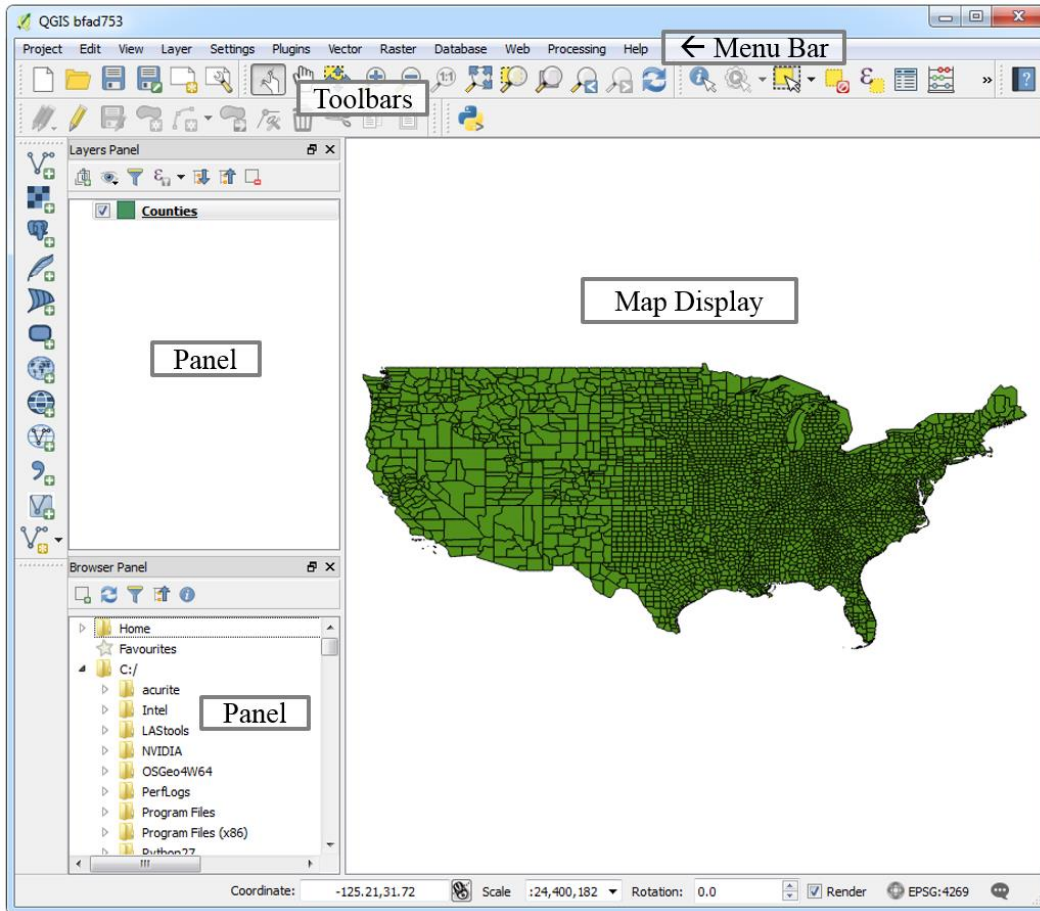
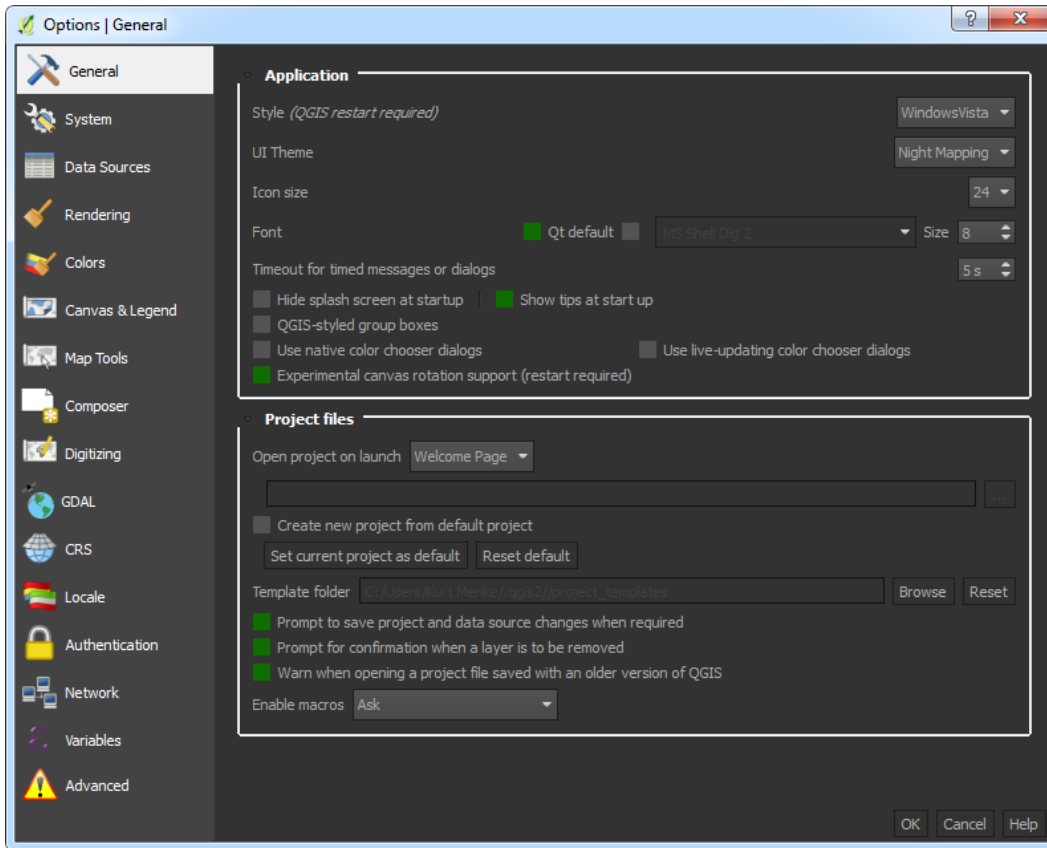
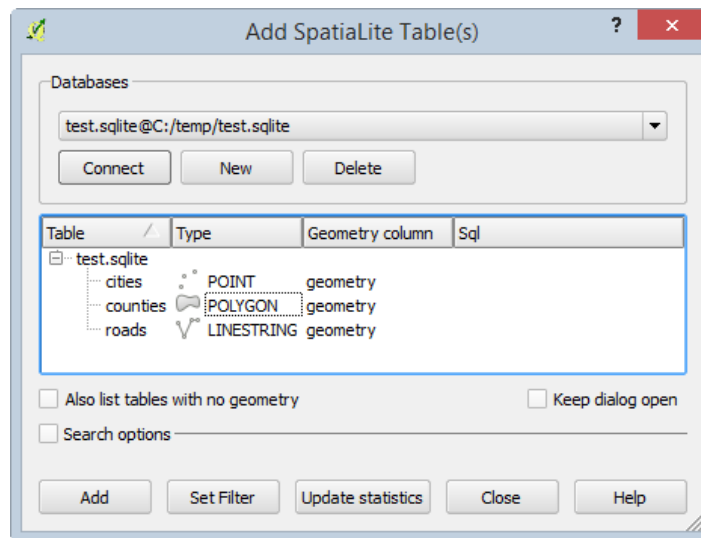
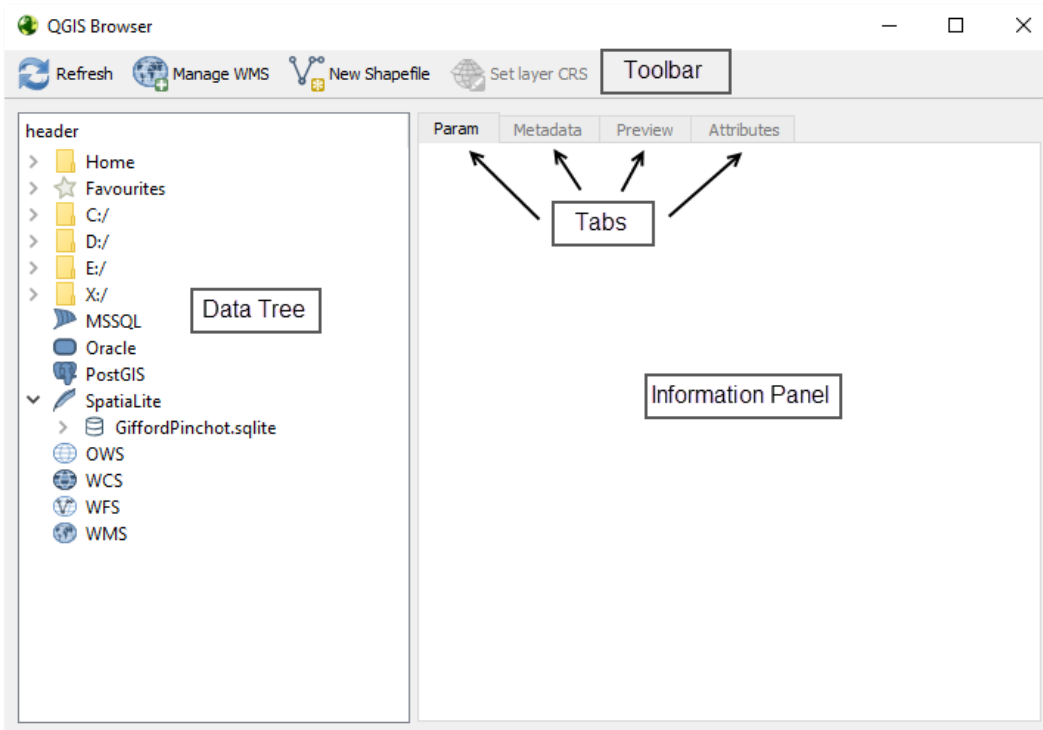


# Chapter 1 – A Refreshing Look at QGIS







**Create a new WMS connection** ? X

**Connection details**

Name: National Weather Service Base Reflectivity Radar

URL: WMSServer?request=GetCapabilities&service=WMS

Authentication | Configurations

If the service requires basic authentication, enter a user name and optional password

User name:

Password:

Referer:

DPI-Mode: all

Ignore GetMap/GetTile URI reported in capabilities

Ignore GetFeatureInfo URI reported in capabilities

Ignore axis orientation (WMS 1.3/WMTS)

Invert axis orientation

Smooth pixmap transform

OK Cancel Help

Attribute table - watershed\_huc4 :: Features total: 938, filtered: 938, selected: 0

Table Information

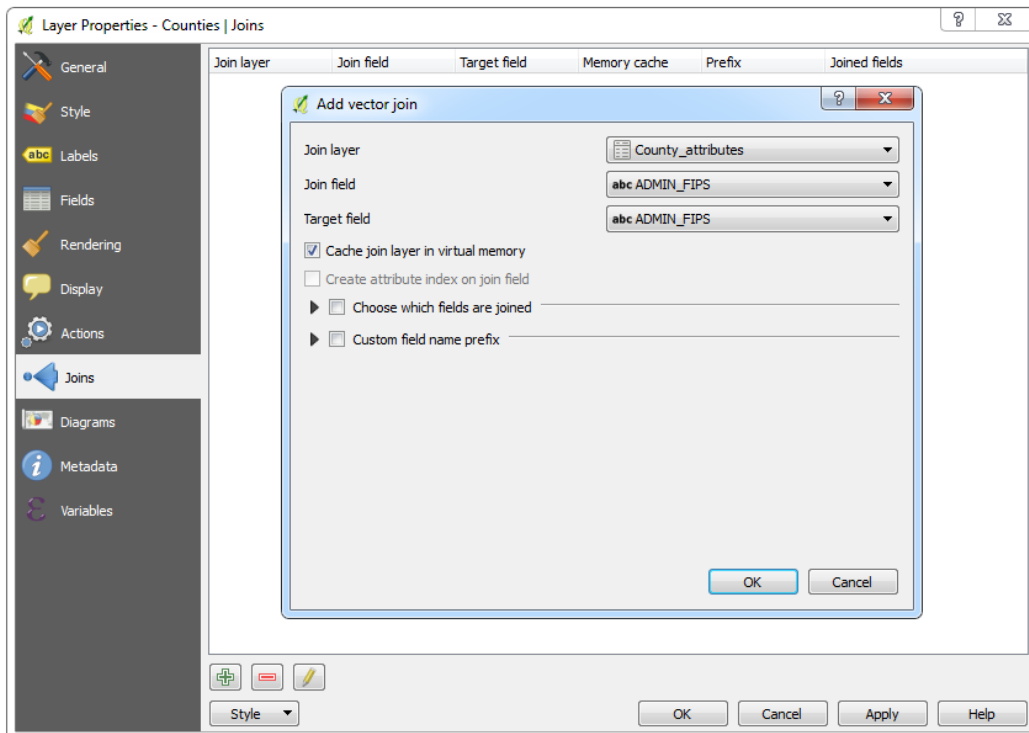
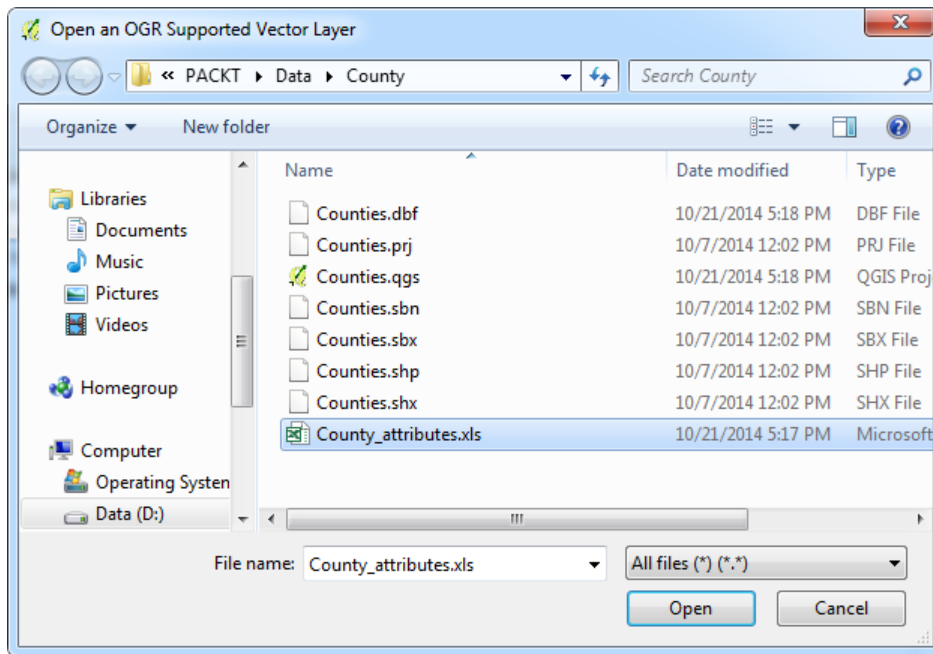
Table Tools

	AREA	PERIMETER	WATERSHED_	WATERSHED1	WSUNIT_ID
0	239712958.3310...	104171.2198180...		2	1 1648
1	126508862.5639...	61850.93658000...		3	2 1647
2	153801421.7260...	81701.18727850...		4	7 1796
3	36358587.13849...	34205.57029880...		5	3 1646
4	473377702.7049...	133341.3644189...		6	13 2511

Table Body

Show All Features Table Menu Table View







### Snapping options

Layer	Mode	Tolerance	Units	Avoid intersections
<input checked="" type="checkbox"/> Parks_pdx	to vertex	10.00000	map units	<input type="checkbox"/>
<input type="checkbox"/> schools	to segment	5.00000	map units	<input type="checkbox"/>
<input type="checkbox"/> Streets_pdx	to vertex and segment	2.00000	pixels	<input type="checkbox"/>

Enable topological editing    Enable snapping on intersection

OK   Cancel   Apply

### Layer Properties - watershed\_huc4 | Style

General | Style | Labels | Fields | Rendering | Display | Actions | Joins | Diagrams | Metadata | Variables

Single Symbol

Unit: Millimeter  
Transparency 0%  
Color: [Green]

Symbols in group: [Dropdown]   Open Library

corners   diagonal   dotted   green   land   water   wine

Layer rendering

Layer transparency: [Slider]   0

Layer blending mode: Normal   Feature blending mode: Normal

Draw effects    Control feature rendering order

Style   OK   Cancel   Apply   Help

Layer Properties - NA LC 1km | Style

General

Style

Transparency

Pyramids

Histogram

Metadata

**Band rendering**

Render type: Singleband gray

Gray band: Band 1 (Palette)

Color gradient: Black to white

Min: 0

Max: 0

Contrast enhancement: No enhancement

**Load min/max values**

Cumulative count cut: 2.0 - 98.0 %

Min / max

Mean +/- standard deviation x: 2.00

**Extent**

Full

Current

**Accuracy**

Estimate (faster)

Actual (slower)

Load

**Color rendering**

Blending mode: Normal

Brightness: 0

Saturation: 0

Hue:  Colorize

Contrast: 0

Grayscale: Off

Strength: 100%

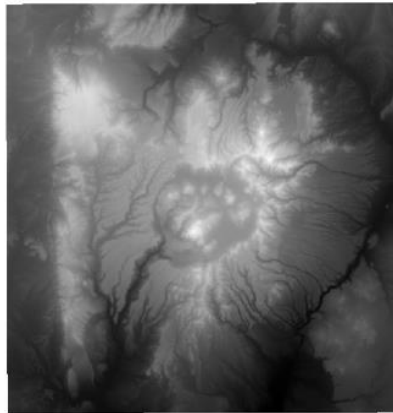
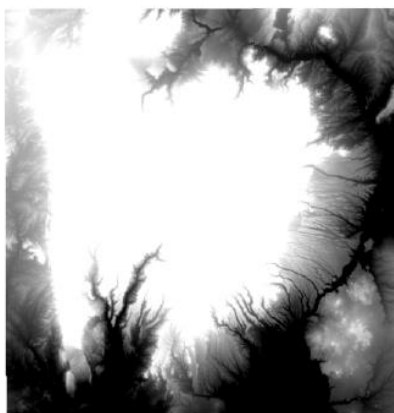
Reset

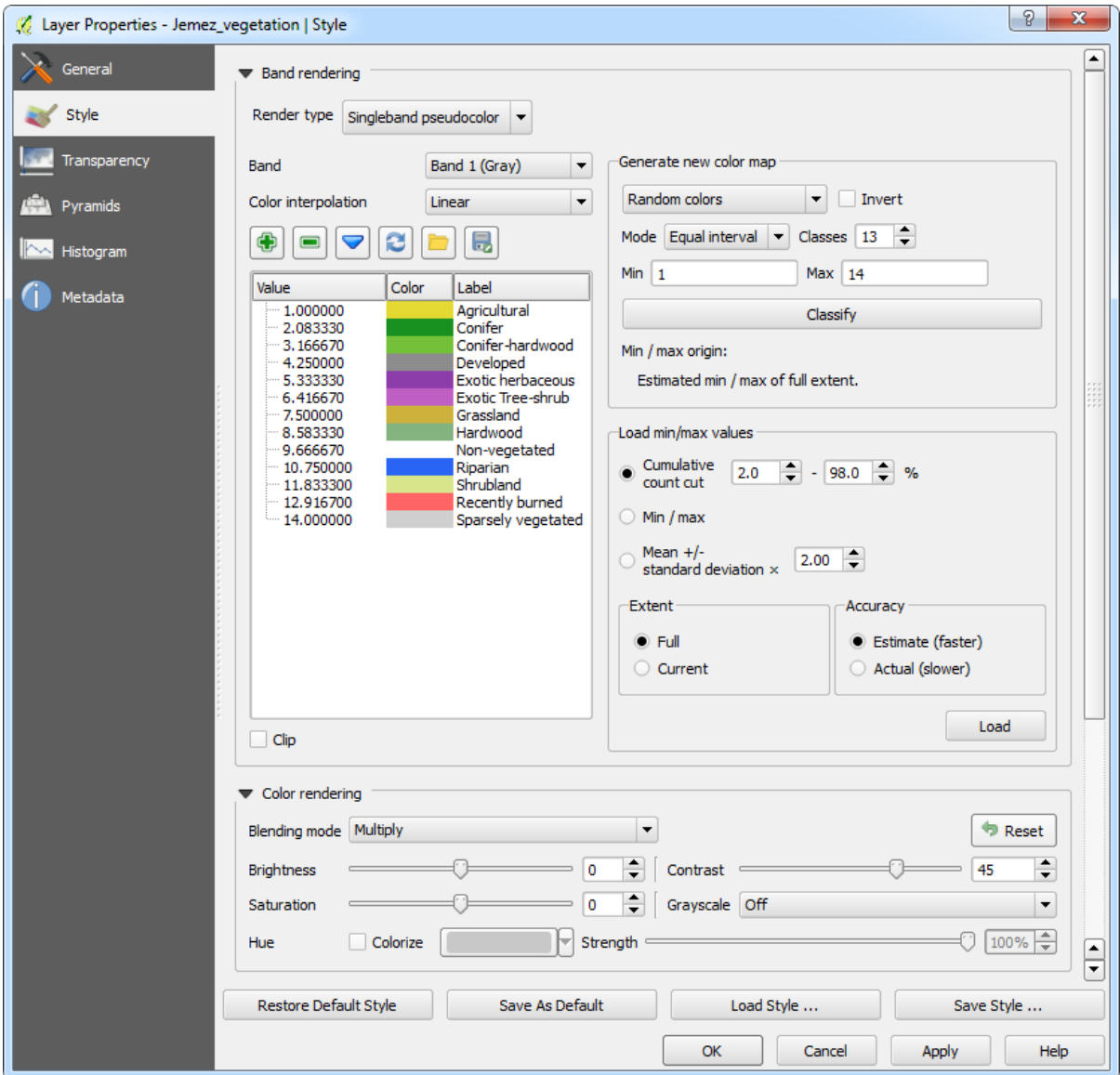
**Resampling**

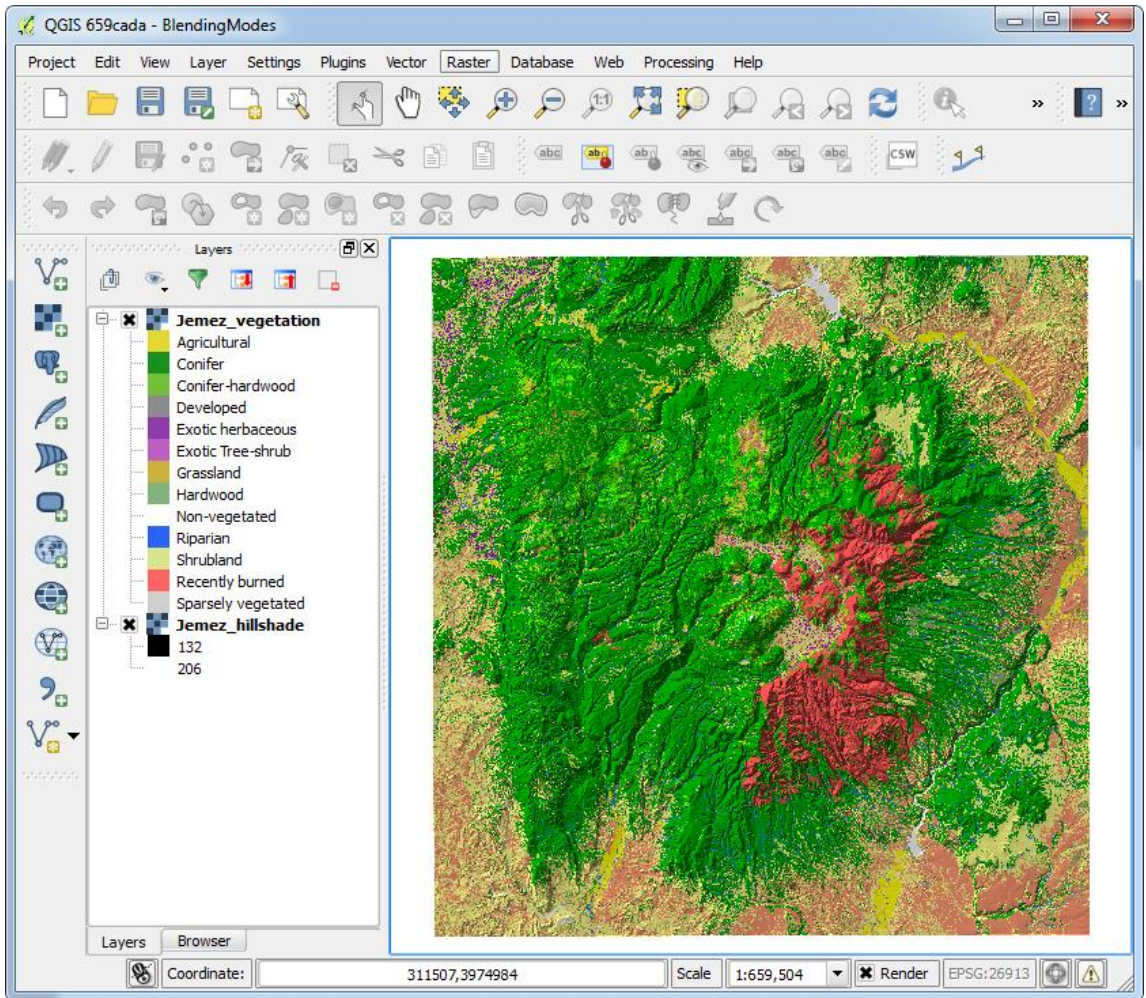
Zoomed: in Nearest neighbour out Nearest neighbour Oversampling: 2.00

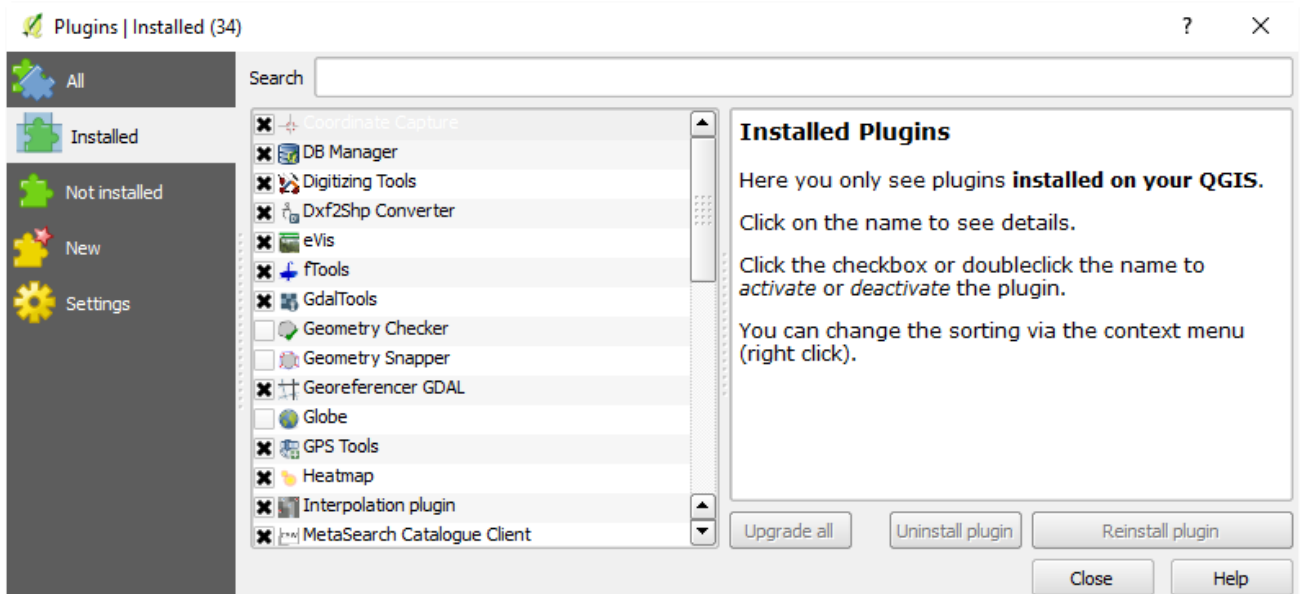
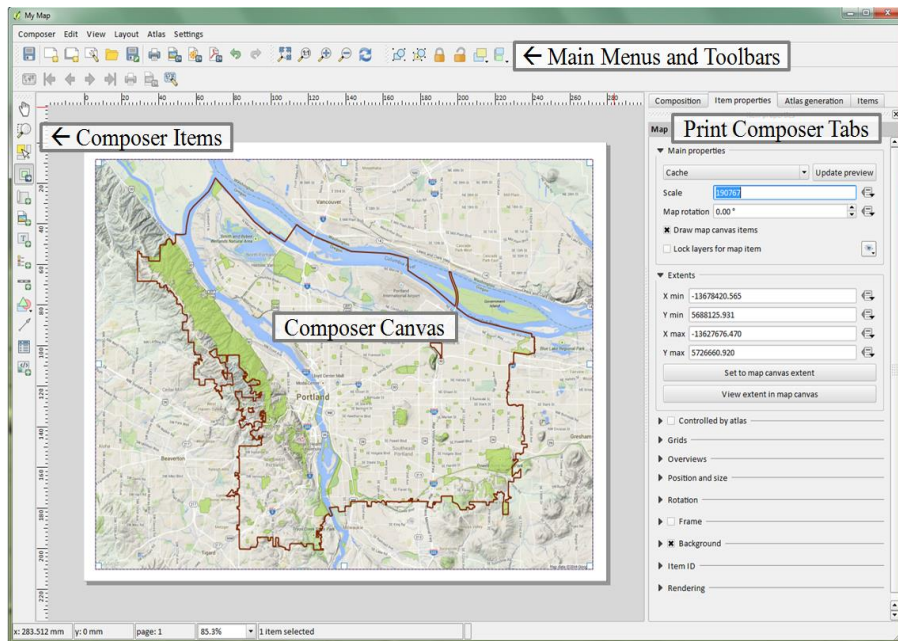
Style

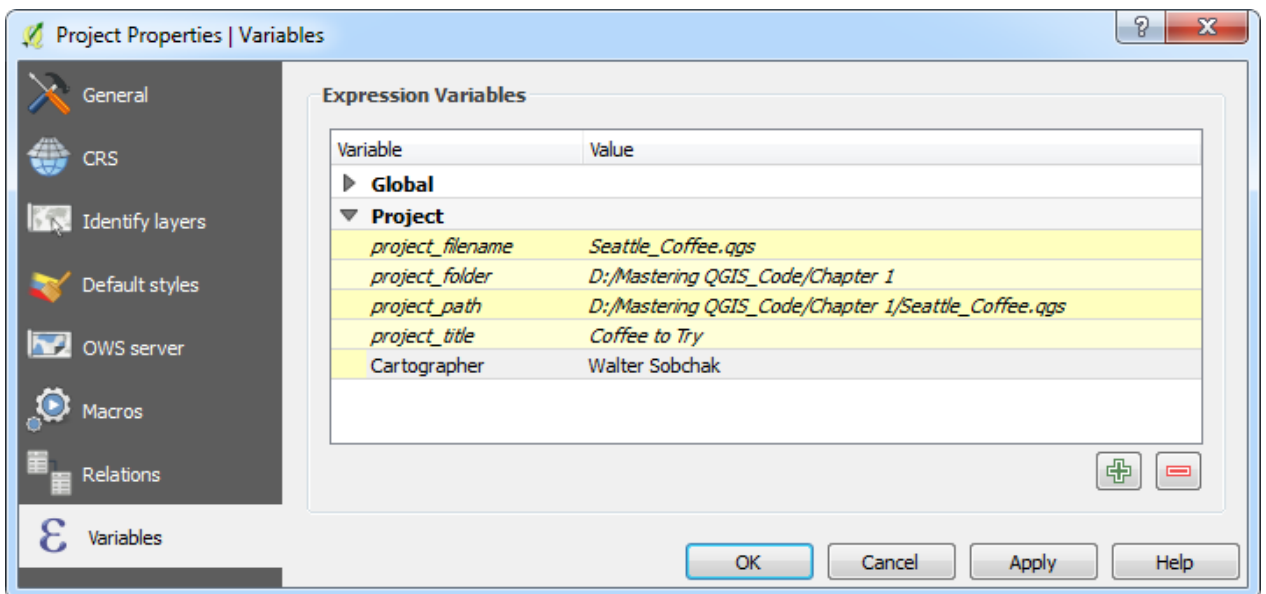
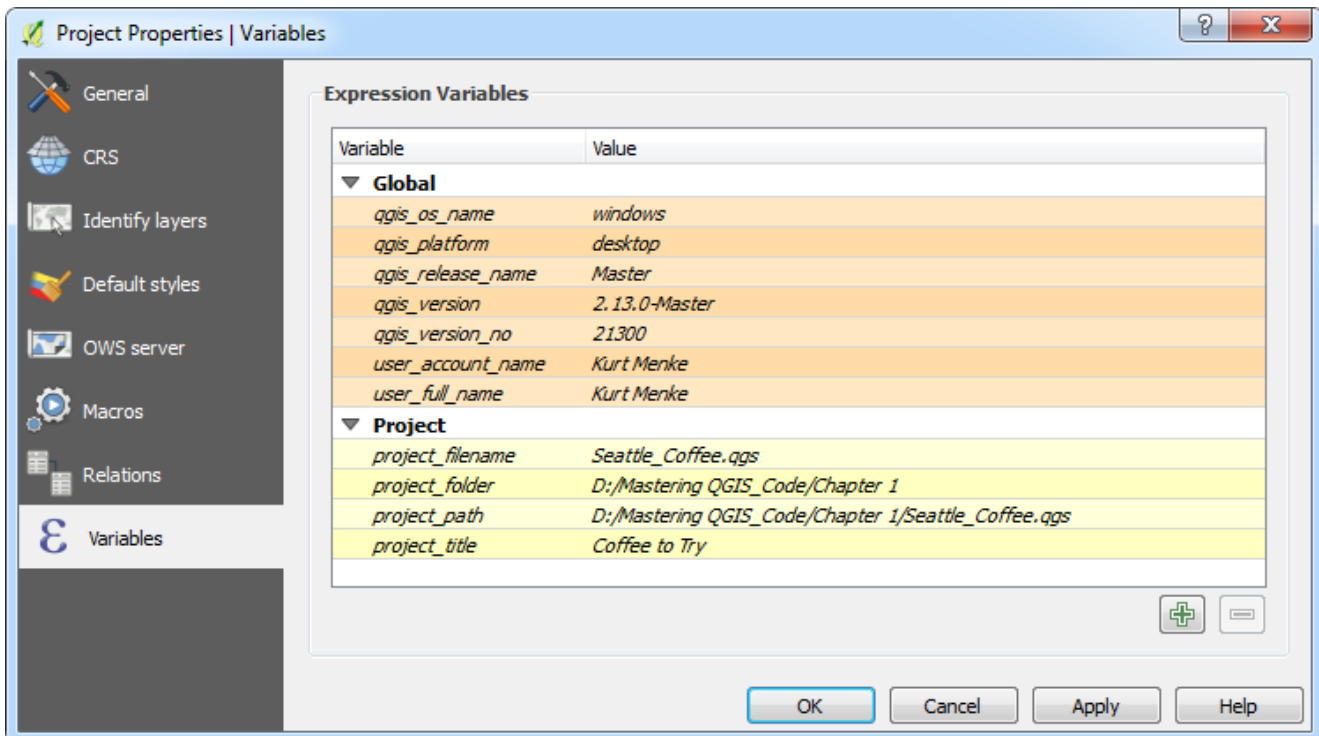
OK Cancel Apply Help













The screenshot shows a QGIS map with a yellow background and a grid. A label 'Analog Coffee' is placed on the map, accompanied by a red coffee cup icon. A tooltip is displayed over the label, containing the following text:

Cartography by: Walter Sobchak  
 Path: D:/Mastering QGIS\_Code/Chapter 1  
 File: Seattle\_Coffee.qgs

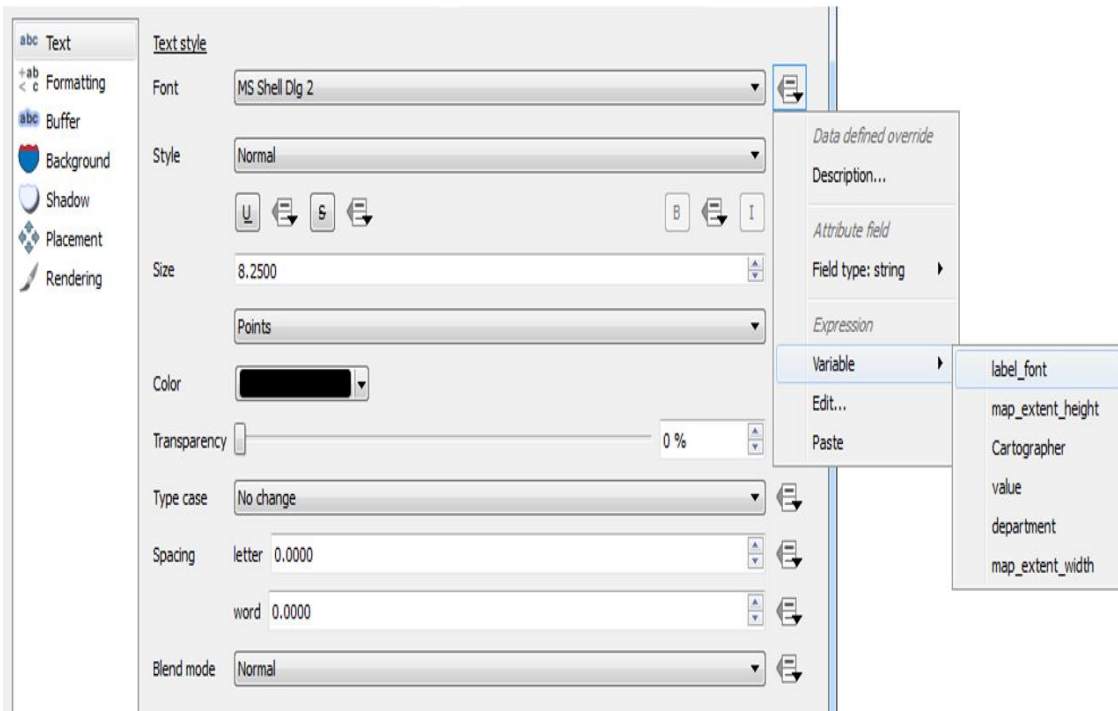
On the right side, the 'Label' properties panel is open, showing the 'Main properties' section with the following text:

Cartography by: [%@Cartographer%]  
 Path: [%@project\_folder%]  
 File: [%@project\_filename%]

**Expression Variables**

Variable	Value
<b>Global</b>	
<i>qgis_os_name</i>	<i>windows</i>
<i>qgis_platform</i>	<i>desktop</i>
<i>qgis_release_name</i>	<i>Master</i>
<i>qgis_version</i>	<i>2.13.0-Master</i>
<i>qgis_version_no</i>	<i>21300</i>
<i>user_account_name</i>	<i>Kurt Menke</i>
<i>user_full_name</i>	<i>Kurt Menke</i>
<i>department</i>	<i>Spatial-Analysis</i>
<b>Project</b>	
<i>project_filename</i>	<i>Seattle_Coffee.qgs</i>
<i>project_folder</i>	<i>D:/Mastering QGIS_Code/Chapter 1</i>
<i>project_path</i>	<i>D:/Mastering QGIS_Code/Chapter 1/Seattle_Coffee.qgs</i>
<i>project_title</i>	<i>Coffee to Try</i>
Cartographer	Walter Sobchak
department	Survey





Layer Properties - Neighborhoods | Variables

General  
Style  
Labels  
Fields  
Rendering  
Display  
Actions  
Joins  
Diagrams  
Metadata  
Variables

