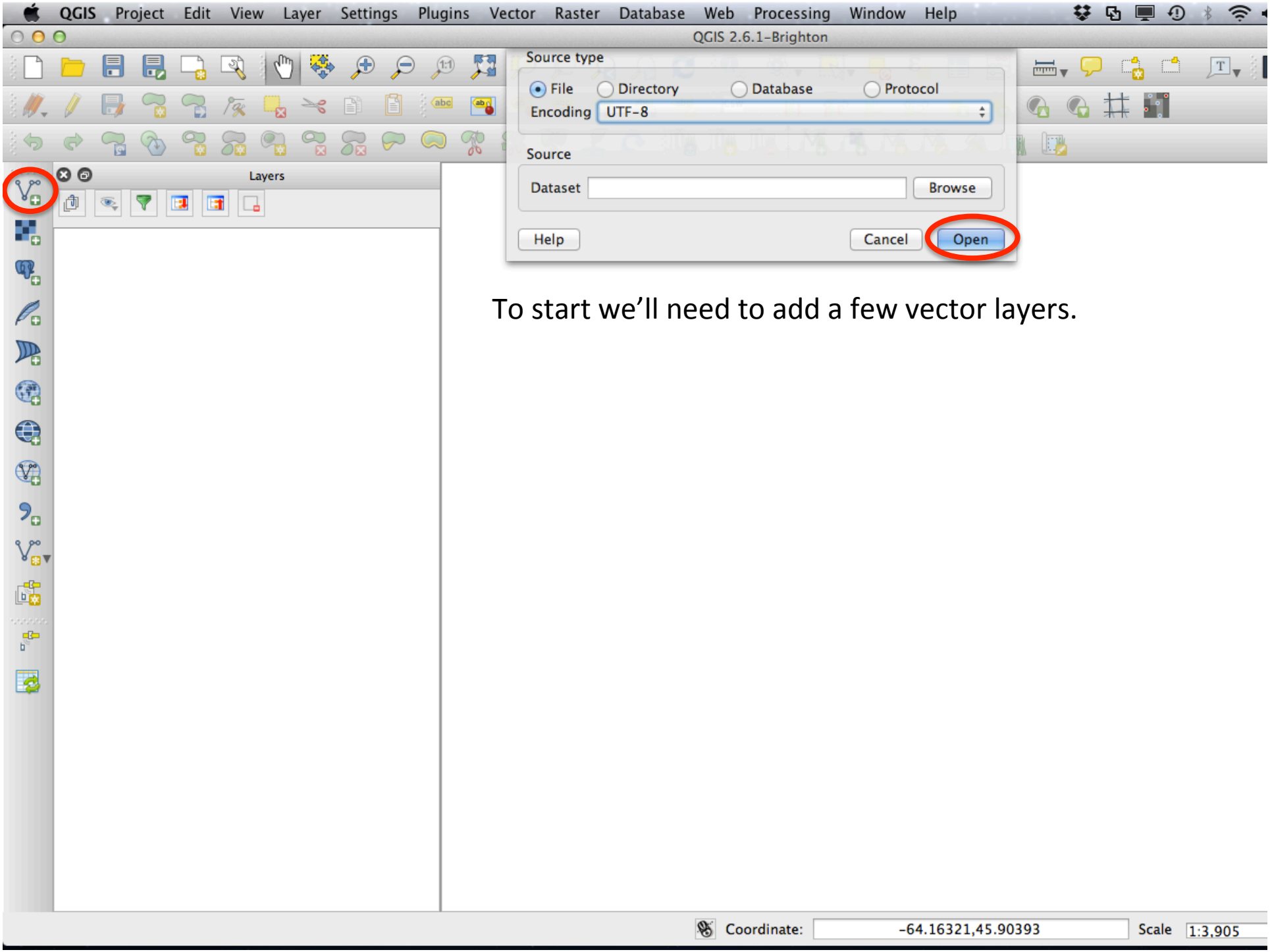
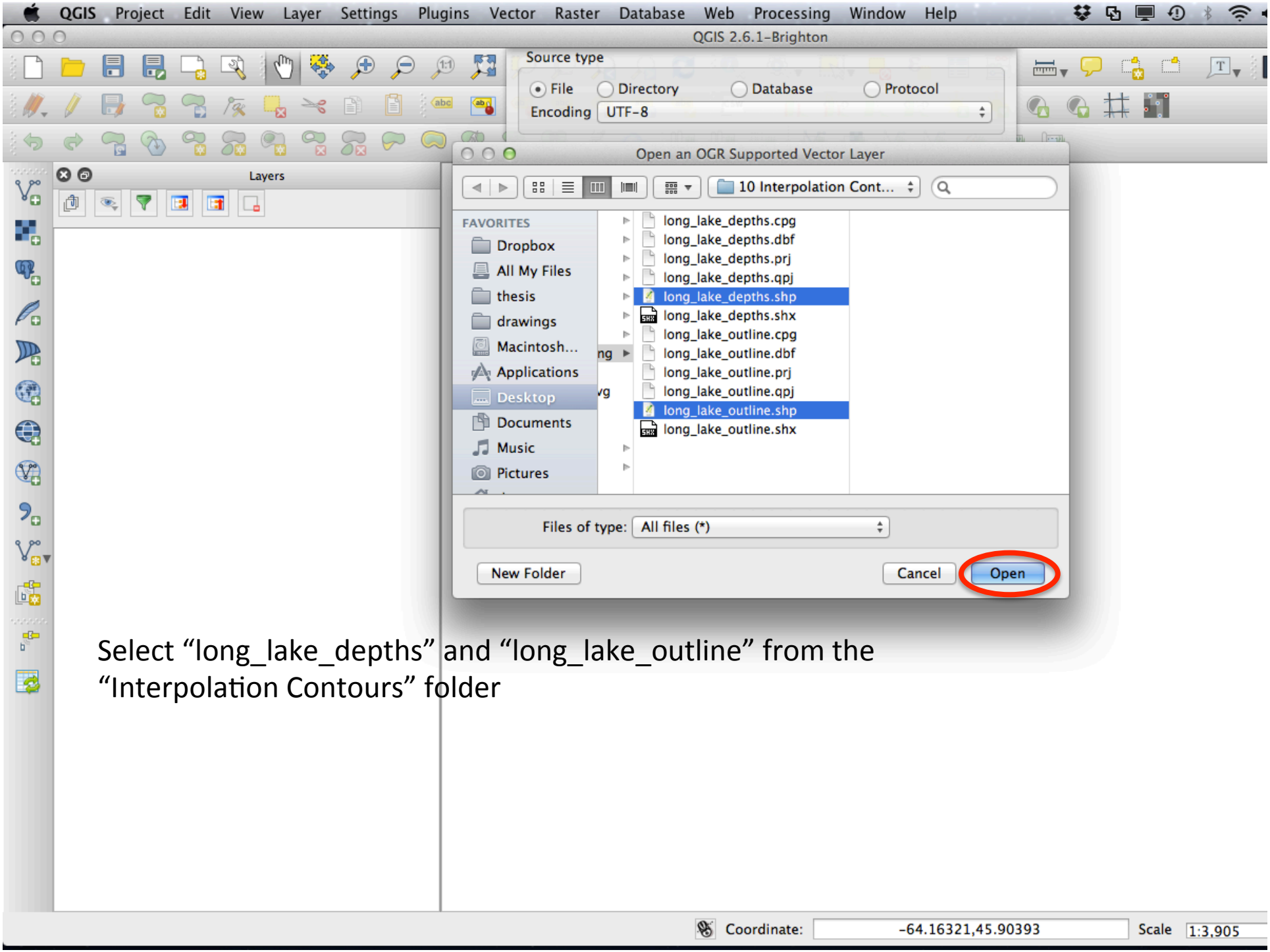
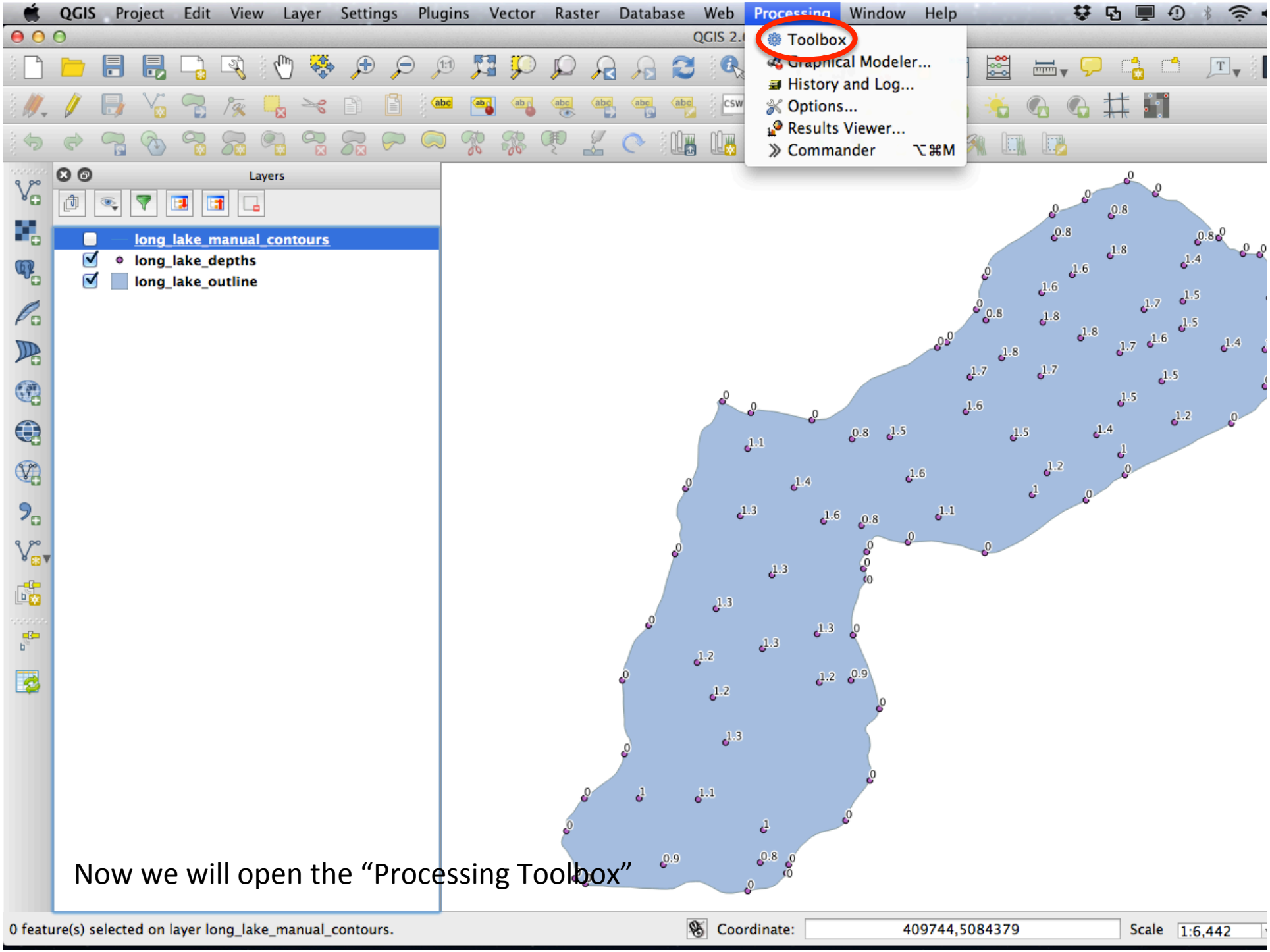
10. Interpolation and Contouring

