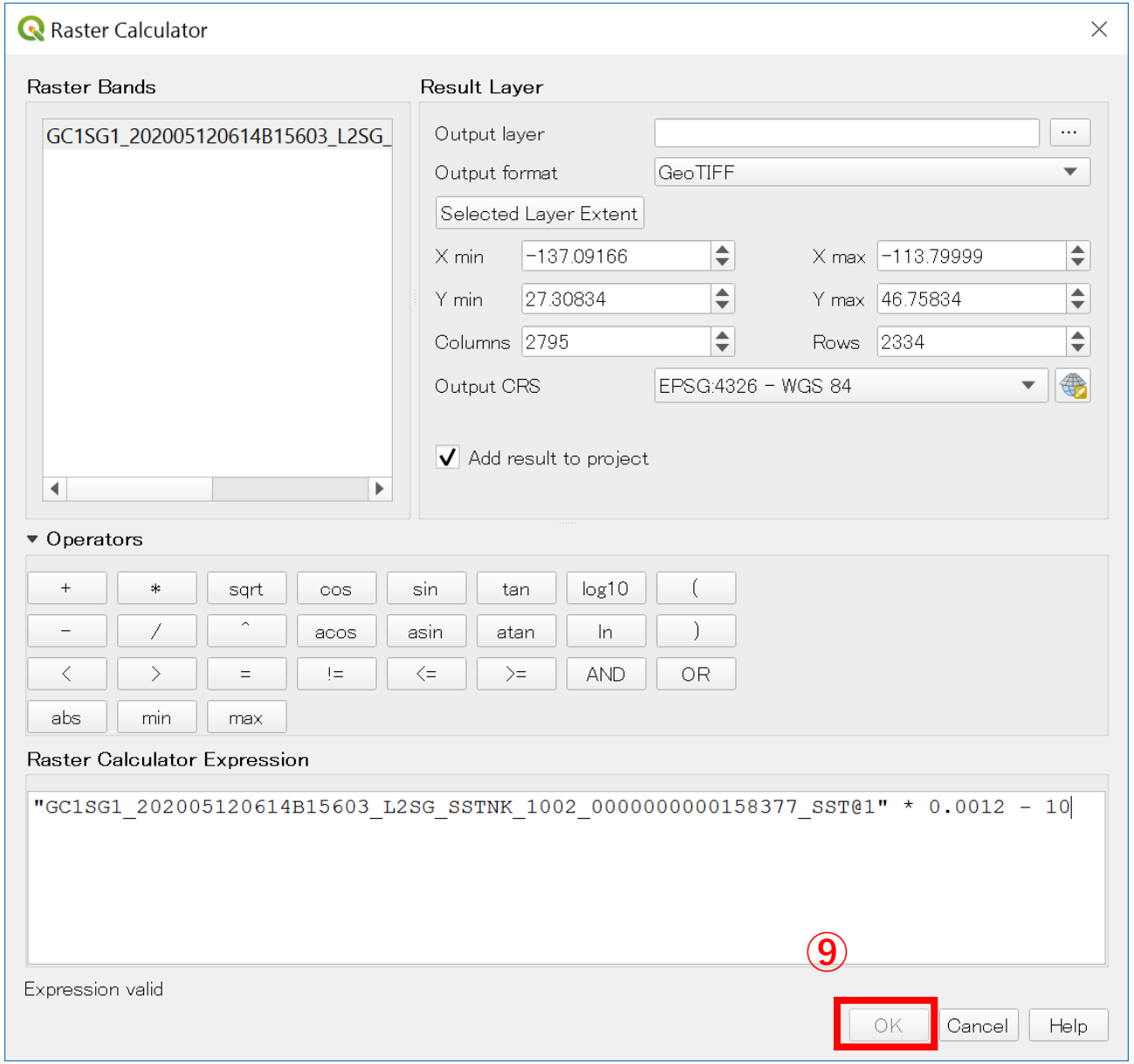


⑦ Click “...” at the right end of “Output layer” in the “Result layer”.



⑧Specify the directory (example: desktop), give an arbitrary file name (example: "gcom-c_sst" etc.) and click the save button.

※The screen is Japanese version Windows 10.


Raster Calculator
Raster Bands
GC1SG1_202005120614B15603_L2SG_
Result Layer
Output layer
Output format
GeoTIFF
Selected Layer Extent
X min
-137.09166
X max
-113.79999
Y min
27.30834
Y max
46.75834
Columns
2795
Rows
2334
Output CRS
EPSG:4326 - WGS 84
Add result to project
Operators
+
*
sqrt
cos
sin
tan
log10
(
-
/
^
acos
asin
atan
ln
)
<
>
=
!=
<=
>=
AND
OR
abs
min
max
Raster Calculator Expression
"GC1SG1_202005120614B15603_L2SG_SSTNK_1002_0000000000158377_SST@1" * 0.0012 - 10
⑨
Expression valid
OK
Cancel
Help

⑨ Click to ”OK”.

When the calculation process is complete, you will see a screen like this.