**Variables**

Variable	Value
<b>Global</b>	
<i>qgis_os_name</i>	<i>windows</i>
<i>qgis_platform</i>	<i>desktop</i>
<i>qgis_release_name</i>	<i>Master</i>
<i>qgis_version</i>	<i>2.13.0-Master</i>
<i>qgis_version_no</i>	<i>21300</i>
<i>user_account_name</i>	<i>Kurt Menke</i>
<i>user_full_name</i>	<i>Kurt Menke</i>
<i>department</i>	<i>Spatial Analysis</i>
<b>Project</b>	
<i>project_filename</i>	<i>Seattle_Coffee.qgs</i>
<i>project_folder</i>	<i>D:/Mastering QGIS_Code/Chapter 1</i>
<i>project_path</i>	<i>D:/Mastering QGIS_Code/Chapter 1/Seattle_Coffee.qgs</i>
<i>project_title</i>	<i>Coffee to Try</i>
<i>Cartographer</i>	<i>Walter Sobchak</i>
<i>label_font</i>	<i>Times New Roman</i>
<b>Layer</b>	
<i>layer_id</i>	<i>Neighborhoods20160128121121103</i>
<i>layer_name</i>	<i>Neighborhoods</i>
<i>feet_2_acres</i>	<i>0.00002295684113865932</i>

Style

OK Cancel Apply Help

**Field calculator**

Only update 0 selected features

Create a new field  Update existing field

Create virtual field

Output field name: Acres

Output field type: Decimal number (real)

Output field length: 10 Precision: 1

OBJECTID

Expression Function Editor

$\pm \cdot / * \wedge || ( ) \backslash \prime$


\$area \* @feet\_2\_acres

Search

- Record
- String
- Variables
  - row\_number
  - Cartographer
  - department
  - feet\_2\_acres
  - label\_font
  - layer\_id
  - layer\_name
  - project\_filename
  - project\_folder
  - project\_path
  - project\_title
  - qgis\_os\_name
  - qgis\_platform

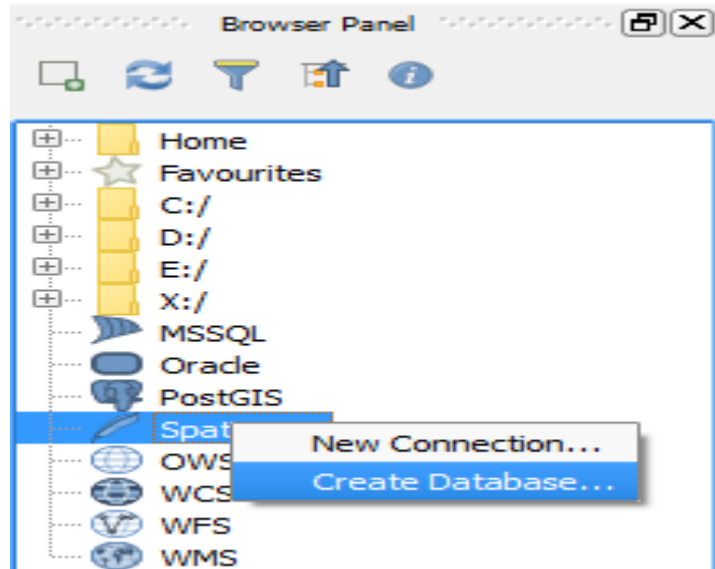
Current value: '0.00002295684113865932'

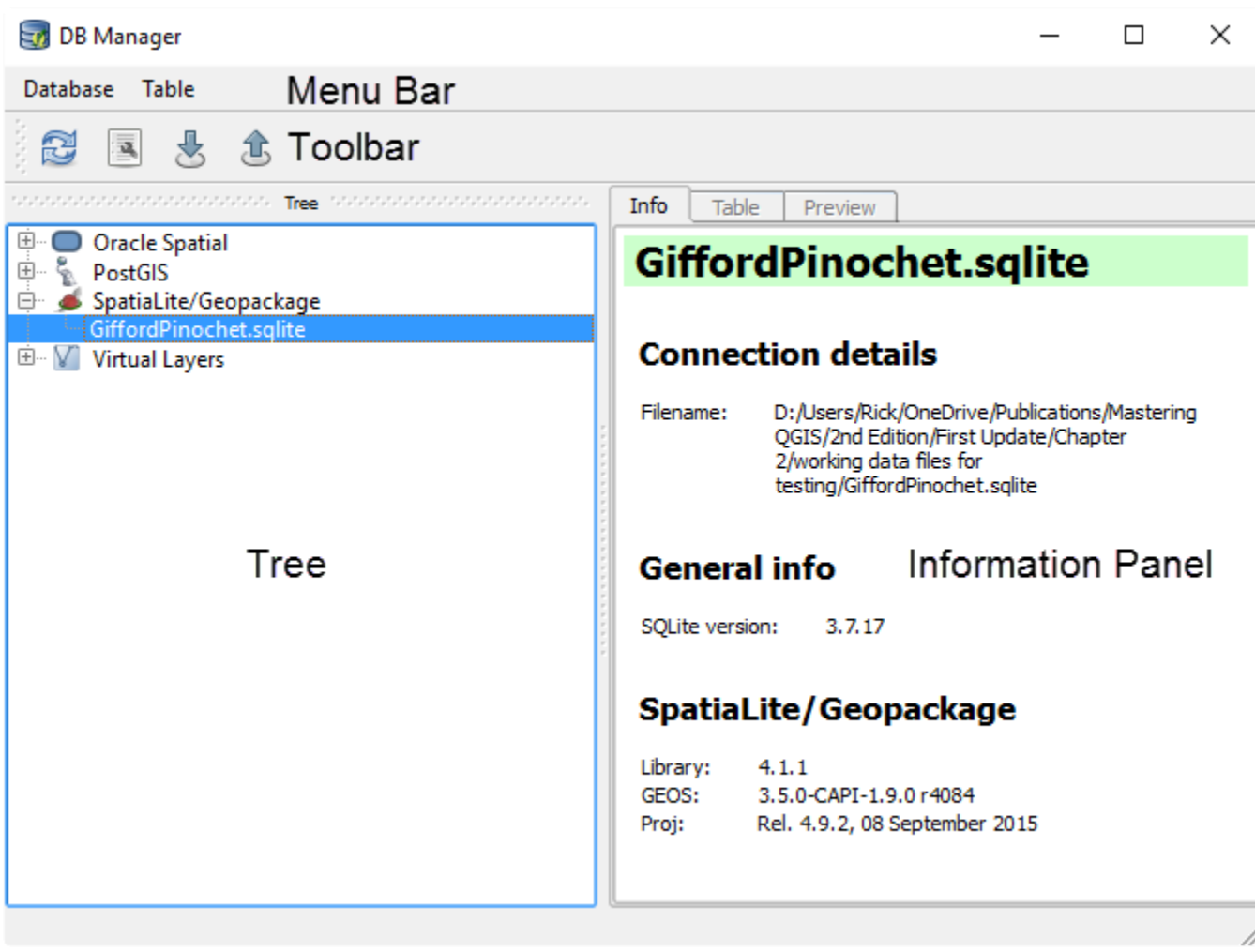
Output preview: 0.0823793024180459

 You are editing information on this layer but the layer is currently not in edit mode. If you click Ok, edit mode will automatically be turned on.

OK Cancel Help

## Chapter 2 – Creating Spatial Databases





DB Manager

Database Table Menu Bar

Toolbar

Tree

- Oracle Spatial
- PostGIS
- SpatiaLite/Geopackage
- GiffordPinochet.sqlite**
- Virtual Layers

Tree

Info Table Preview

## GiffordPinochet.sqlite

### Connection details

Filename: D:/Users/Rick/OneDrive/Publications/Mastering QGIS/2nd Edition/First Update/Chapter 2/working data files for testing/GiffordPinochet.sqlite

### General info Information Panel

SQLite version: 3.7.17

### SpatiaLite/Geopackage

Library: 4.1.1  
GEOS: 3.5.0-CAPI-1.9.0 r4084  
Proj: Rel. 4.9.2, 08 September 2015

Import vector layer

Input  ...

Import only selected features

Update options

Output table

Schema

Table

Options

Primary key

Geometry column

Source SRID   Target SRID

Encoding

Replace destination table (if exists)

Create single-part geometries instead of multi-part

Create spatial index

OK

Cancel

Import vector layer

Input  ...

Import only selected features

Update options

Output table

Schema

Table

Options

Primary key

Geometry column

Source SRID   Target SRID

Encoding

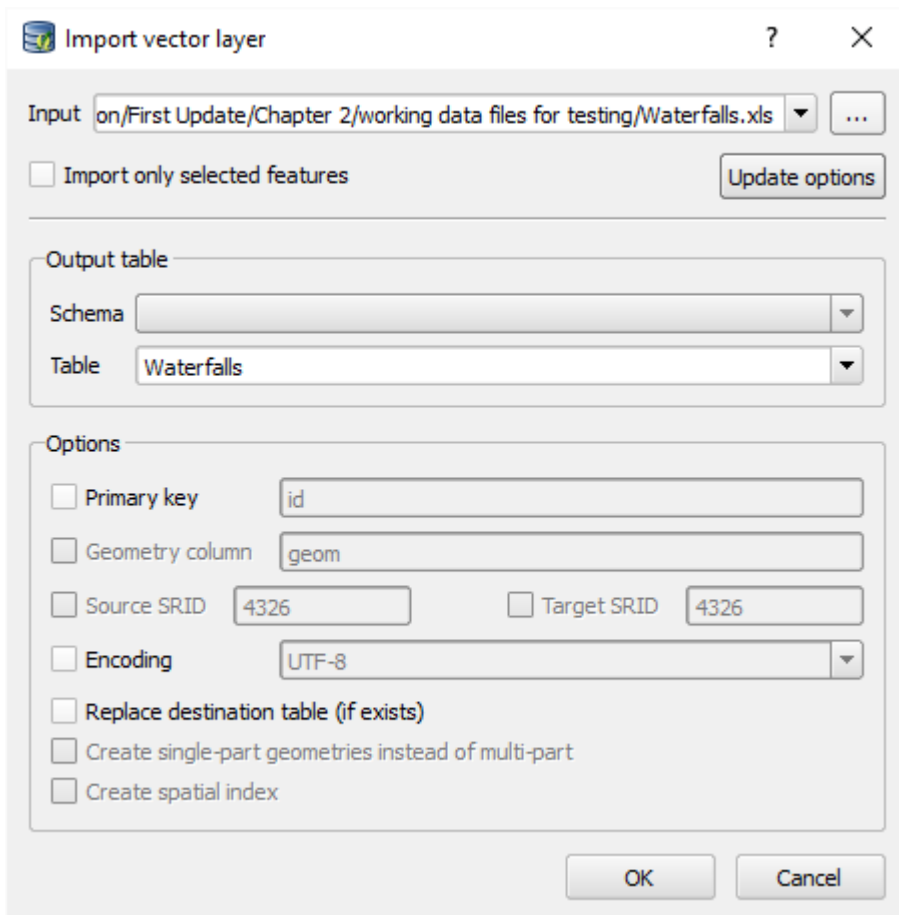
Replace destination table (if exists)

Create single-part geometries instead of multi-part

Create spatial index

OK

Cancel

The dialog box is titled "Import vector layer" and has a standard window title bar with a question mark and a close button. It contains several sections: "Input" with a file path and a browse button; a checkbox for "Import only selected features" with an "Update options" button; "Output table" with "Schema" and "Table" dropdowns; and "Options" with checkboxes and text boxes for "Primary key", "Geometry column", "Source SRID", "Target SRID", "Encoding", "Replace destination table (if exists)", "Create single-part geometries instead of multi-part", and "Create spatial index".

Import vector layer ? X

Input  ...

Import only selected features

Output table

Schema

Table

Options

Primary key

Geometry column

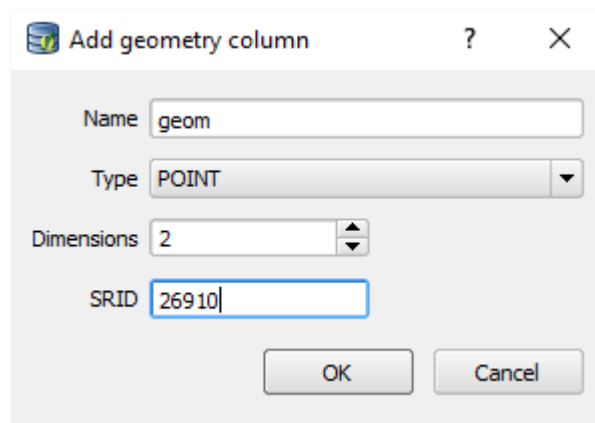
Source SRID   Target SRID

Encoding

Replace destination table (if exists)

Create single-part geometries instead of multi-part

Create spatial index

The dialog box is titled "Add geometry column" and has a standard window title bar with a question mark and a close button. It contains four fields: "Name" (geom), "Type" (POINT), "Dimensions" (2), and "SRID" (26910). It has "OK" and "Cancel" buttons at the bottom.

Add geometry column ? X

Name

Type

Dimensions

SRID



Info Table Preview Query (GiffordPinochet.sqlite)

Saved query:  Name

```
UPDATE Waterfalls
SET geom = MakePoint(Easting, Northing, 26910);
```

100 rows, 0.0 seconds

Load as new layer

Info Table Preview


## Waterfalls

### General info

Relation type: Table  
Rows: 100

### Spatialite/Geopackage

Column: geom  
Geometry: POINT  
Dimension: XY  
Spatial ref: NAD83 / UTM zone 10N (26910)  
Extent: (unknown) [find out](#)

 No spatial index defined [create it](#)

Export to vector file ? X

Format: ESRI Shapefile

Save as: GIS/2nd Edition/First Update/Chapter 2/working data files for testing/Waterfalls.shp ...

Options

Source SRID: 26910  Target SRID: 26910

Encoding: System

Replace destination file (if exists)

OK Cancel

Create Table ? X

Schema

Name

	Name	Type	Null
1	Name	character(20)	<input type="checkbox"/>
2	Elevation	integer	<input type="checkbox"/>

Add field

Delete field

Up

Down

Primary key

Create geometry column

Name

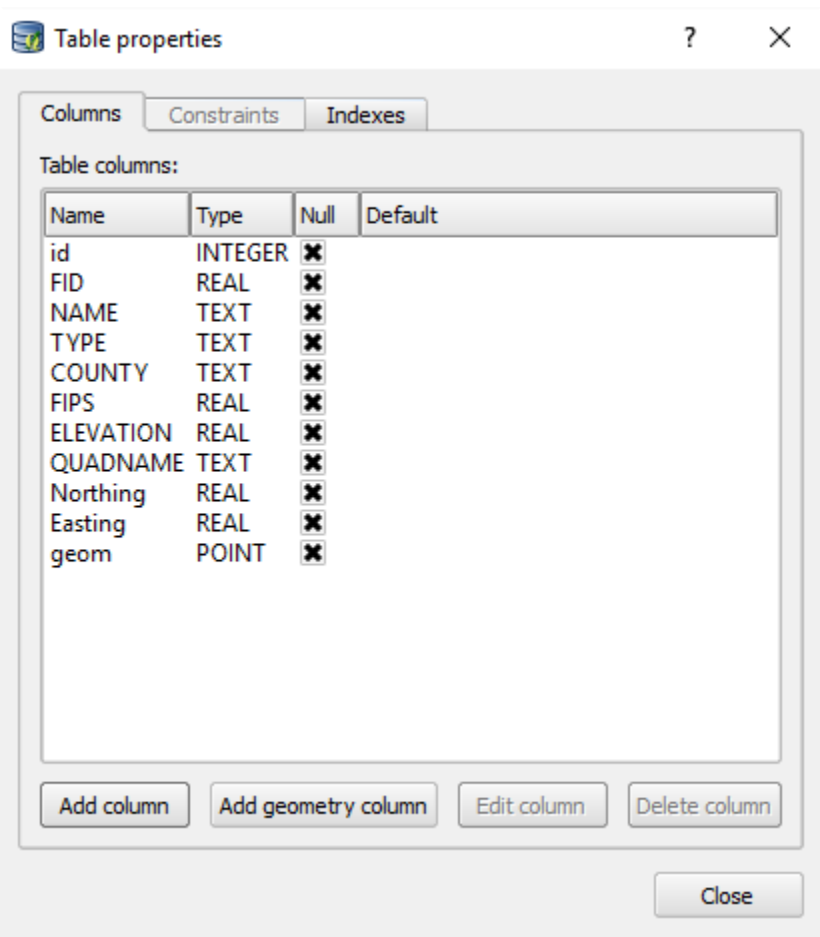
Dimensions

SRID

Create spatial index

Create

Close



Info Table Preview Query (GiffordPinochet.sqlite) X

SQL Saved query: Name Store Delete

```
select Name, Type from Waterfalls
where quadname = 'Mowich Lake';
```

Execute (F5) -1 rows, 0.0 seconds Create a view Clear

	NAME	TYPE
1	Chenuis Falls	falls
2	Ranger Falls	falls
3	Ipsut Falls	falls

Load as new layer

Info Table Preview Query (GiffordPinochet.sqlite) X

SQL Saved query: Name Store Delete

```
create view mowich_lake_waterfalls AS
select w.id as ROWID, w.NAME, w.TYPE, w.geom from Waterfalls as w
where w.quadname = 'Mowich Lake';
```

Execute (F5) -1 rows, 0.1 seconds Create a view Clear

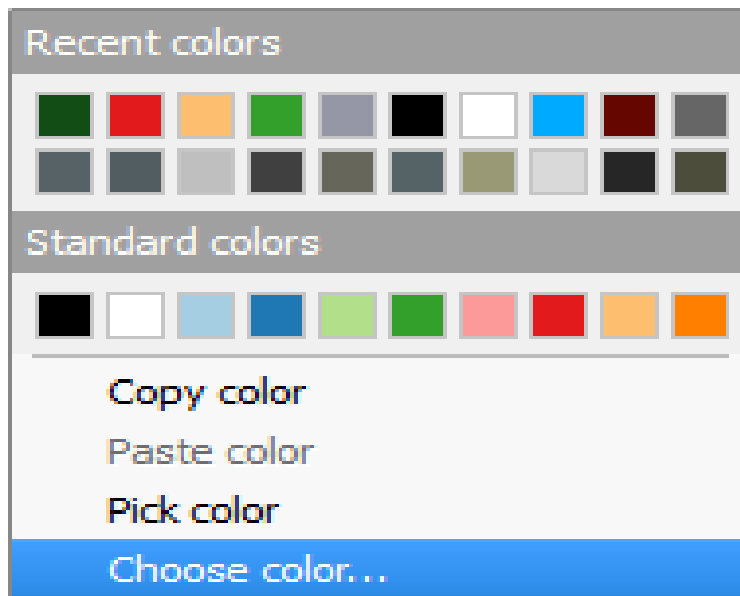
SQL window - GiffordPinochet.sqlite [SpatialLite] ? X

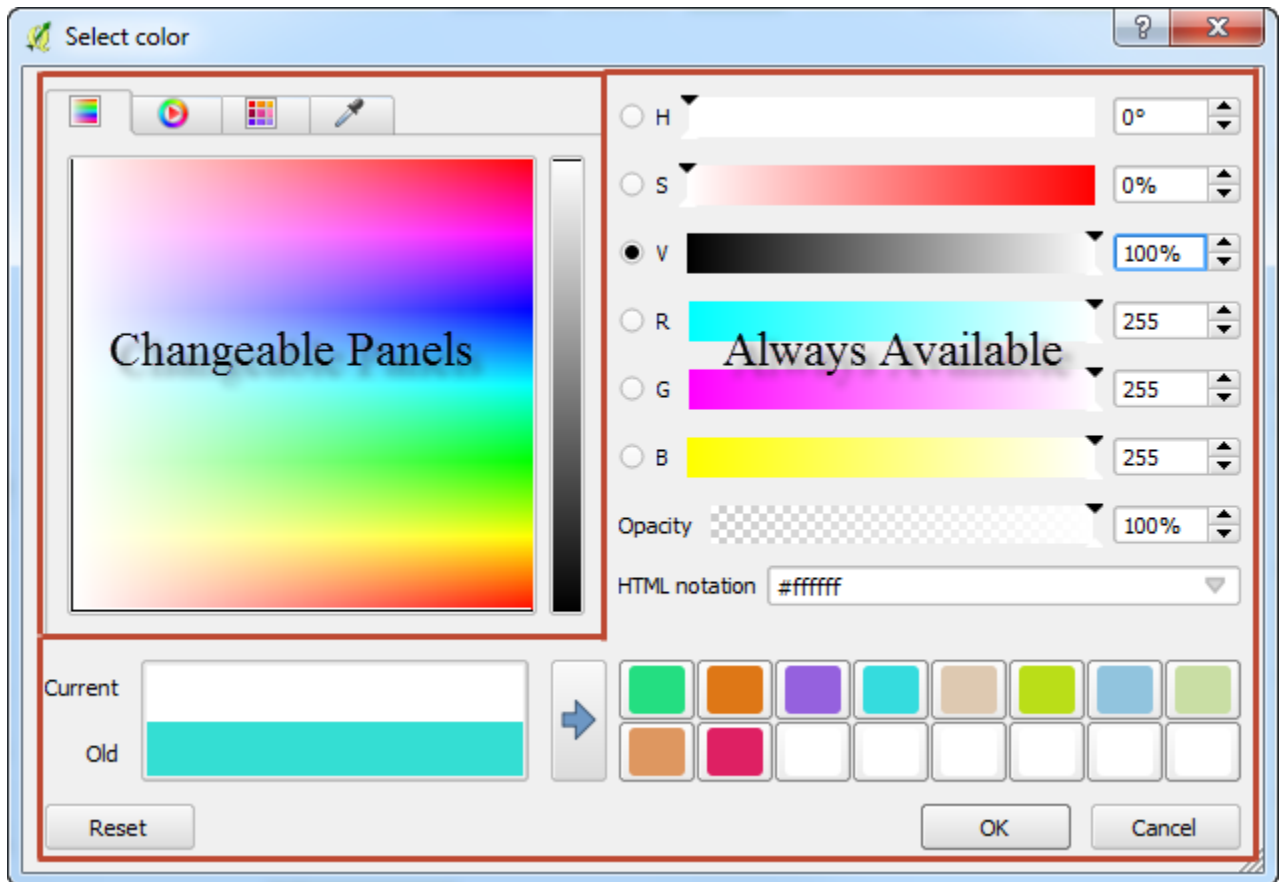
SQL query:

```
1 INSERT INTO views_geometry_columns (view_name, view_geometry, ↵
  view_rowid, f_table_name, f_geometry_column, read_only)
2 VALUES ('mowich_lake_waterfalls', 'geom', 'rowid', ↵
  'waterfalls', 'geom', 1);
```

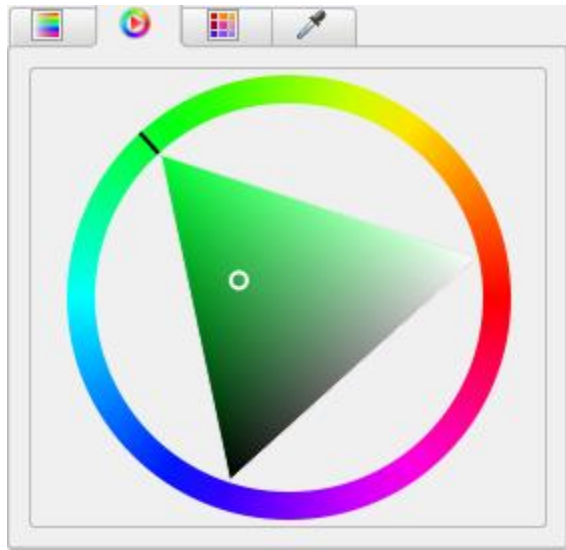
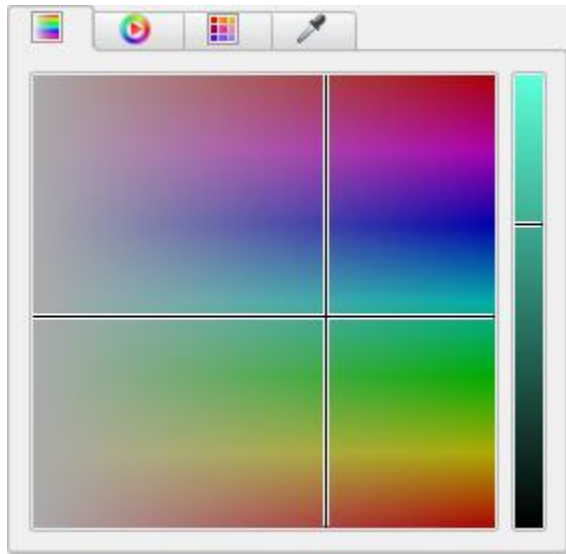
1 rows, 0.0 seconds

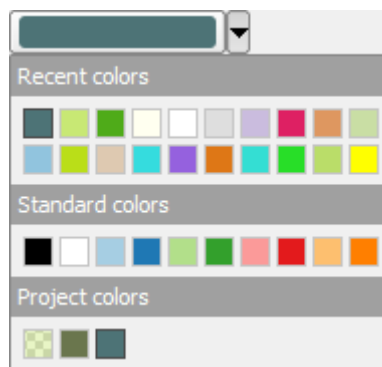
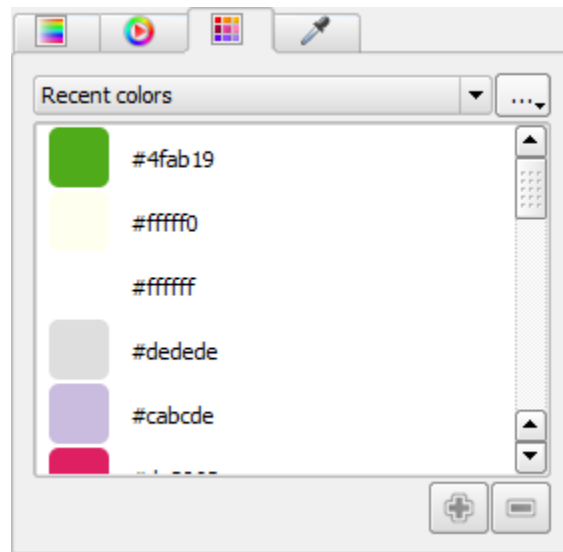
## Chapter 3 – Styling Raster and Vector Data

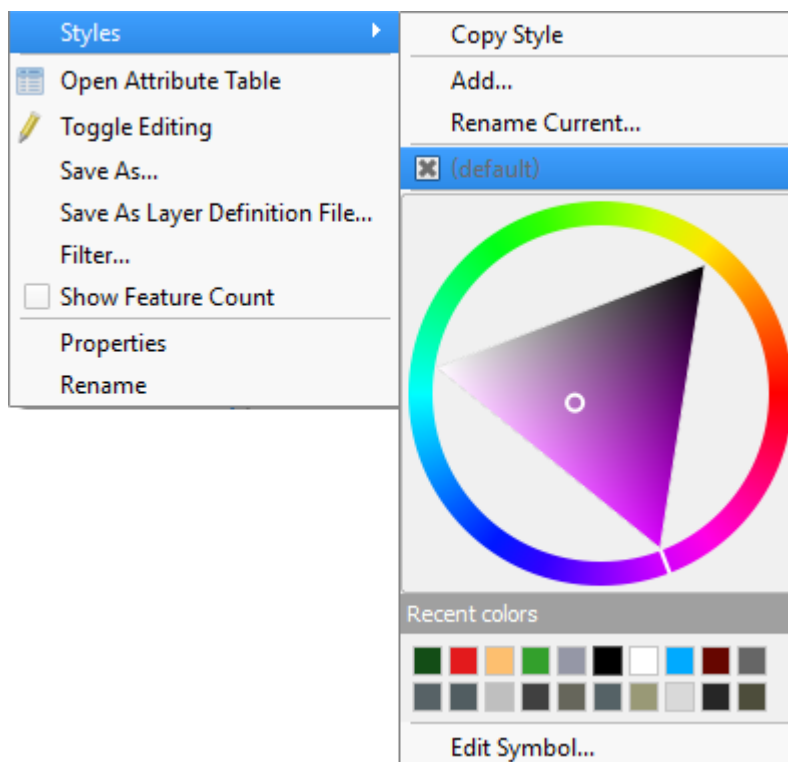
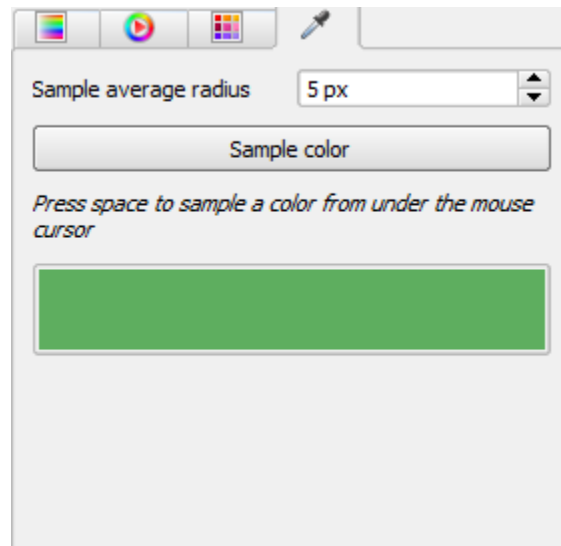










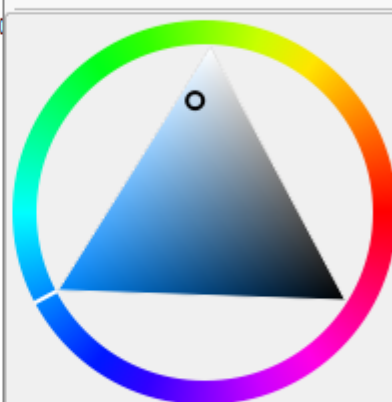


**Populated Places**

- 0.0000 - 2.0000
- 2.0000 - 4.0000
- 4.0000 - 6.0000
- 6.0000 - 8.0000
- 8.0000 - 10.0000

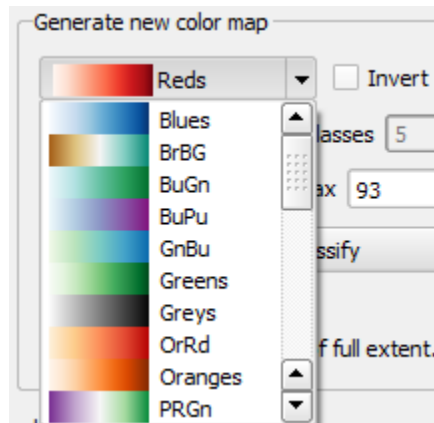
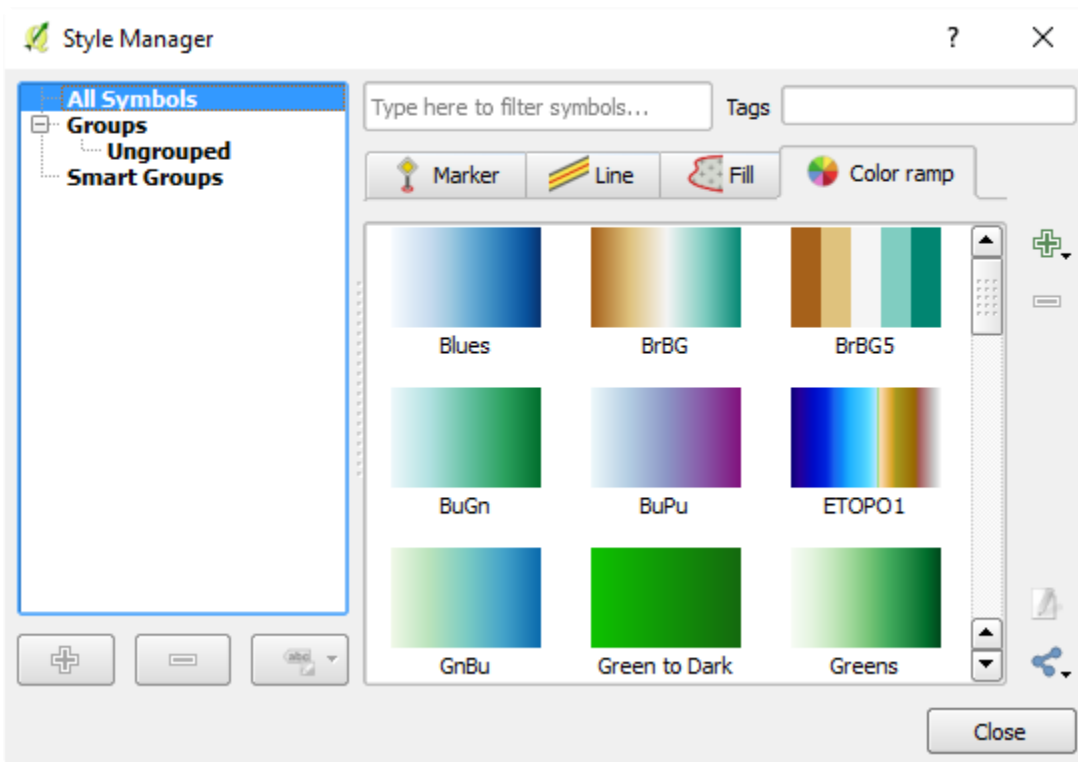
Show All Items

Hide All Items



Recent colors


Edit Symbol...



Export symbol(s)

? X

Select symbols to export

triangle	triangle2	water	wine	Blues	BrBG
BrBG5	BuGn	BuPu	ETOPO1	GnBu	
Green to Dark Green	Greens	Greys	OrRd	Oranges	
PRGn	Pastel15	PiYG	PuBu	PuBuGn	PuOr
PuRd	Purples	RdBu	RdGy	RdPu	RdYlBu

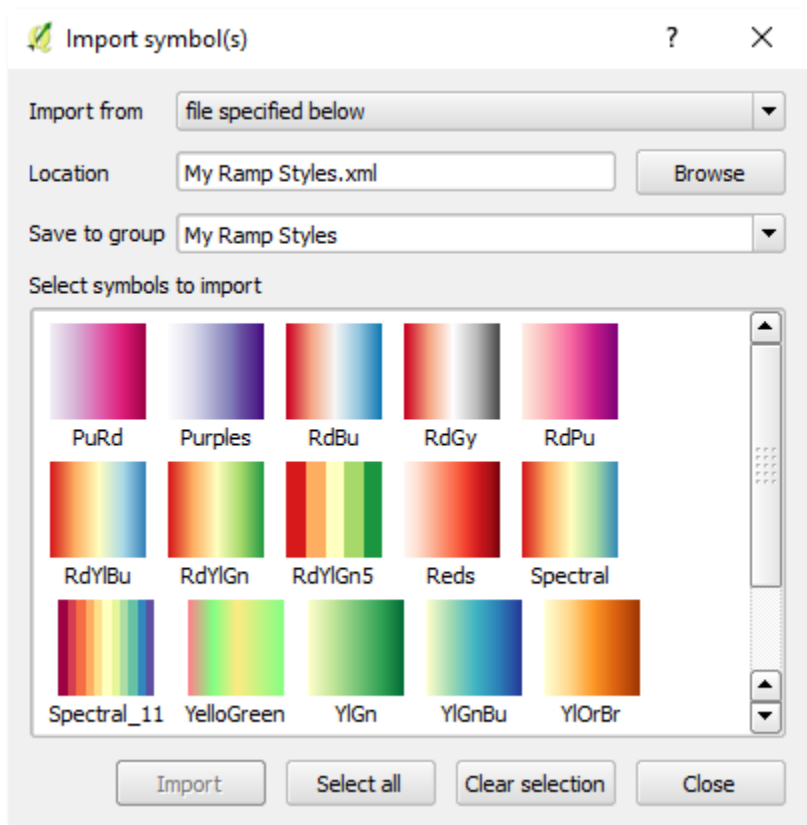
Export

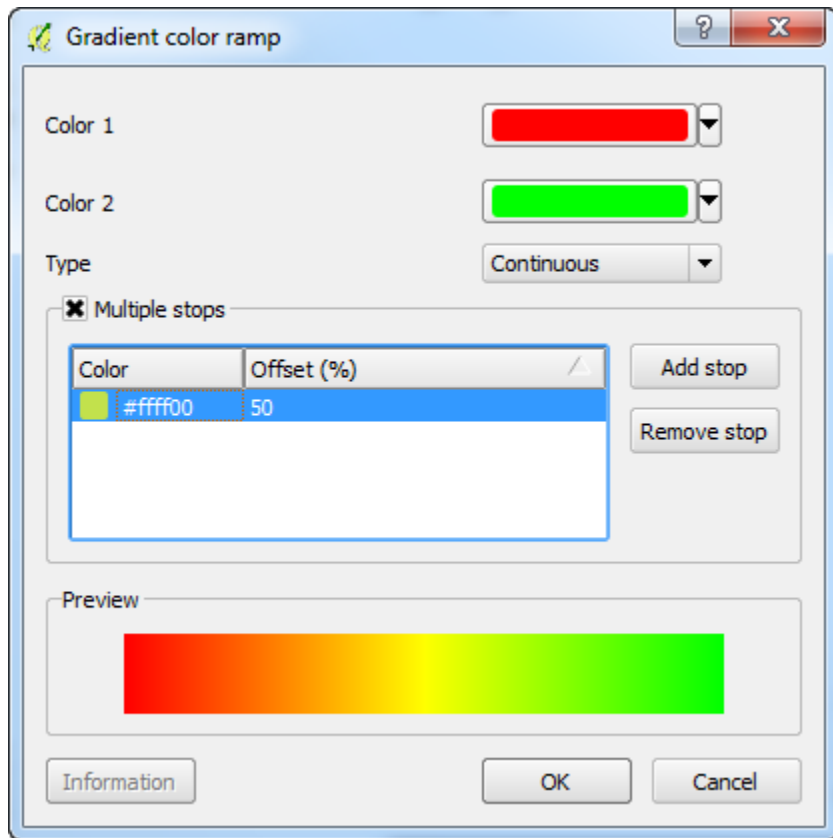
Select all

Clear selection

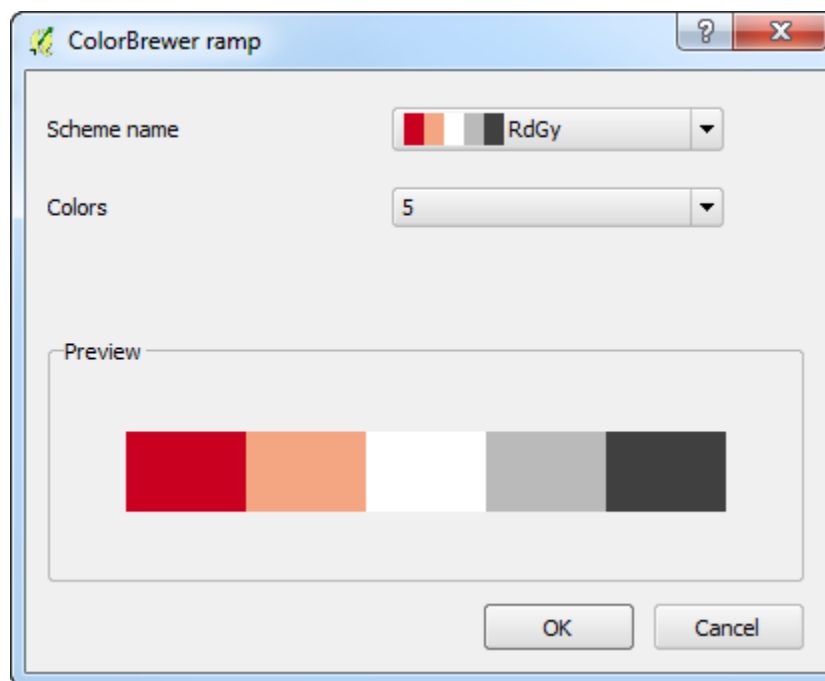
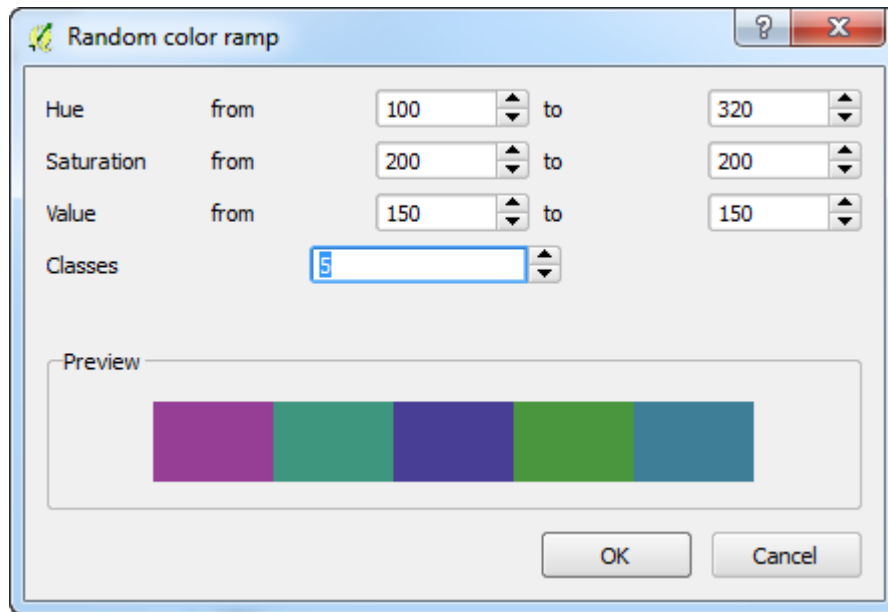
Select by group