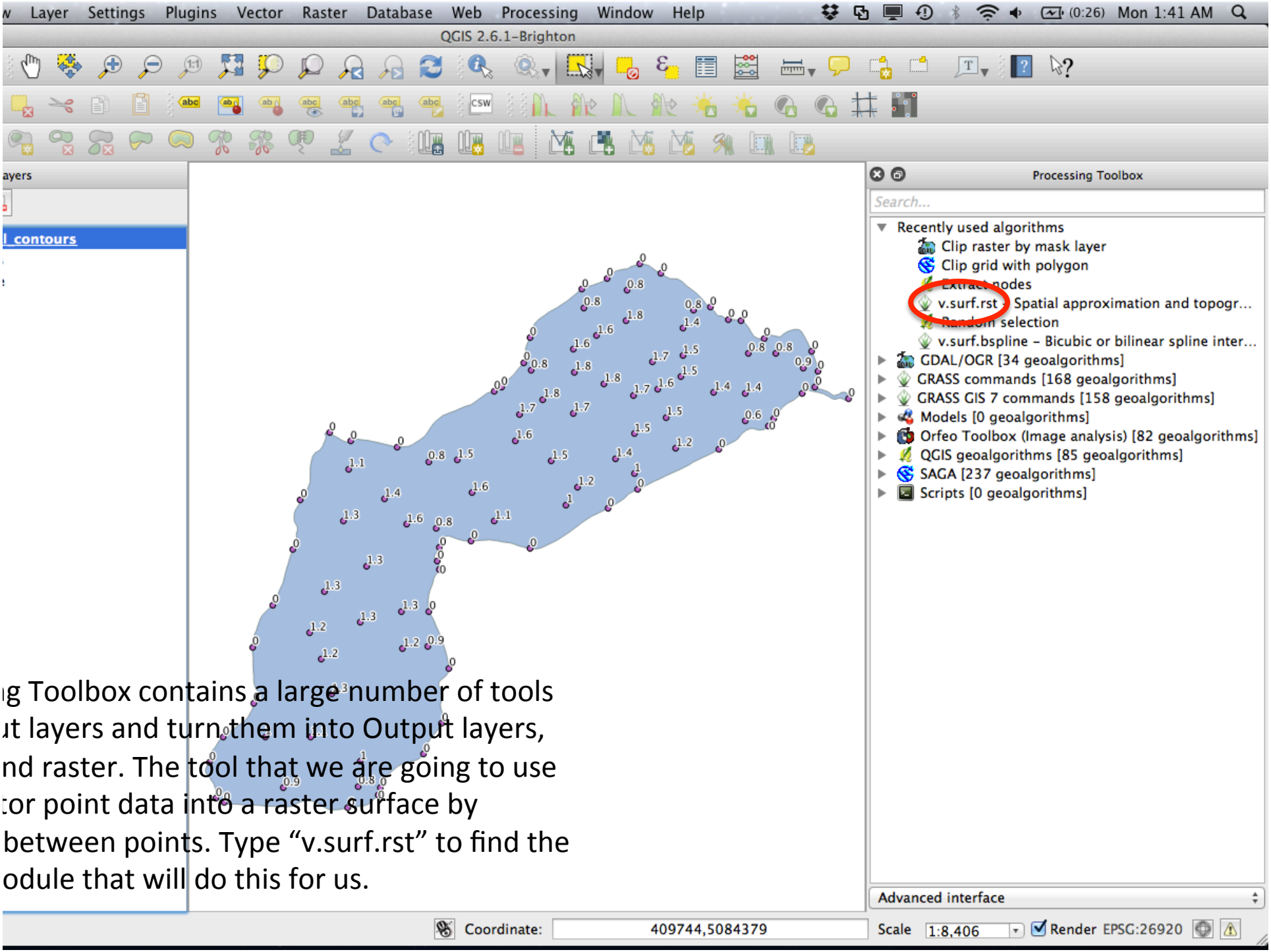


To start we'll need to add a few vector layers.

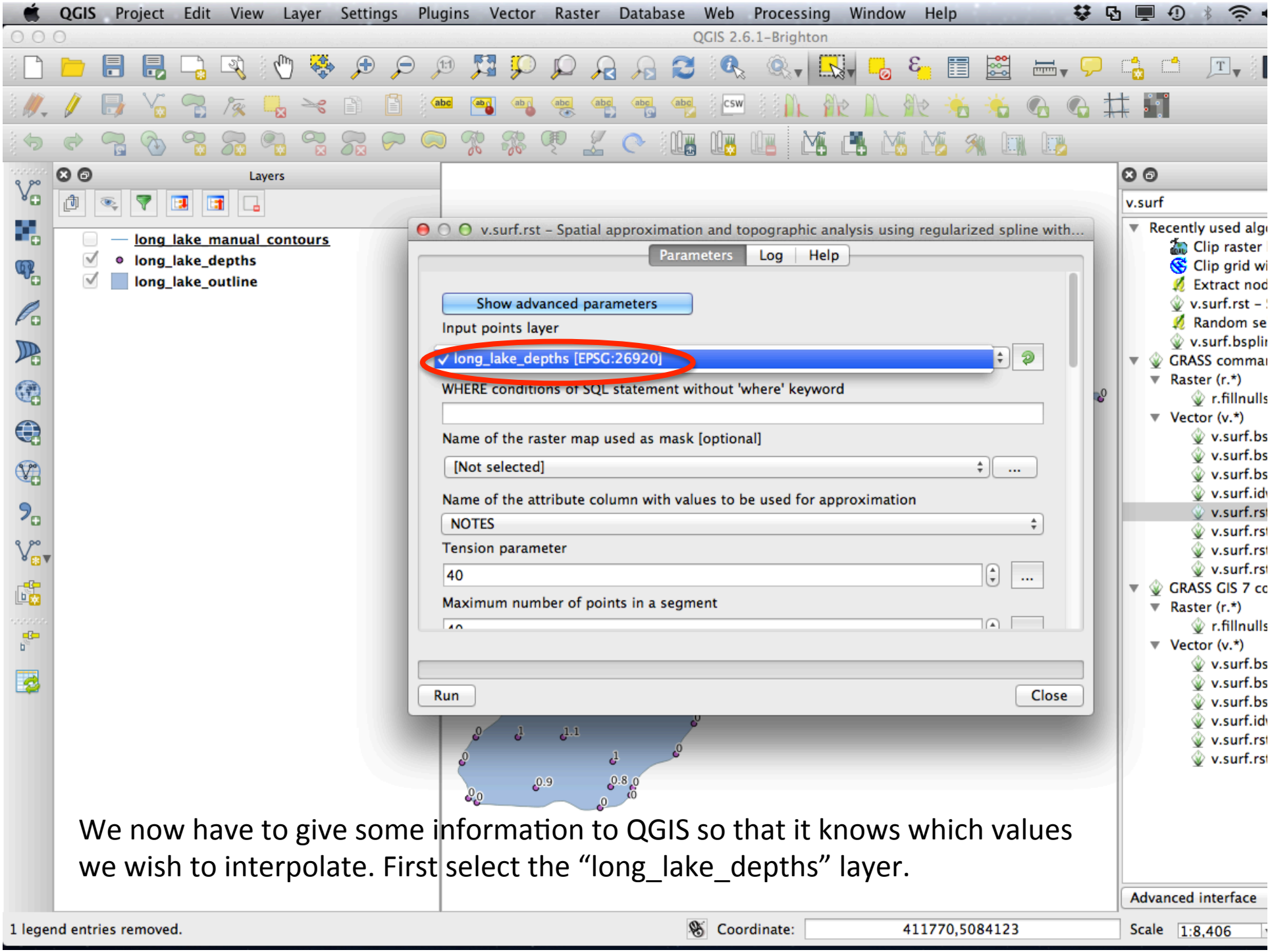


Select “long_lake_depths” and “long_lake_outline” from the “Interpolation Contours” folder

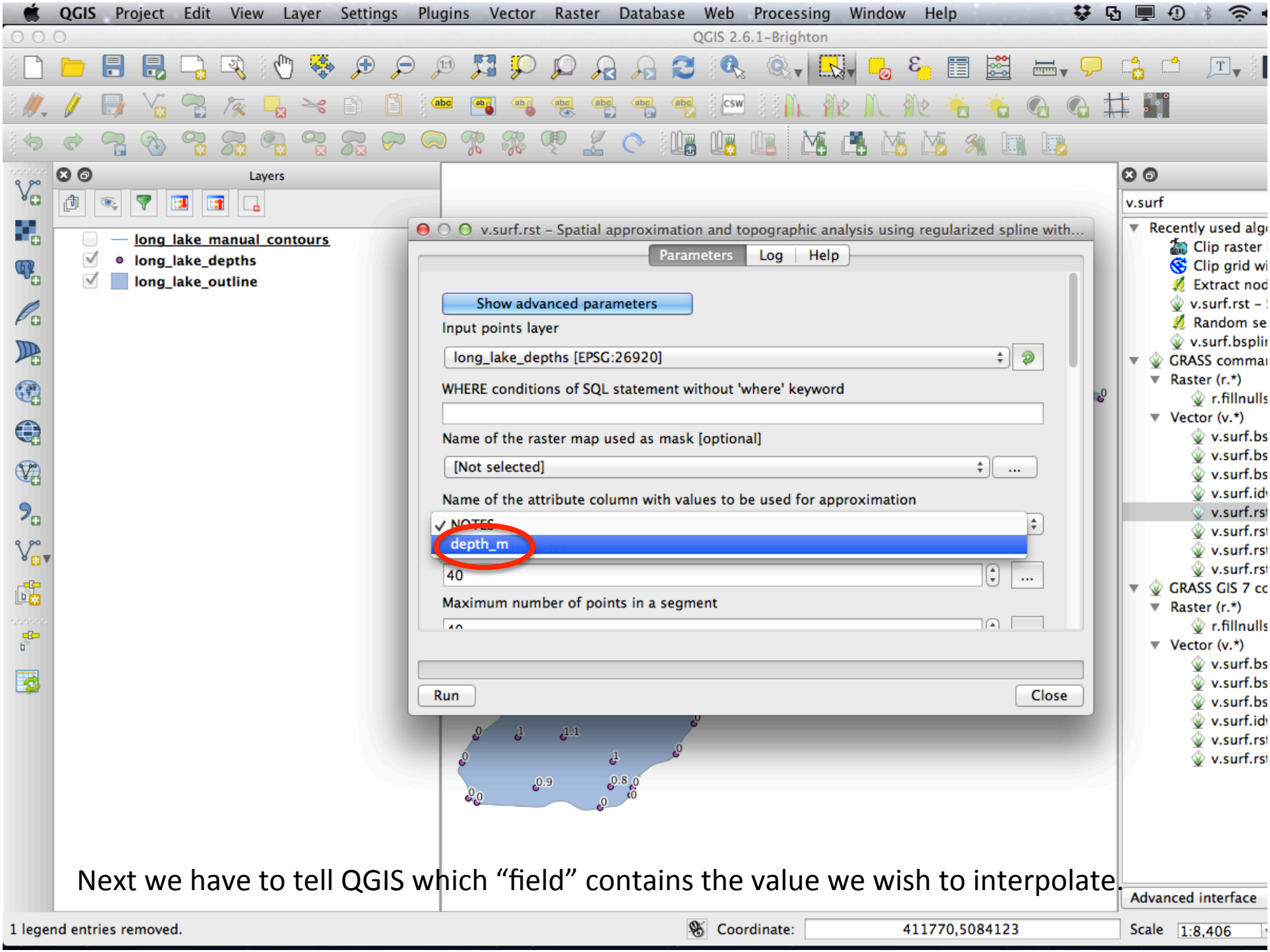

QGIS
Project
Edit
View
Layer
Settings
Plugins
Vector
Raster
Database
Web
Processing
Window
Help
Toolbox
Graphical Modeler...
History and Log...
Options...
Results Viewer...
Commander ⌥⌘M
Layers
long_lake_manual_contours
long_lake_depths
long_lake_outline
Now we will open the “Processing Toolbox”
0 feature(s) selected on layer long_lake_manual_contours.
Coordinate:
409744,5084379
Scale
1:6,442



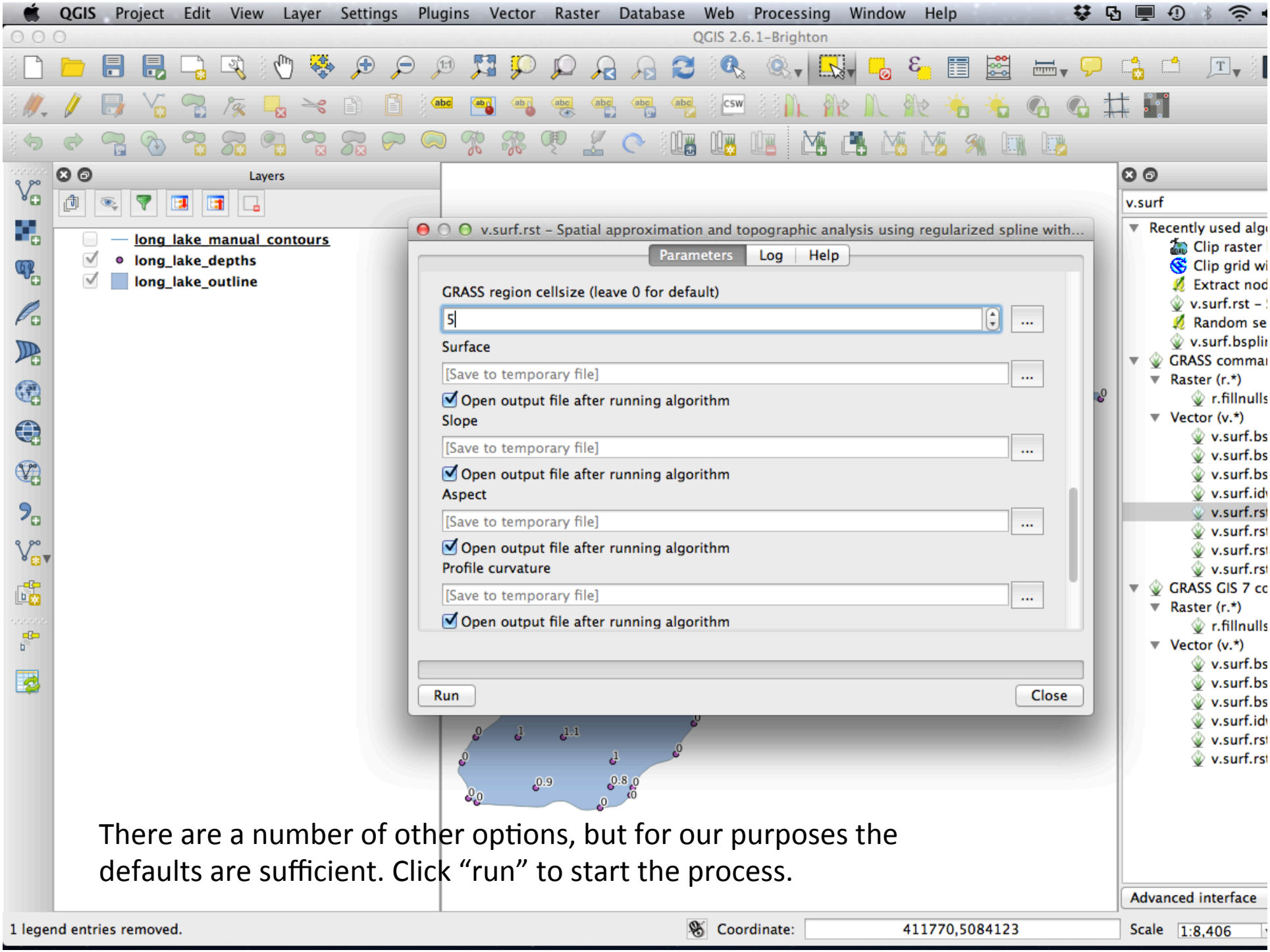
g Toolbox contains a large number of tools
ut layers and turn them into Output layers,
nd raster. The tool that we are going to use
:or point data into a raster surface by
between points. Type “v.surf.rst” to find the
odule that will do this for us.



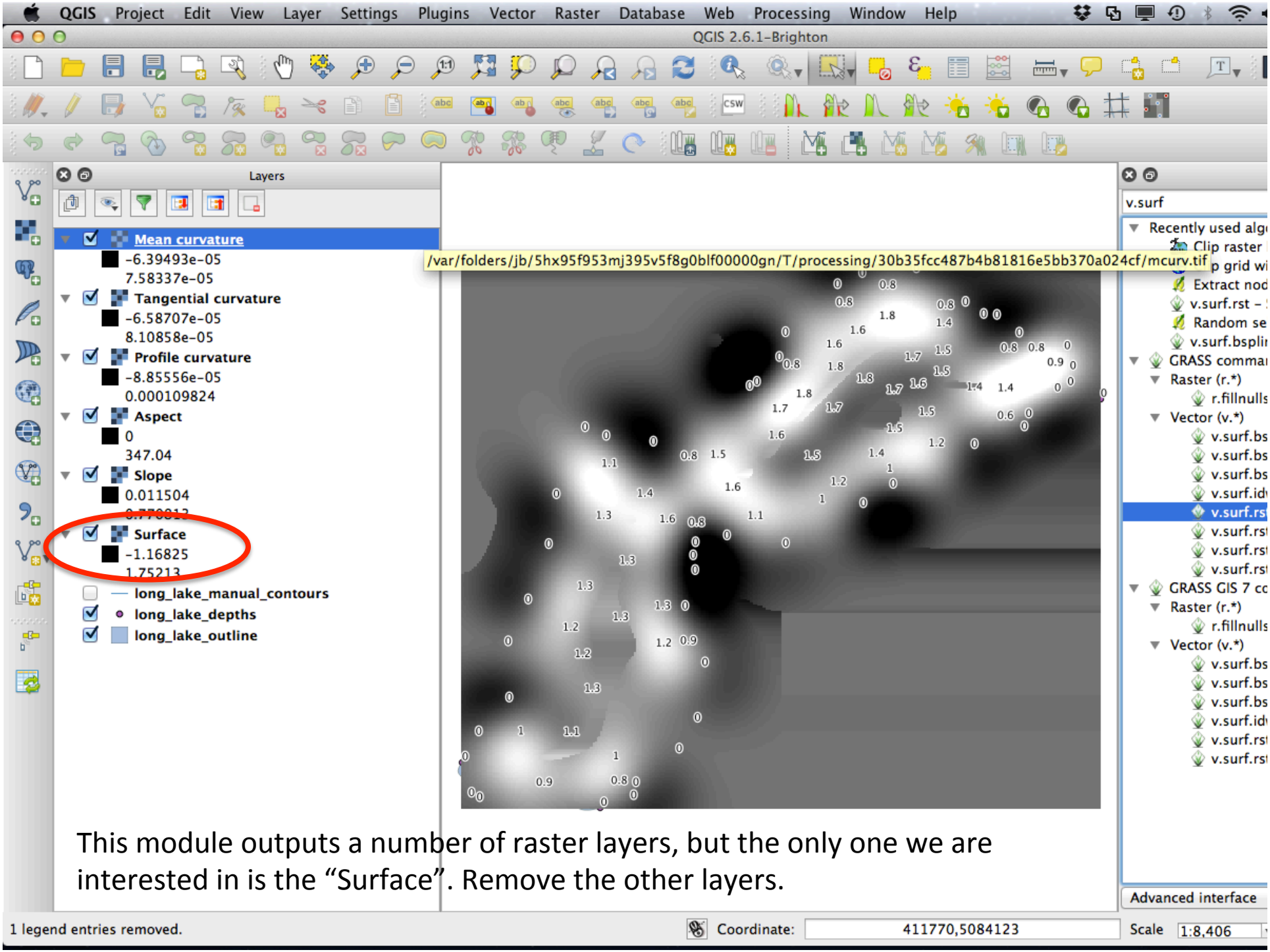
We now have to give some information to QGIS so that it knows which values we wish to interpolate. First select the “long_lake_depths” layer.



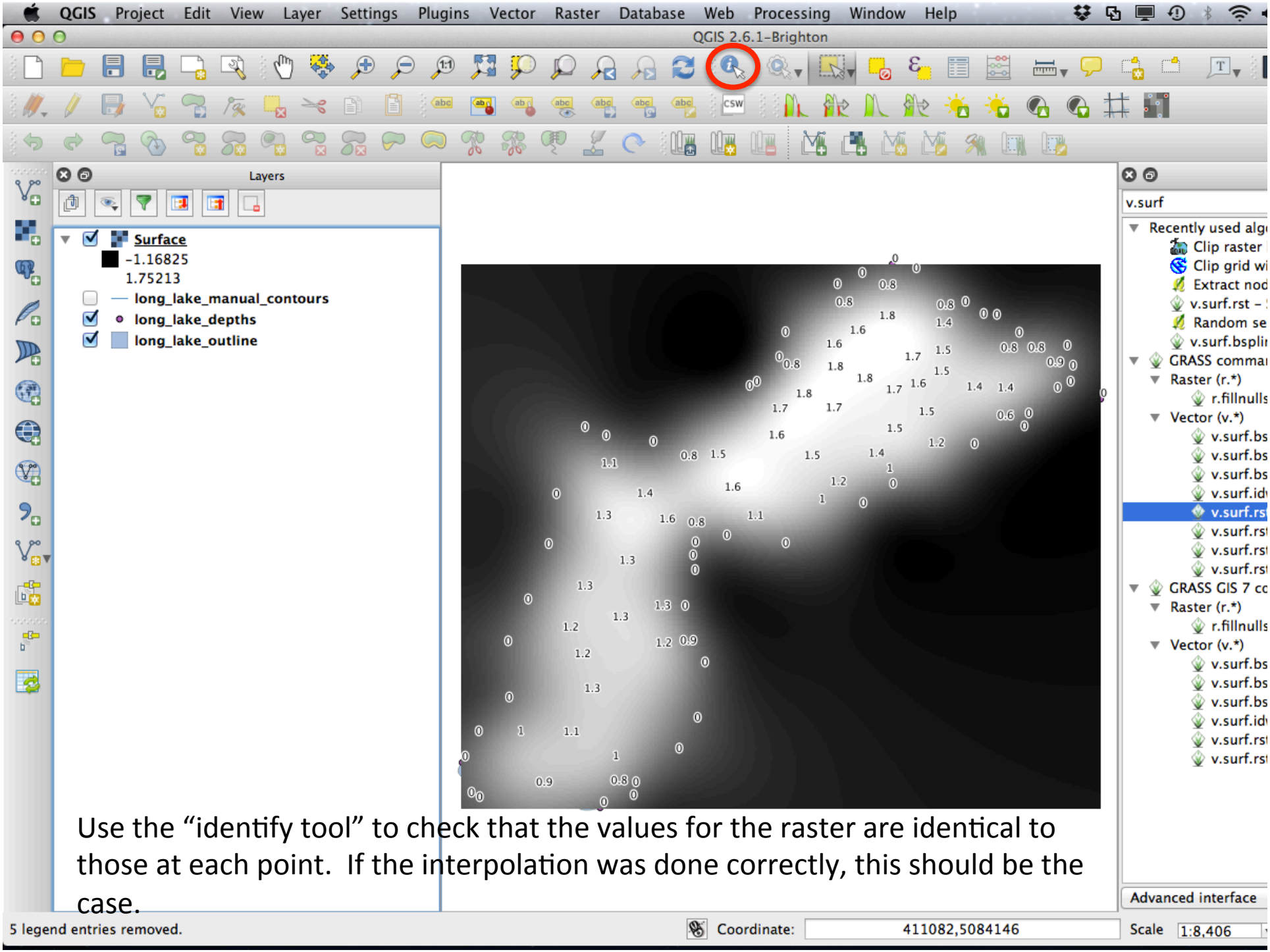
Next we have to tell QGIS which “field” contains the value we wish to interpolate.