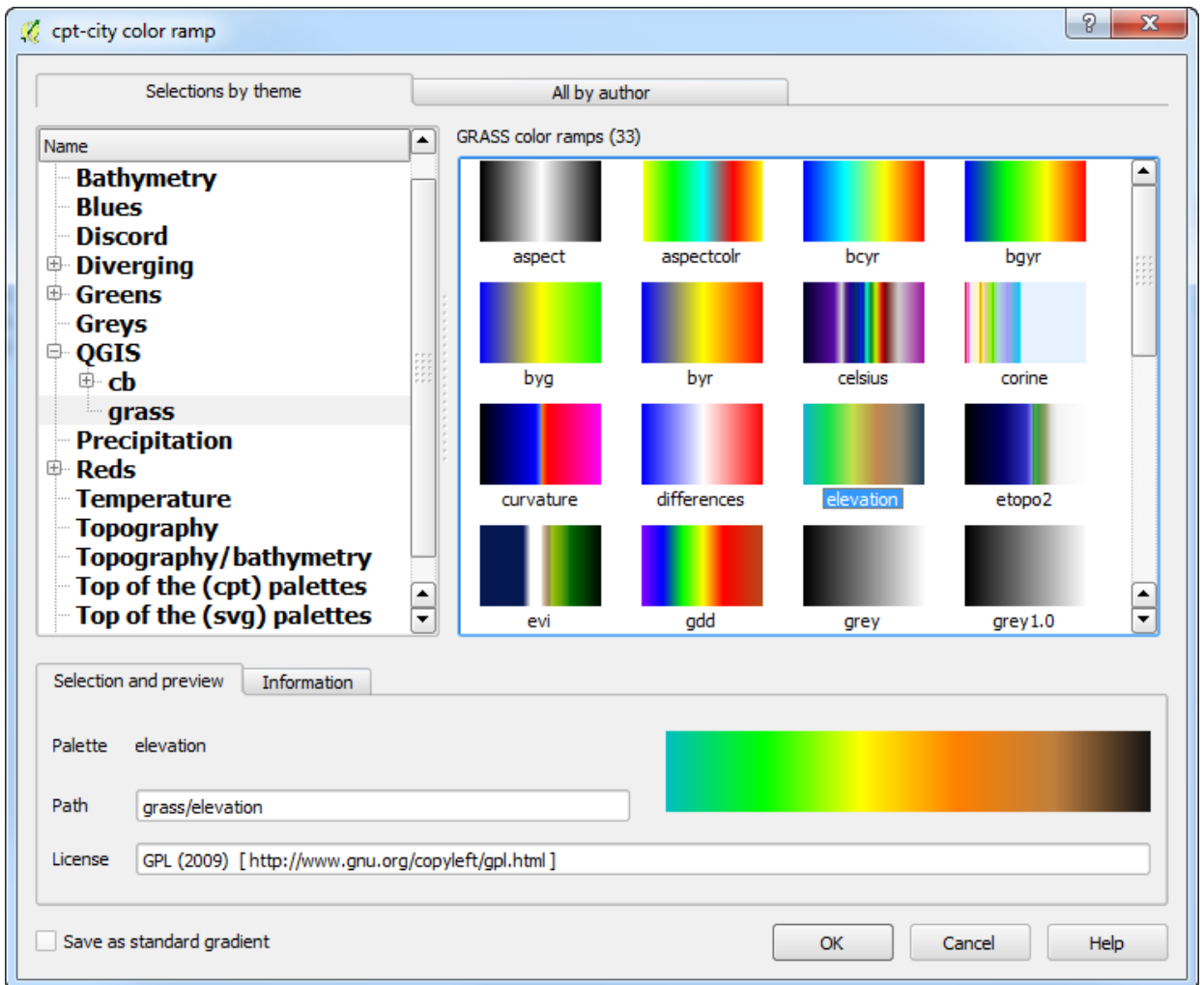
Close

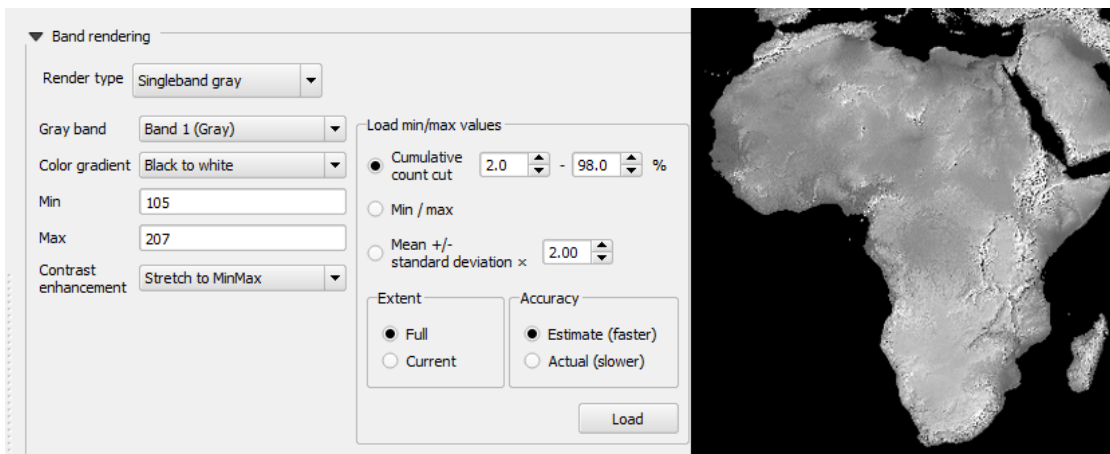
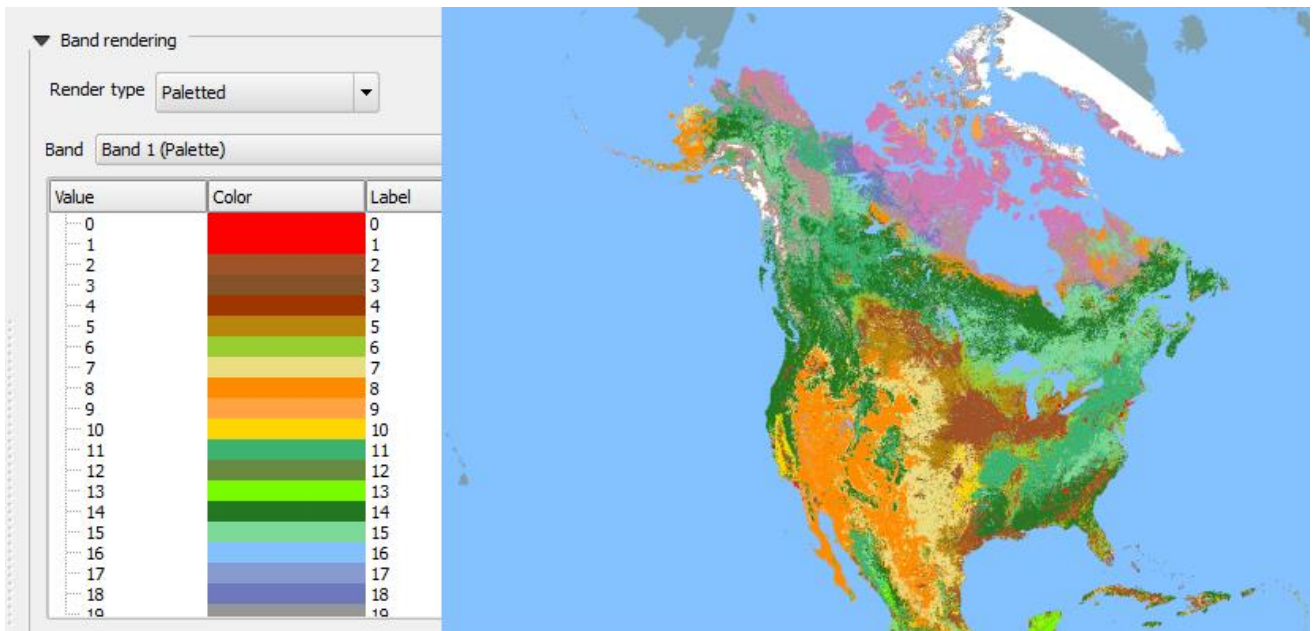


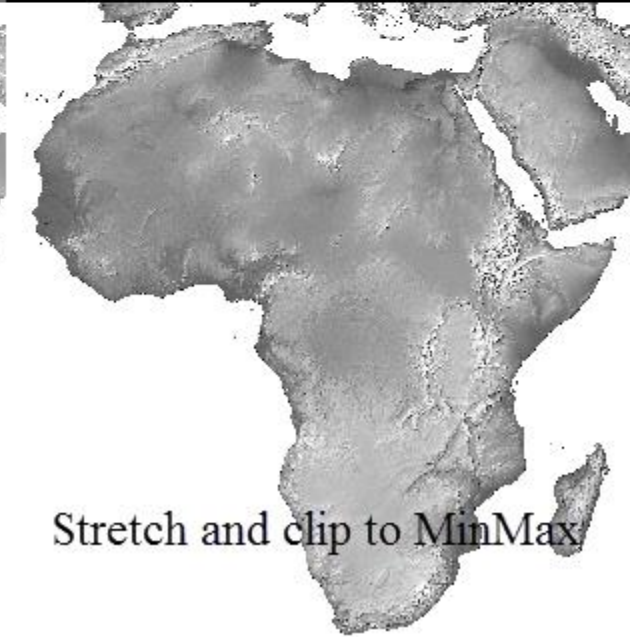
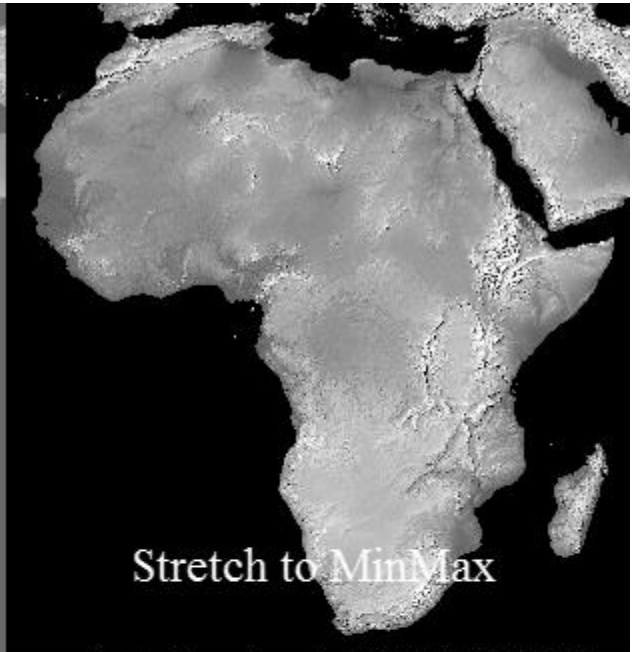
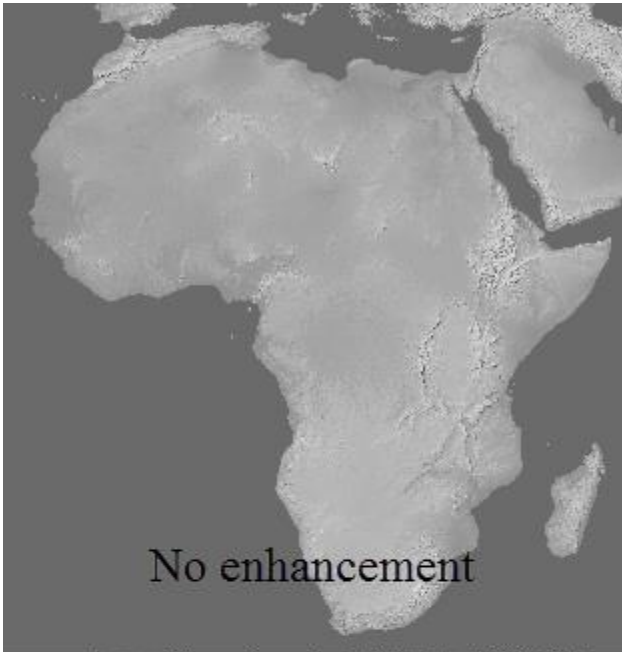












▼ Band rendering

Render type: Singleband pseudocolor

Band: Band 1 (Gray)

Color interpolation: Linear

Generate new color map

Color ramp: wiki-2

Mode: Continuous

Classes: 5

Min: 105

Max: 207


Classify

Min / max origin: Exact cumulative cut of full extent.

Load min/max values

Cumulative count cut: 2.0 - 98.0 %

Value	Color	Label
105.000000		105.000000
108.519000		108.519000
112.038000		112.038000
115.546800		115.546800
119.065800		119.065800
122.584800		122.584800
126.103800		126.103800
129.622800		129.622800
133.141800		133.141800
136.650600		136.650600
140.169600		140.169600



Generate new color map

Greys

YelloGreen

YlGn

YlGnBu

YlOrBr

YlOrRd

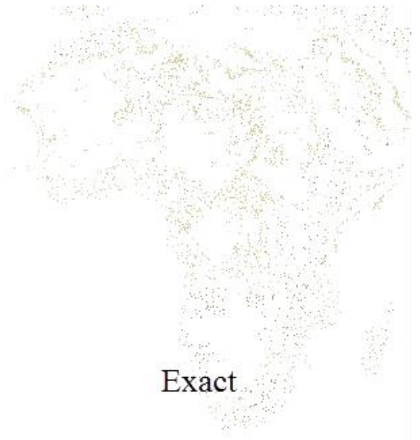
elevation

spectrum-dark

wiki-2

Random colors

New color ramp...



▼ Band rendering

Render type: **Multiband color**

Red band: **Band 1 (Red)**  
Min/max: 0 0

Green band: **Band 2 (Green)**  
Min/max: [ ] [ ]

Blue band: **Band 3 (Blue)**  
Min/max: [ ] [ ]

Contrast enhancement: **No enhancement**

Load min/max values

Cumulative count cut: 2.0 - 98.0 %

Min / max

Mean +/- standard deviation × 2.00

Extent:  Full  Current

Accuracy:  Estimate (faster)  Actual (slower)

**Load**

Red band	<b>Band 1 (Red)</b>
	Not set
	<b>Band 1 (Red)</b>
Green band	Band 2 (Green)
	Band 3 (Blue)

r.composite - Combines red, green and blue raster ma... [X]

Parameters Log Help

Red  
C:/Users/Rick/OneDrive/Publications/Mastering QGIS/Chapter 3 ...

Green  
C:/Users/Rick/OneDrive/Publications/Mastering QGIS/Chapter 3 ...

Blue  
C:/Users/Rick/OneDrive/Publications/Mastering QGIS/Chapter 3 ...

Number of levels to be used for <red>  
32 ...

Number of levels to be used for <green>  
32 ...

Number of levels to be used for <blue>  
32 ...

Dither  
 Use closest color

GRASS region extent (xmin, xmax, ymin, ymax)  
[Leave blank to use min covering extent] ...

GRASS region cellsize (leave 0 for default)  
0.000000 ...

Output RGB image  
ive/Publications/Mastering QGIS/Chapter 3/Data/composite/LC\_Composite.tif ...

Open output file after running algorithm

0%

Run Close

Color rendering

Blending mode Normal [Reset]

Brightness 0 Contrast 0

Saturation 0 Grayscale Off

Hue  Colorize Strength 100%

▼ Resampling

Zoomed: in **Nearest neighbour** out **Nearest neighbour** Oversampling **2.00**

Single Symbol ▾

**Parameters**

Unit: **Millimeter** Size: **2.00000**

Transparency 0%

Color: **[Blue]** Rotation: **0.00 °**

Symbols in group: **[Empty]** **Open Library**

**Library Symbols**

airport arrow capital circle city diamond ellipse  
 pentagon square star star2 star3 triangle triangle2

Preview

Marker

Simple marker

Symbol Component Tree

Save Advanced ▾

Single Symbol ▾

Symbol layer type: **SVG marker**

Size: **8.000000** Millimeter

Angle: **0.00**

Colors: Fill **[Black]** Border **[Black]**

Border width: **1.000000** Millimeter

Offset X,Y: **-0.200000** **-0.100000** Millimeter

Anchor point: **HCenter** **VCenter**

Data defined properties...

SVG Groups

SVG Image

App Symbols  
 accommod...  
 amenity  
 arrows

Single Symbol ▾

Symbol layer type: **Simple marker**

Colors: Fill **[White]** Border **[Black]**

Size: **7.250000** Millimeter

Outline style: **Solid Line**

Outline width: **0.200000** Millimeter

Angle: **45.00 °**

Offset X,Y: **0.000000** **0.000000** Millimeter

Anchor point: **HCenter** **VCenter**

Data defined properties...

Save

**Categorized** ▾

Column: **LEVEL** **Σ**

Symbol: **● Change...** Color ramp: **BuGn** **✕ Invert**

Symbol	Value	Legend
<b>●</b>	High school	High school
<b>●</b>	Elementary	Elementary
<b>●</b>	Middle or junior high	Middle or junior high
<b>○</b>		

Classify Add Delete Delete all Join Advanced ▾



Graduated

Column: **123 POP 1996**

Symbol: Change...

Legend Format: %1 to %2    Precision: 0     Trim

Method: **Color**

Color ramp: [source]    Edit     Invert

---

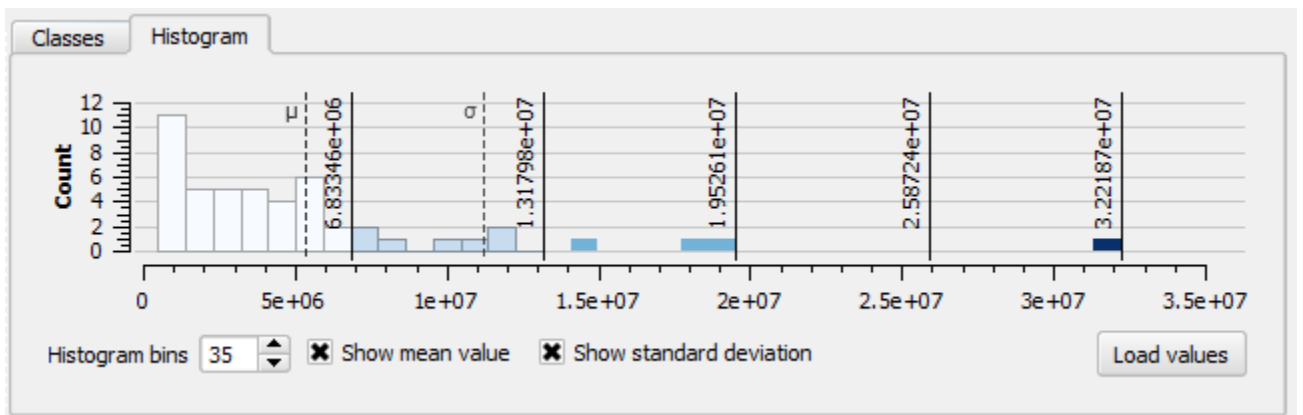
**Classes**    **Histogram**

Mode: **Equal Interval**    Classes: **5**    Classify

Symbol	Values	Legend
<input checked="" type="checkbox"/>	487142.00 - 6833456.20	487142 to 6833456
<input checked="" type="checkbox"/>	6833456.20 - 13179770.40	6833456 to 13179770
<input checked="" type="checkbox"/>	13179770.40 - 19526084.60	13179770 to 19526085
<input checked="" type="checkbox"/>	19526084.60 - 25872398.80	19526085 to 25872399
<input checked="" type="checkbox"/>	25872398.80 - 32218712.00	25872399 to 32218712

Add class    Delete    Delete all     Link class boundaries

Advanced



Rule-based

Label	Rule	Min. scale	Ma
487142 to 6833456	"POP1996" >= 487142.000000 AND "POP1996" <= 6833456.200000		
6833456 to 13179770	"POP1996" > 6833456.200000 AND "POP1996" <= 13179770.400000		
13179770 to 19526085	"POP1996" > 13179770.400000 AND "POP1996" <= 19526084.600000		
19526085 to 25872399	"POP1996" > 19526084.600000 AND "POP1996" <= 25872398.800000		
25872399 to 32218713	"POP1996" > 25872398.800000 AND "POP1996" <= 32218713.000000		

### Rule properties

Label: Capital Cities

Filter: "adm0cap" = 1

Description: Capital cities of countries

Scale range

Minimum (exclusive): 1:20,000,000 Maximum (inclusive): 1:1

Symbol

Unit: Millimeter Size: 4.00000  
 Transparency: 0% Color:   
 Rotation: 0.00°

Symbols in group:

Simple marker  
 Simple marker



Center symbol

Renderer

Point distance tolerance    
 Map unit

Placement method

**▼ Displacement rings**

Outline width

Outline color

Ring size adjustment

**▼ Labels**

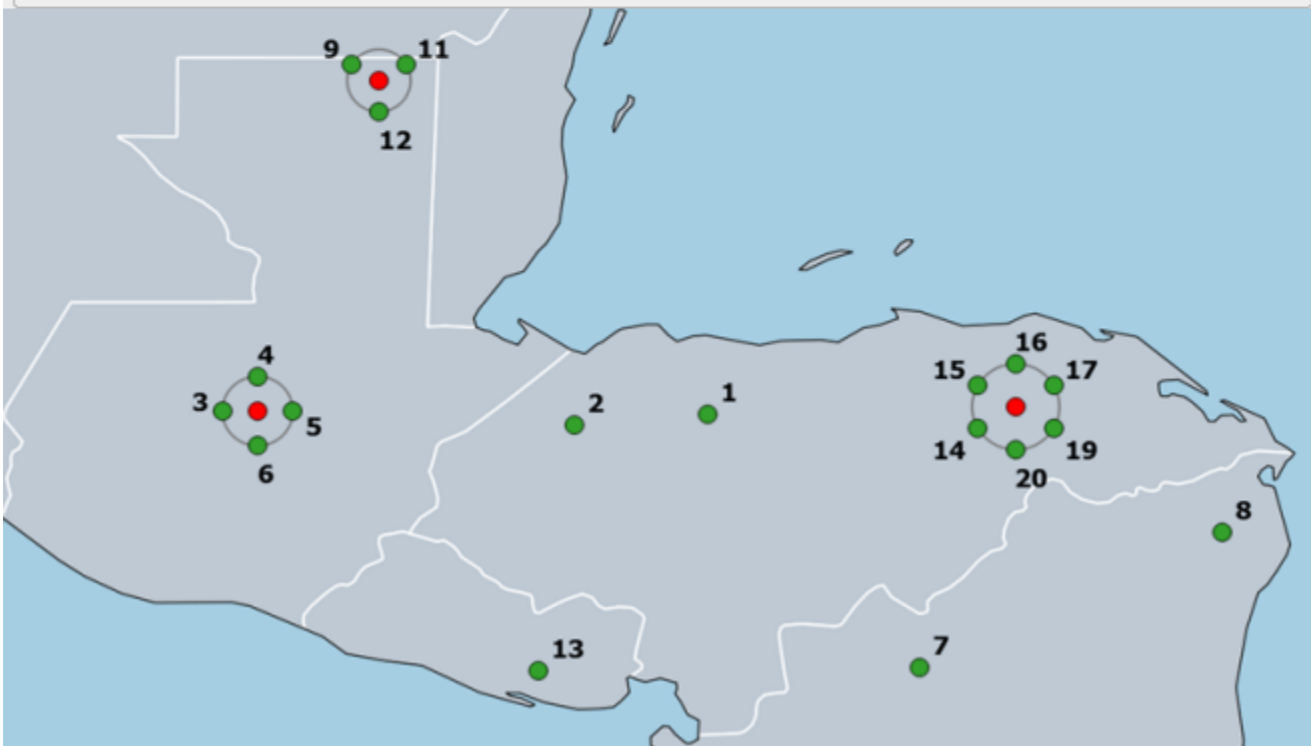
Label attribute

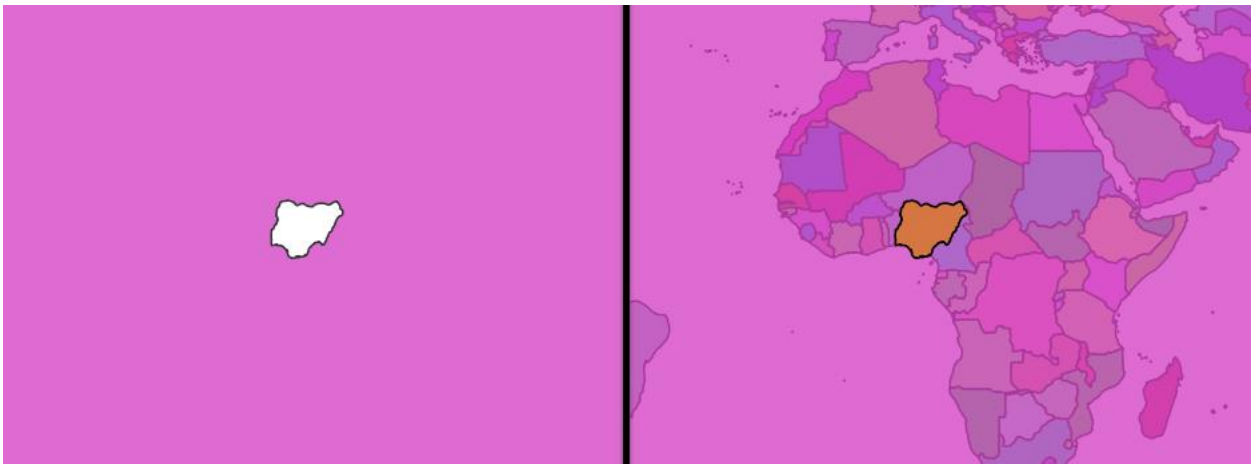
Label font

Label color

Use scale dependent labelling

Max scale denominator





Inverted Polygons

Sub renderer:

Merge polygons before rendering (slow)

Unit: Millime

Transparency 0%

Color:

Symbols in group:  Open Library

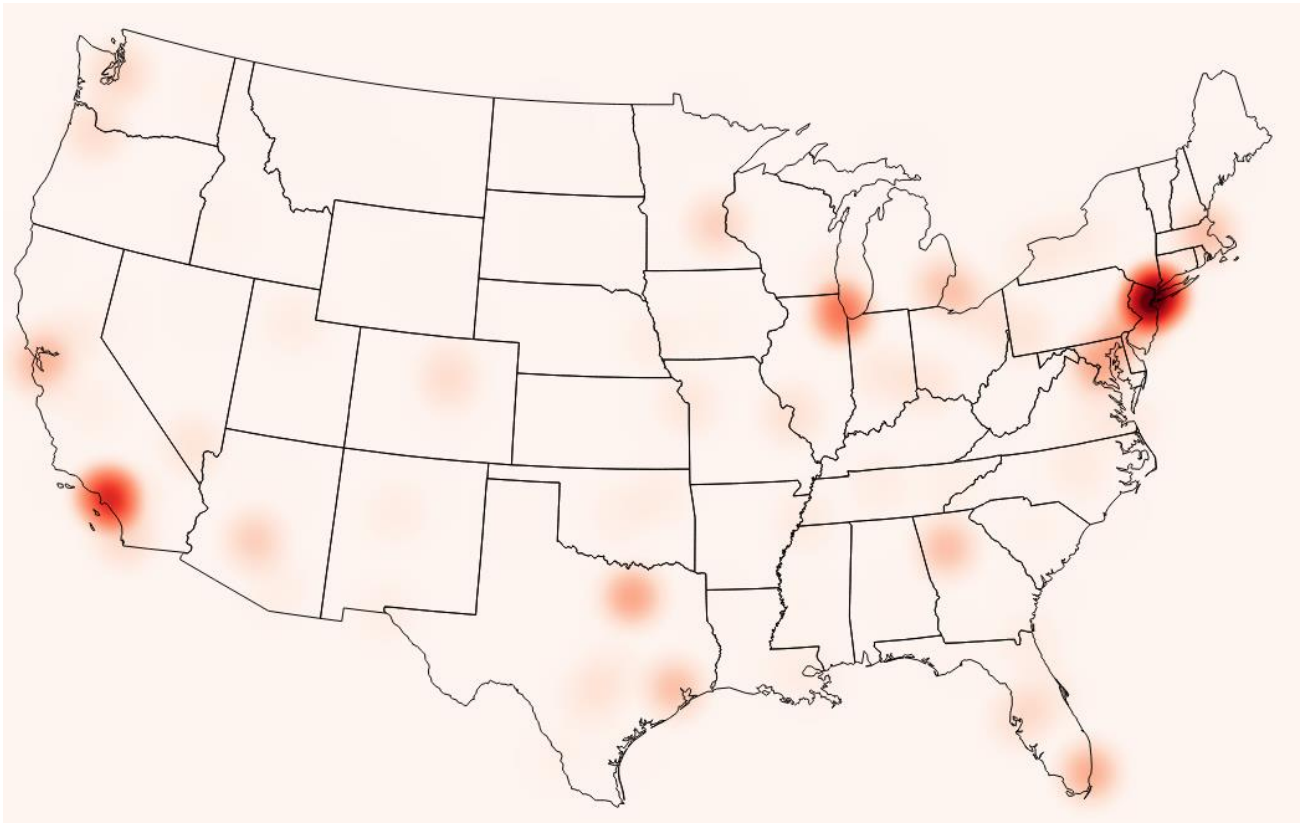
Fill: Simple fill

corners diagonal dotted green land water wine

Save Advanced

**Symbol Legend:**

- Single Symbol
- Single Symbol
- Categorized
- Graduated
- Rule-based
- Heatmap
- 2.5 D



Heatmap

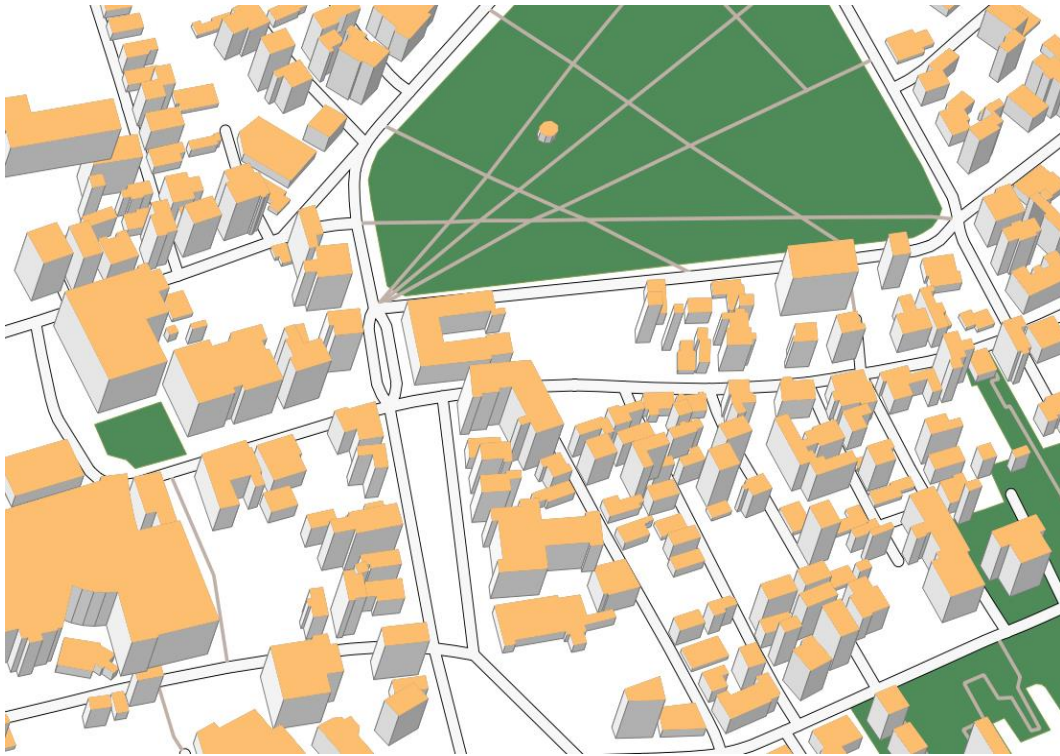
[source] Edit  Invert

Radius 10.000000 Millimeter

Maximum value Automatic

Weight points by 123 pop\_max

Rendering quality Best Fastest



2.5 D

Height  ⌵ ⌵

Angle  ⬆ ⬇ ⬆ ⬇

**Advanced Configuration**

Roof Color  ⌵

Wall Color  ⌵

Shade walls based on aspect

Shadow

Color  ⌵

Size  ⬆ ⬇ ⬆ ⬇



▼ **Layer rendering**

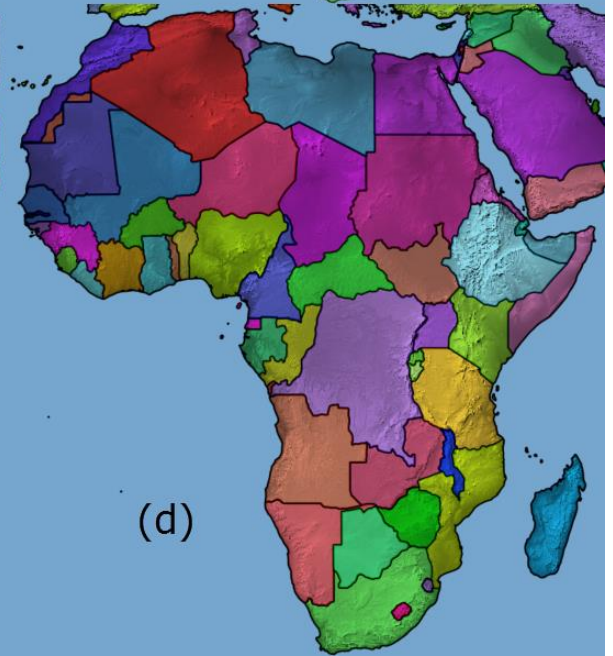
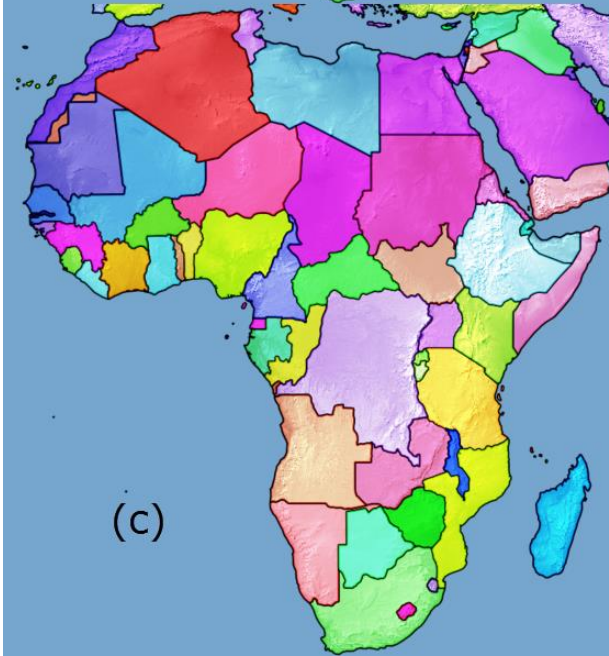
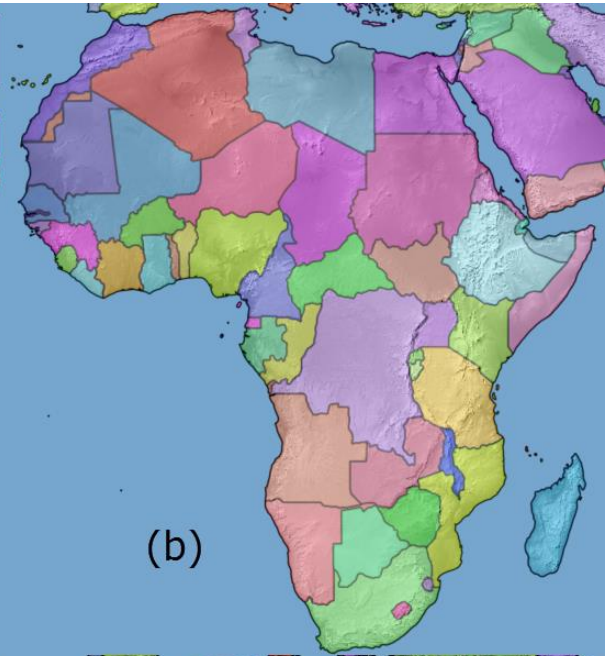
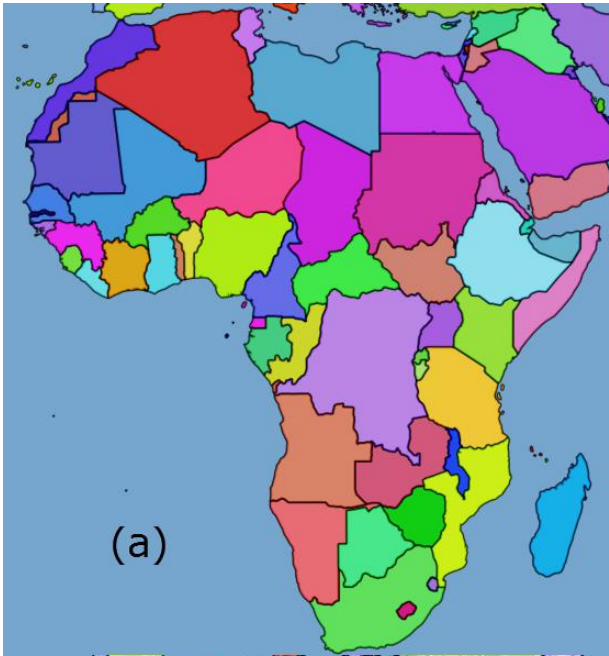
Layer transparency

Layer blending mode **Normal** Feature blending mode **Normal**

Draw effects

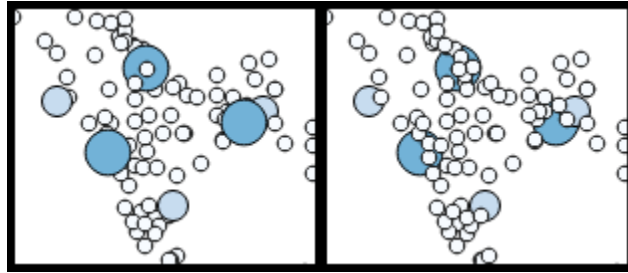
Control feature rendering order





Define order

	Expression	Asc / Desc	NULLs handling
1	123 pop_max	Descending	NULLs last
2	123 rank_min	Ascending	NULLs first



Define order

	Expression	Asc / Desc	NULLs handling
1	123 pop_max	Descending	NULLs last

Show diagrams for this layer

Diagram type: Pie chart

Attributes

Appearance

Size

Placement

Options

**Size**

Size units: mm

Fixed size: 15.00000

Scaled size

Scale linearly between 0 and the following attribute value / diagram size:

Attribute: [Empty field]

Maximum value: 0.000000 [Find]

Size: 50 [Scale] Area

Increase size of small diagrams Minimum size: 0.000000

**Size**

Size units

Fixed size

Scaled size

Bar length: Scale linearly, so that the following value matches the specified bar length:

Attribute

Maximum value

Bar length

**Placement**

Placement

Distance

Data defined position

x

y

Priority: Low  High

Diagram z-index

Automated Placement Engine ? X

Search method Chain (fast) ▾

**Number of candidates**

Point  ▴ ▾

Line  ▴ ▾

Polygon  ▴ ▾

Draw text as outlines (recommended)

Show partials labels







Show all labels and features for all layers  
(i.e. including colliding objects)

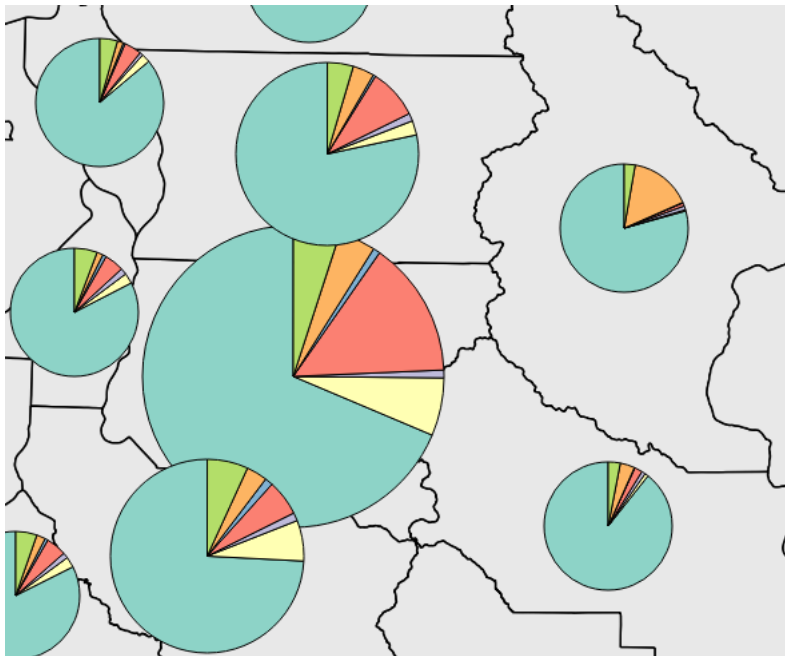
Show candidates (for debugging)

Show shadow rectangles (for debugging)

Restore Defaults OK Cancel

Assigned attributes

Attribute	Color	Legend
"White"		White
"Black"		Black
"NativeAm"		Native American
"NativeHI"		Native Hawaii
"Asian"		Asian
"Other"		Other



**Appearance**

Format

Transparency  0 %

Line color

Line width

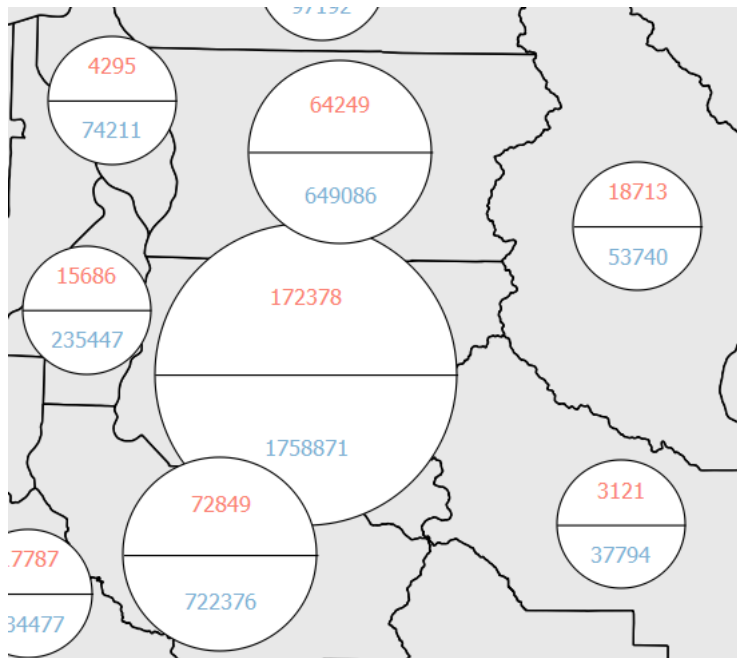
Start angle

Visibility

Show all diagrams

**Scale dependent visibility**

Minimum (exclusive)  Maximum (inclusive)



**Appearance**

**Format**

Transparency

Background color

Line color

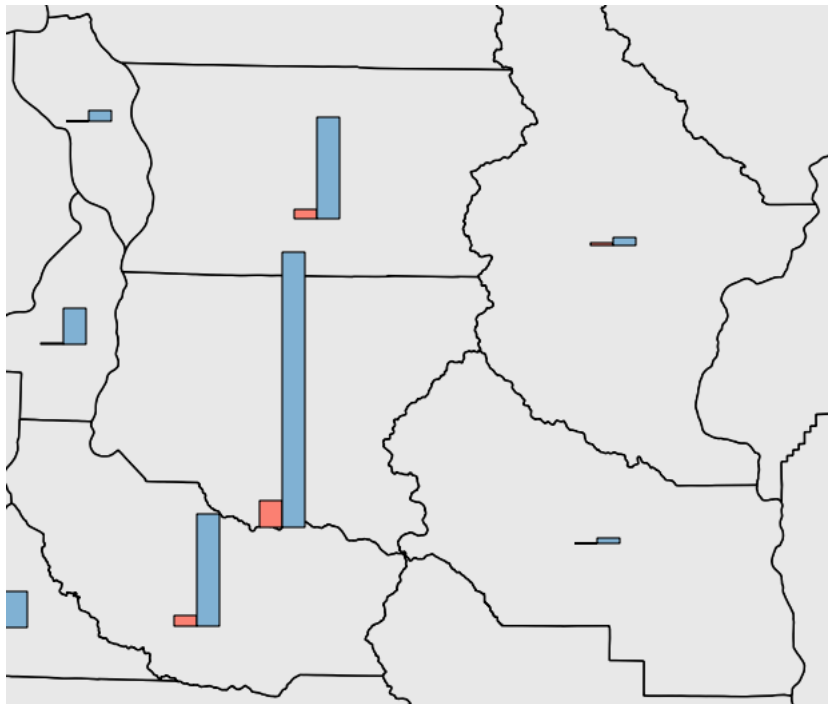
Line width

**Visibility**

Show all diagrams

**Scale dependent visibility**

Minimum (exclusive)  Maximum (inclusive)



**Options**  
Bar Orientation

- Up
- Down
- Right
- Left

Style ▾

- Load Style
- Save Style ▶

---

- Save as Default
- Restore Default

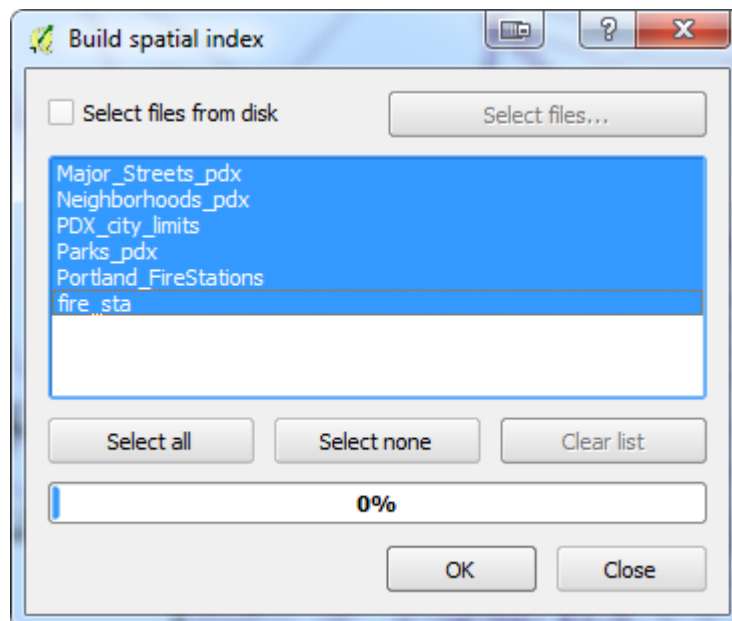
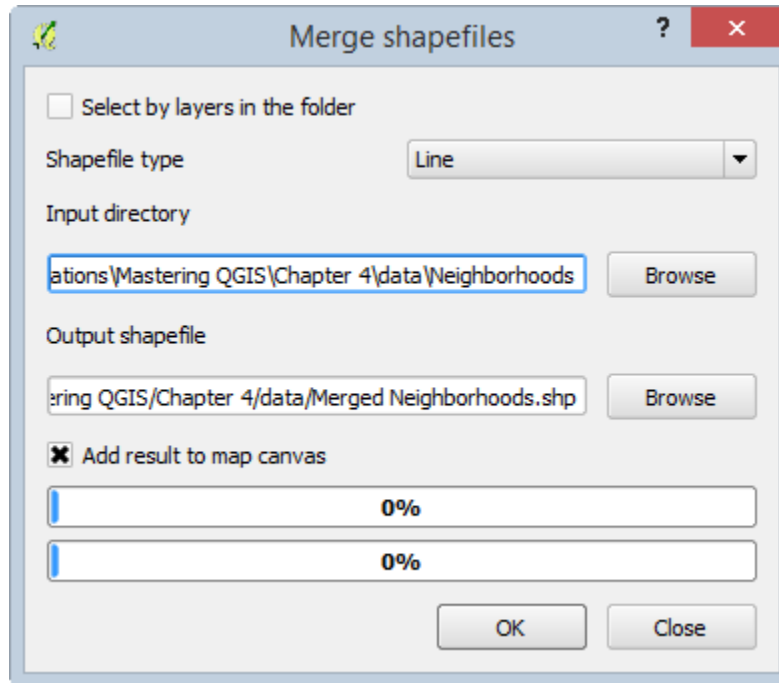
---

- Add...
- Rename Current...

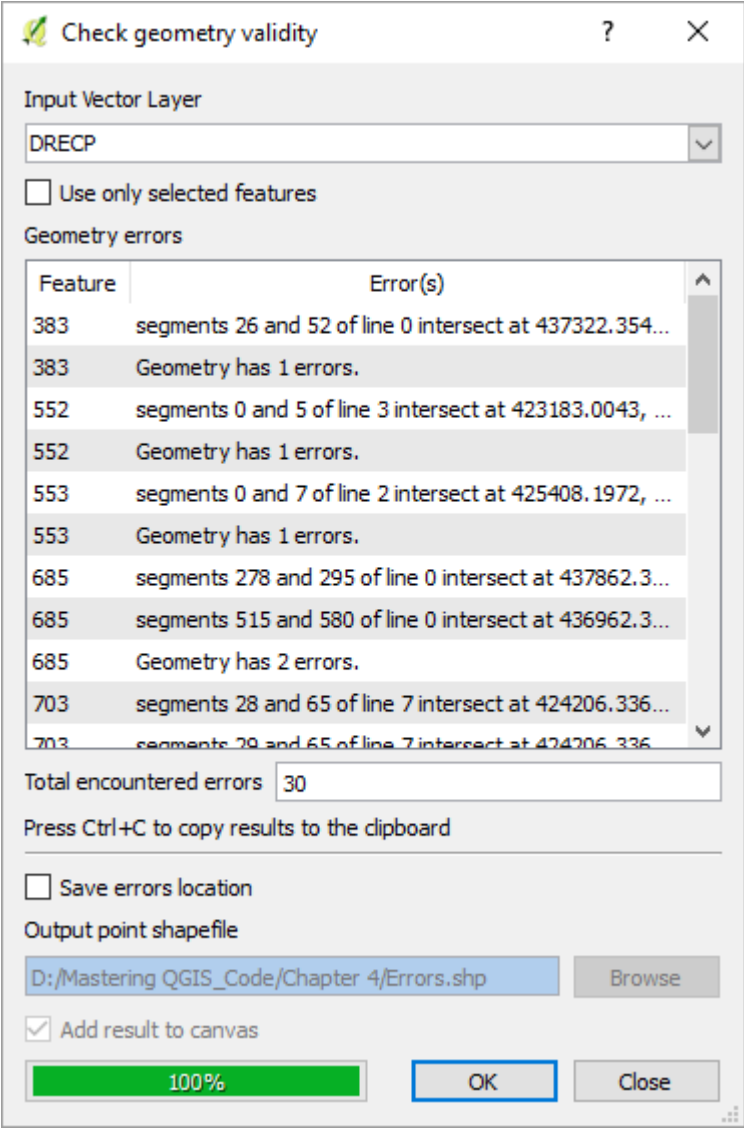
---

- (default)

## Chapter 4 – Preparing Vector Data for Processing





The image shows a 'Check geometry validity' dialog box in QGIS. It has a title bar with a green checkmark icon, a question mark, and a close button. The dialog is divided into several sections: 'Input Vector Layer' with a dropdown menu set to 'DRECP' and an unchecked checkbox for 'Use only selected features'; 'Geometry errors' with a scrollable table; 'Total encountered errors' with a text box containing '30'; a note 'Press Ctrl+C to copy results to the clipboard'; an unchecked checkbox for 'Save errors location'; 'Output point shapefile' with a text box containing 'D:/Mastering QGIS\_Code/Chapter 4/Errors.shp' and a 'Browse' button; and an unchecked checkbox for 'Add result to canvas'. At the bottom, there is a green progress bar at 100%, and 'OK' and 'Close' buttons.

Check geometry validity

Input Vector Layer

DRECP

Use only selected features

Geometry errors

Feature	Error(s)
383	segments 26 and 52 of line 0 intersect at 437322.354...
383	Geometry has 1 errors.
552	segments 0 and 5 of line 3 intersect at 423183.0043, ...
552	Geometry has 1 errors.
553	segments 0 and 7 of line 2 intersect at 425408.1972, ...
553	Geometry has 1 errors.
685	segments 278 and 295 of line 0 intersect at 437862.3...
685	segments 515 and 580 of line 0 intersect at 436962.3...
685	Geometry has 2 errors.
703	segments 28 and 65 of line 7 intersect at 424206.336...
703	segments 29 and 65 of line 7 intersect at 424206.336...

Total encountered errors 30

Press Ctrl+C to copy results to the clipboard

Save errors location

Output point shapefile

D:/Mastering QGIS\_Code/Chapter 4/Errors.shp

Add result to canvas

100%

Check Geometries

Setup Result

**Input vector layer**

DRECP

Only selected features

**Geometry validity:**

Self intersections

Duplicate nodes

Polygon with less than 3 nodes

**Allowed geometry types:**

Point  Line  Polygon

Multipoint  Multiline  Multipolygon

**Geometry properties:**

Polygons and multipolygons may not contain any holes

Multipart objects must consist of more than one part

**Geometry conditions:**

Minimal segment length (map units): 0.000000

Minimum angle between segments (deg): 0.000000

Minimal polygon area (map units sqr.): 0.000000

No sliver polygons:

Maximum thinness: 1

Max. area (map units sqr.): 0.000000

**Topology checks:**

Check for duplicates

Check for features within other features

Check for overlaps smaller than (map units sqr.): 0.000000

Check for gaps smaller than (map units sqr.): 0.000000

Tolerance: 1E-8

**Output vector layer**

Modify input layer

Create new layer D:/Mastering\_QGIS\_Code/Chapter 4/DCREP\_repaired.shp

**Check Geometries** [?] [X]

Setup | **Result**

**Geometry check result:**

Object ID	Error	Coordinates	Value	Resolution
46	Geometry type (MultiPolygon)	444548.4, 3804856.3		
420	Geometry type (MultiPolygon)	417557.0, 3813249.7		
617	Geometry type (MultiPolygon)	417565.9, 3810507.9		
699	Geometry type (MultiPolygon)	417584.2, 3815866.3		
1051	Geometry type (MultiPolygon)	417564.2, 3831176.4		
1073	Geometry type (MultiPolygon)	421797.4, 3836108.3		
1075	Geometry type (MultiPolygon)	437648.8, 3835837.0		
1143	Geometry type (MultiPolygon)	444783.4, 3813519.7		
1144	Geometry type (MultiPolygon)	419425.8, 3823196.6		
1147	Geometry type (MultiPolygon)	444579.0, 3804907.4		
1556	Geometry type (MultiPolygon)	444706.3, 3808761.2		
1585	Geometry type (MultiPolygon)	444653.5, 3810336.0		
...	Geometry type	417570.4,		

Export Total errors: 14, fixed errors: 0

When a row is selected, move to:

Error
  Feature
  Don't move

Highlight contour of selected features

Show selected features in attribute table

Fix selected errors using default resolution

Fix selected errors, prompt for resolution method

Error resolution settings

Attribute to use when merging features by attribute value: Integrated

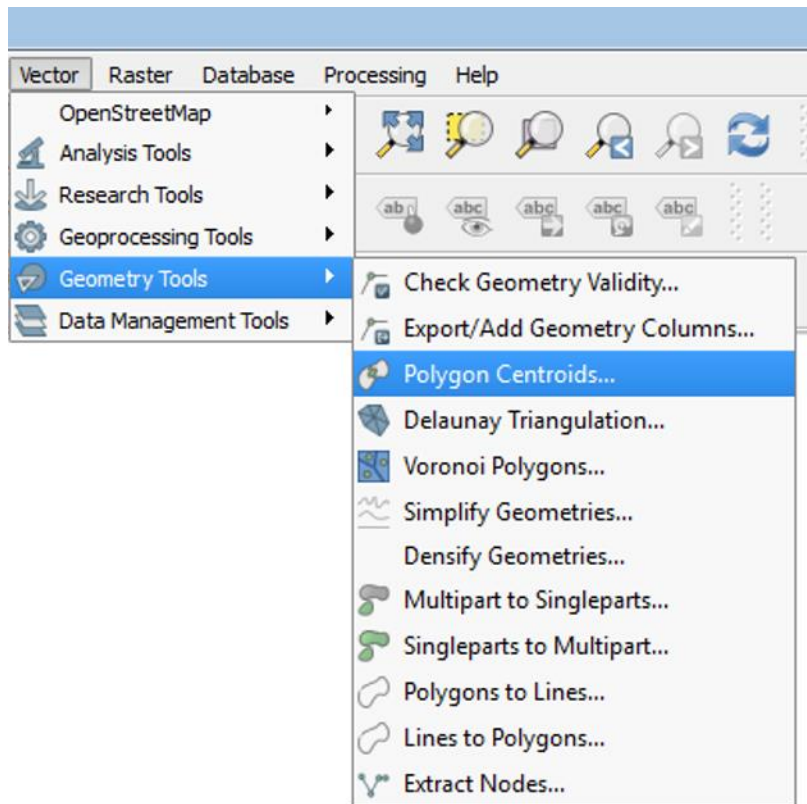
Close

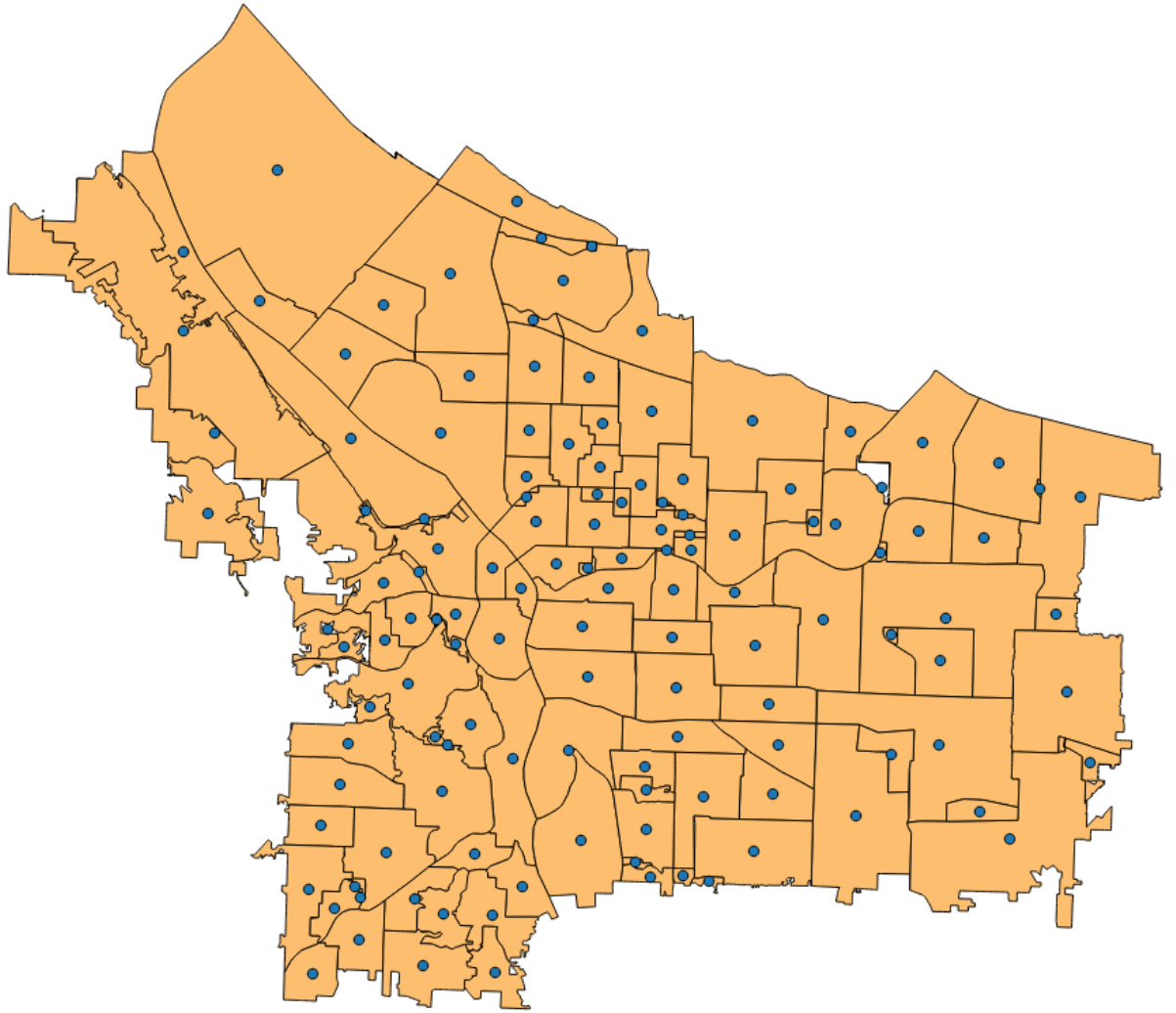
Summary ? X

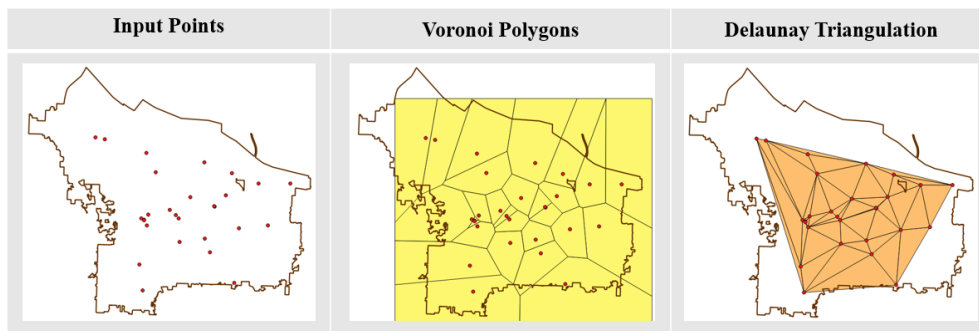
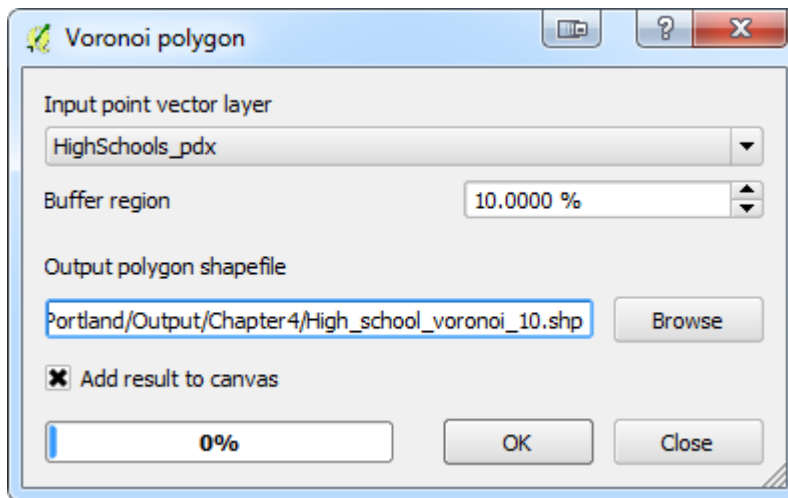
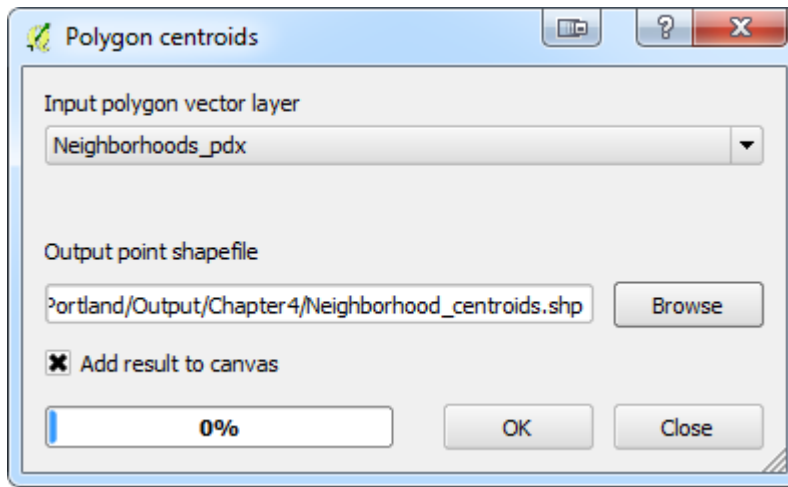
**1 errors were fixed**

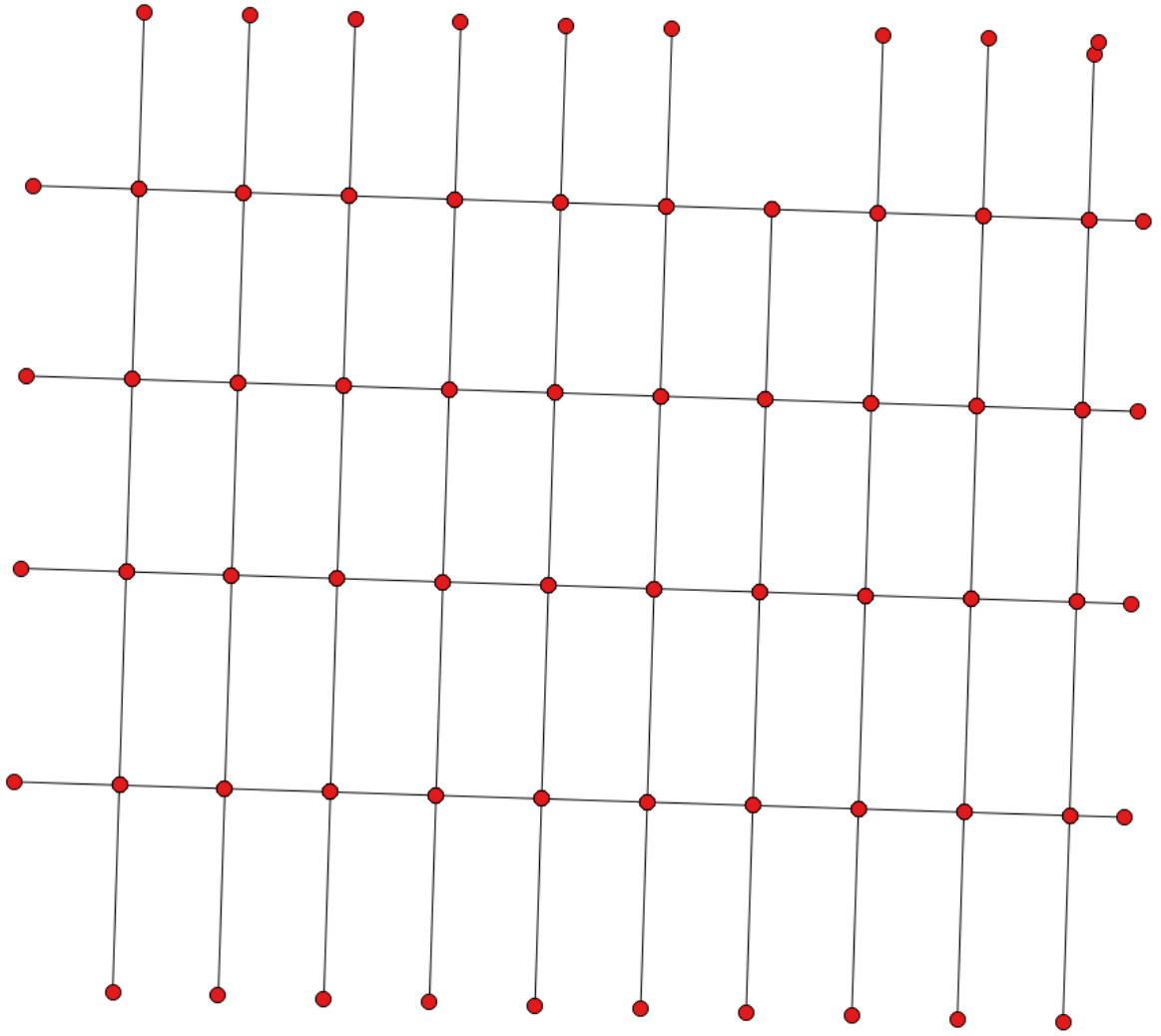
Object ID ^	Error	Coordinates	Value
46	Geometry type (MultiPolygon)	444548.4, 3804856.3	

Close

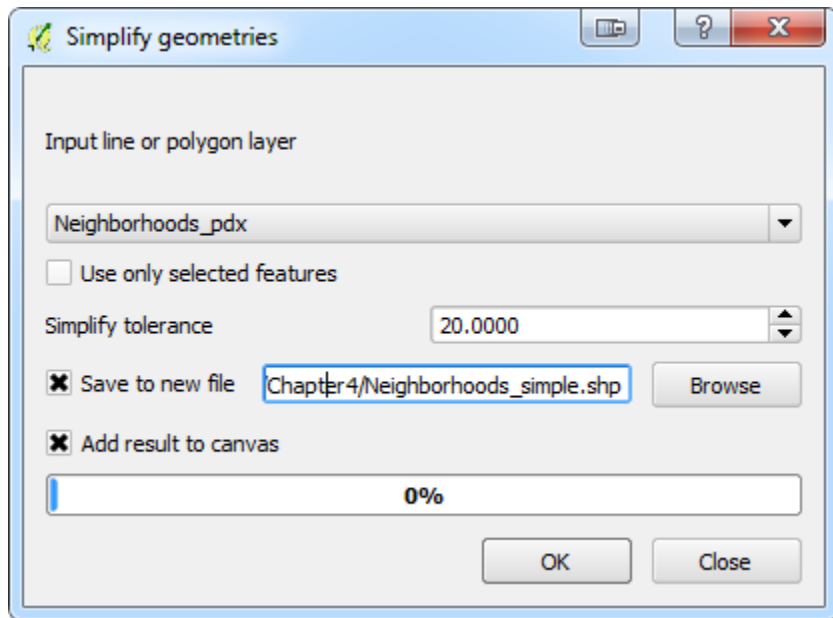


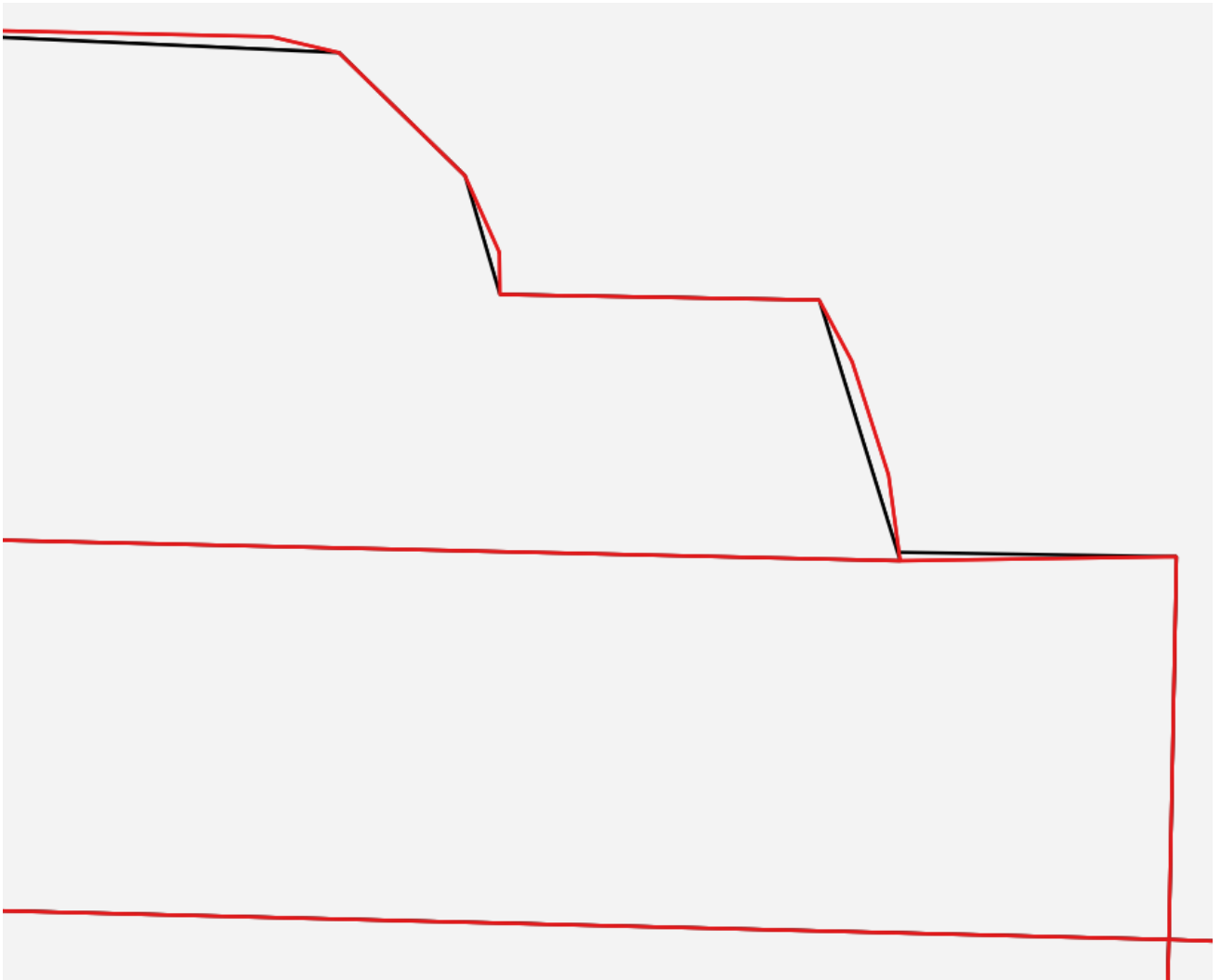


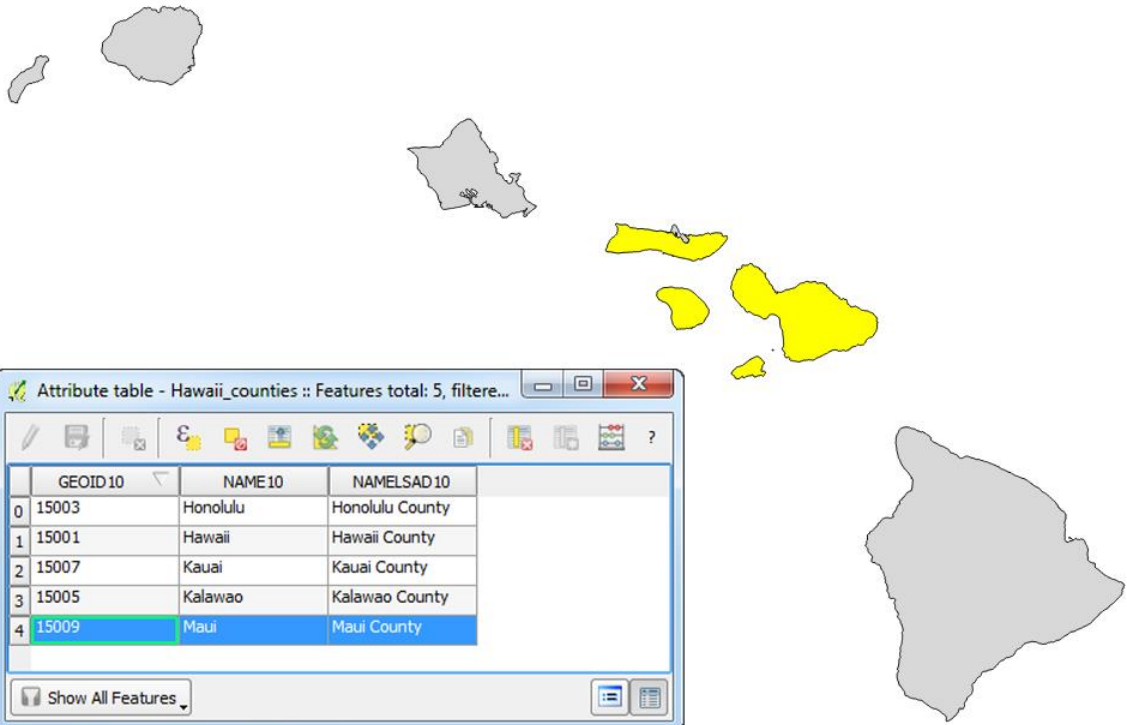


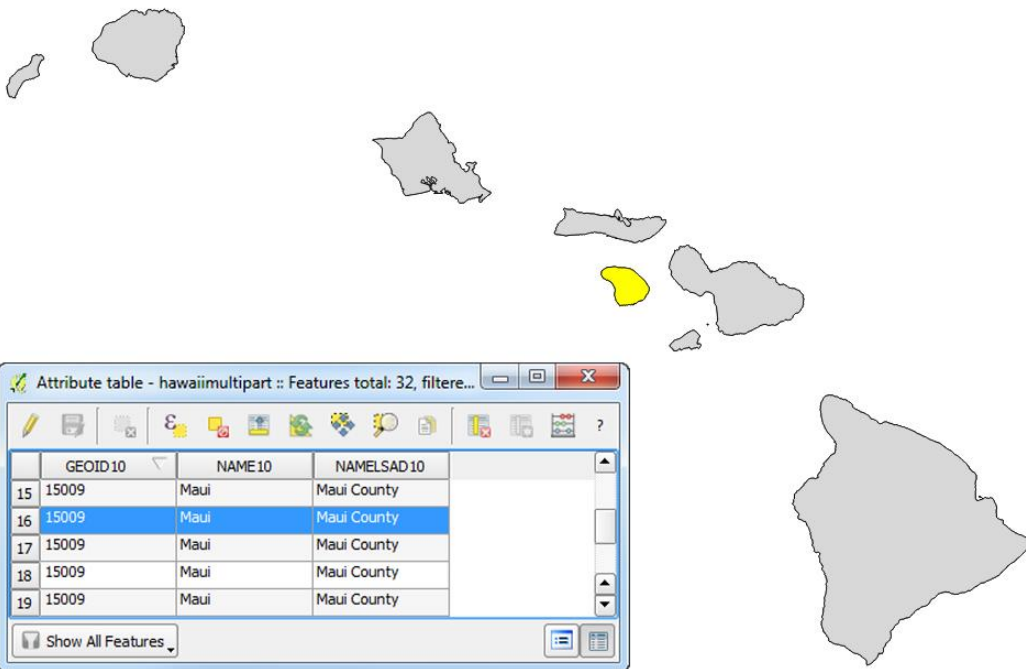












**Singleparts to multipart**

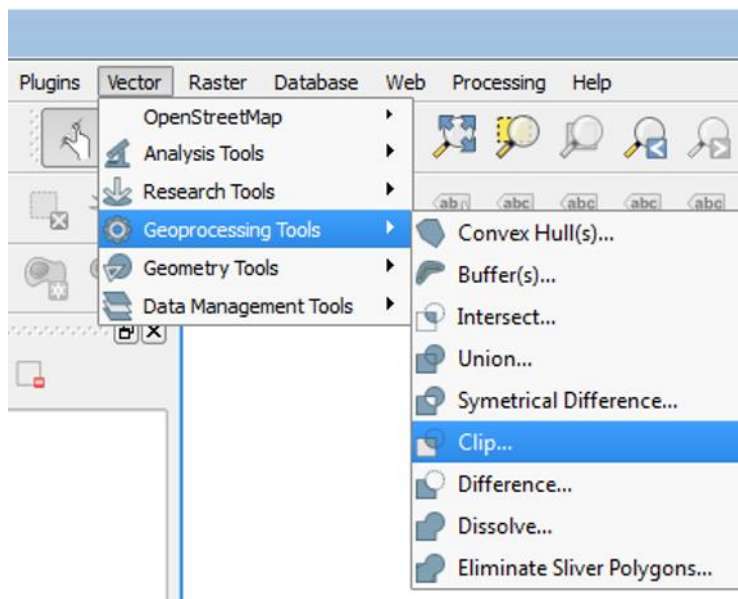
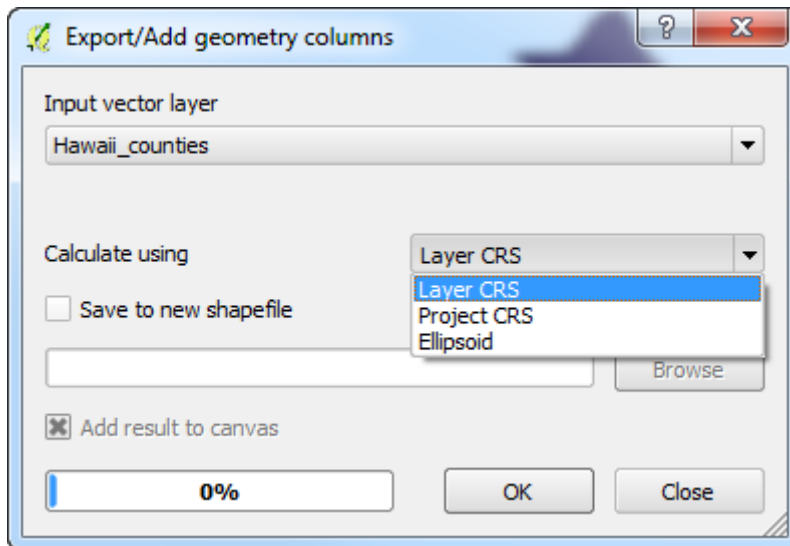
Input line or polygon vector layer  
 Hawaii\_counties