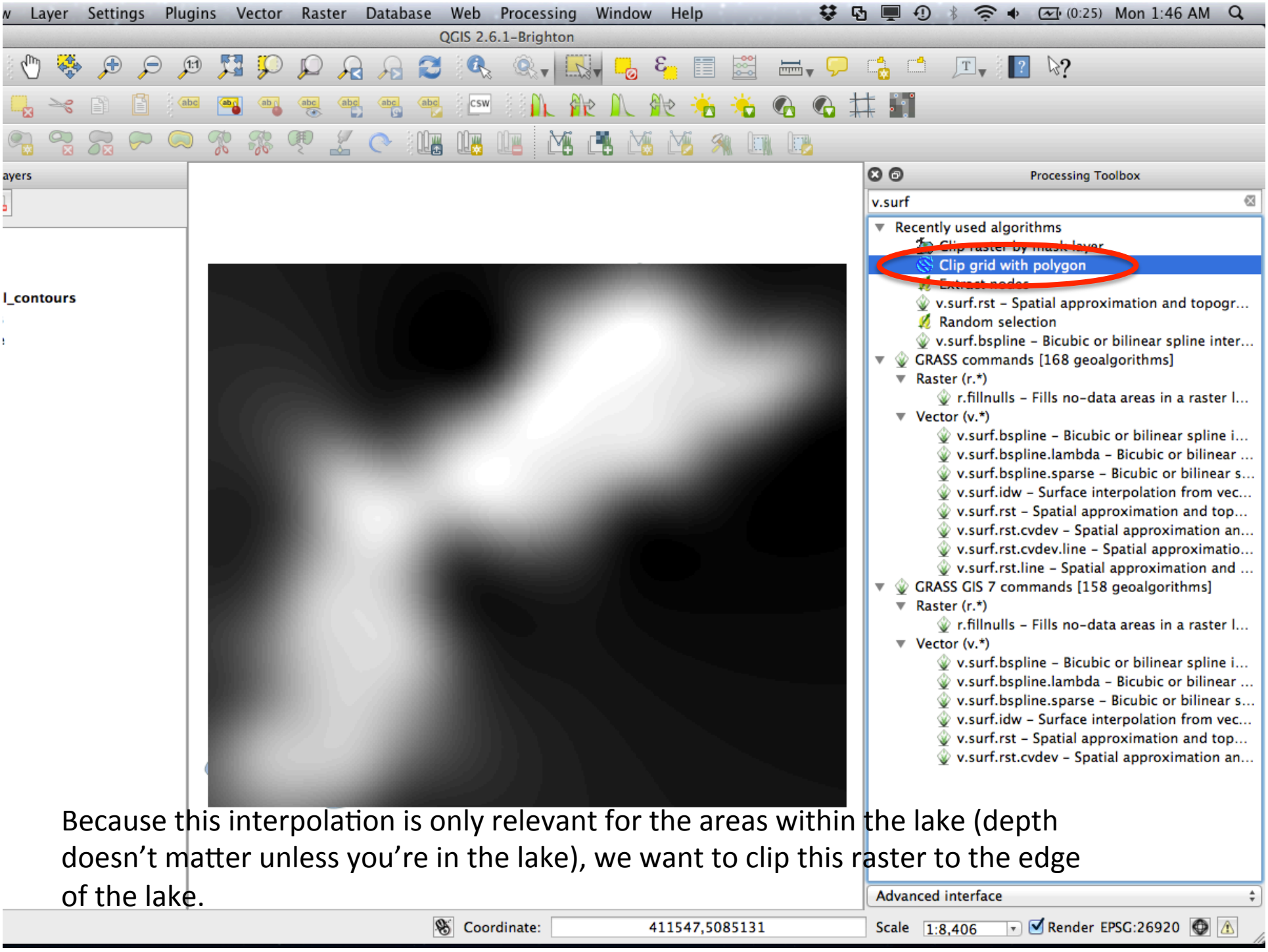
There are a number of other options, but for our purposes the defaults are sufficient. Click “run” to start the process.



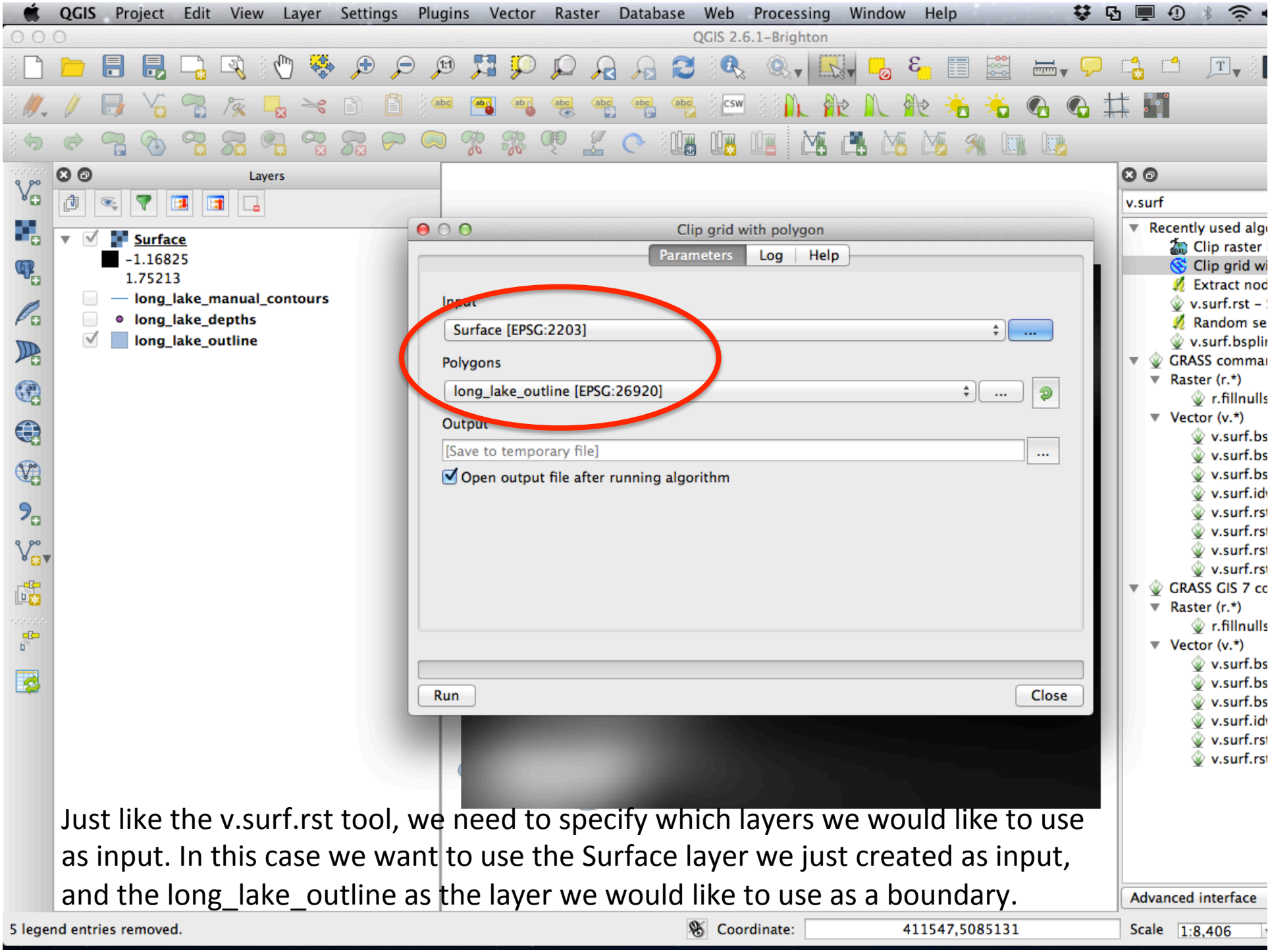
This module outputs a number of raster layers, but the only one we are interested in is the “Surface”. Remove the other layers.



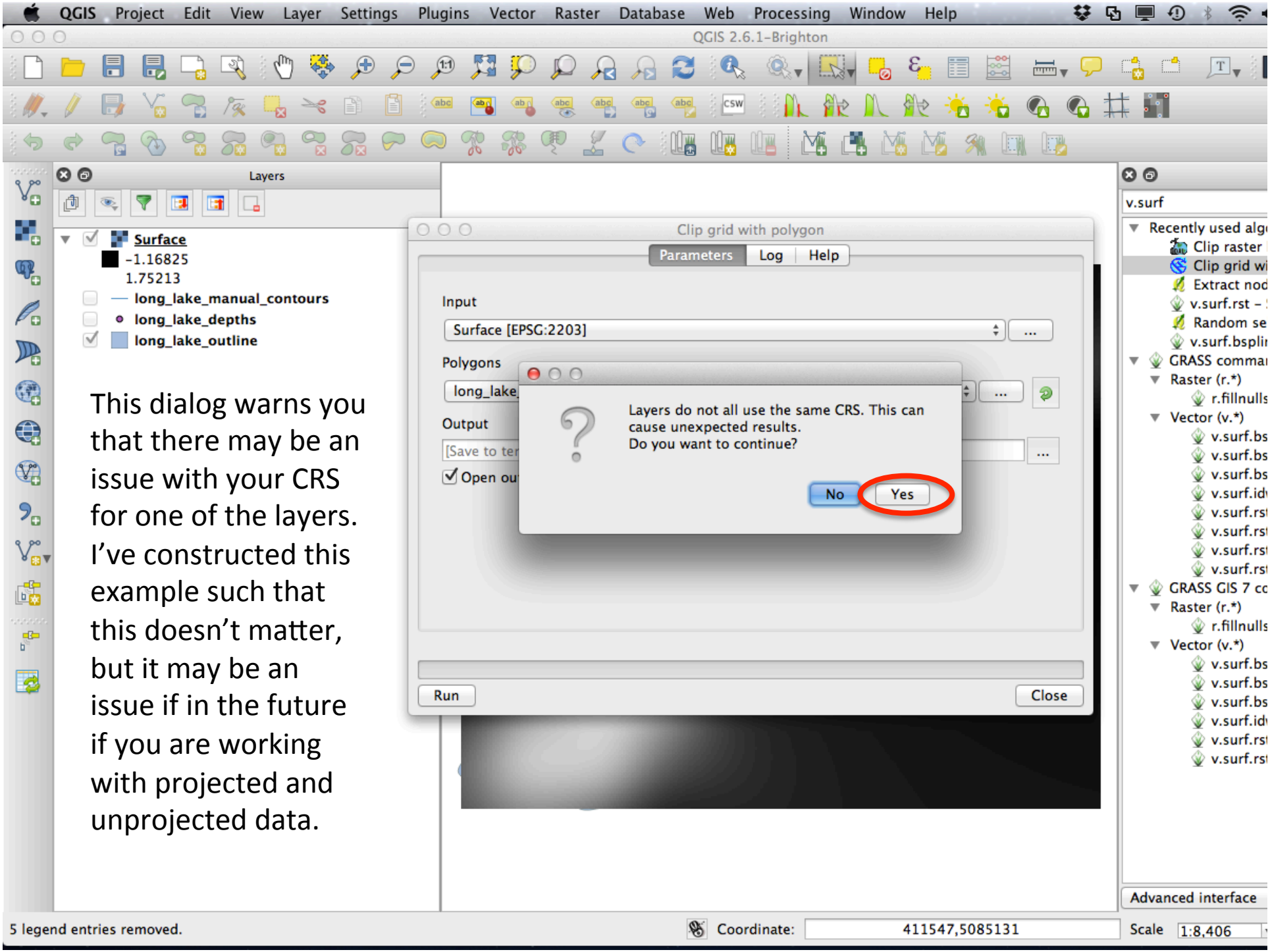
Use the “identify tool” to check that the values for the raster are identical to those at each point. If the interpolation was done correctly, this should be the case.