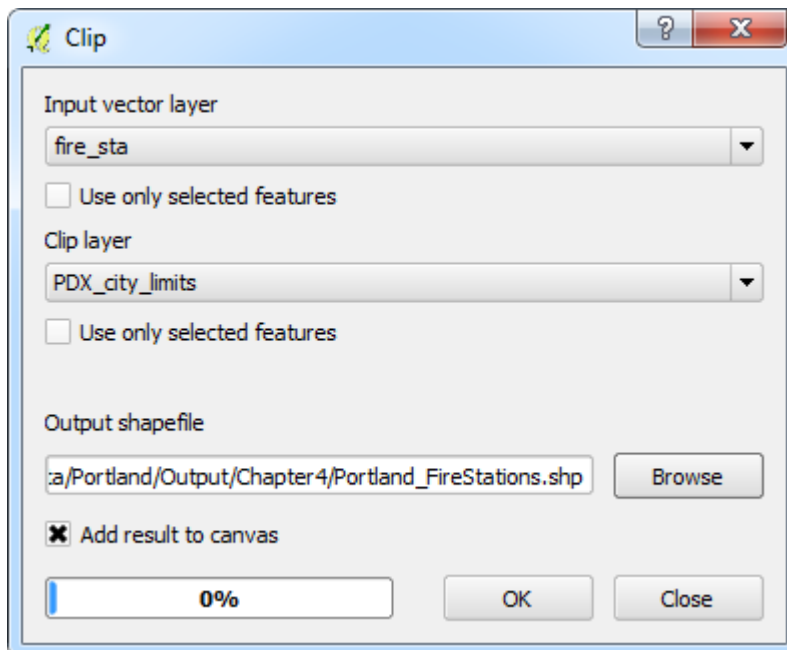
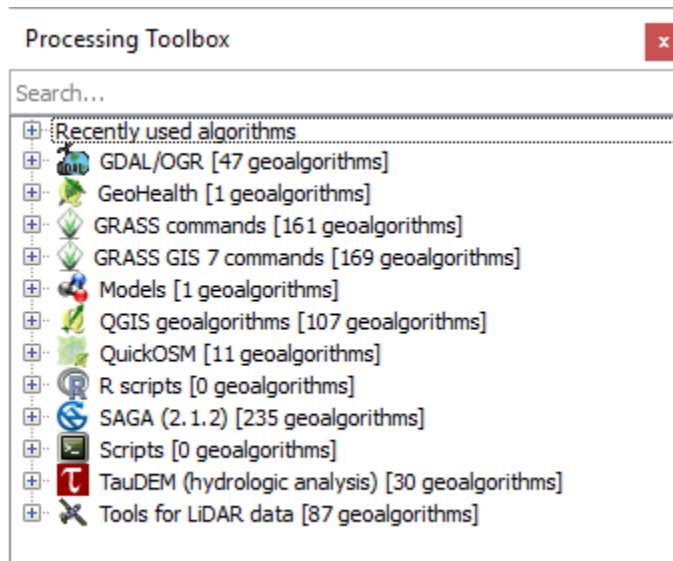
Unique ID field  
 NAME10

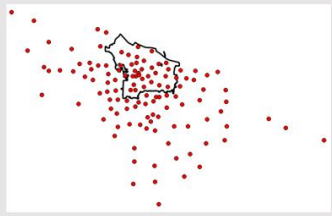
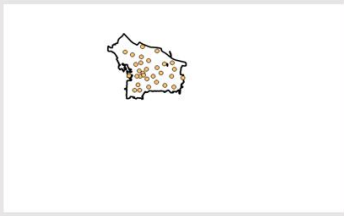
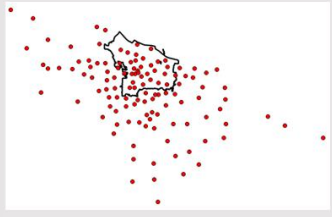
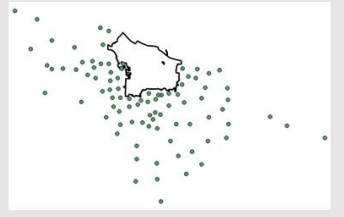
Output shapefile  
 D:/Hawaii Counties.shp Browse


Add result to canvas

0% OK Close





	Input	Output
Clip		
Difference		

 Intersect
? X

Input vector layer  
 ▼

Use only selected features

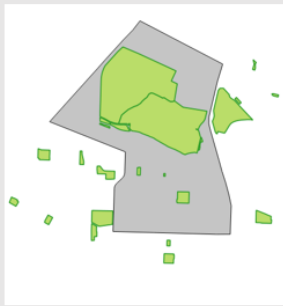
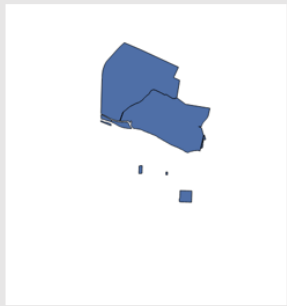
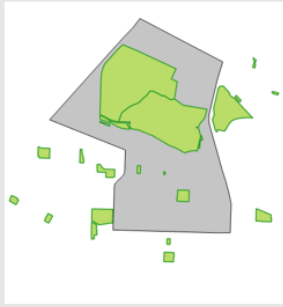

Intersect layer  
 ▼

Use only selected features

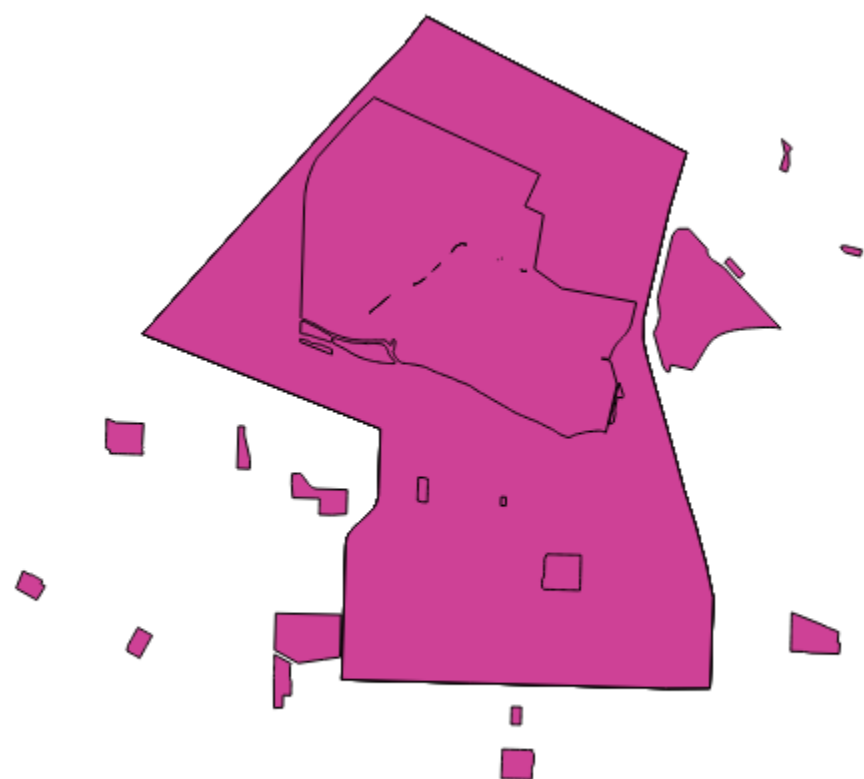
Output shapefile

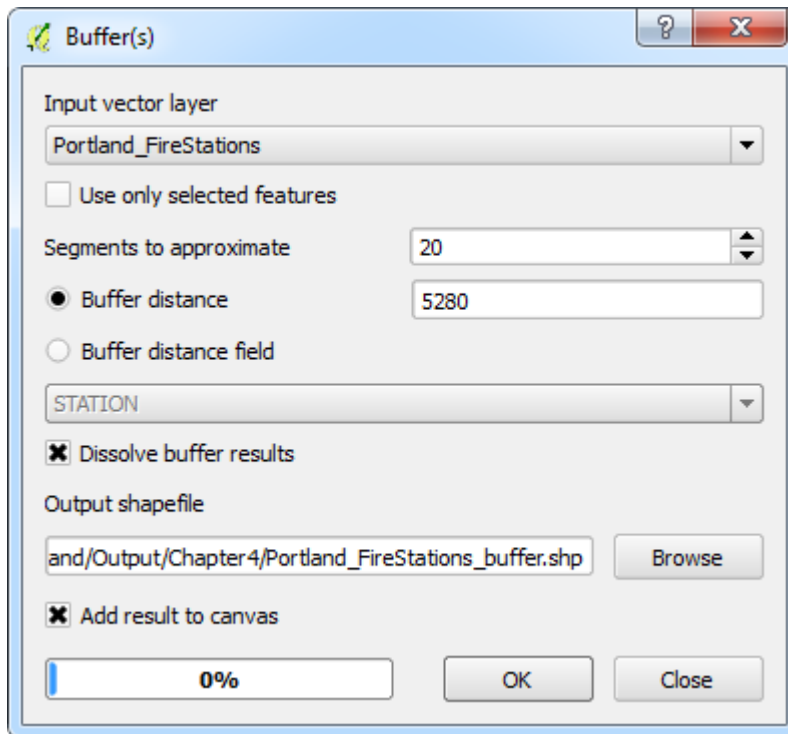
Add result to canvas

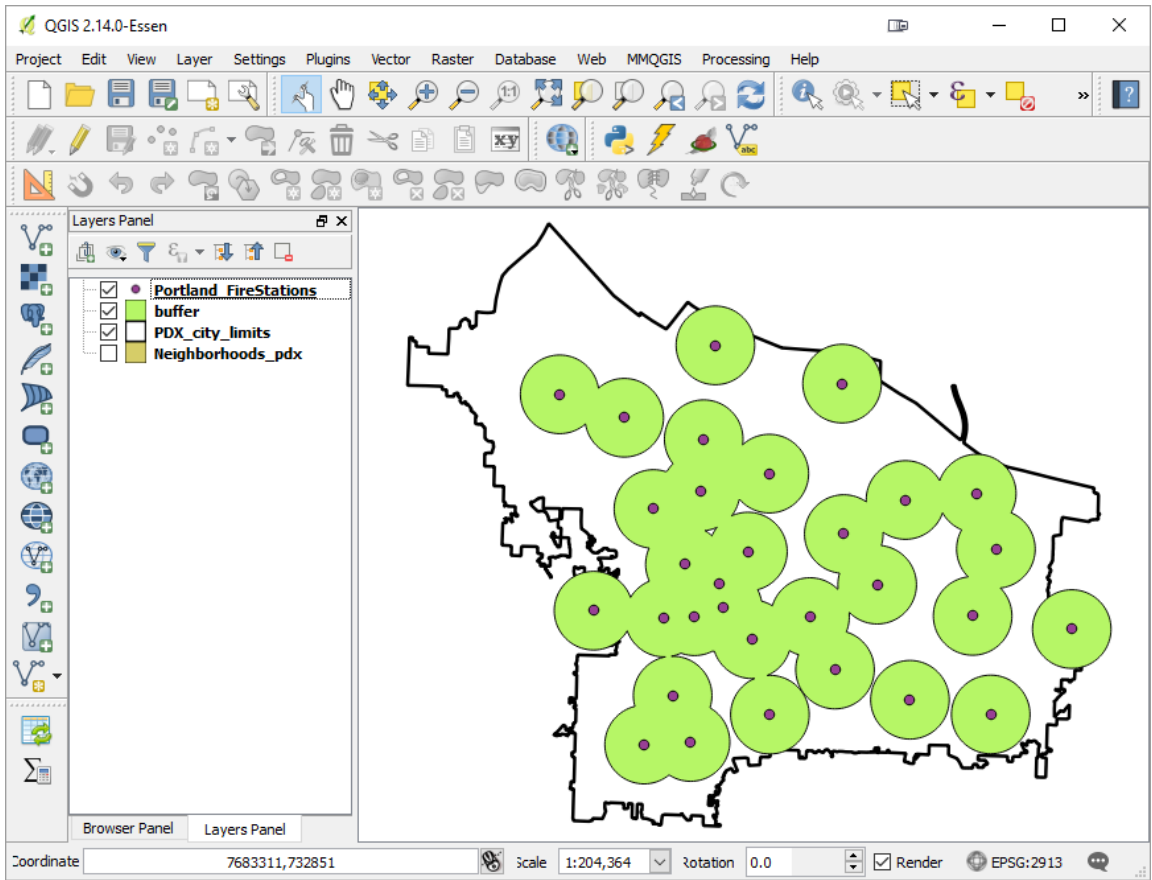
0%

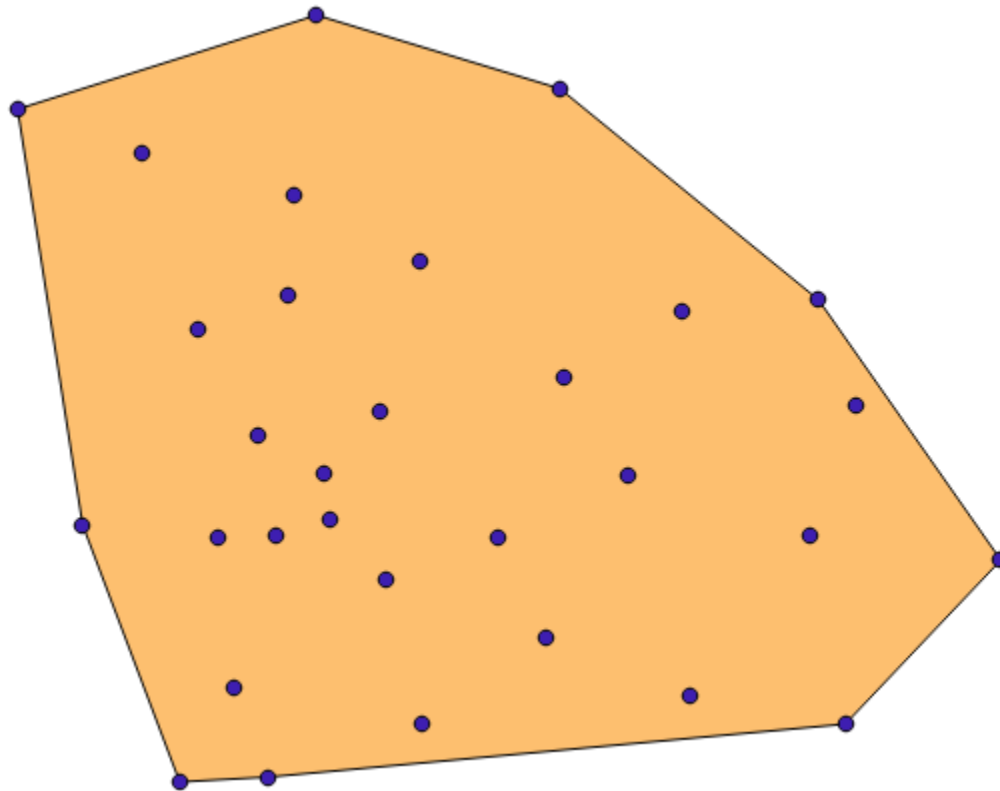
	Input	Output
Intersect		
Symmetrical Difference		









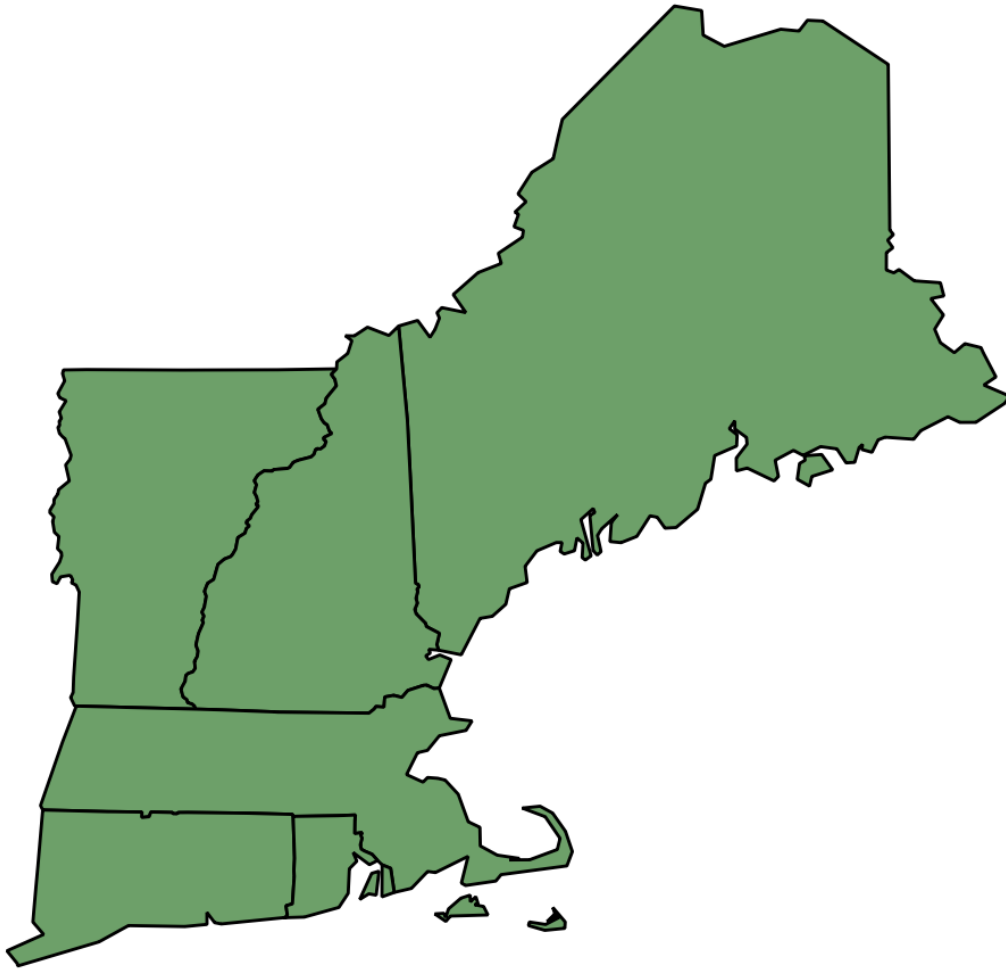




Tool	Input	Output
<div data-bbox="341 1249 673 1480"> <p><b>Dissolve</b></p> <p>Input vector layer            Neighborhoods_pdx</p> <p><input type="checkbox"/> Use only selected features</p> <p>Dissolve field            --- Dissolve all ---</p> <p>Output shapefile            [nd/Output/Chapter4/PDX_neighborhoods_Dissolve.shp] <input type="button" value="Browse"/></p> <p><input checked="" type="checkbox"/> Add result to canvas</p> <p>0% <input type="button" value="OK"/> <input type="button" value="Close"/></p> </div>		

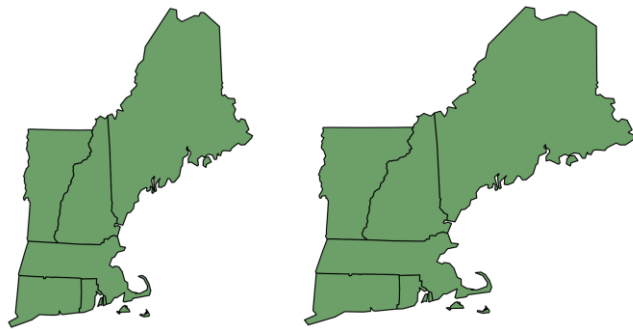
USA\_Eckert\_IV

```
+proj=eck4 +lon_0=-96.0 +x_0=0 +y_0=0 +datum=WGS84 +units=m
+no_defs
```



Name	New England Albers Equal Area Conic
Parameters	<pre>+proj=aea +lat_1=42.5 +lat_2=45 +lat_0=43.75 +lon_0=-71 +x_0=0 +y_0=0 +datum=NAD83 +units=m +no_defs</pre>

- User Defined Coordinate Systems**
  - New England Albers Equal Area Conic





Statistics Panel

▼

▼  $\epsilon$

Statistic	Value
-----------	-------

◀ [Progress Bar] ▶▶

Selected features only  

The image shows a software interface for a statistics panel. At the top, there is a title bar with the text "Statistics Panel" and a close button. Below the title bar is a dropdown menu with a downward arrow. Underneath that is a text input field with a dropdown arrow and a purple Greek letter epsilon symbol. The main area is a table with two columns: "Statistic" and "Value". The table is currently empty. At the bottom of the table area is a progress bar with left and right arrows. Below the progress bar is a checkbox labeled "Selected features only", a refresh icon, and a more options icon.

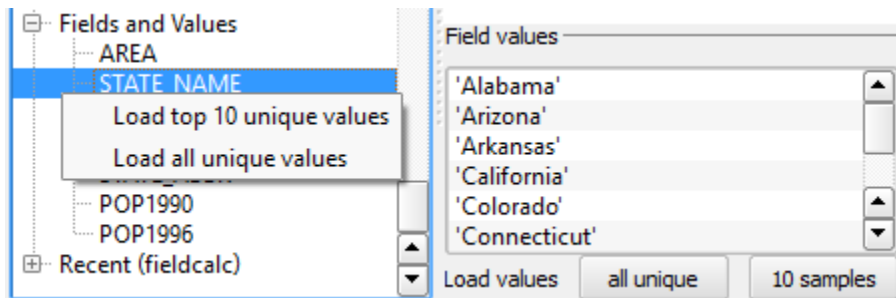
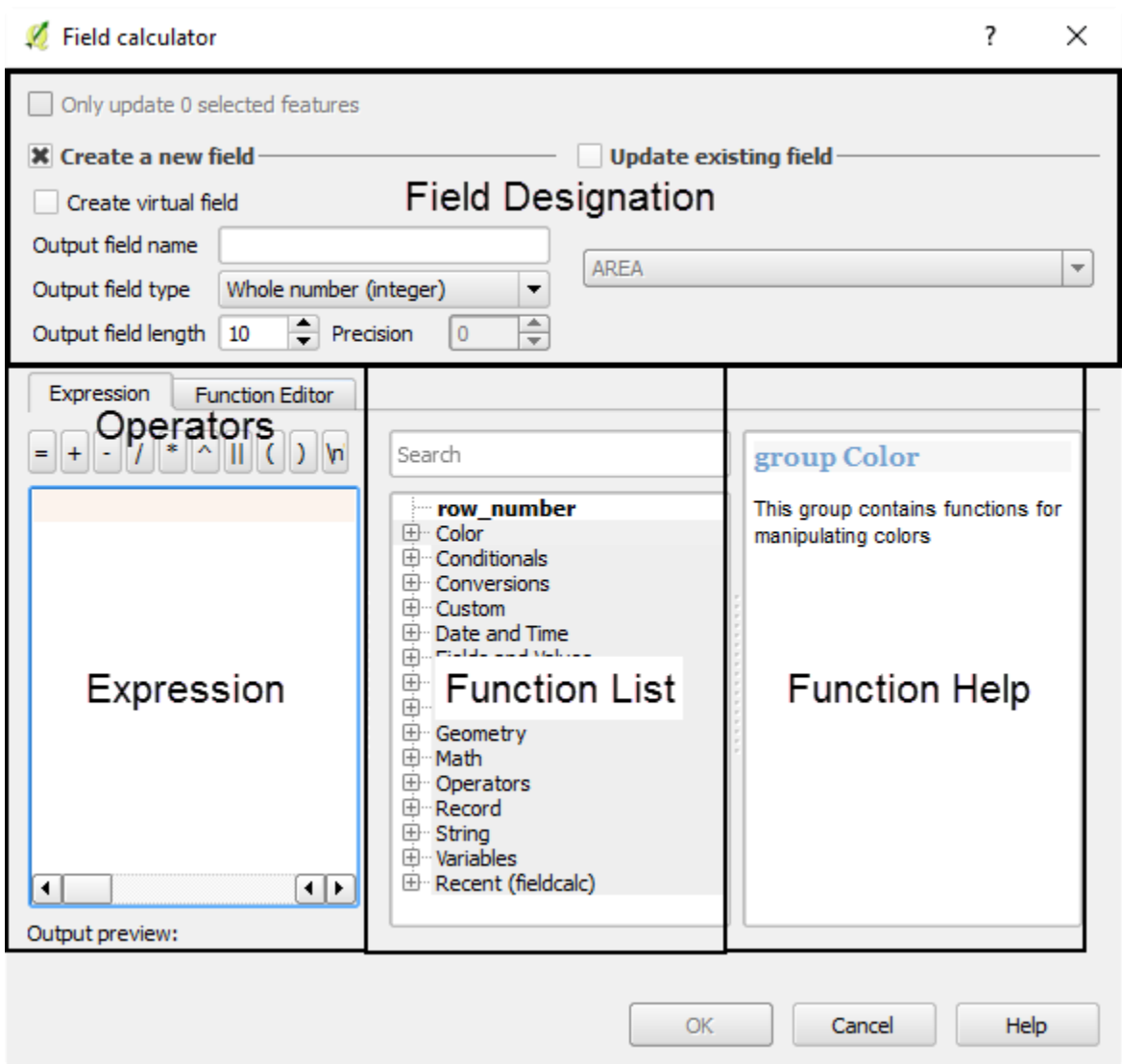
Statistics Panel

Counties

1.2 CattleCalv

Statistic	Value
Count	64
Sum	2.65608e+06
Mean	41501.2
Median	17790.5
St dev (pop)	83213.2
St dev (sample)	83871.1
Minimum	-99
Maximum	547953
Range	548052
Missing (null)	0

Selected features only





Expression    Function Editor

= + - / \* ^ || ( ) '\n'

format\_date( now(), 'dd/MM/yyyy' )

Updated
29/11/2014
29/11/2014

XCoord
7610162.7910105
7630980.8126640

Vertices
152
130

```

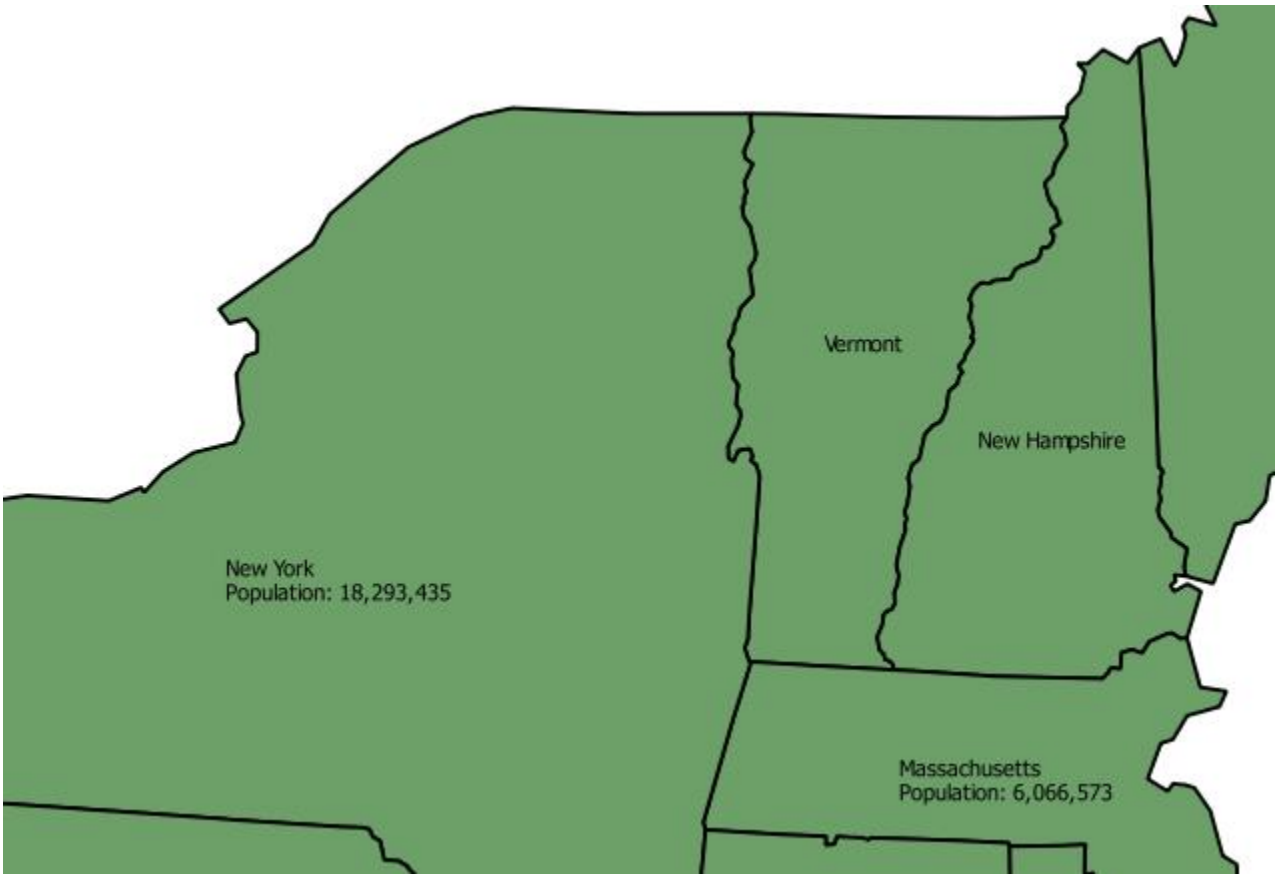
CASE
WHEN "POP 1996" > 5000000 THEN
  result
ELSE
  "STATE_NAME"
END


```

```

CASE
WHEN "POP1996" > 5000000 THEN
  "STATE_NAME" || '\nPopulation: ' ||
  format_number( "POP1996", 0)
ELSE
  "STATE_NAME"
END


```



 ?