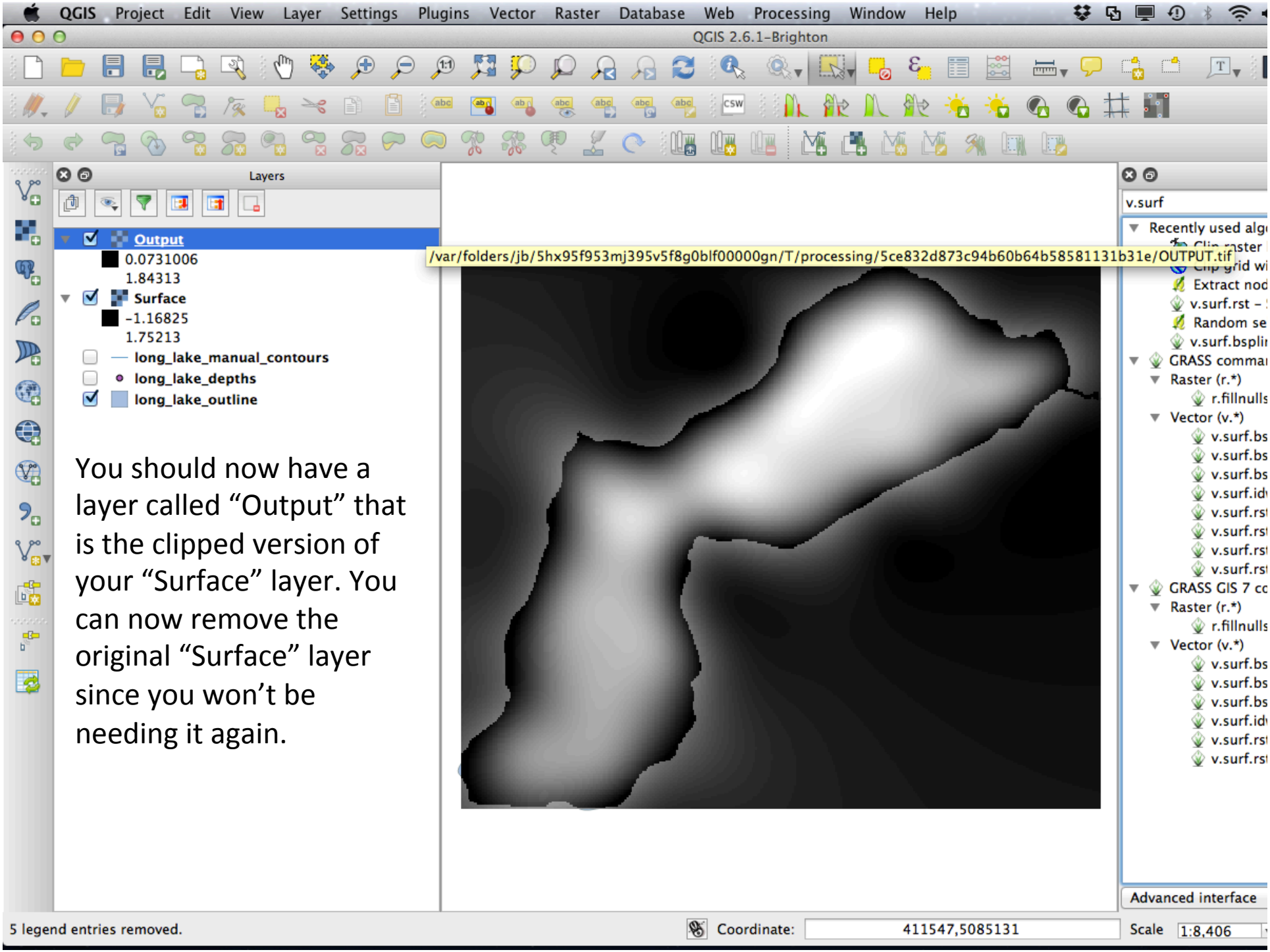
Because this interpolation is only relevant for the areas within the lake (depth doesn't matter unless you're in the lake), we want to clip this raster to the edge of the lake.



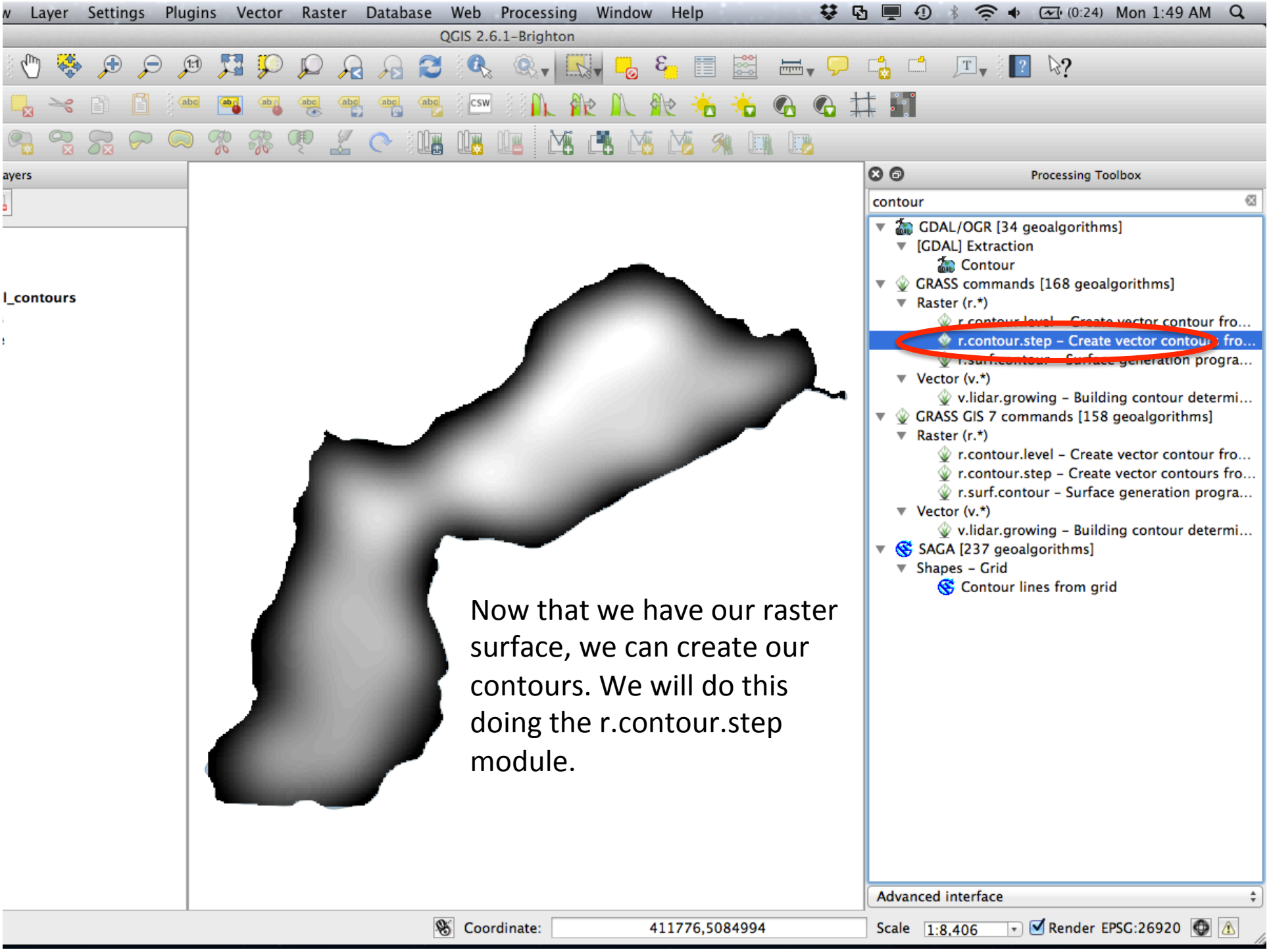
Just like the v.surf.rst tool, we need to specify which layers we would like to use as input. In this case we want to use the Surface layer we just created as input, and the long_lake_outline as the layer we would like to use as a boundary.

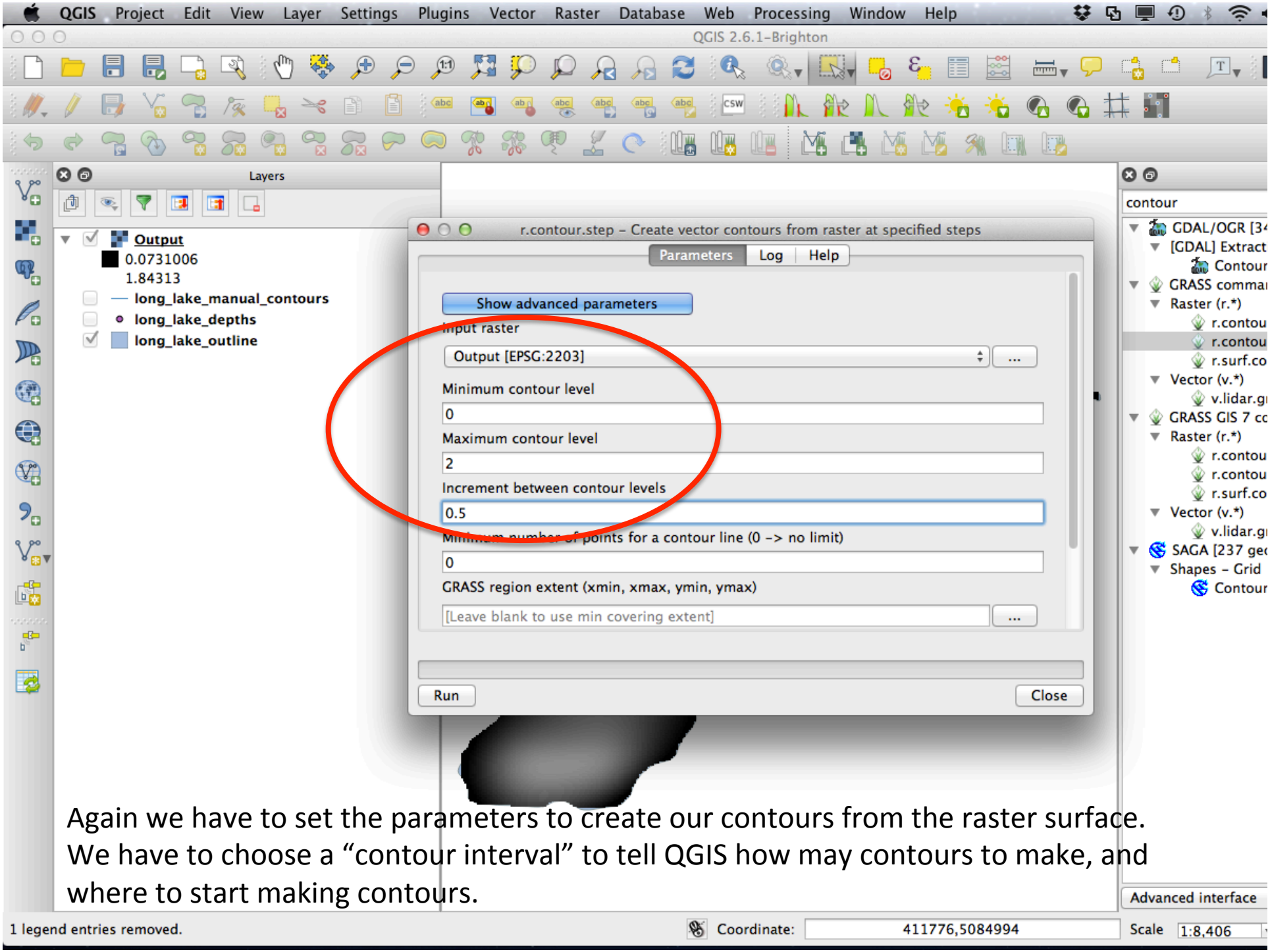


This dialog warns you that there may be an issue with your CRS for one of the layers. I've constructed this example such that this doesn't matter, but it may be an issue if in the future if you are working with projected and unprojected data.