### Conditional Format Rules

Name


Condition  
 

Preset

Background  Text

Icon

**B** **I** **U** **S**



GRADE	TYPE	COUNTY
9-12	Public	Multnomah
K-8	Private	Multnomah
6-8	Public	Multnomah

abc Private Schools  
 123 "TYPE" = 'Private'

**abc** Elementary Schools  
**123** "LEVEL" = 'Elementary'

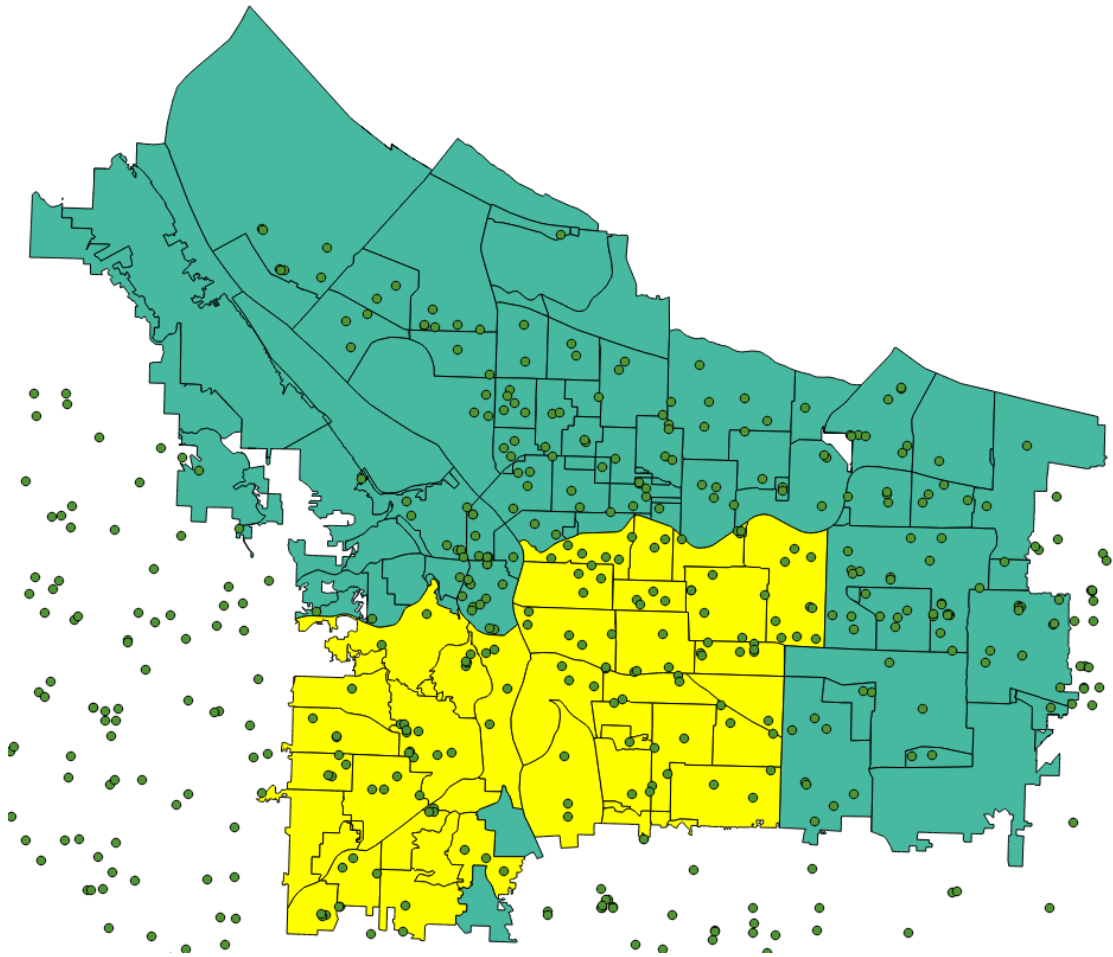
<b>Elementary</b>	<b>23J</b>	<b>Tigard-Tualatin</b>	<b>K-5</b>	<b>Public</b>
<b>Elementary</b>	<b>NULL</b>	<b>Archdiocese o...</b>	<b>K-8</b>	<b>Private</b>
<b>Elementary</b>	<b>12</b>	<b>North Clacka...</b>	<b>K-5</b>	<b>Public</b>

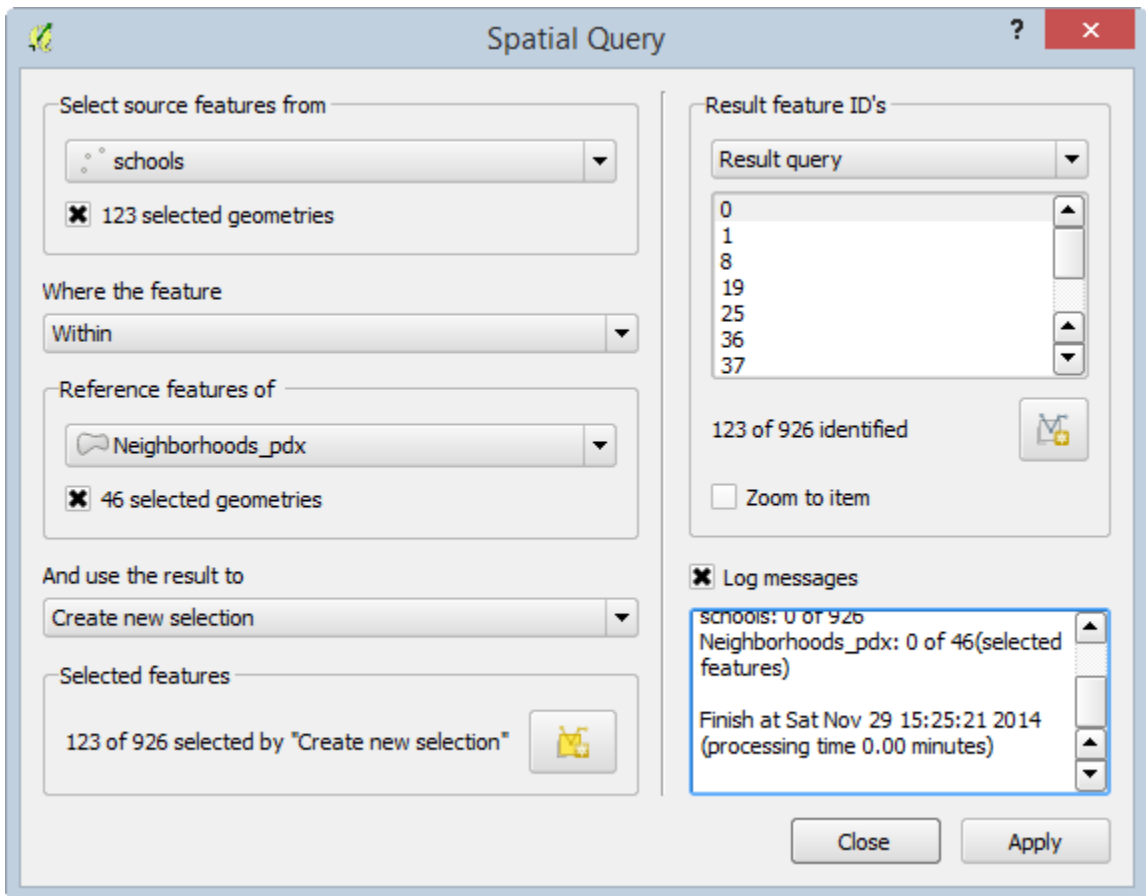
SITE_ID	▲
*	NULL
*	NULL

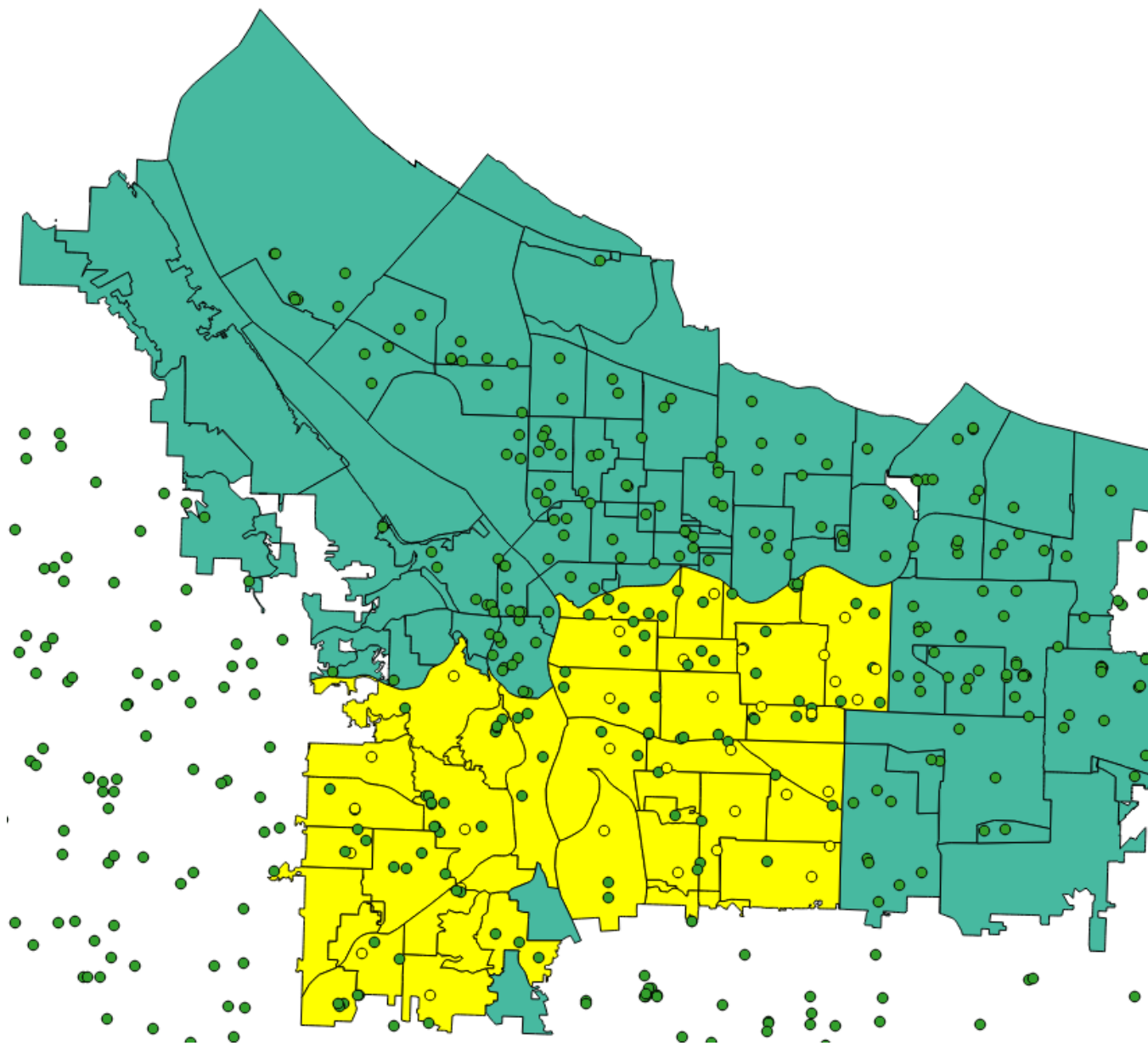
Expression    Function Editor

= + - / \* ^ || ( ) 'n'

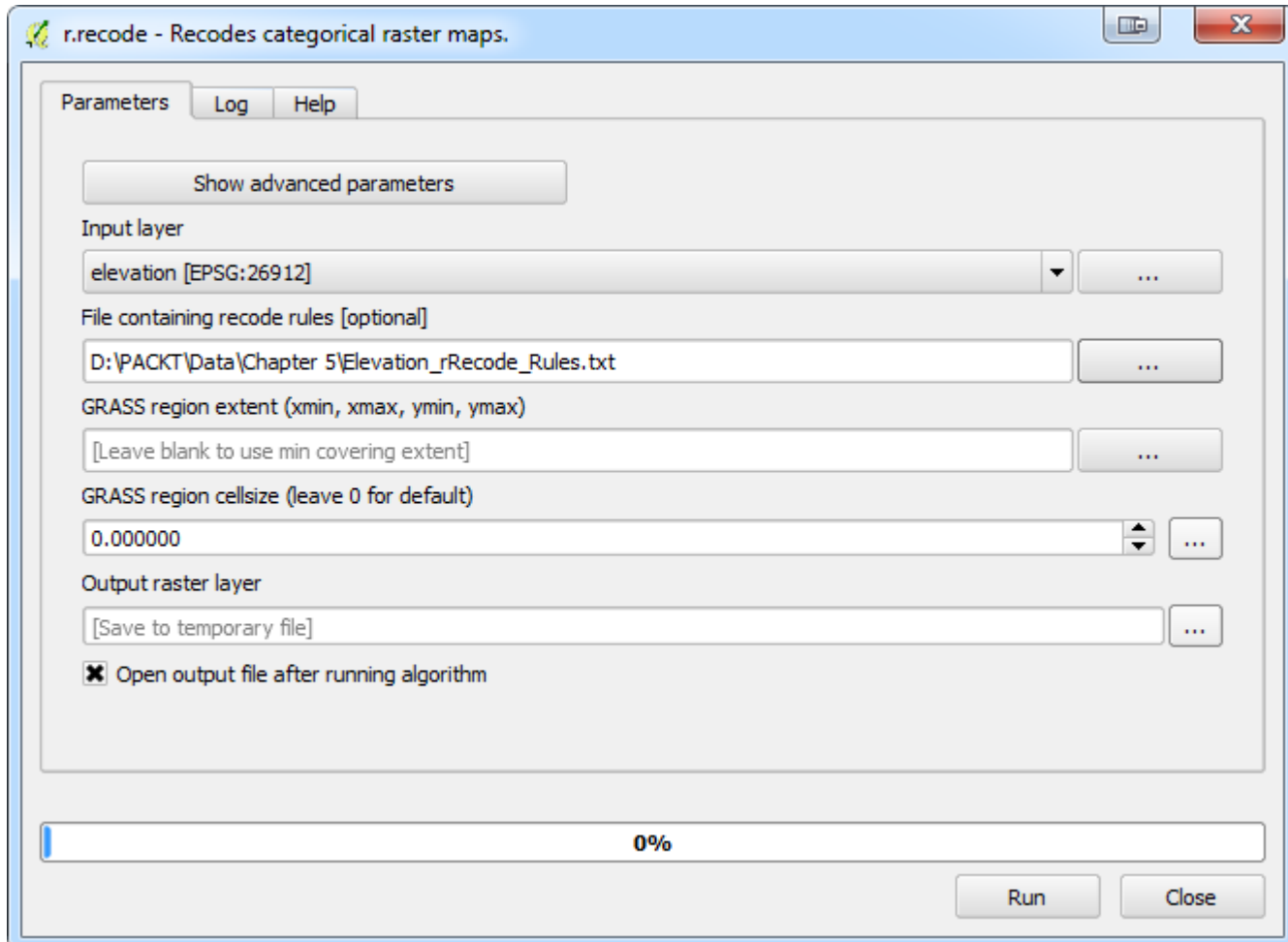
"COALIT" = 'SEUL' OR "COALIT" = 'SWNI'

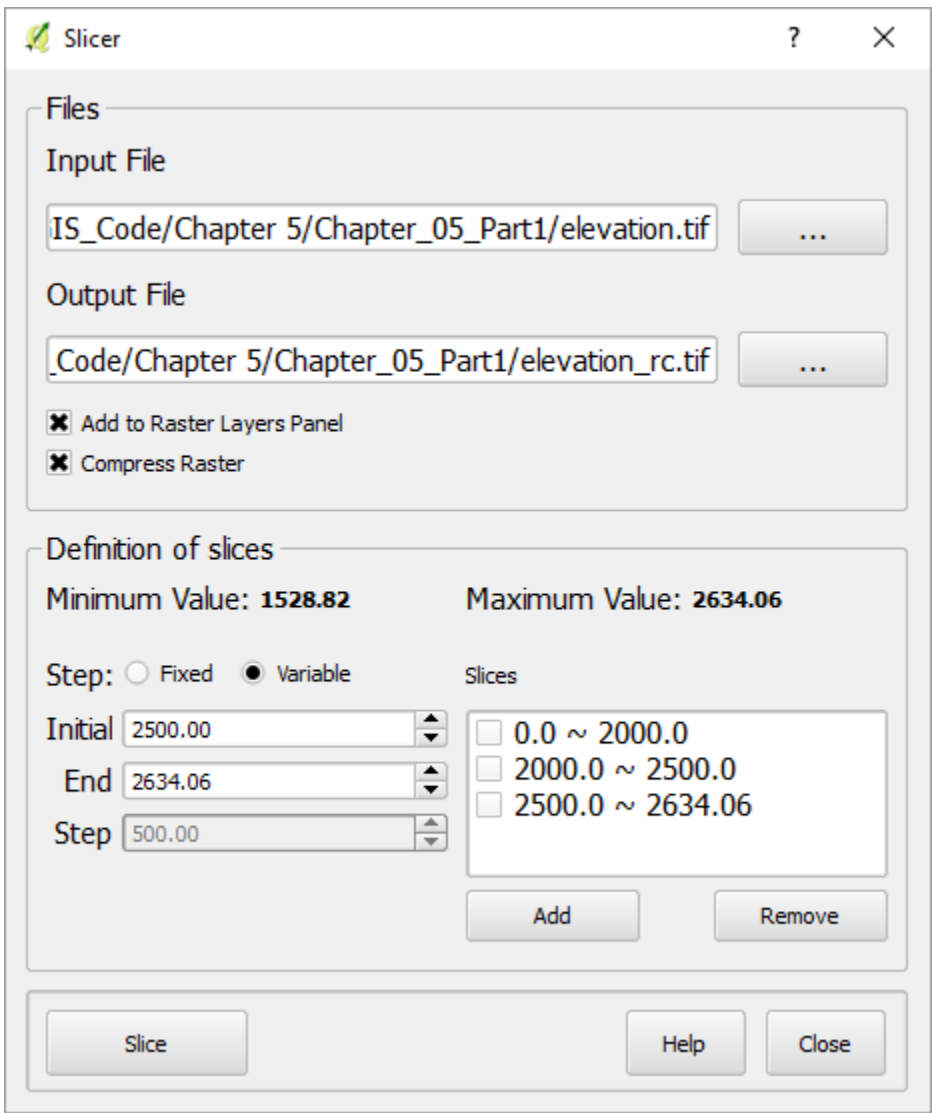




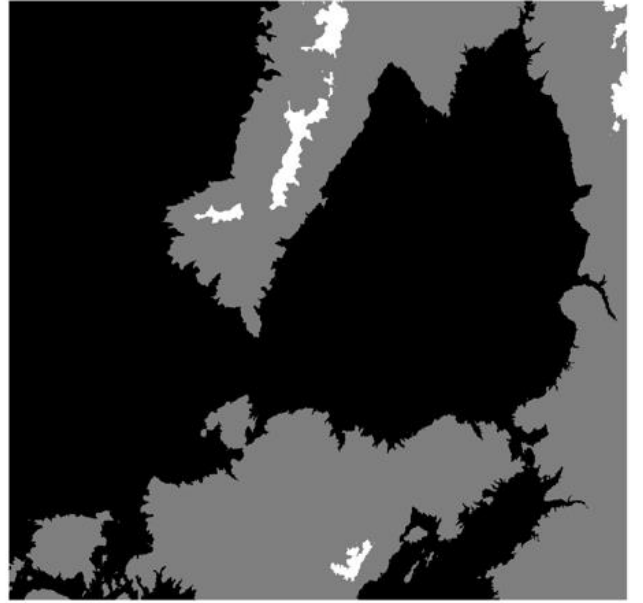
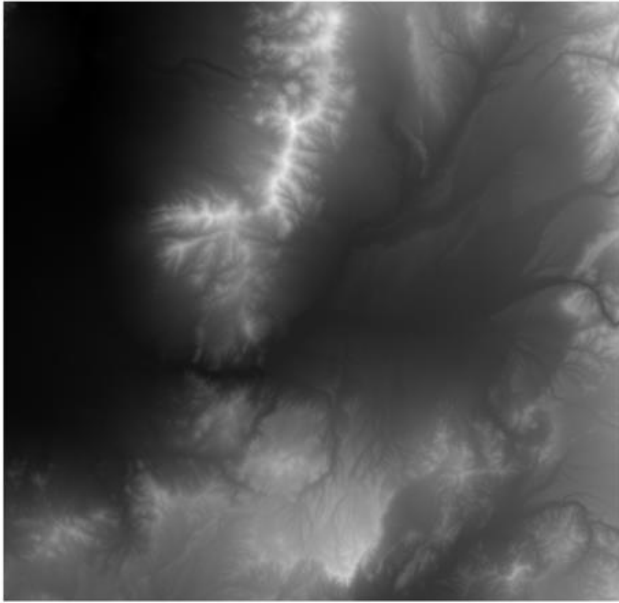


## Chapter 5 – Preparing Raster Data for Processing









**Translate (convert format)** [?] [X]

Parameters [Log] [Run as batch process...]

Input layer: elevation [EPSG:26912] ...

Set the size of the output file (in pixels or %): 100 ...

Output size is a percentage of input size

Nodata value, leave blank to take the nodata value from input: [ ]

Expand: none

Output projection for output file [leave blank to use input projection] [optional]: [ ] ...

Subset based on georeferenced coordinates (xmin, xmax, ymin, ymax): [Leave blank to use min covering extent] ...

Copy all subdatasets of this file to individual output files

**Advanced parameters**

Output raster type: UInt16

GeoTIFF options. Compression type: DEFLATE

Set the JPEG compression level: 75 ...

Set the DEFLATE compression level: 6 ...

Set the predictor for LZW or DEFLATE compression: 1 ...

Create tiled output (only used for the GTiff format)

Control whether the created file is a BigTIFF or a classic TIFF: [ ]

Force the generation of an associated ESRI world file (.tfw)

Additional creation parameters [optional]: [ ]

Converted: [Save to temporary file] ...

Open output file after running algorithm

GDAL/OGR console call

```
gdal_translate -of GTiff -ot UInt16 -outsize 100% 100% -projwin 319664.912903 4258995.86496 366054.845333 4214165.02814 -co COMPRESS=DEFLATE -co PREDICTOR=1 -co ZLEVEL=6 "D:\Mastering QGIS_Code\Chapter 5\Chapter_05_Part1\elelevation.tif" "[temporary file]"
```

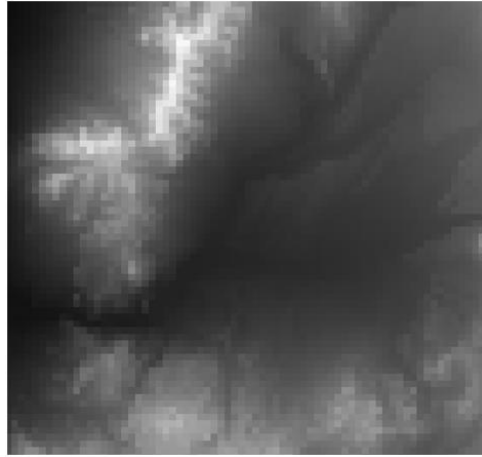
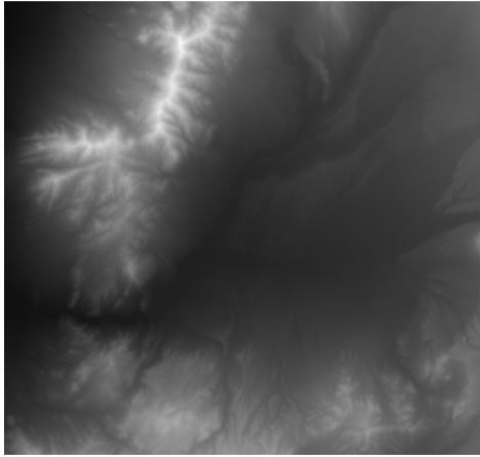
0%

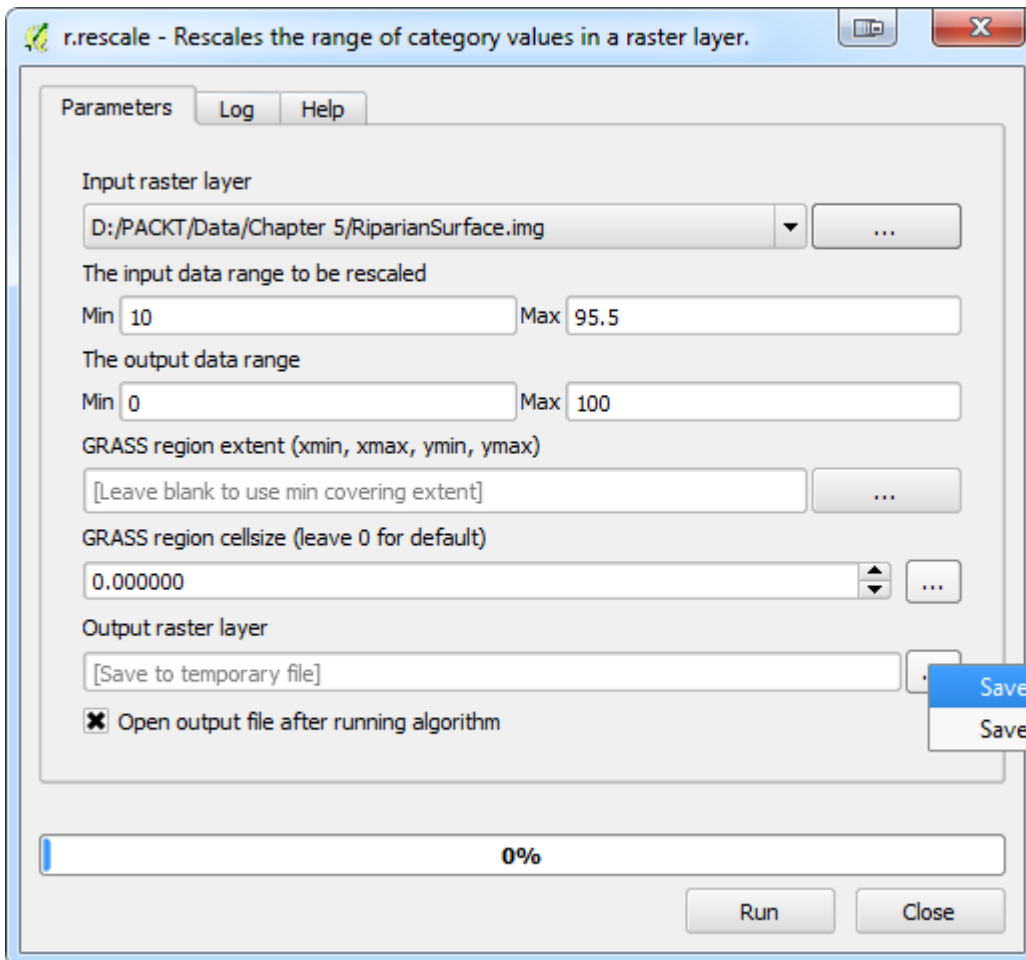
[Run] [Close]

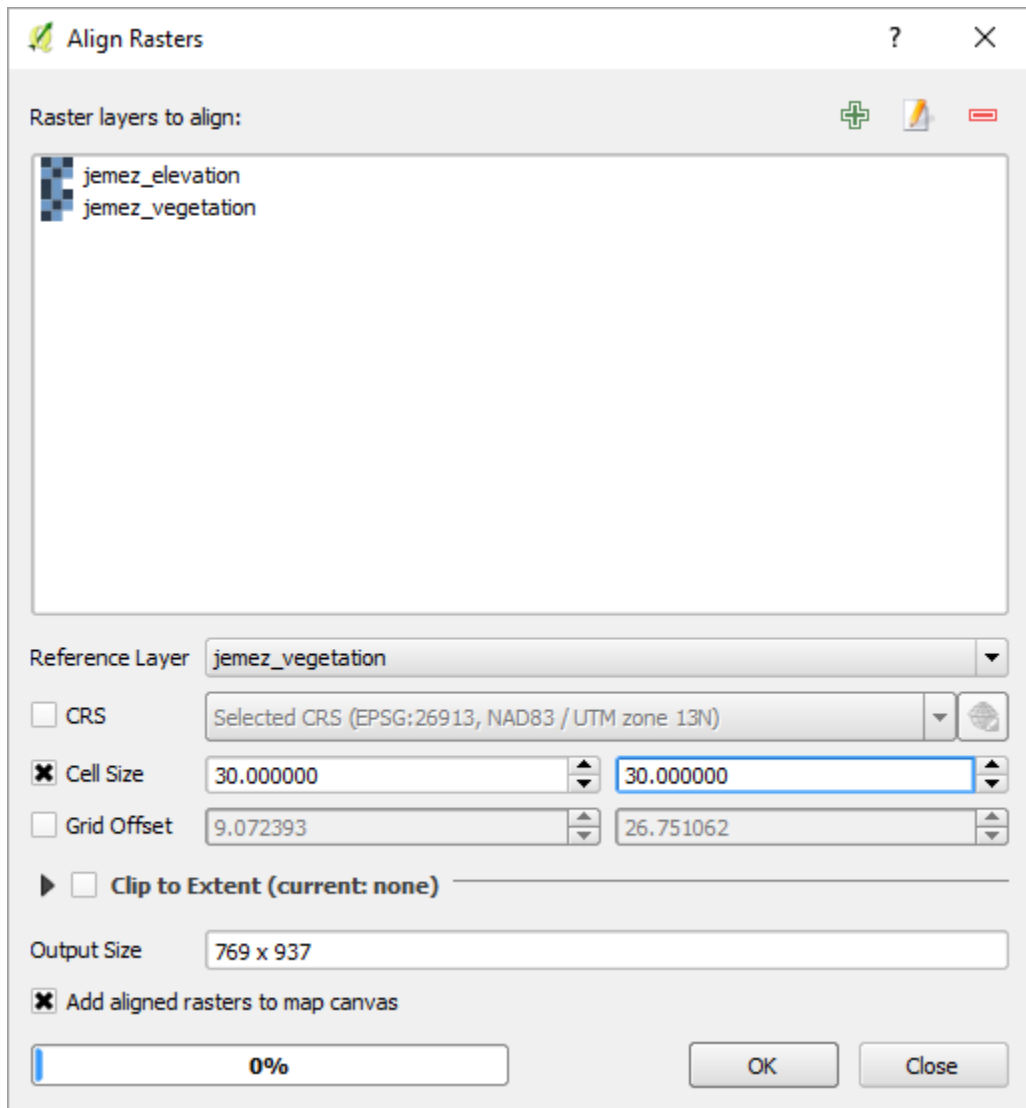
**Translate (convert format)**

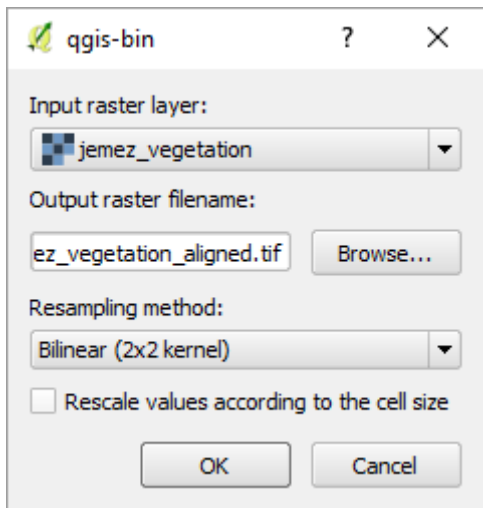
This algorithm is based on the GDAL `gdal_translate` module.

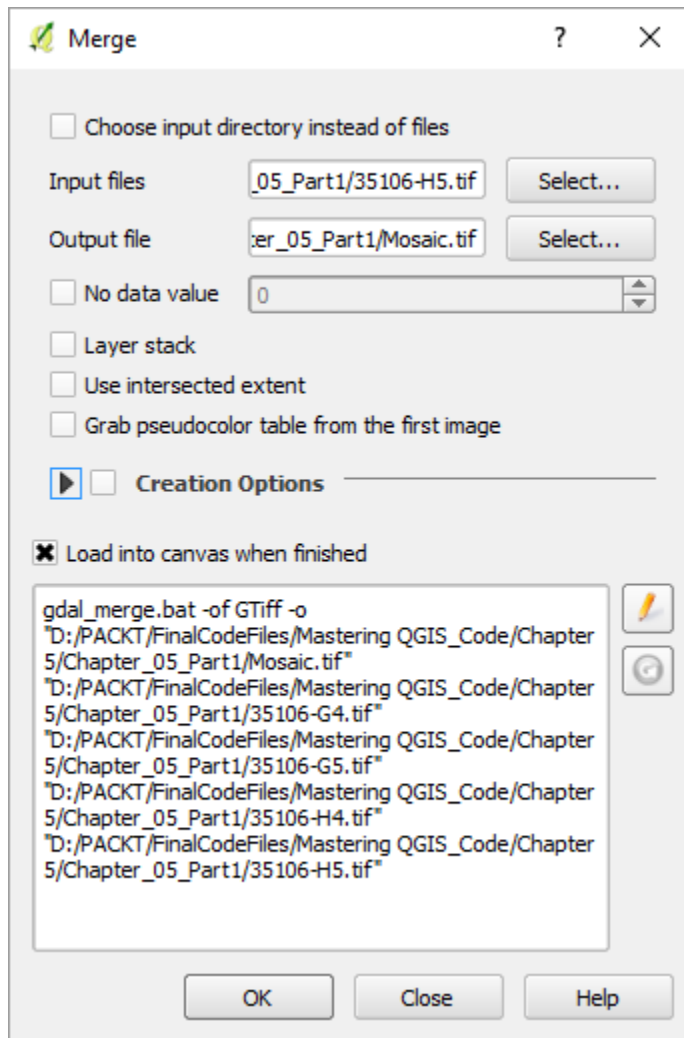
For more info, see the [module help](#)

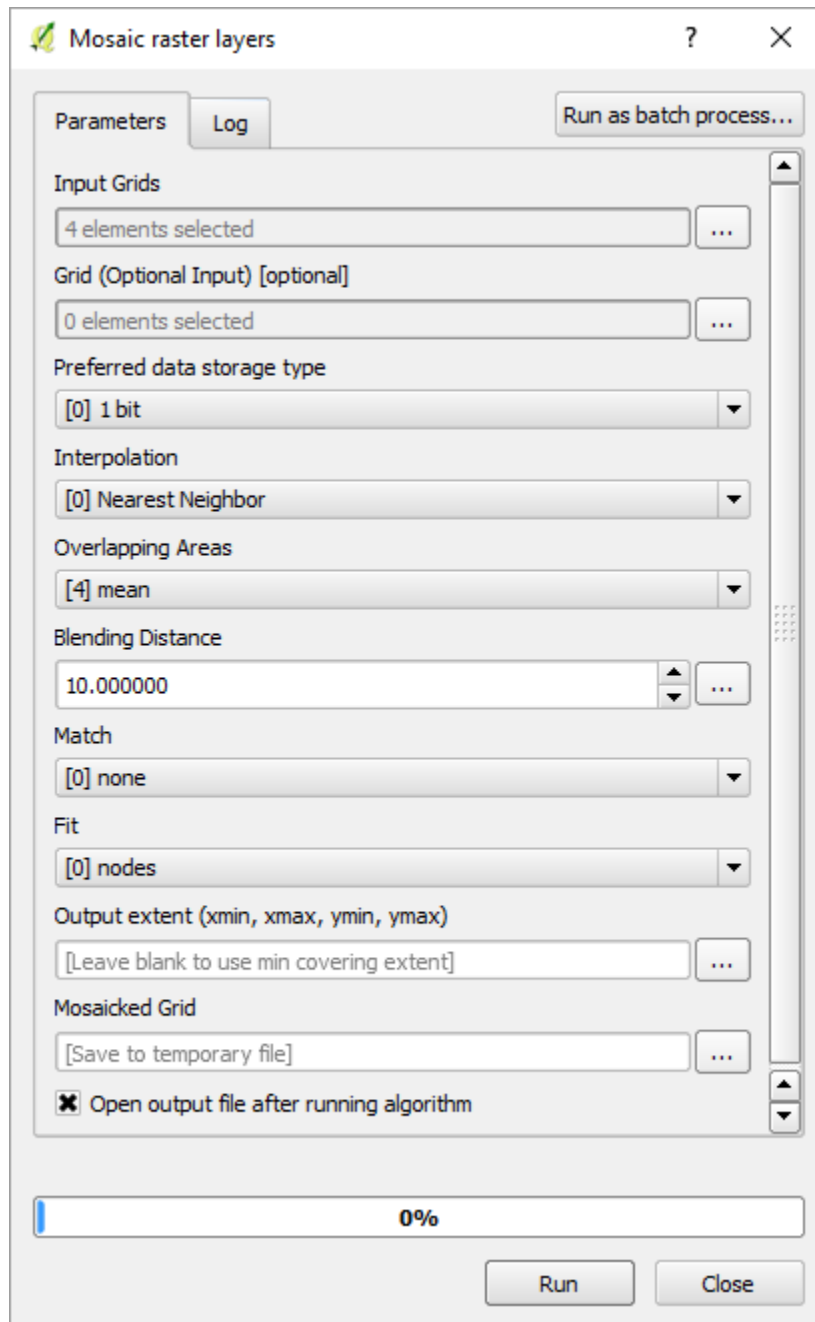




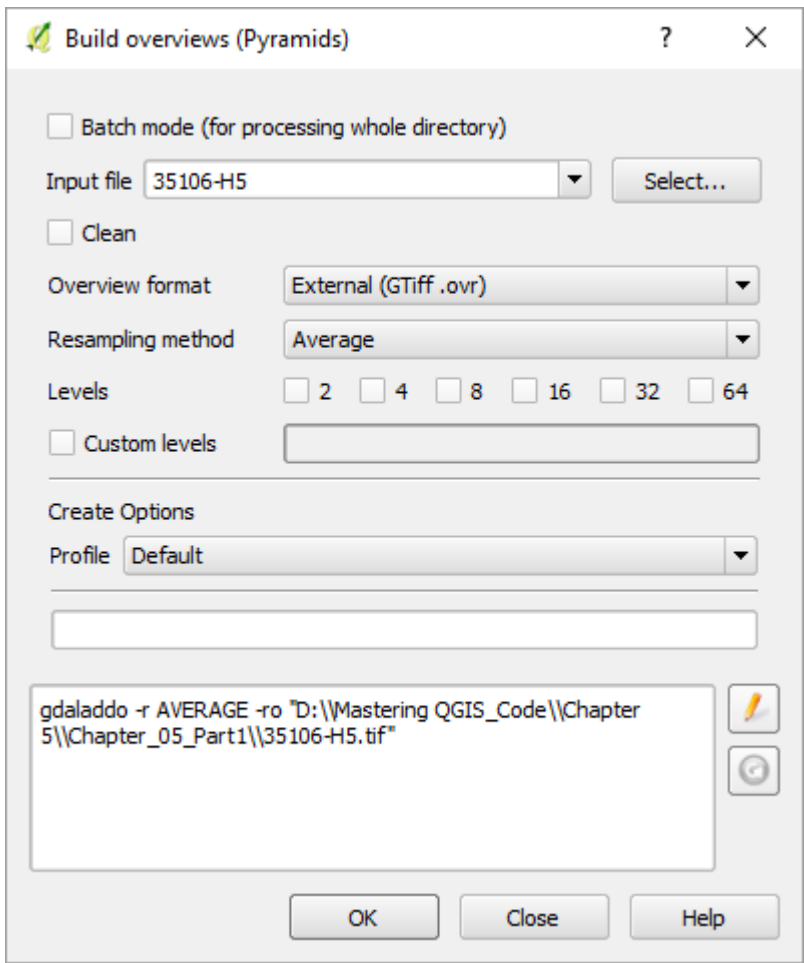


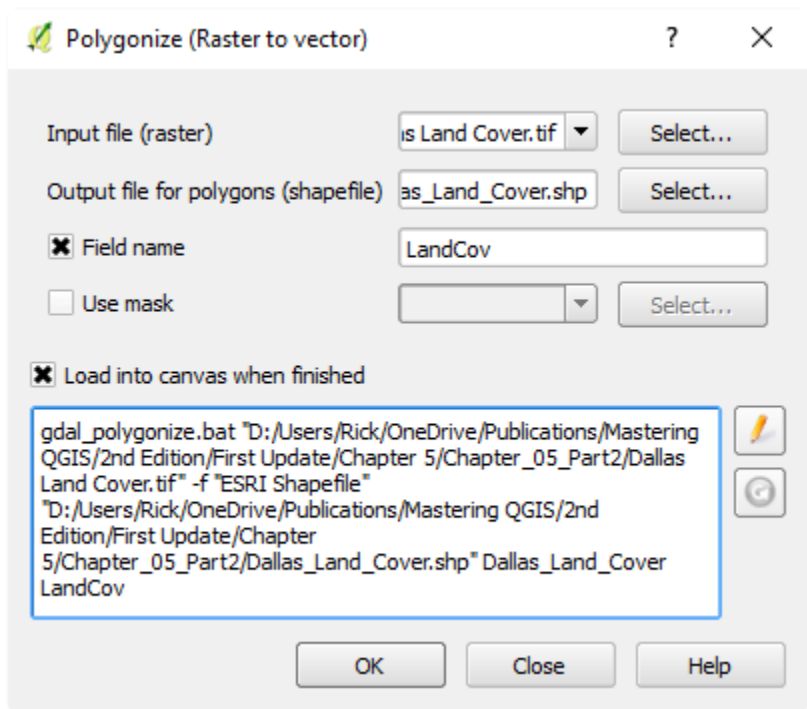


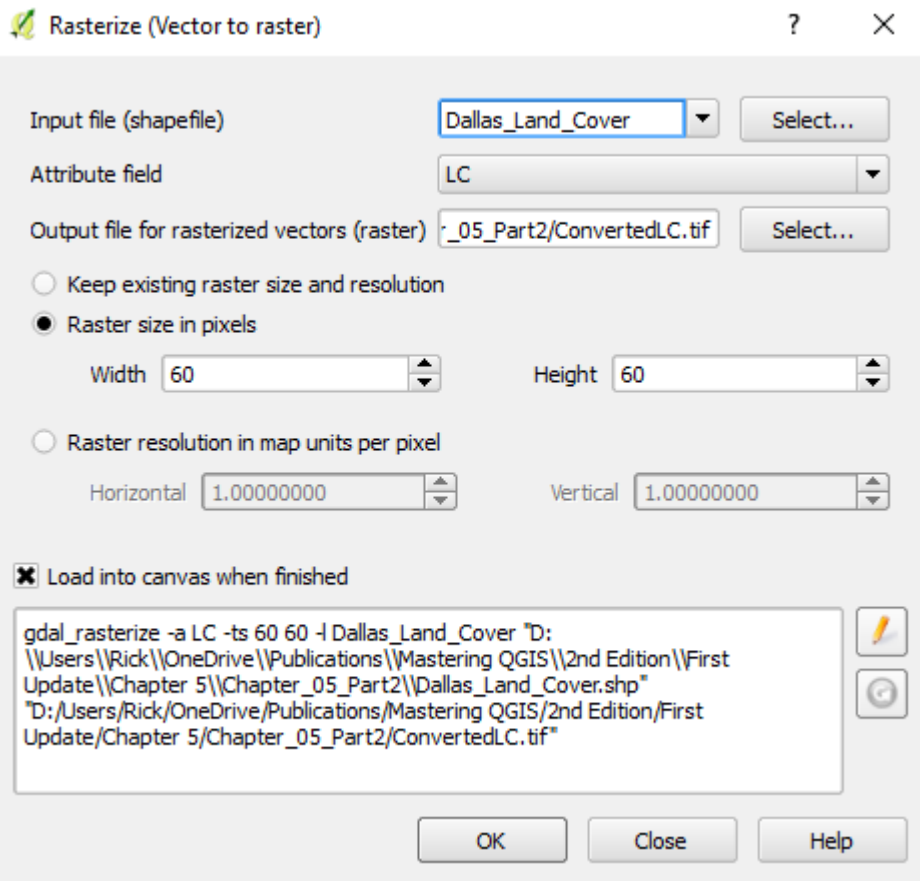












### Interpolation plugin

**Input**

Vector layers: Pecos DEM Points

Interpolation attribute: value

Use z-Coordinate for interpolation

Add Remove

Vector layer	Attribute	Type
Pecos DEM P...	value	Points

**Output**

Interpolation method: Inverse Distance Weighting (IDW)