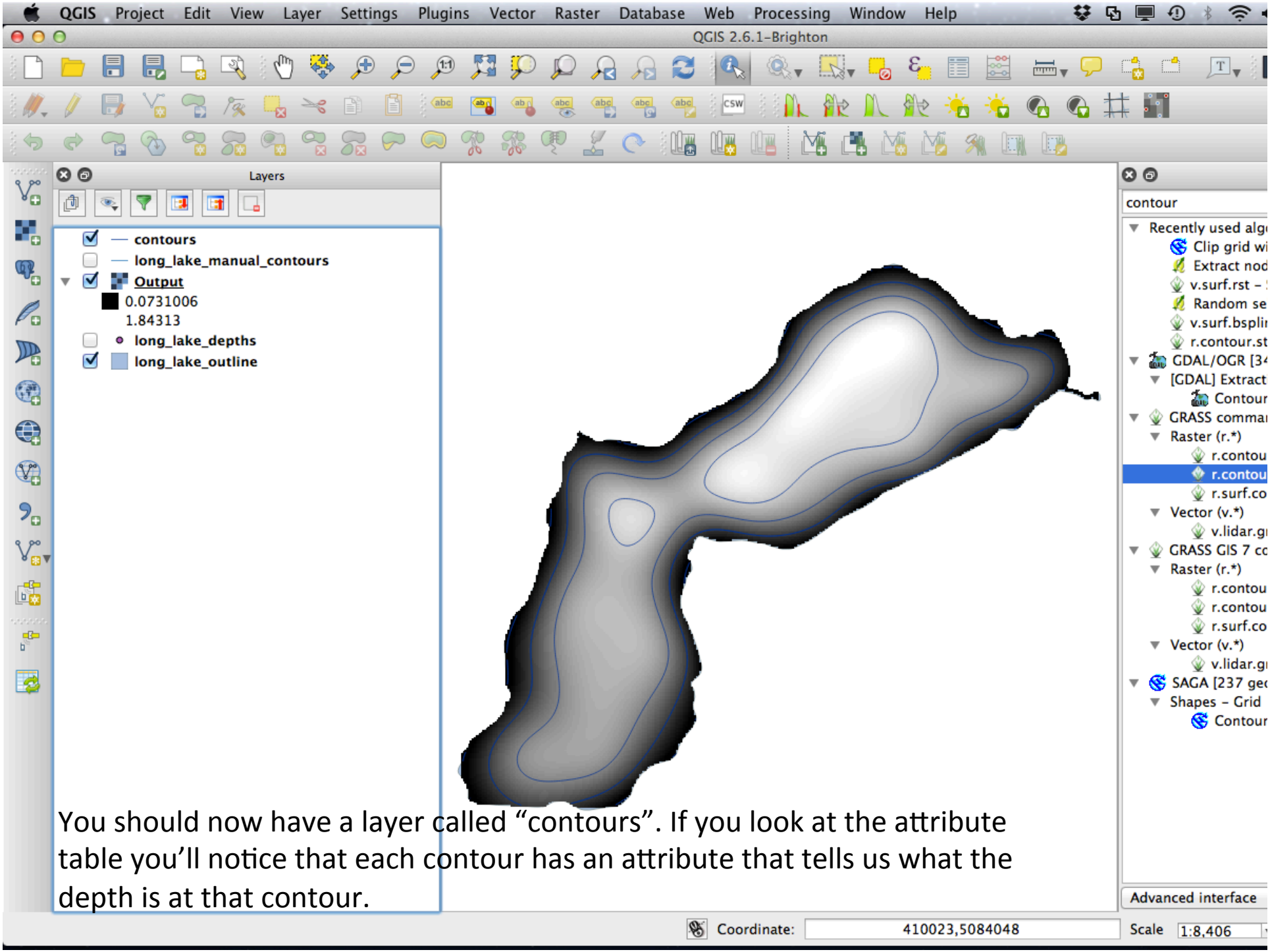


You should now have a layer called “Output” that is the clipped version of your “Surface” layer. You can now remove the original “Surface” layer since you won’t be needing it again.

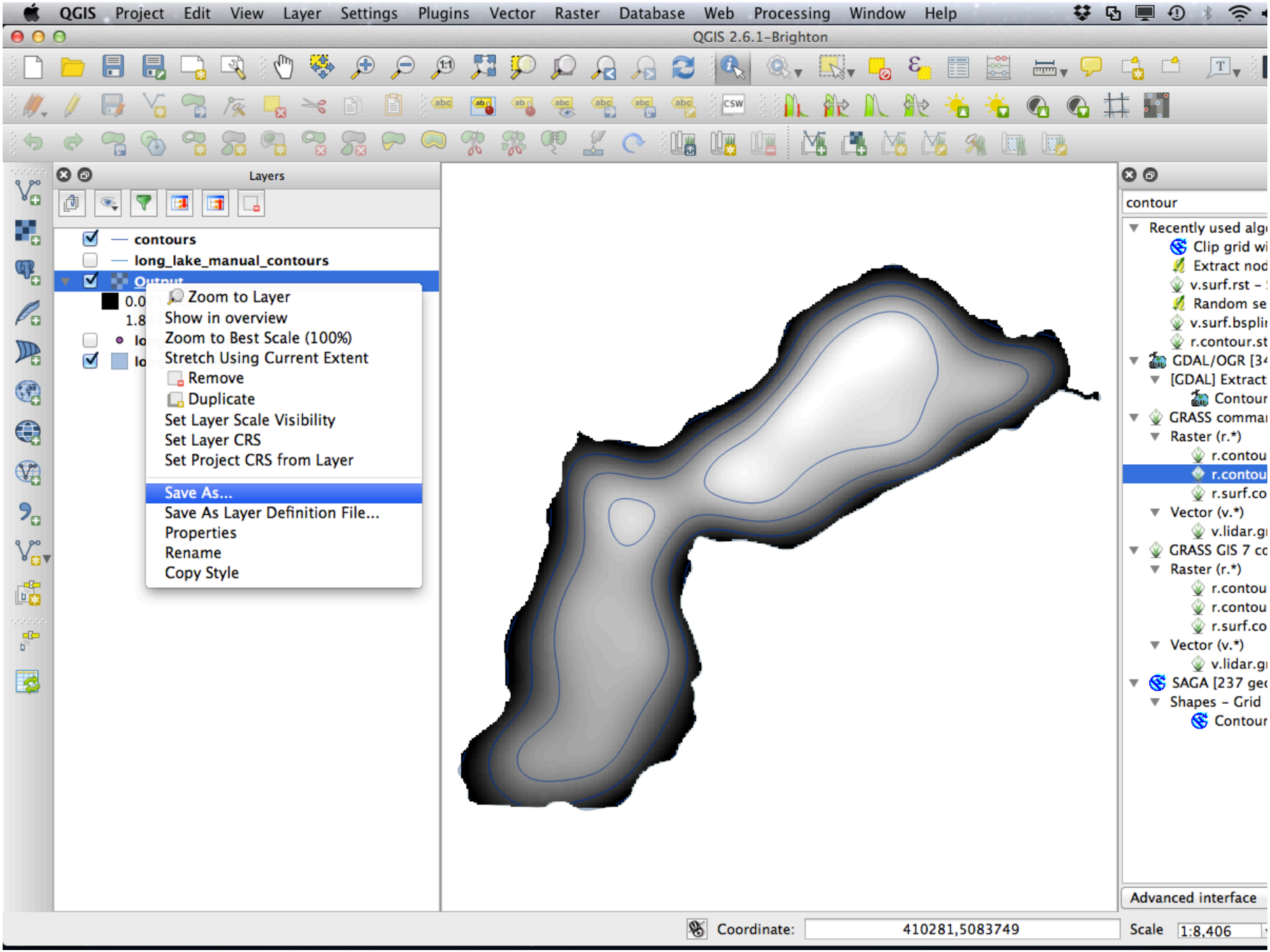

Layer Settings Plugins Vector Raster Database Web Processing Window Help
(0:24) Mon 1:49 AM
QGIS 2.6.1-Brighton
Processing Toolbox
contour
GDAL/OGR [34 geoalgorithms]
[GDAL] Extraction
Contour
GRASS commands [168 geoalgorithms]
Raster (r.*)
r.contour.step – Create vector contour fro...
Vector (v.*)
v.lidar.growing – Building contour determi...
GRASS GIS 7 commands [158 geoalgorithms]
Raster (r.*)
r.contour.level – Create vector contour fro...
r.contour.step – Create vector contours fro...
r.surf.contour – Surface generation progra...
Vector (v.*)
v.lidar.growing – Building contour determi...
SAGA [237 geoalgorithms]
Shapes – Grid
Contour lines from grid
Advanced interface
Coordinate: 411776,5084994
Scale 1:8,406
Render EPSG:26920
Now that we have our raster surface, we can create our contours. We will do this doing the r.contour.step module.

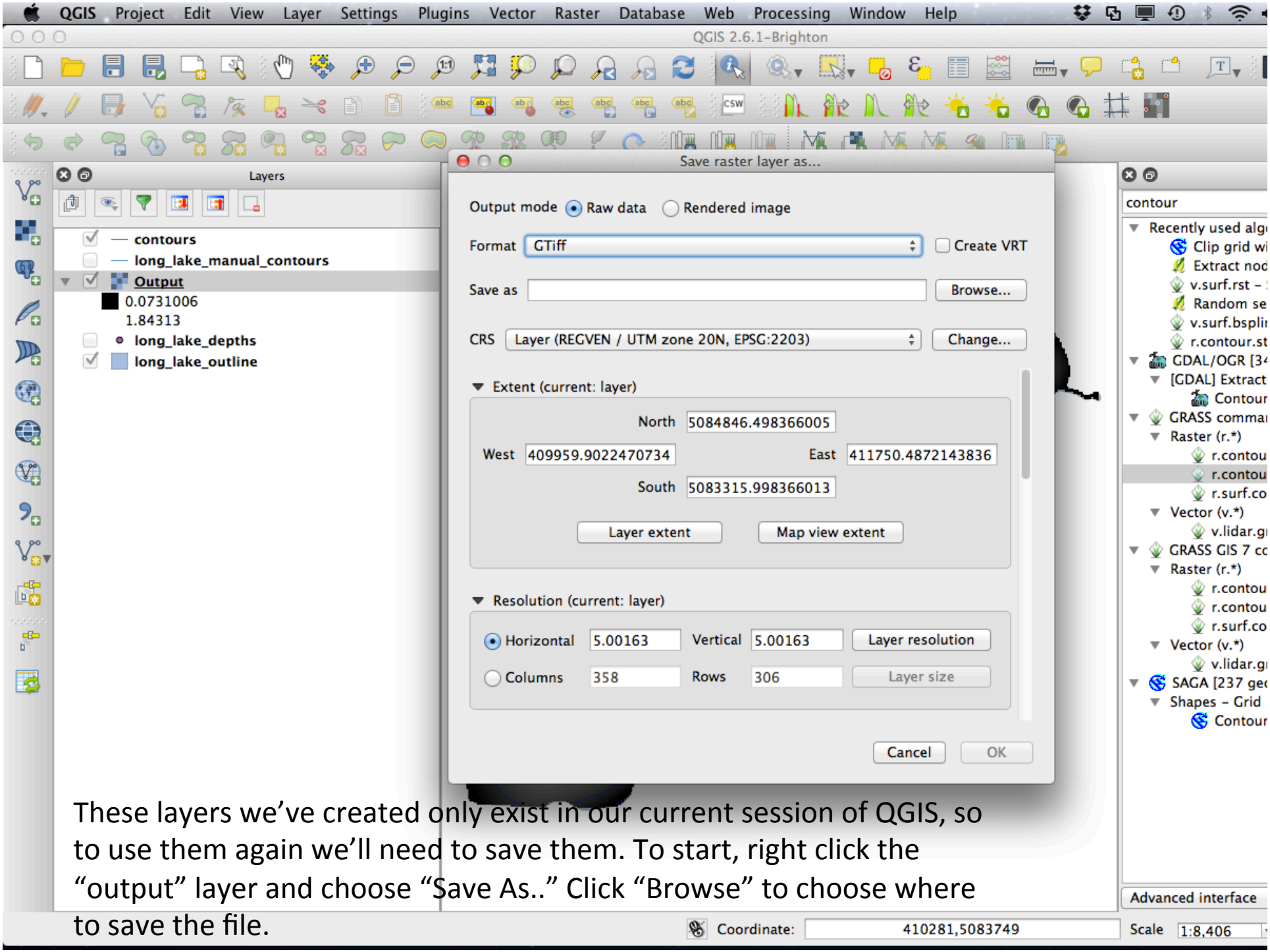


Again we have to set the parameters to create our contours from the raster surface. We have to choose a “contour interval” to tell QGIS how may contours to make, and where to start making contours.