Number of columns: 300      Number of rows: 300

Cellsize X: 0.00003      Cellsize Y: 0.00002

X min: -102.662      X max: -102.652

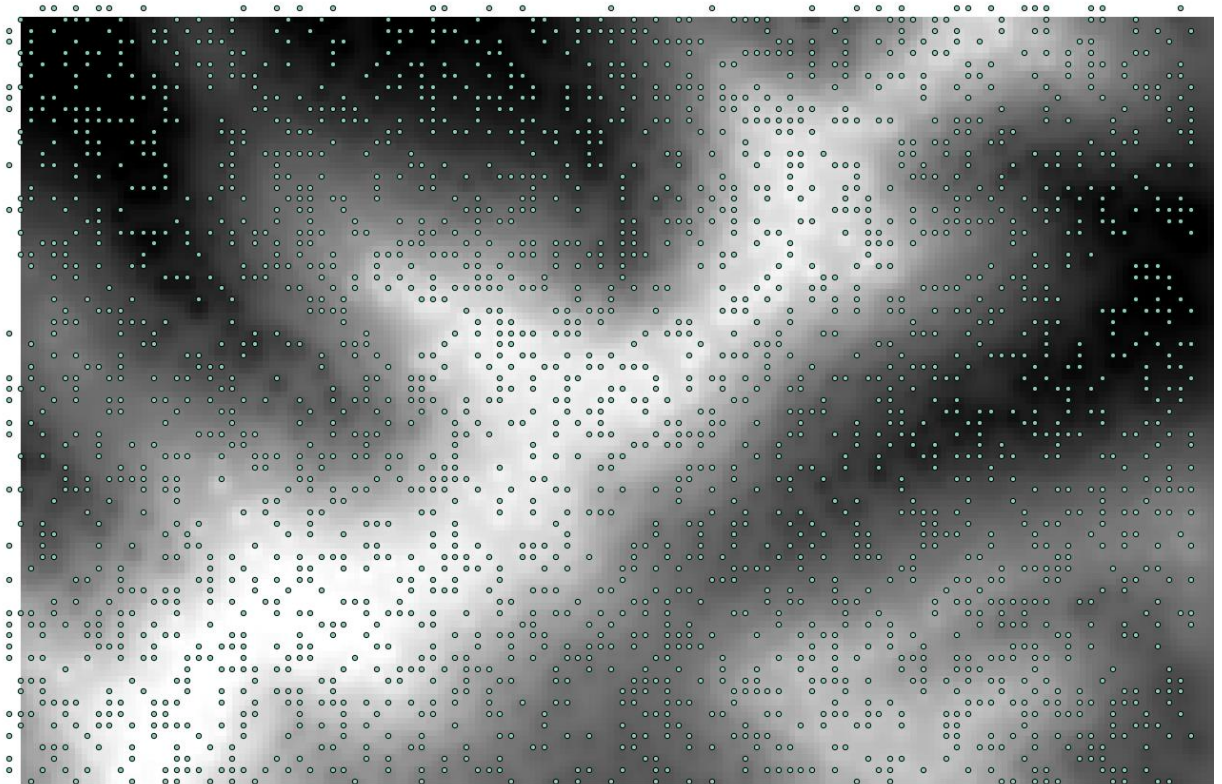
Y min: 30.2218      Y max: 30.2286

Set to current extent

Output file: ublications/Mastering QGIS/Chapter 5/Data/Pecos DEM/Pecos\_Surface\_IDW.tif

Add result to project

OK Cancel



## Chapter 6 – Advanced Data Creation and Editing



```
"SAMPID,C,20","SEX,C,10","UTM_X,N,19,11","UTM_Y,N,19,11"  
PA087,F,115556.044021,3486272.88304  
PA097,F,116870.543644,3489102.55056  
PA098,M,116148.894117,3483420.50411  
PN001,M,482000.018751,3700998.34463  
PN002,M,296192.720405,4053069.38808  
PN003,M,347990.948523,3990302.26593  
PN004,F,431049.74714,3998099.74491  
PN005,F,498461.953615,4013066.46126  
PN006,F,319083.556347,3988585.77826
```

Create a Layer from a Delimited Text File

File Name:

Layer name:  Encoding:

File format:  CSV (comma separated values)  Custom delimiters  Regular expression delimiter

Record options: Number of header lines to discard:   First record has field names

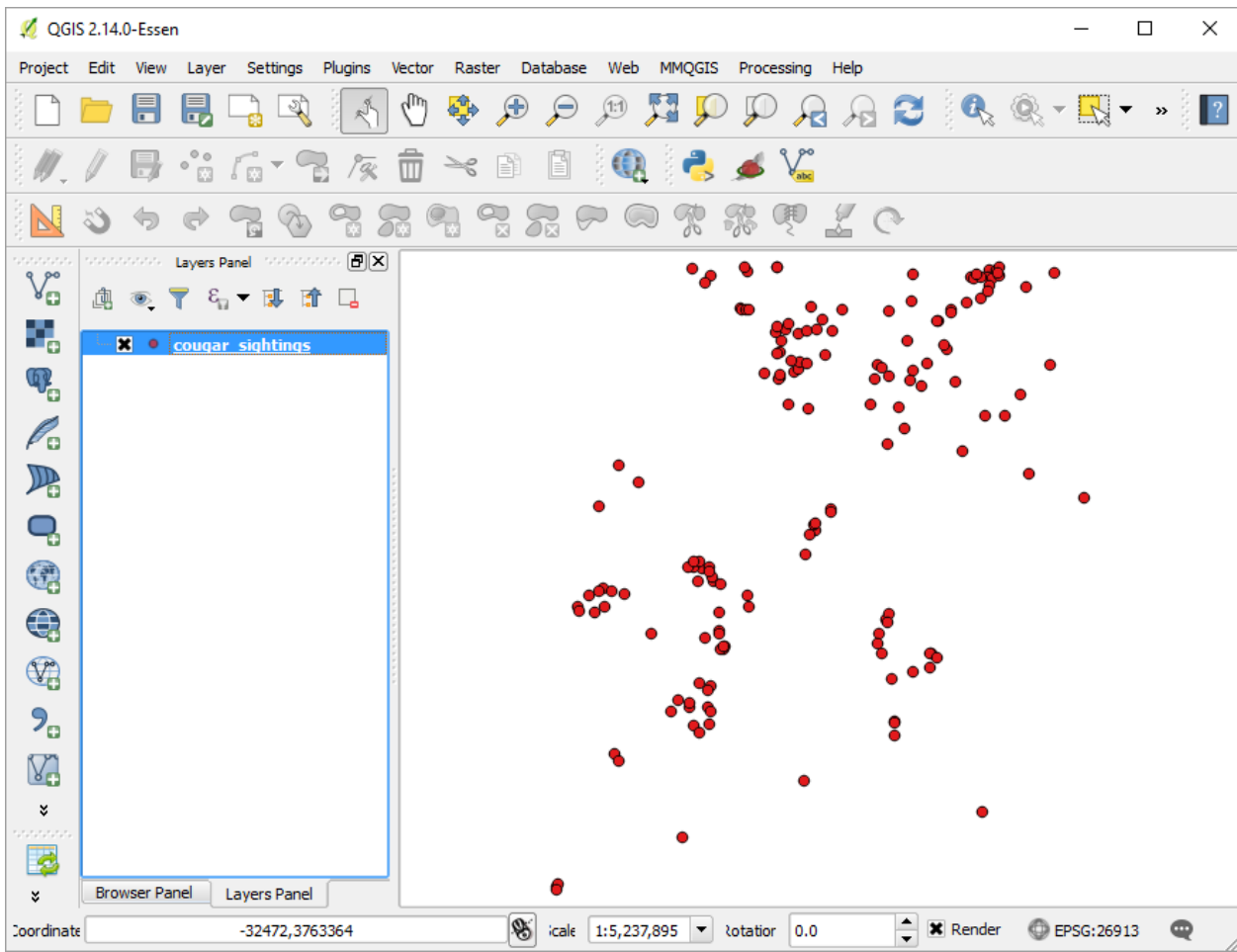
Field options:  Trim fields  Discard empty fields  Decimal separator is comma

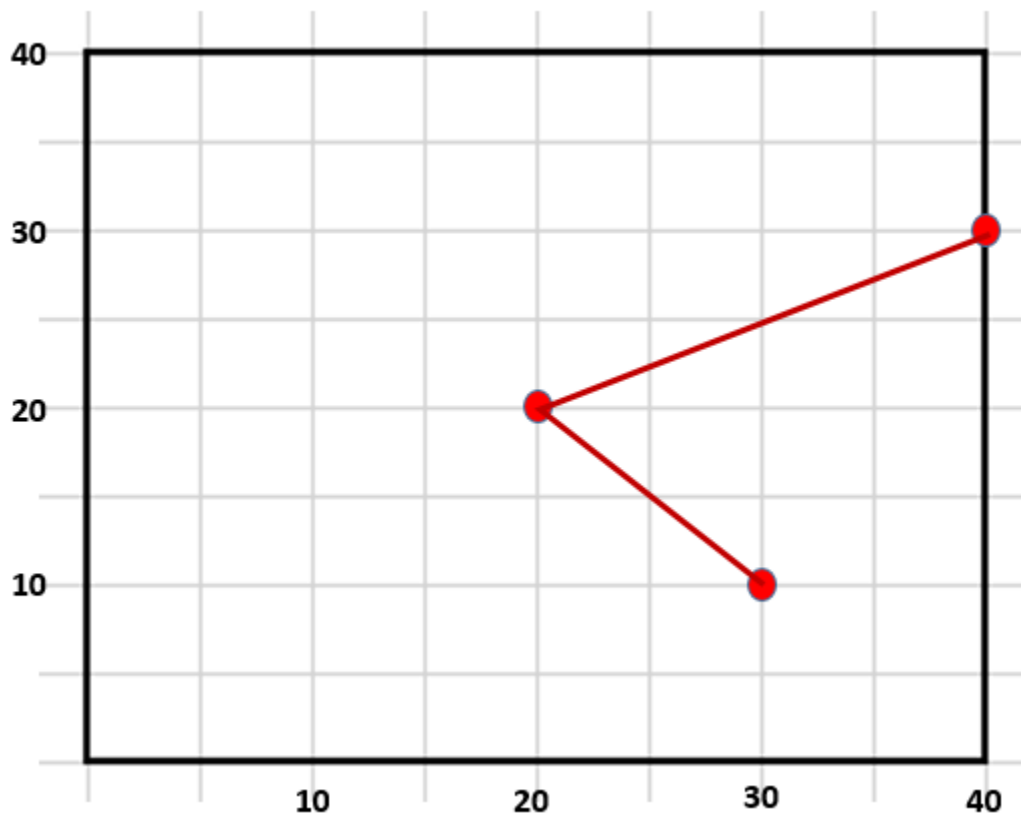
Geometry definition:  Point coordinates  Well known text (WKT)  No geometry (attribute only table)

X field:  Y field:   DMS coordinates

Layer settings:  Use spatial index  Use subset index  Watch file

	SAMPID,C,20	SEX,C,10	UTM_X,N,19,11	UTM_Y,N,19,11
1	PA087	F	115556.044021	3486272.88304
2	PA097	F	116870.543644	3489102.55056
3	PA098	M	116148.894117	3483420.50411
4	PN001	M	482000.018751	3700998.34463
5	PN002	M	296192.720405	4053069.38808
6	PN003	M	347990.948523	3990302.26593
7	PN004	F	431049.74714	3998099.74491
8	PN005	F	498461.953615	4013066.46126
9	PN006	F	319083.556347	3988585.77826
10	PN007	M	362239.882957	3955204.72246
11	PN008	M	266226.655138	3683064.68196







Create a Layer from a Delimited Text File

File Name:

Layer name:  Encoding:

File format:  CSV (comma separated values)  Custom delimiters  Regular expression delimiter

Record options: Number of header lines to discard:   First record has field names

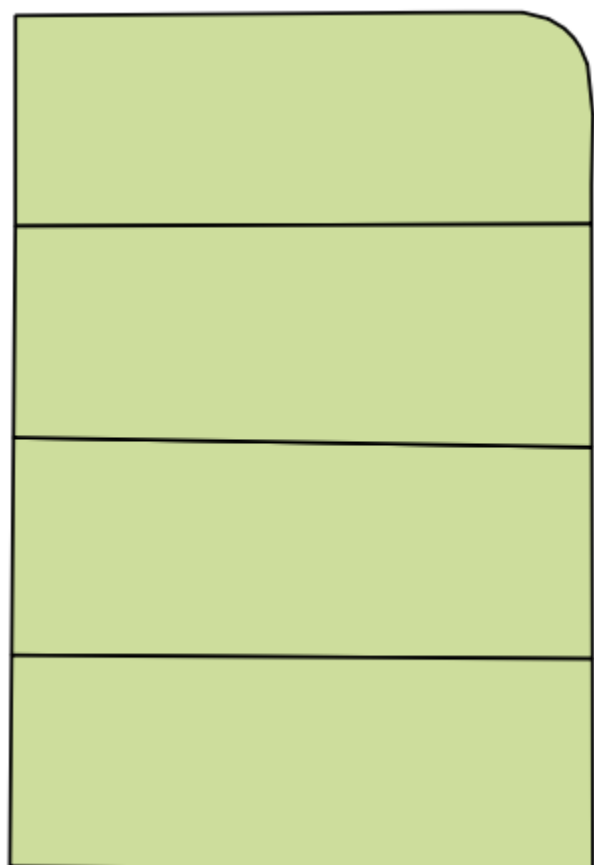
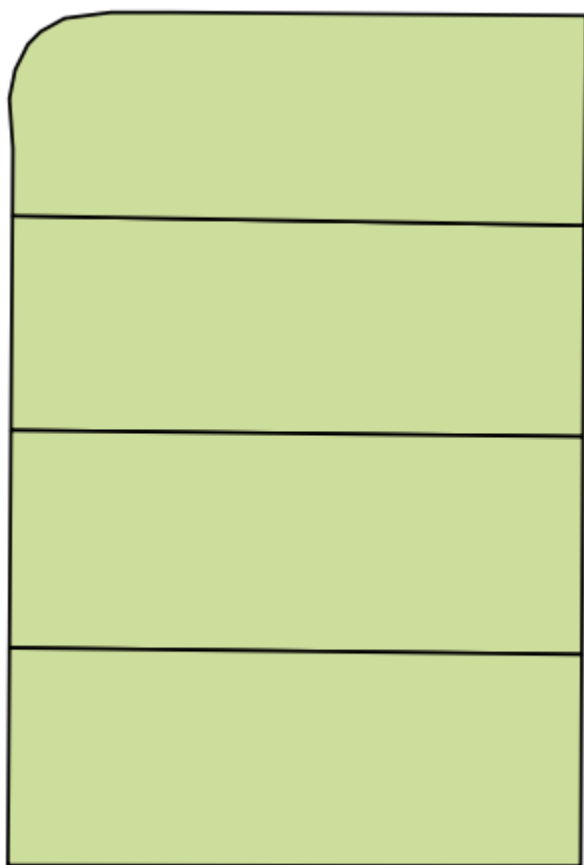
Field options:  Trim fields  Discard empty fields  Decimal separator is comma

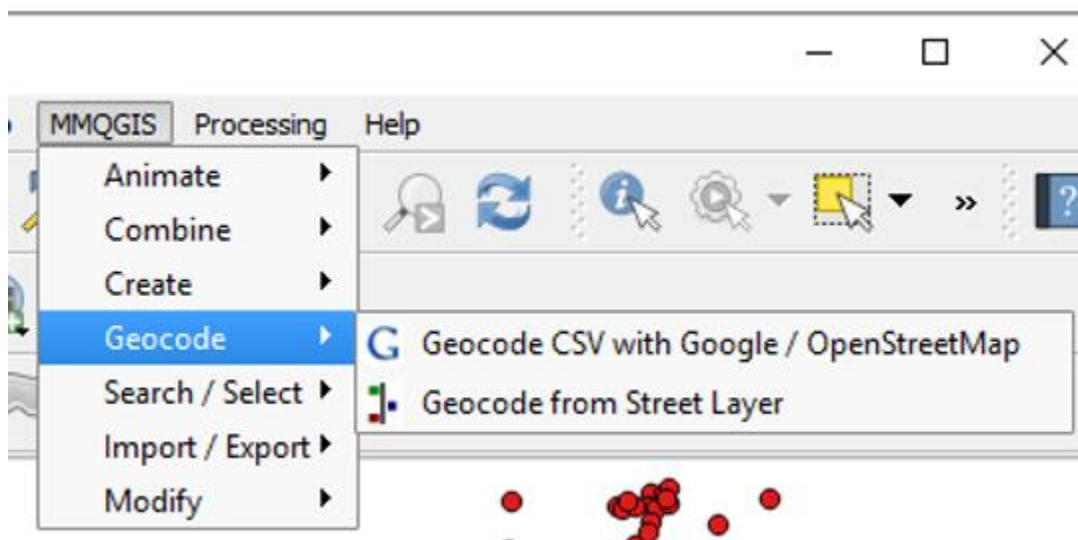
Geometry definition:  Point coordinates  Well known text (WKT)  No geometry (attribute only table)

Geometry field:  Geometry type:

Layer settings:  Use spatial index  Use subset index  Watch file

1	POLYGON ((1530937.9648094601 1484863.2944761293,1530800.6348094593 1484862.7961427944,153080
2	POLYGON ((1530783.4314761229 1484862.9744761295,1530783.1664761244 1484812.6844761225,153064
3	POLYGON ((1530938.056476126 1484810.184476123,1530938.1664761249 1484759.7794761283,1530799.
4	POLYGON ((1530938.056476126 1484810.184476123,1530800.1964761235 1484812.4744761272,1530800.
5	POLYGON ((1530783.1664761244 1484812.6844761225,1530782.8848094589 1484760.8194761265,153064
6	POLYGON ((1530647.1814761227 1484865.2644761277,1530647.291476123 1484881.279476129,1530646.4
7	POLYGON ((1530799.7598094586 1484760.6478094577,1530938.1664761249 1484759.7794761283,153093
8	POLYGON ((1530646.4631427892 1484762.3978094608,1530782.8848094589 1484760.8194761265,153078

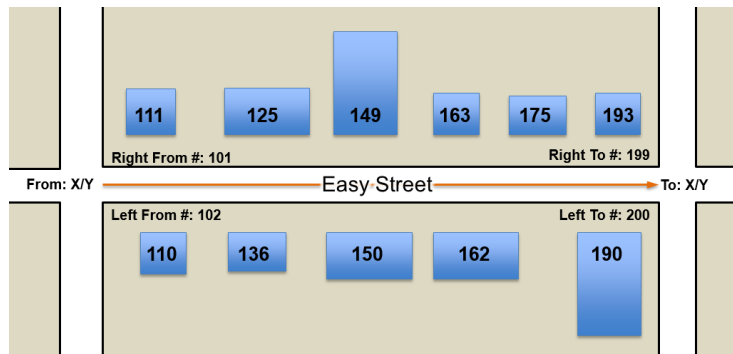





Attribute table - Streets :: Features total: 41825, filtered: 41825, selected: 0

	LEFTFLOW	LEFTHIGH	RIGHTLOW	RIGHTHIGH	STREETNAME	STREETDESI
16316	25920.00000000...	25926.00000000...	25919.00000000...	25925.00000000...	SAN PABLO	ST
16404	25914.00000000...	25916.00000000...	25915.00000000...	25917.00000000...	SAN PABLO	ST
16479	25910.00000000...	25912.00000000...	25911.00000000...	25913.00000000...	SAN PABLO	ST
16533	25906.00000000...	25908.00000000...	25907.00000000...	25909.00000000...	SAN PABLO	ST
16588	25900.00000000...	25904.00000000...	25901.00000000...	25905.00000000...	SAN PABLO	ST
16241	25876.00000000...	25898.00000000...	25877.00000000...	25897.00000000...	ANTHIS	AV
16317	25854.00000000...	25868.00000000...	25853.00000000...	25873.00000000...	BRADSHAW	AV
16356	25830.00000000...	25852.00000000...	25831.00000000...	25849.00000000...	BRADSHAW	AV
30358	25827.00000000...	25829.00000000...	25828.00000000...	25828.00000000...	CONNER	AV

Show All Features



 Web Service Geocode ? X

Input CSV File (UTF-8)

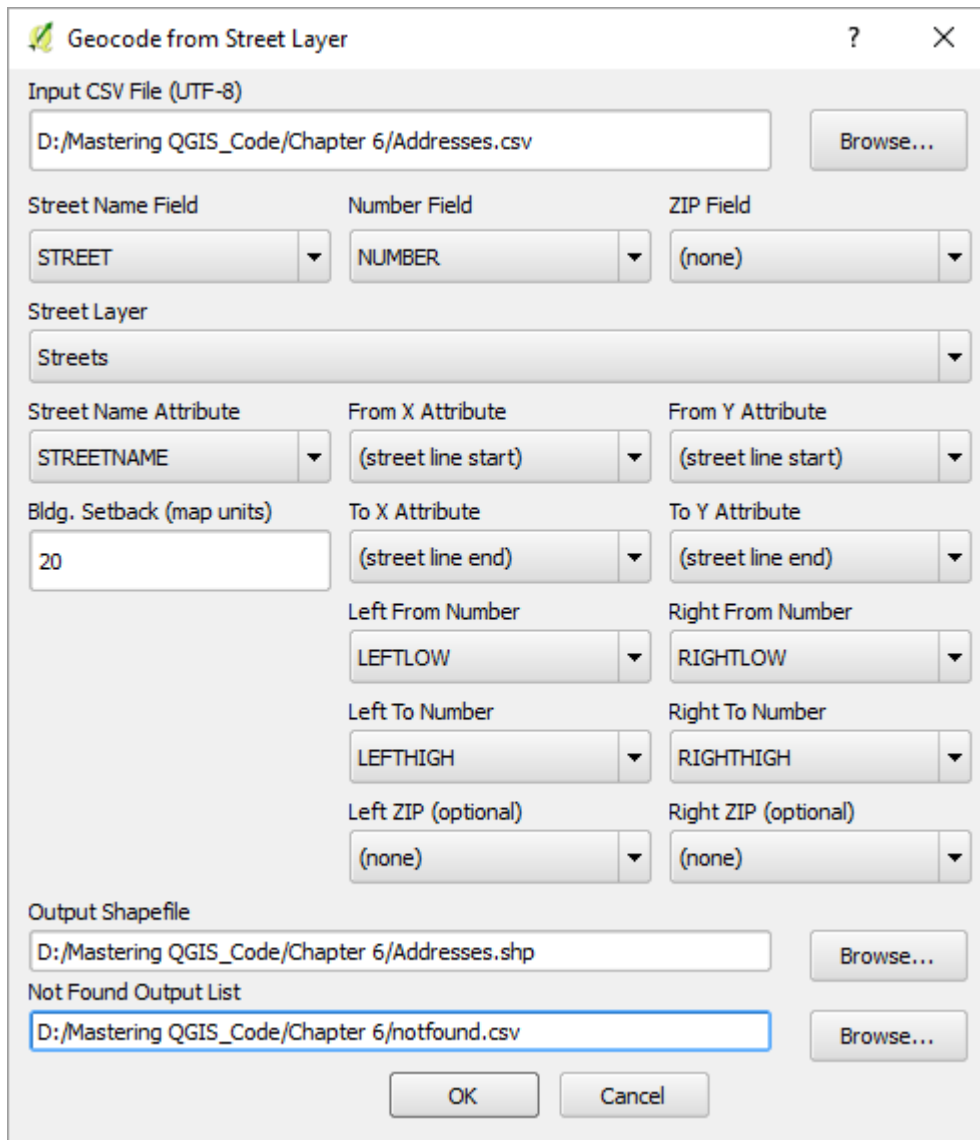
Address Field:  City Field:

State Field:  Country Field:

Web Service:

Output Shapefile

Not Found Output List

The image shows a dialog box titled "Geocode from Street Layer" with a question mark and a close button in the top right corner. The dialog is organized into several sections. The "Input CSV File (UTF-8)" section has a text field containing "D:/Mastering QGIS\_Code/Chapter 6/Addresses.csv" and a "Browse..." button. Below this are three dropdown menus for "Street Name Field" (set to "STREET"), "Number Field" (set to "NUMBER"), and "ZIP Field" (set to "(none)"). The "Street Layer" section has a dropdown menu set to "Streets". The "Street Name Attribute" section has a dropdown menu set to "STREETNAME". The "From X Attribute" and "From Y Attribute" sections both have dropdown menus set to "(street line start)". The "Bldg. Setback (map units)" section has a text field containing "20". The "To X Attribute" and "To Y Attribute" sections both have dropdown menus set to "(street line end)". The "Left From Number" and "Right From Number" sections have dropdown menus set to "LEFTFLOW" and "RIGHTFLOW" respectively. The "Left To Number" and "Right To Number" sections have dropdown menus set to "LEFTHIGH" and "RIGHTHIGH" respectively. The "Left ZIP (optional)" and "Right ZIP (optional)" sections both have dropdown menus set to "(none)". The "Output Shapefile" section has a text field containing "D:/Mastering QGIS\_Code/Chapter 6/Addresses.shp" and a "Browse..." button. The "Not Found Output List" section has a text field containing "D:/Mastering QGIS\_Code/Chapter 6/notfound.csv" and a "Browse..." button. At the bottom of the dialog are "OK" and "Cancel" buttons.

Geocode from Street Layer ? X

Input CSV File (UTF-8)  
D:/Mastering QGIS\_Code/Chapter 6/Addresses.csv Browse...

Street Name Field Number Field ZIP Field  
STREET NUMBER (none)

Street Layer  
Streets

Street Name Attribute From X Attribute From Y Attribute  
STREETNAME (street line start) (street line start)

Bldg. Setback (map units) To X Attribute To Y Attribute  
20 (street line end) (street line end)

Left From Number Right From Number  
LEFTFLOW RIGHTFLOW

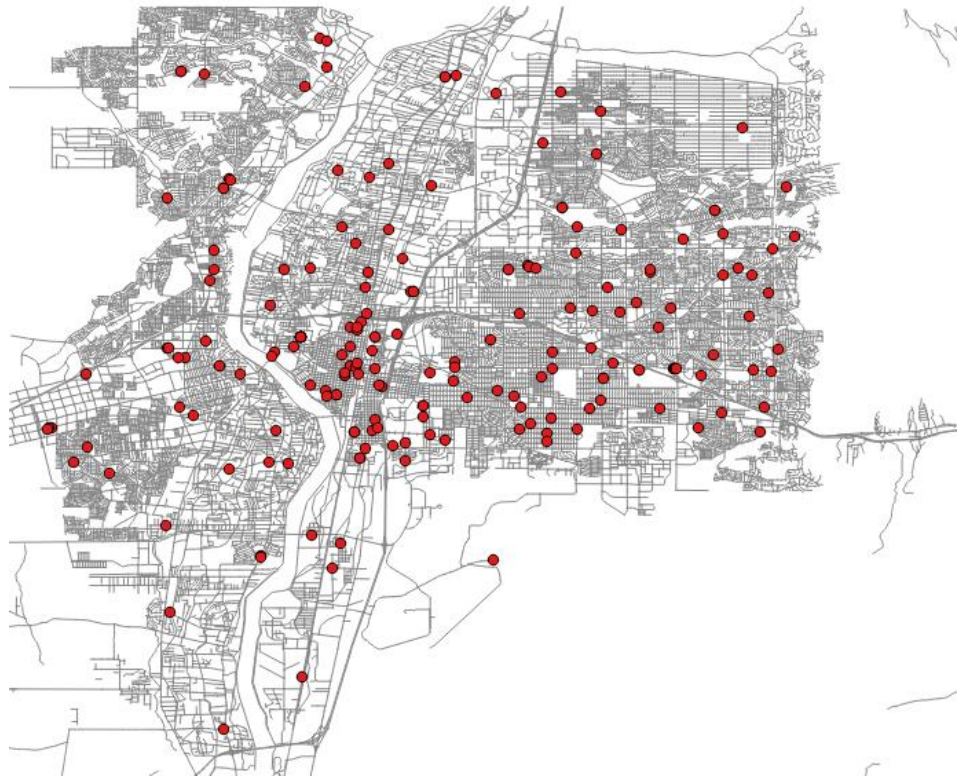
Left To Number Right To Number  
LEFTHIGH RIGHTHIGH

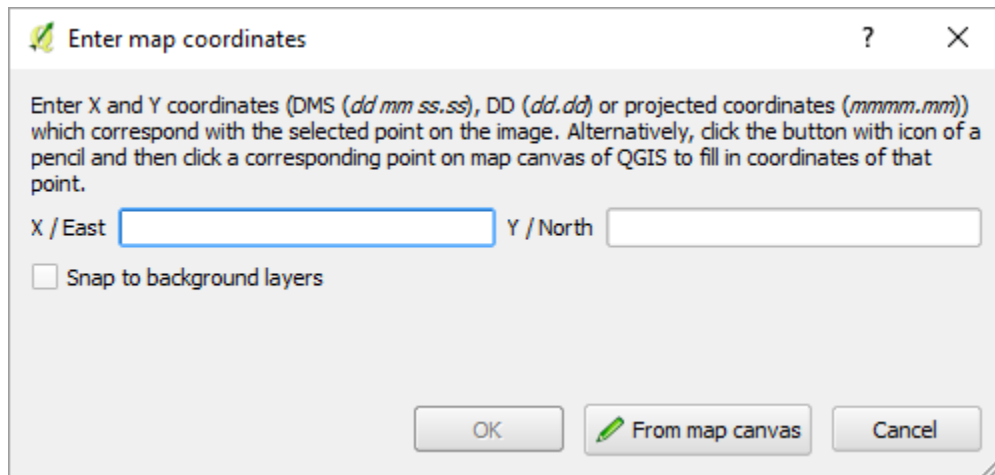
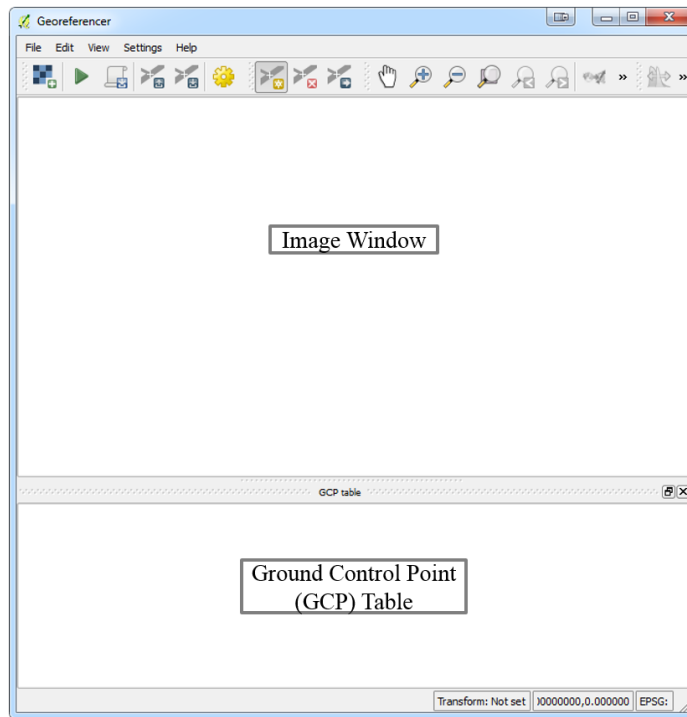
Left ZIP (optional) Right ZIP (optional)  
(none) (none)


Output Shapefile  
D:/Mastering QGIS\_Code/Chapter 6/Addresses.shp Browse...

Not Found Output List  
D:/Mastering QGIS\_Code/Chapter 6/notfound.csv Browse...

OK Cancel





 Enter map coordinates ? X

Enter X and Y coordinates (DMS (*dd mm ss.ss*), DD (*dd.dd*) or projected coordinates (*mmmm.mm*)) which correspond with the selected point on the image. Alternatively, click the button with icon of a pencil and then click a corresponding point on map canvas of QGIS to fill in coordinates of that point.

X / East  Y / North

Snap to background layers



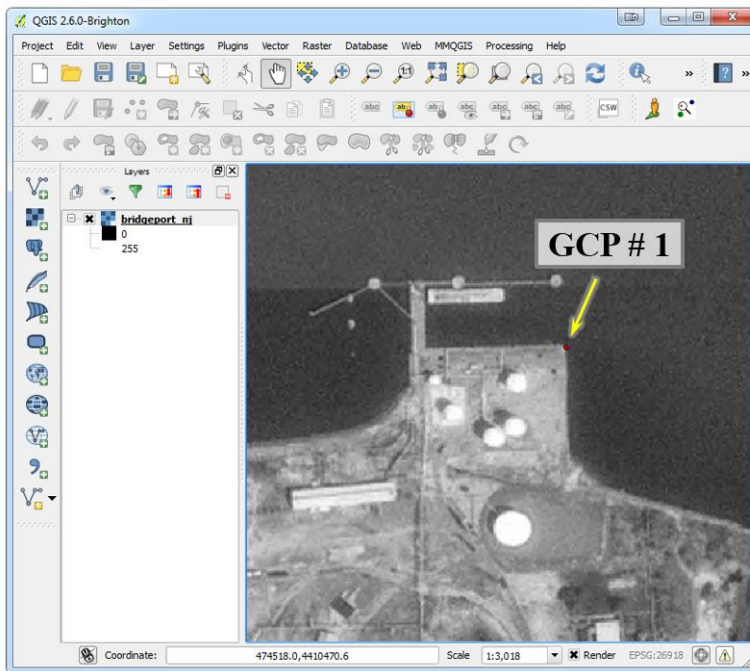
Georeferencer - Scanned1990.tif

File Edit View Settings

GCP table

Visible	ID	Source X	Source Y	Dest. X	Dest. Y	dX (pixels)	dY (pixels)	Residual (pixels)
<input checked="" type="checkbox"/>	0	121.995	-244.213	474793	4.4106e+06	0	0	0

Transform: Not set    489,-2    None




**GCP # 1**

on/off	id	srcX	srcY	dstX	dstY	dX[pixels]	dY[pixels]	residual[pixels]
<input checked="" type="checkbox"/>	0	121.32	-244.85	474793.69	4410597.69	0.00	0.00	0.00

**GCP # 1 – Source and Destination Coordinates**




 Transformation settings

Transformation type: Polynomial 2

Resampling method: Linear  
Helmert  
Polynomial 1  
Polynomial 2  
Polynomial 3  
Thin Plate Spline  
Projective

Compression: **Polynomial 2**

Create world file

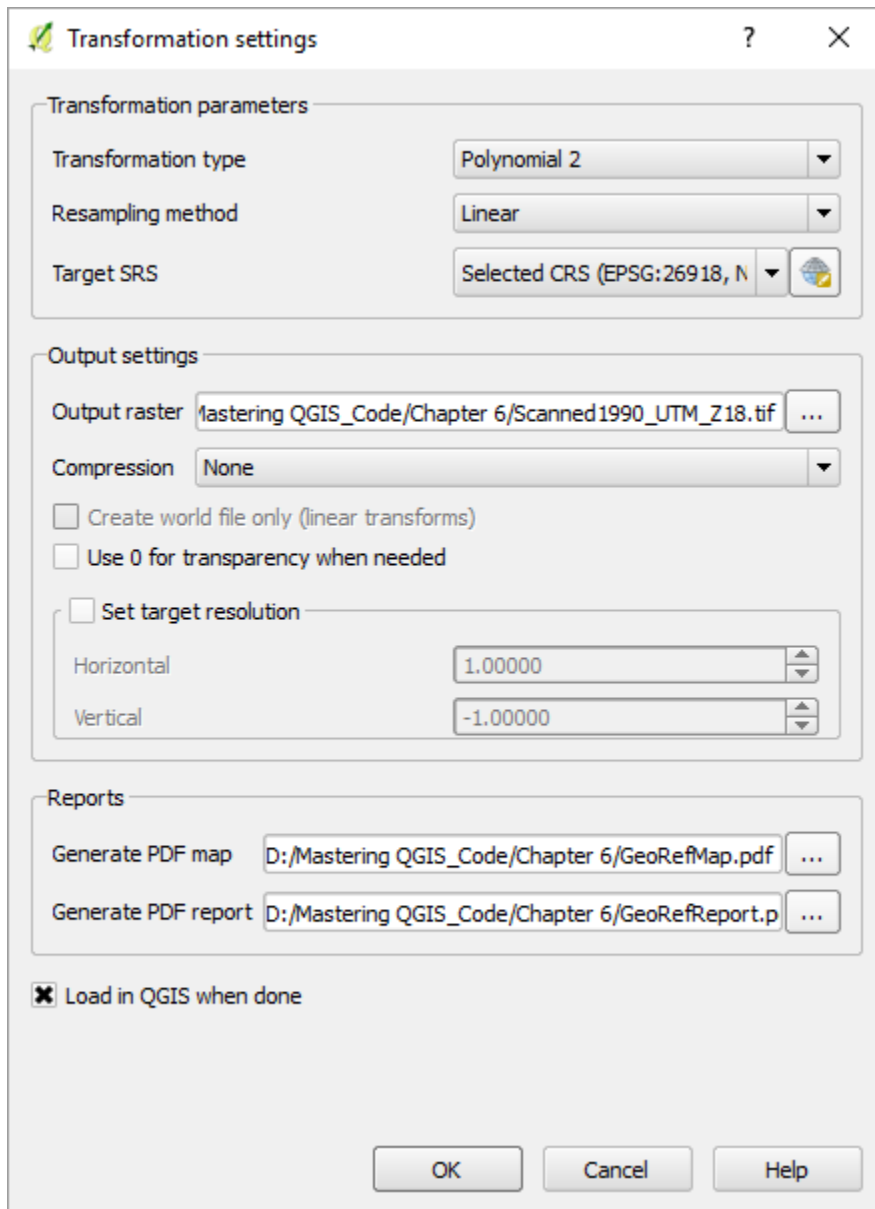
 Transformation settings

Transformation type: Polynomial 2

Resampling method: Nearest neighbour  
Nearest neighbour

Compression: Linear  
Cubic  
Cubic Spline  
Lanczos

Create world file

The image shows a 'Transformation settings' dialog box in QGIS. It is divided into three main sections: 'Transformation parameters', 'Output settings', and 'Reports'. The 'Transformation parameters' section includes dropdown menus for 'Transformation type' (Polynomial 2), 'Resampling method' (Linear), and 'Target SRS' (Selected CRS (EPSG:26918, N)). The 'Output settings' section includes a text field for 'Output raster' (Mastering QGIS\_Code/Chapter 6/Scanned1990\_UTM\_Z18.tif), a 'Compression' dropdown (None), and three checkboxes: 'Create world file only (linear transforms)', 'Use 0 for transparency when needed', and 'Set target resolution'. The 'Set target resolution' section has two spinners for 'Horizontal' (1.00000) and 'Vertical' (-1.00000). The 'Reports' section has two text fields for 'Generate PDF map' and 'Generate PDF report', both pointing to files in the 'D:/Mastering QGIS\_Code/Chapter 6/' directory. At the bottom, there is a checked checkbox 'Load in QGIS when done' and three buttons: 'OK', 'Cancel', and 'Help'.