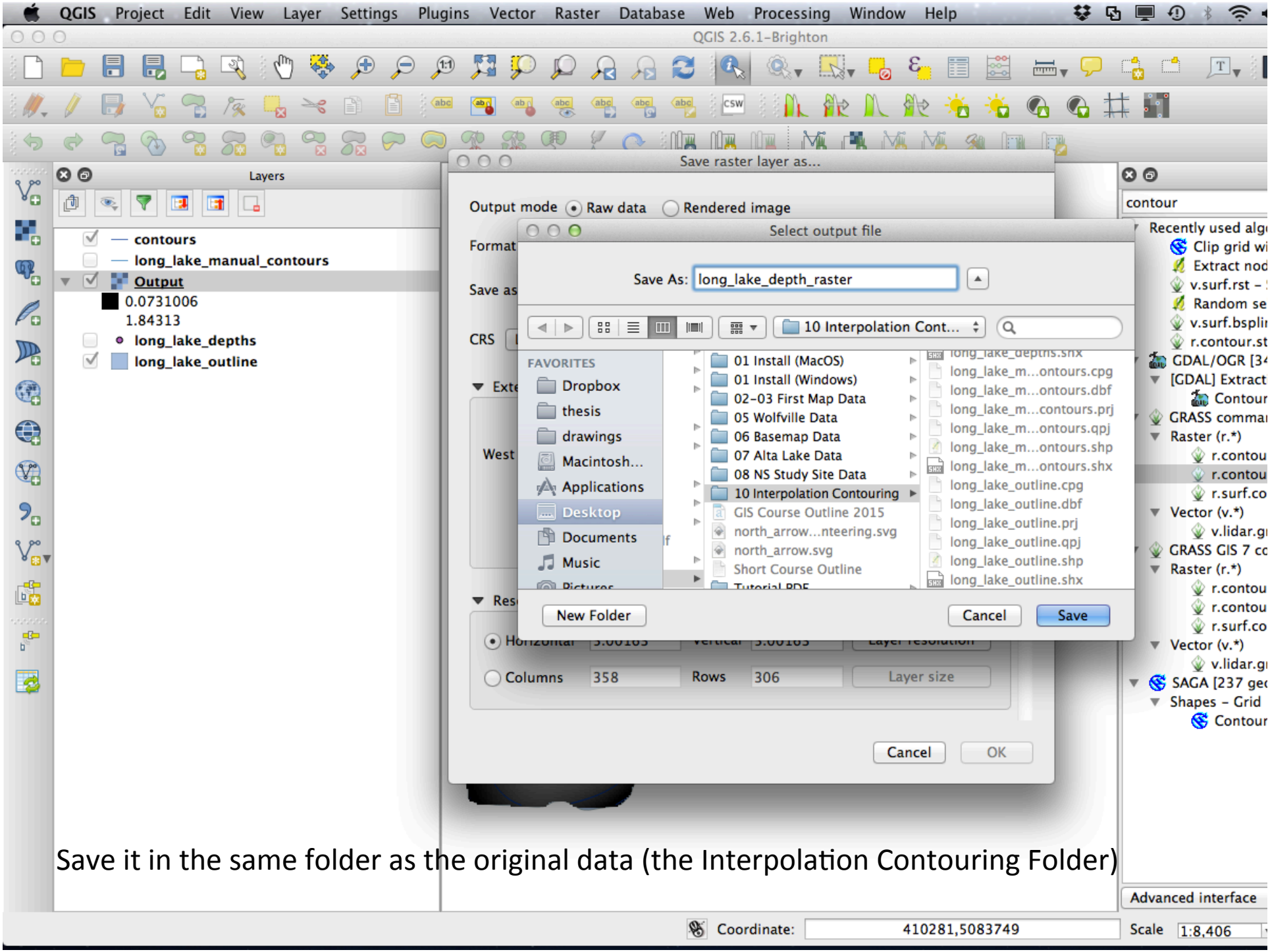


You should now have a layer called “contours”. If you look at the attribute table you’ll notice that each contour has an attribute that tells us what the depth is at that contour.

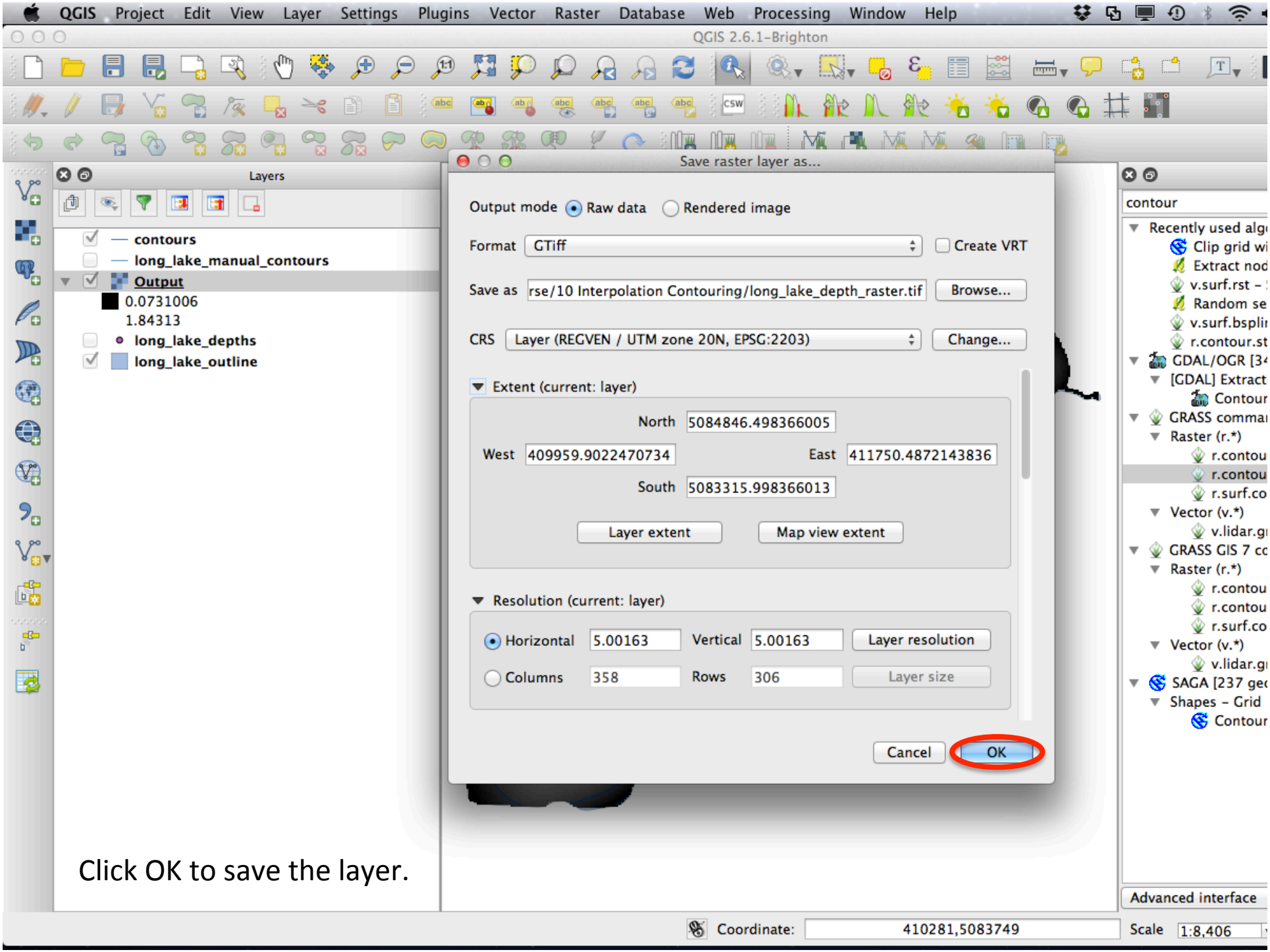

QGIS Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Window Help
QGIS 2.6.1-Brighton
Layers
contours
long_lake_manual_contours
Output
Zoom to Layer
Show in overview
Zoom to Best Scale (100%)
Stretch Using Current Extent
Remove
Duplicate
Set Layer Scale Visibility
Set Layer CRS
Set Project CRS from Layer
Save As...
Save As Layer Definition File...
Properties
Rename
Copy Style
contour
Recently used alg
Clip grid wi
Extract nod
v.surf.rst -
Random se
v.surf.bspli
r.contour.st
GDAL/OGR [34
[GDAL] Extract
Contour
GRASS commar
Raster (r.*)
r.contou
r.contou
r.surf.co
Vector (v.*)
v.lidar.gr
GRASS GIS 7 co
Raster (r.*)
r.contou
r.contou
r.surf.co
Vector (v.*)
v.lidar.gr
SAGA [237 gec
Shapes - Grid
Contour
Advanced interface
Coordinate:
410281,5083749
Scale
1:8,406



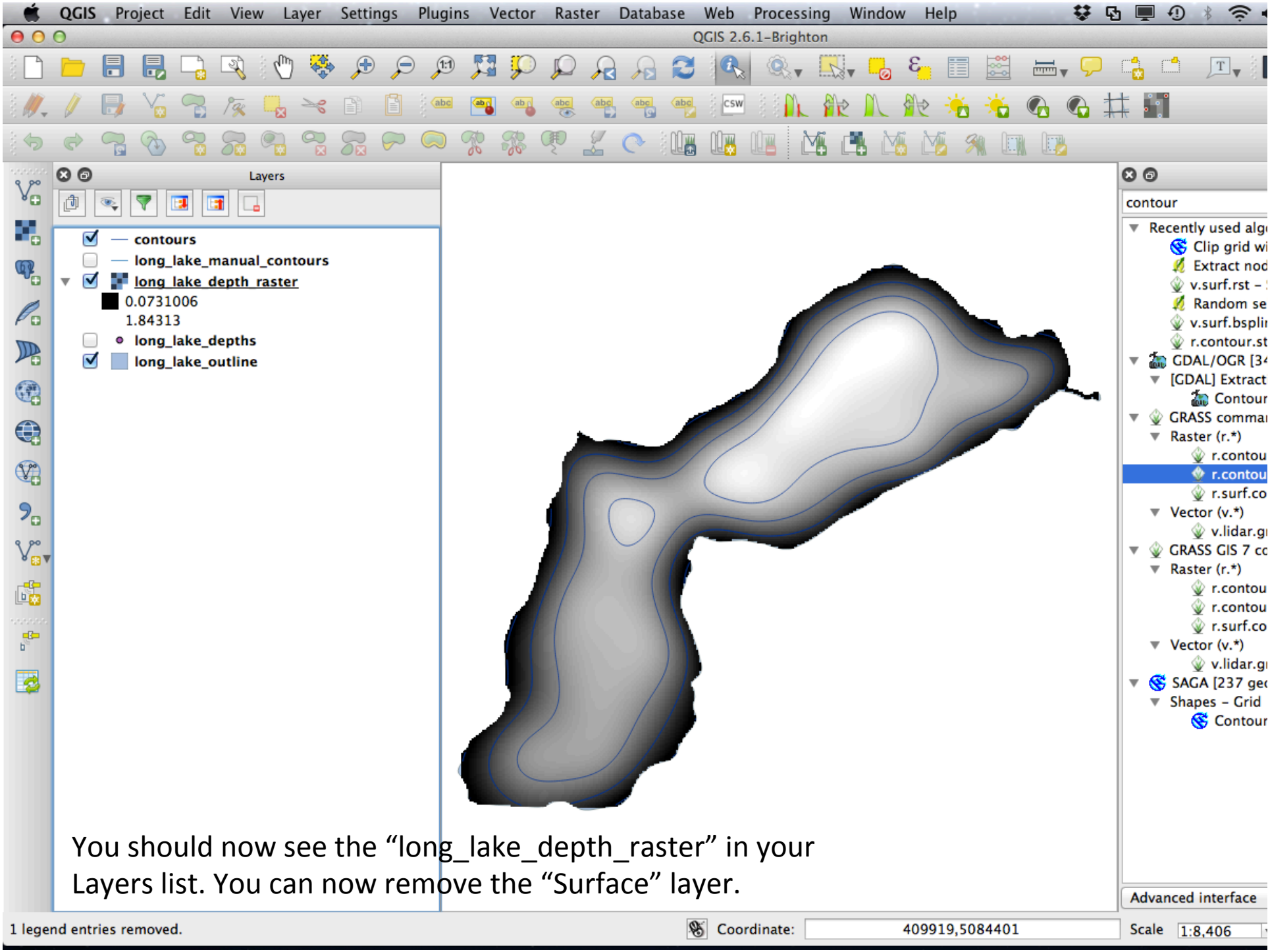
These layers we've created only exist in our current session of QGIS, so to use them again we'll need to save them. To start, right click the "output" layer and choose "Save As.." Click "Browse" to choose where to save the file.



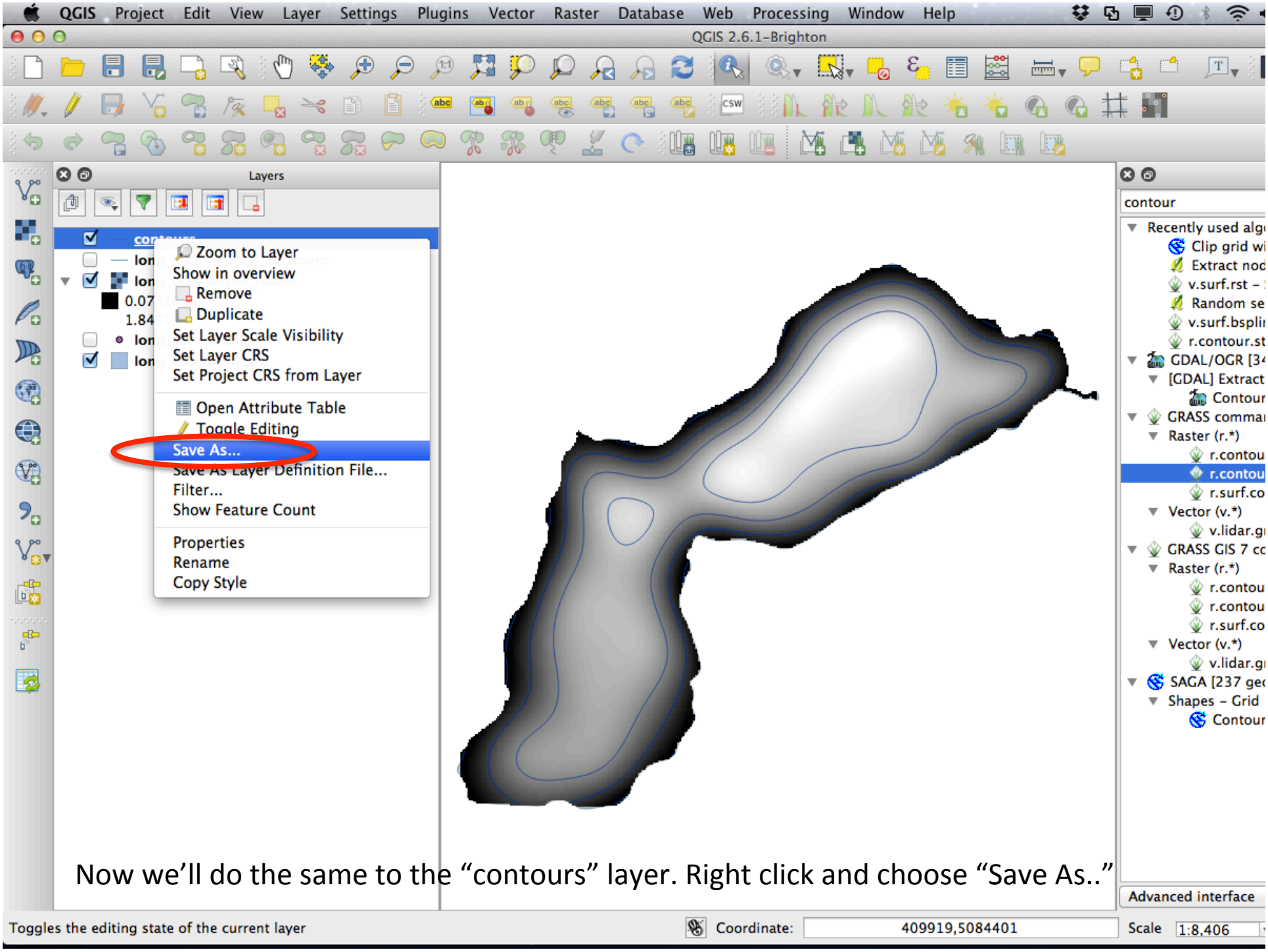
Save it in the same folder as the original data (the Interpolation Contouring Folder)



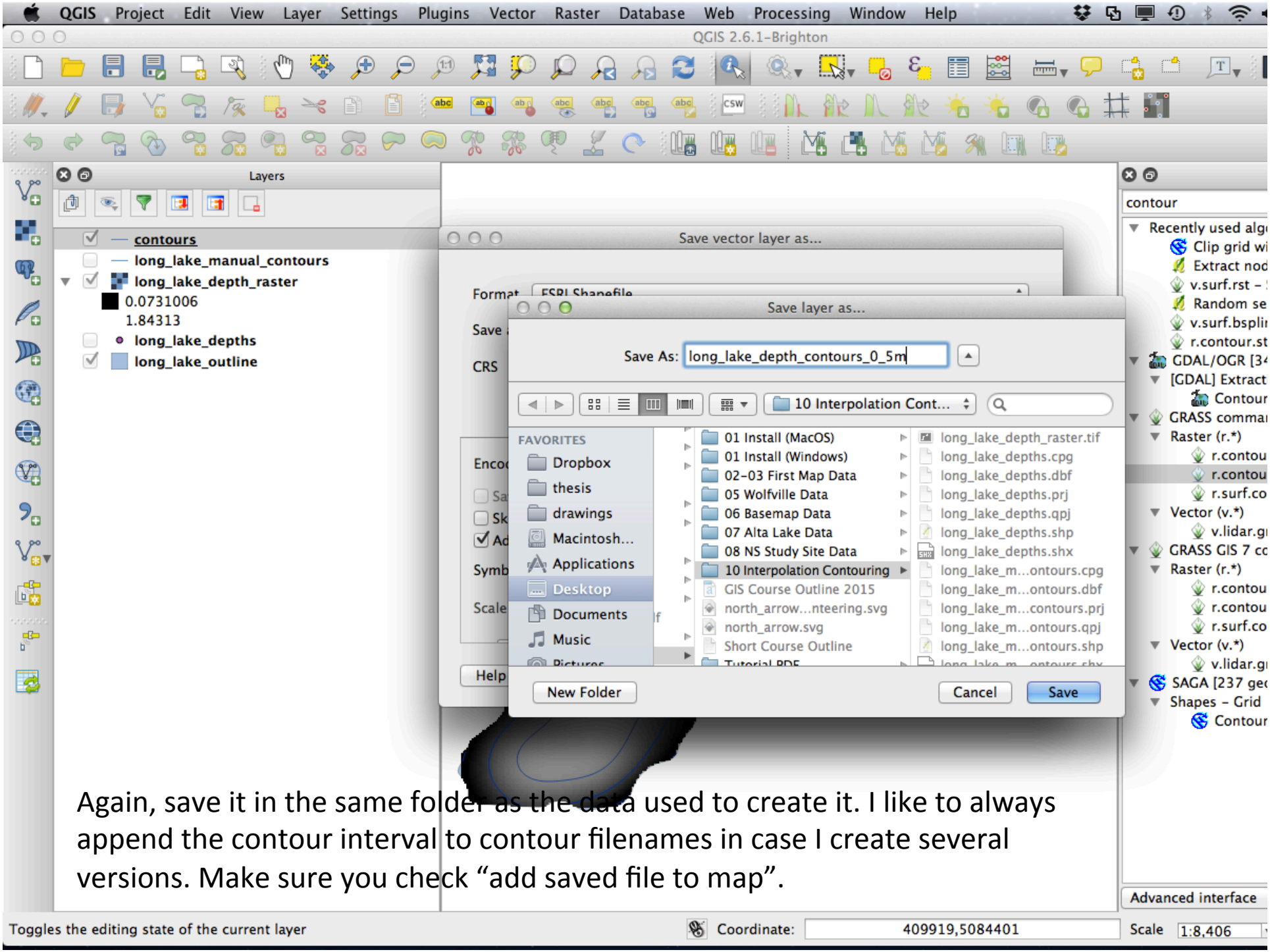
Click OK to save the layer.



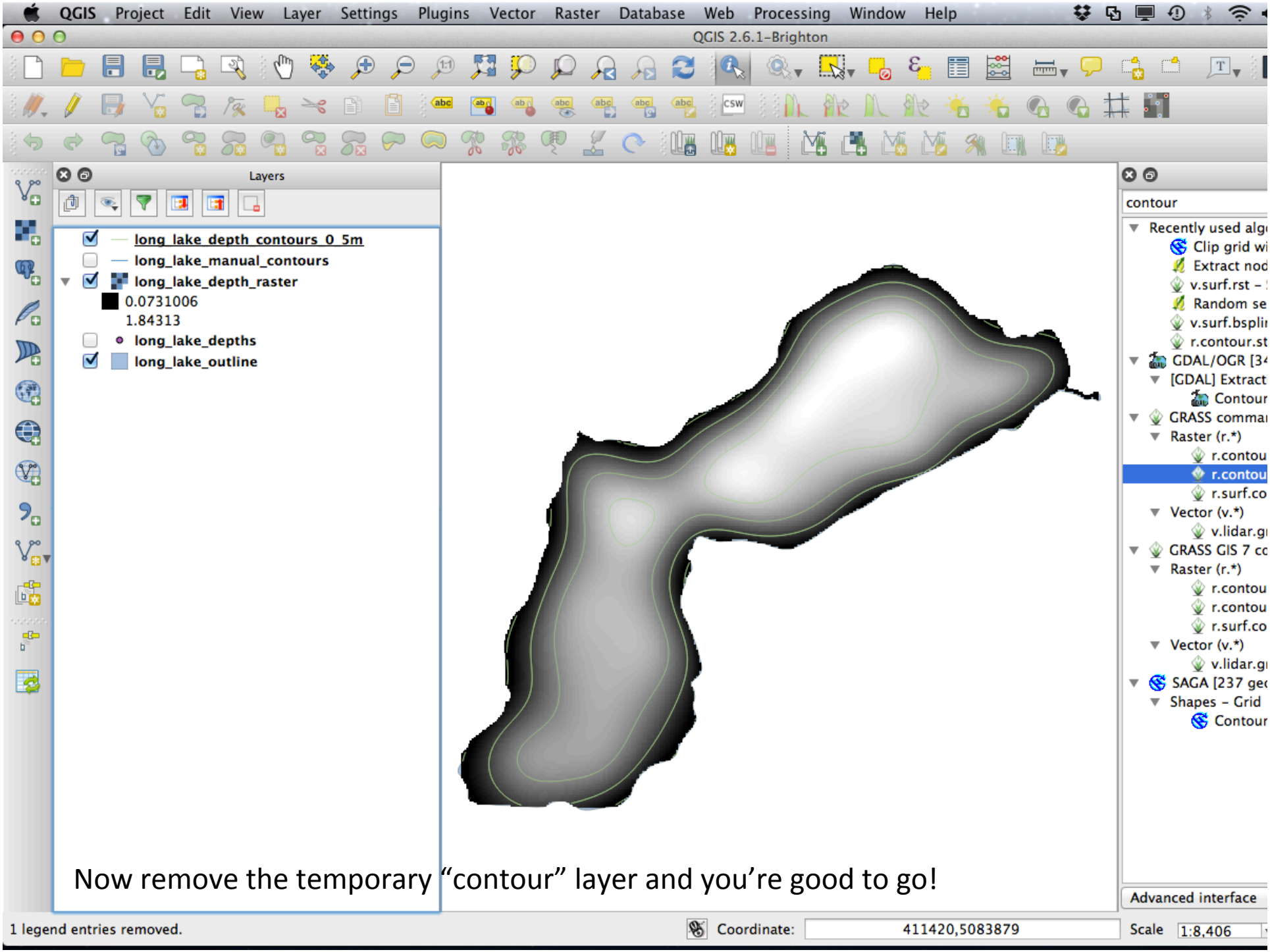
You should now see the “long_lake_depth_raster” in your Layers list. You can now remove the “Surface” layer.



Now we'll do the same to the "contours" layer. Right click and choose "Save As.."



Again, save it in the same folder as the data used to create it. I like to always append the contour interval to contour filenames in case I create several versions. Make sure you check “add saved file to map”.



Now remove the temporary “contour” layer and you’re good to go!