**Transformation settings**

**Transformation parameters**

Transformation type: Polynomial 2

Resampling method: Linear

Target SRS: Selected CRS (EPSG:26918, N)

**Output settings**

Output raster: Mastering QGIS\_Code/Chapter 6/Scanned1990\_UTM\_Z18.tif

Compression: None

Create world file only (linear transforms)

Use 0 for transparency when needed

Set target resolution

Horizontal: 1.00000

Vertical: -1.00000

**Reports**

Generate PDF map: D:/Mastering QGIS\_Code/Chapter 6/GeoRefMap.pdf

Generate PDF report: D:/Mastering QGIS\_Code/Chapter 6/GeoRefReport.p

Load in QGIS when done

OK Cancel Help



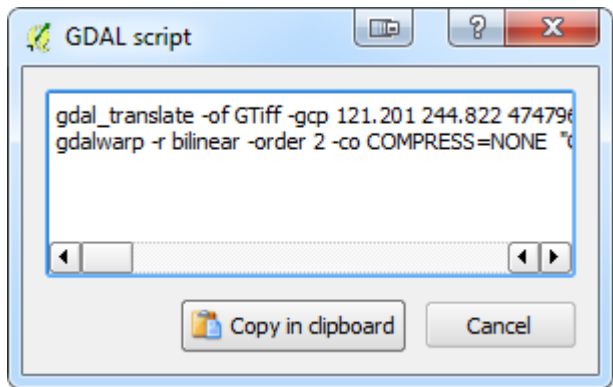
Georeferencer - Scanned1990.tif

File Edit View Settings Help

GCP table

on/off	id	srcX	srcY	dstX	dstY	dx[pixels]	dy[pixels]	residual[pixels]
<input checked="" type="checkbox"/>	0	121.20	-244.82	474795.86	4410599.34	-0.14	-0.13	0.19
<input checked="" type="checkbox"/>	1	1553.94	-1267.33	478363.61	4407951.56	0.37	0.65	0.74
<input checked="" type="checkbox"/>	2	1538.03	-49.94	478368.78	4411005.76	-0.02	0.08	0.08
<input checked="" type="checkbox"/>	3	141.39	-1356.35	474774.80	4407777.55	0.03	0.04	0.05
<input checked="" type="checkbox"/>	4	904.92	-240.10	476776.99	4410568.52	0.28	0.34	0.44
<input checked="" type="checkbox"/>	5	754.03	-1210.22	476344.17	4408130.27	-0.37	-0.18	0.41
<input checked="" type="checkbox"/>	6	1446.50	-919.43	478103.67	4408838.90	-0.44	-0.94	1.04
<input checked="" type="checkbox"/>	7	458.80	-1070.24	475602.69	4408496.53	0.30	0.14	0.33

Transform: Polynomial 2 Mean error: 1.03886 608,-240 None



Georeferencer - zone\_map.bmp

File Edit View Settings Help

ZONING MAP

125 28

M-1

R-1

K 15 S

SU-2

SU-1

R-1

SU-1

STADIUM

0 5 27

2 5 28

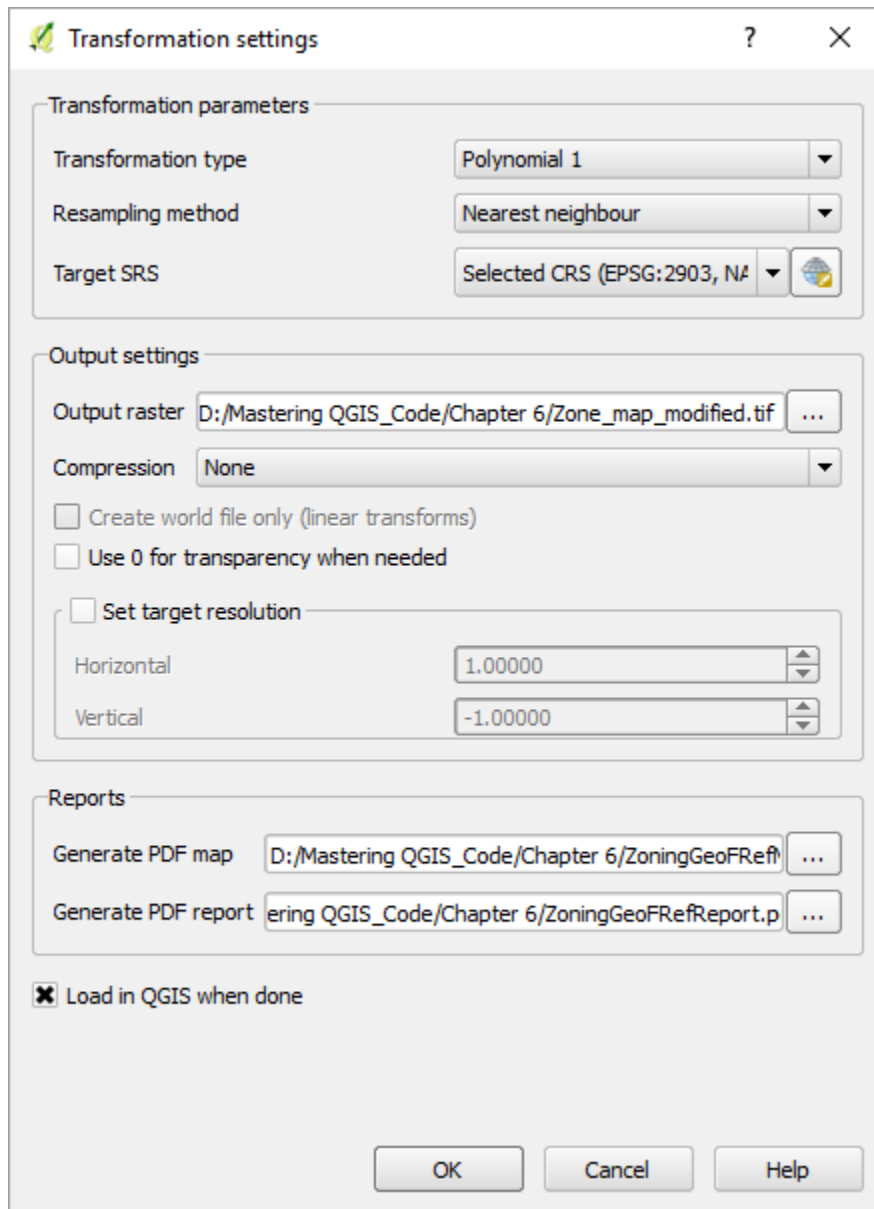
1 5 29

4

GCP table

on/off	id	srcX	srcY	dstX	dstY	dX[map units]	dY[map units]	residual[map units]
<input checked="" type="checkbox"/>	0	7532975.55	-1935414.15	1524608.32	1484404.47	-0.09	4.49	4.49
<input checked="" type="checkbox"/>	1	6274098.49	-8399918.00	1523925.76	1480815.95	-1.39	0.03	1.39
<input checked="" type="checkbox"/>	2	5780754.77	-5490891.27	1523645.13	1482436.21	1.46	-2.27	2.70
<input checked="" type="checkbox"/>	3	10850286.74	-6171365.35	1526449.40	1482056.68	-0.86	-6.42	6.47
<input checked="" type="checkbox"/>	4	11700879.35	-10356281.00	1526925.10	1479718.37	0.88	4.16	4.25

Transform: Polynomial 1 Mean error: 6.68678 9006038,-94503 EPSG:2903

The image shows a 'Transformation settings' dialog box with three main sections: Transformation parameters, Output settings, and Reports. The Transformation parameters section includes dropdown menus for Transformation type (Polynomial 1), Resampling method (Nearest neighbour), and Target SRS (Selected CRS (EPSG:2903, NA)). The Output settings section includes a text field for Output raster (D:/Mastering QGIS\_Code/Chapter 6/Zone\_map\_modified.tif), a dropdown for Compression (None), and checkboxes for 'Create world file only (linear transforms)', 'Use 0 for transparency when needed', and 'Set target resolution'. The 'Set target resolution' section has spinners for Horizontal (1.00000) and Vertical (-1.00000). The Reports section includes text fields for 'Generate PDF map' (D:/Mastering QGIS\_Code/Chapter 6/ZoningGeoRef) and 'Generate PDF report' (erding QGIS\_Code/Chapter 6/ZoningGeoRefReport.p), both with file selection buttons. A checked checkbox 'Load in QGIS when done' is at the bottom. At the very bottom are 'OK', 'Cancel', and 'Help' buttons.

**Transformation settings**

**Transformation parameters**

Transformation type: Polynomial 1

Resampling method: Nearest neighbour

Target SRS: Selected CRS (EPSG:2903, NA)

**Output settings**

Output raster: D:/Mastering QGIS\_Code/Chapter 6/Zone\_map\_modified.tif

Compression: None

Create world file only (linear transforms)

Use 0 for transparency when needed

Set target resolution

Horizontal: 1.00000

Vertical: -1.00000

**Reports**

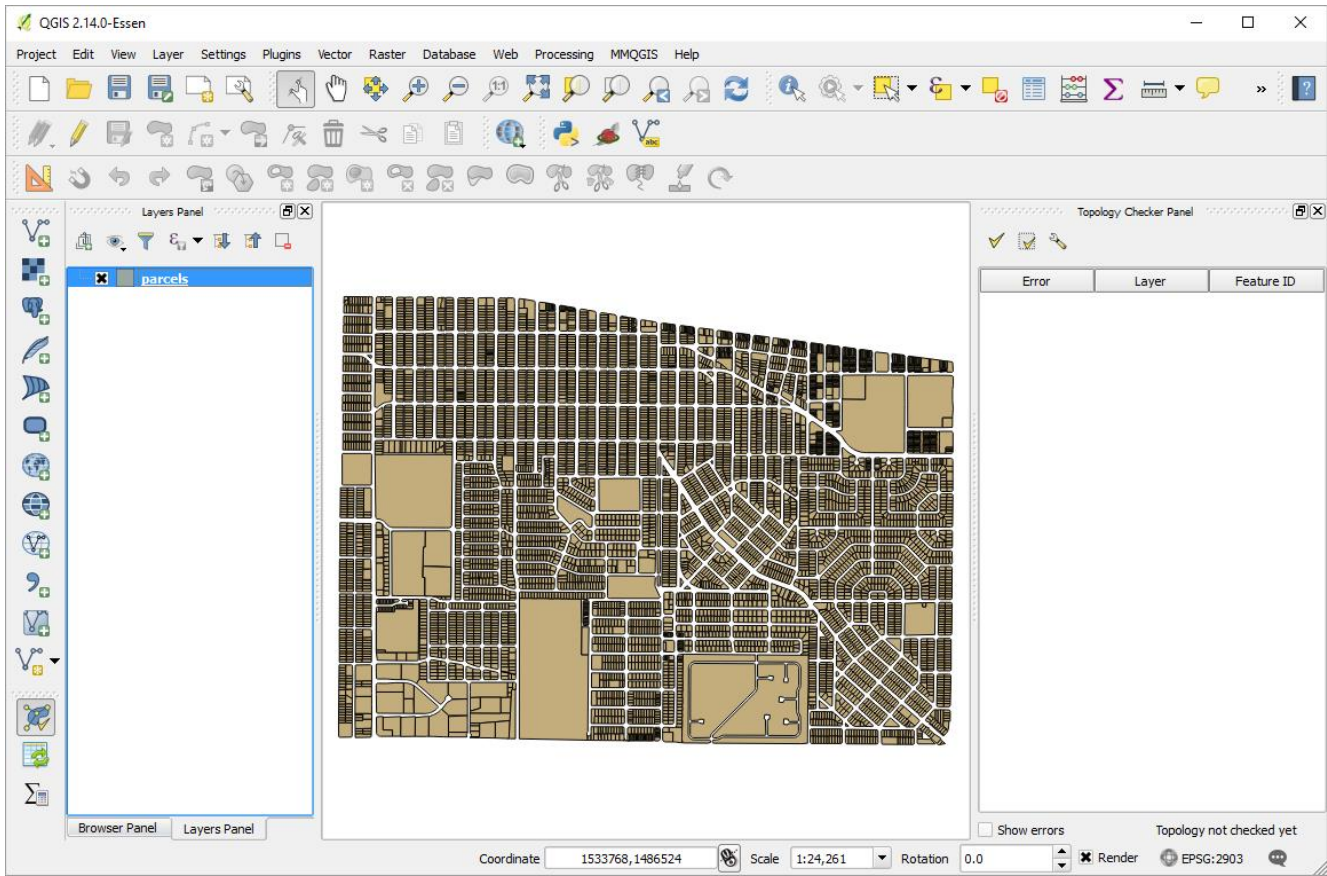
Generate PDF map: D:/Mastering QGIS\_Code/Chapter 6/ZoningGeoRef

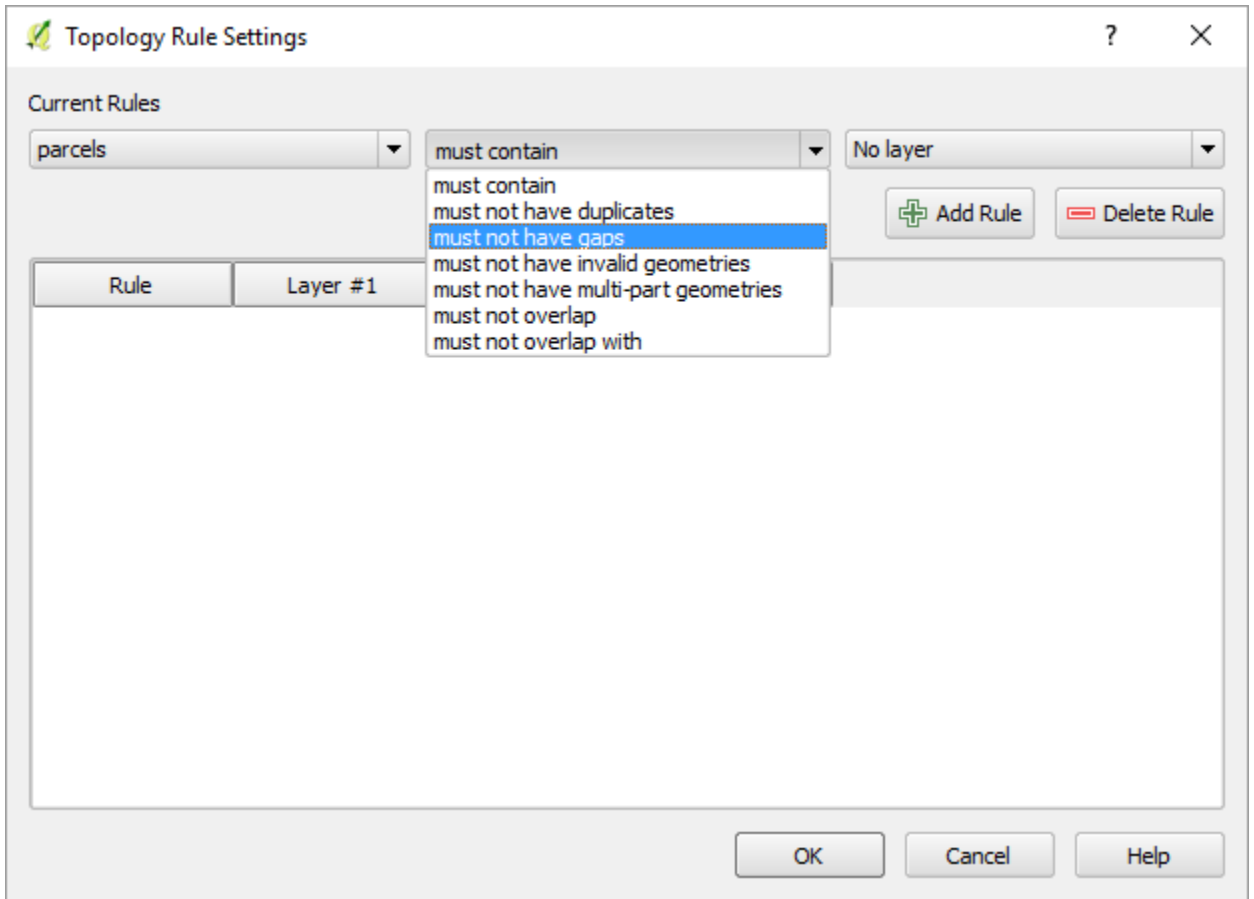
Generate PDF report: erding QGIS\_Code/Chapter 6/ZoningGeoRefReport.p

Load in QGIS when done

OK Cancel Help







Topology Rule Settings

? X

Current Rules




No layer [v] [v] No layer [v]

+ Add Rule - Delete Rule

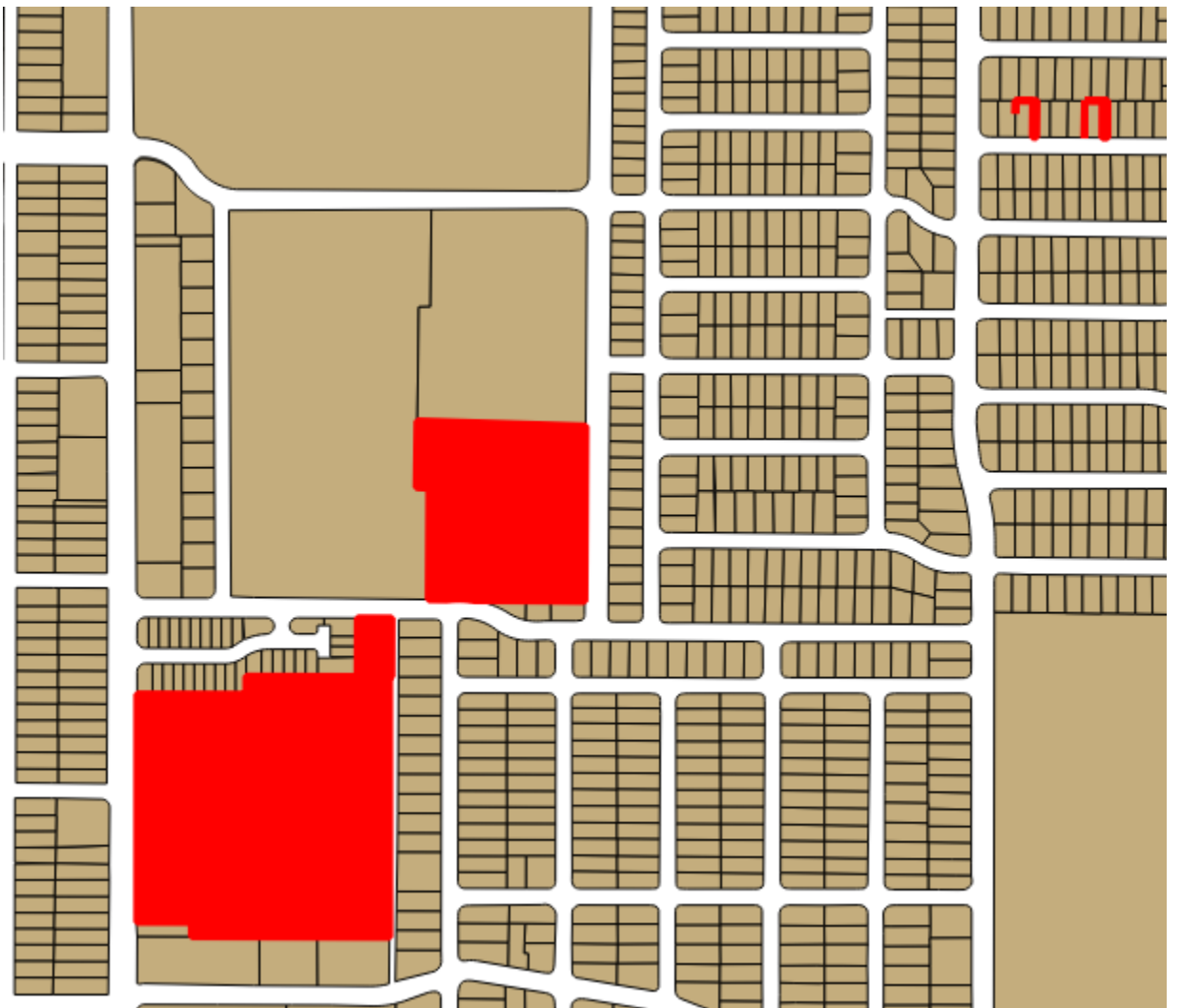
	Rule	Layer #1	Layer #2	Tolerance
1	must not have gaps	parcels	No layer	No tolerance
2	must not overlap	parcels	No layer	No tolerance
3	must not have duplicates	parcels	No layer	No tolerance

OK Cancel Help

Topology Checker Panel

	Error	Layer	Feature ID
0	gaps	parcels	0
1	gaps	parcels	0
2	gaps	parcels	0
3	gaps	parcels	0
4	gaps	parcels	0
5	gaps	parcels	0
6	overlaps	parcels	624
7	overlaps	parcels	1789
8	overlaps	parcels	2947
9	overlaps	parcels	2973
10	overlaps	parcels	3842
11	overlaps	parcels	4164
12	overlaps	parcels	5617
13	overlaps	parcels	5971
14	overlaps	parcels	6442
15	duplicate geometry	parcels	1154
16	duplicate geometry	parcels	6930



Attribute table - parcels :: Features total: 6970, filtered: 2, selected: 2

abc LOT = € [ ] Update Filtered Update Selected

	LOT	BLOCK	SUBDIVISIO	STREETNUMB	STREETNAME	STREETDESI
1154	2A1	0000	CACTUS/SHALIT PARCEL	1700	YALE	BLVD
6968	2A1	0000	CACTUS/SHALIT PARCEL	1700	YALE	BLVD

Show Selected Features

Snapping options

Snapping mode: Advanced

Layer	Mode	Tolerance	Units	Avoid intersections
parcels	to vertex and segment	10.00000	map units	<input type="checkbox"/>

Enable topological editing
  Enable snapping on intersection

- Map Tools
- Composer
- Digitizing
- GDAL
- CPC

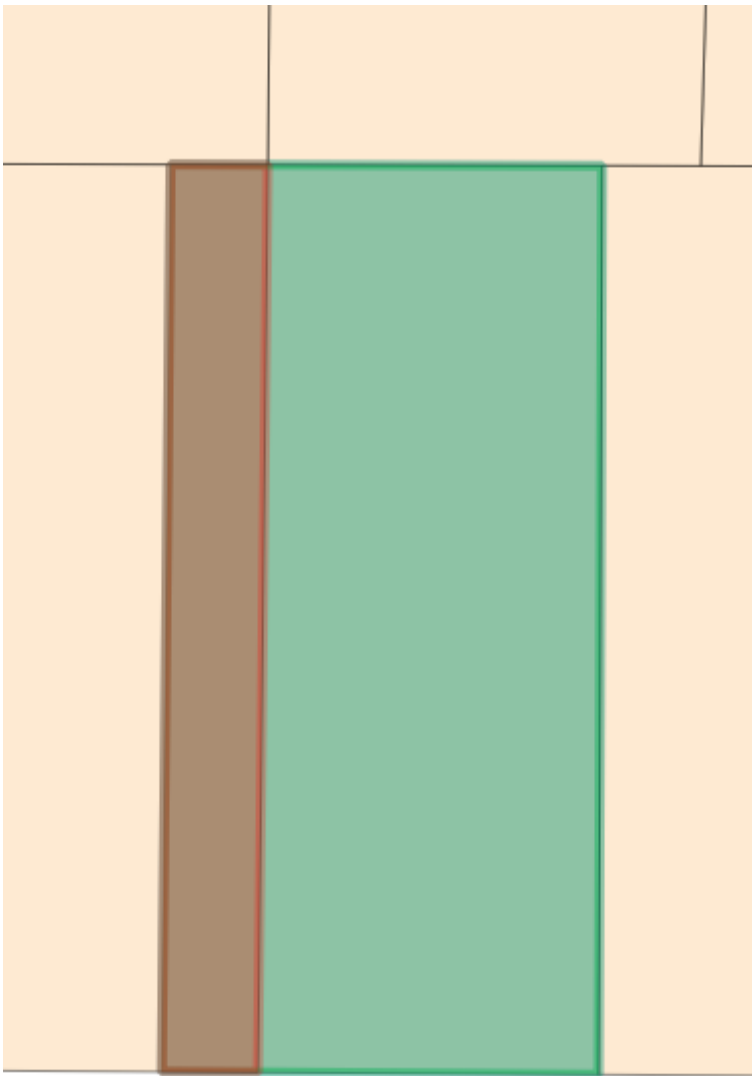
Snapping

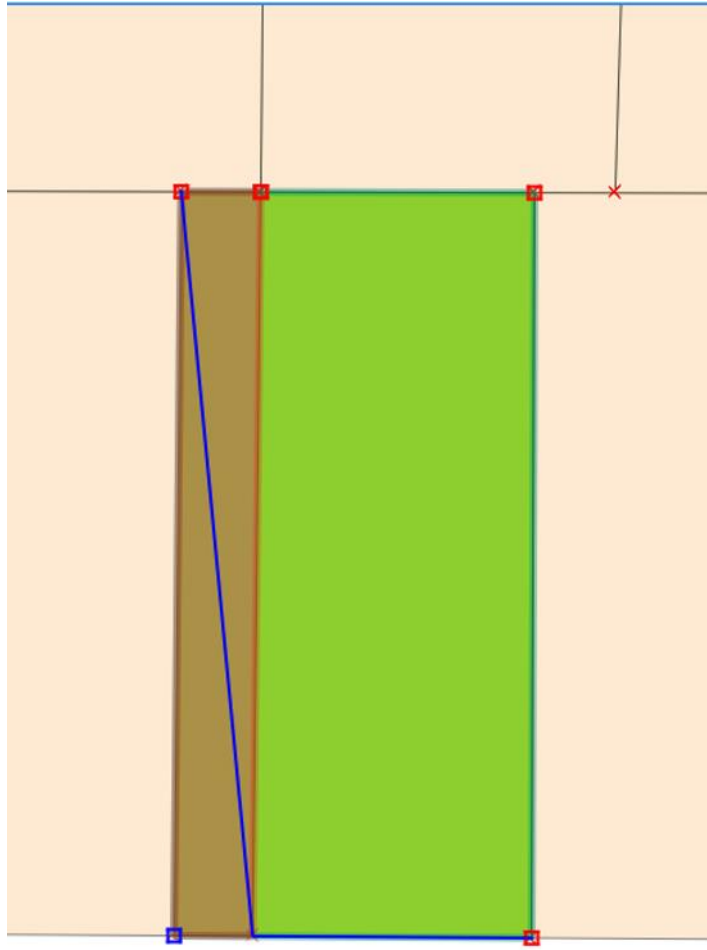
Open snapping options in a dock window (QGIS restart required)

Default snap mode: Off

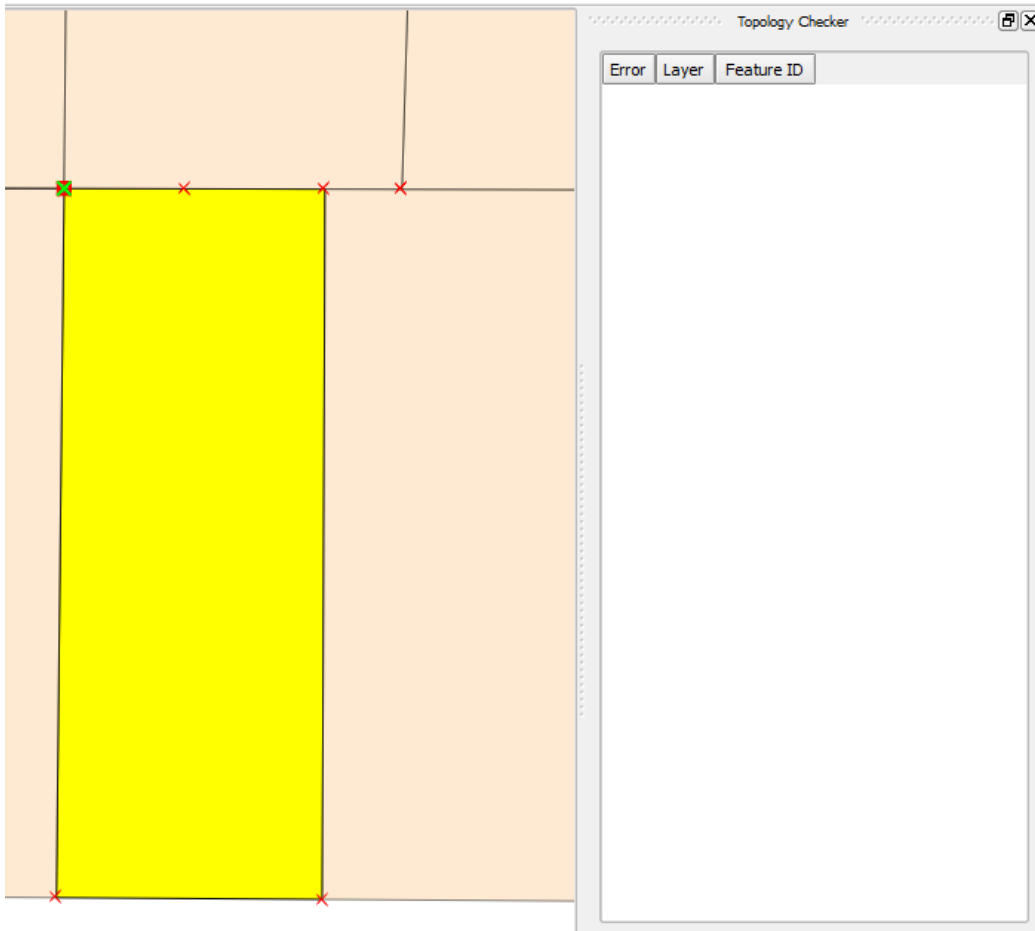
Default snapping tolerance: 0.00000

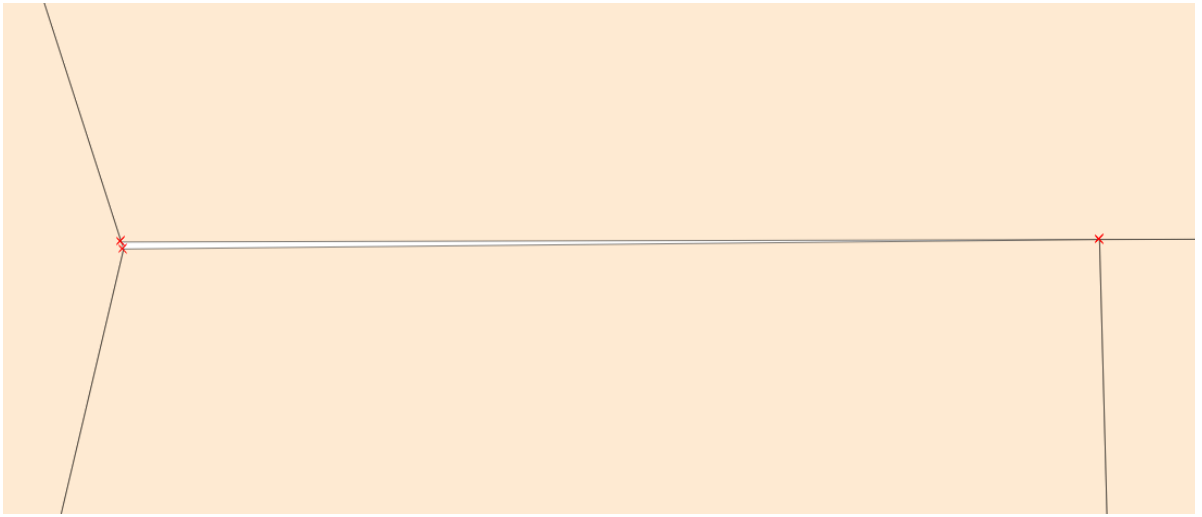
Search radius for vertex edits: 10.00000



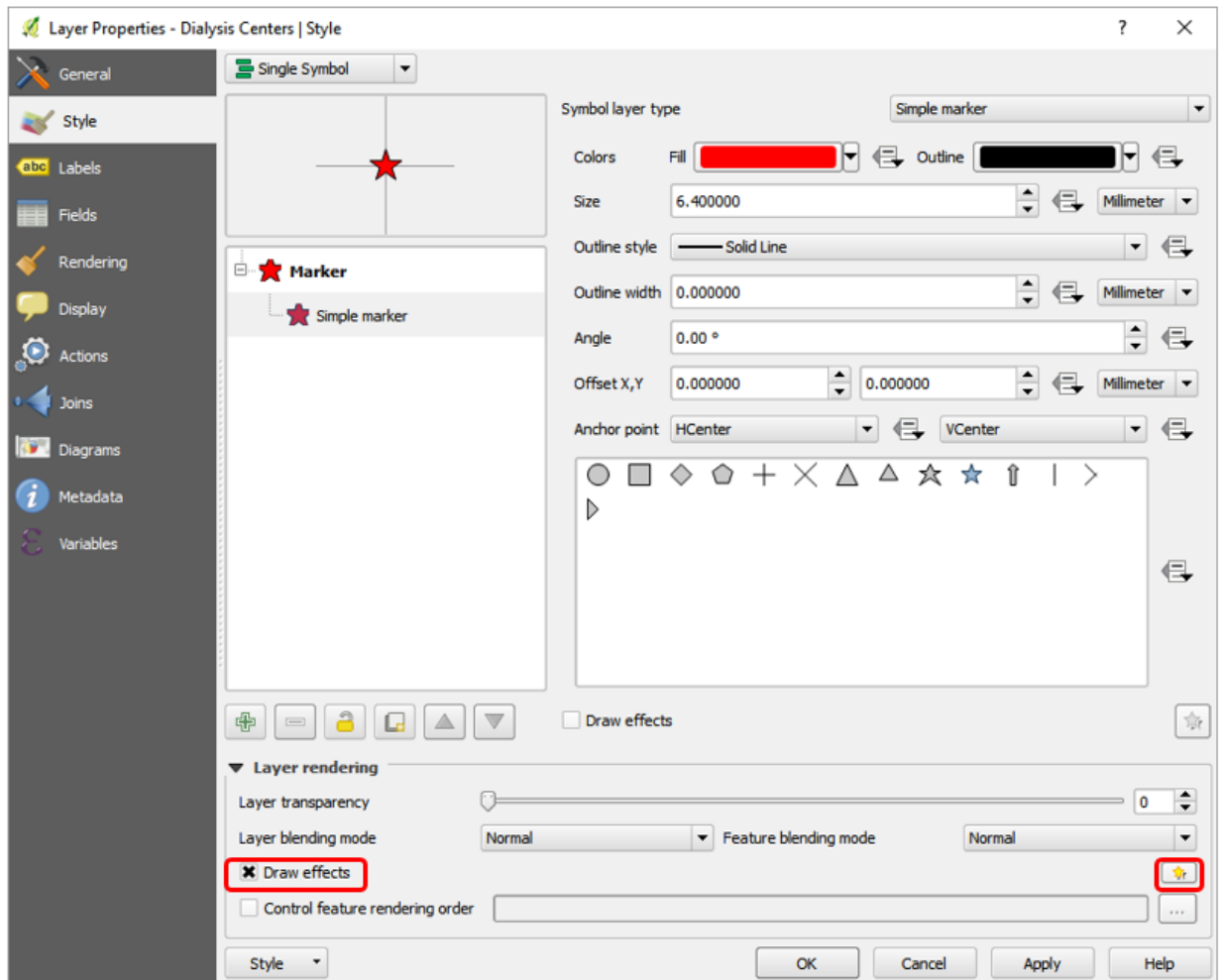








## Chapter 7 – Advanced Data Visualization



Effect Properties



- Inner Glow
- Inner Shadow
- Source
- Outer Glow
- Drop Shadow



Effect type

- Inner Glow
- Blur**
- Colorise
- Source
- Drop Shadow
- Inner Glow
- Inner Shadow
- Outer Glow
- Transform

Spread

2.0000

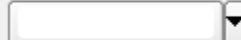
Blur radius

3

Transparency



Single color



Color ramp



Edit

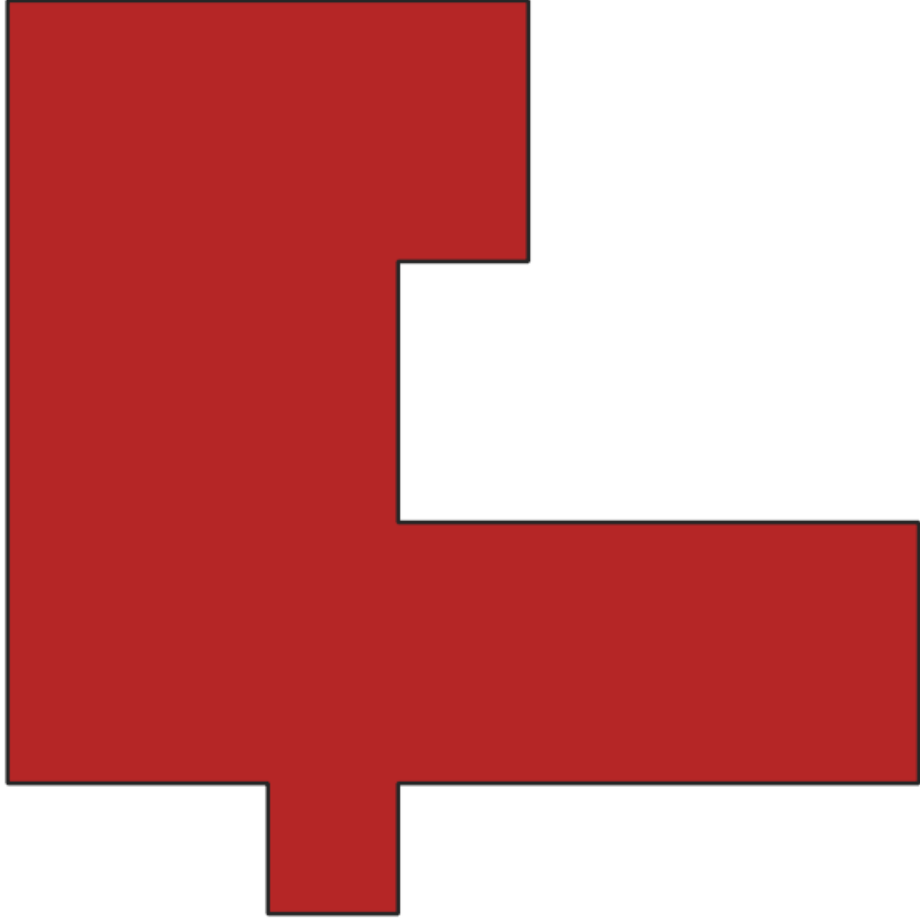
Blend mode

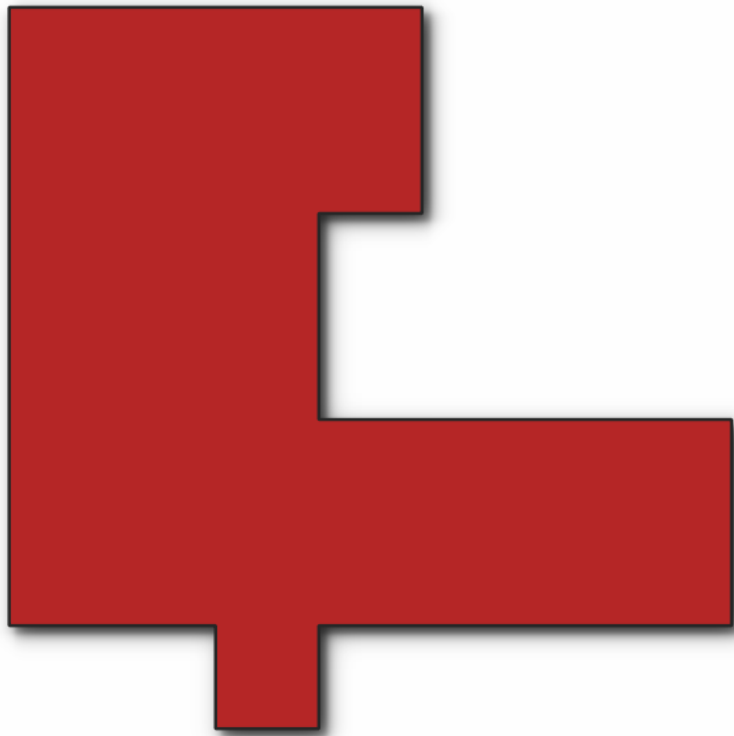
Normal

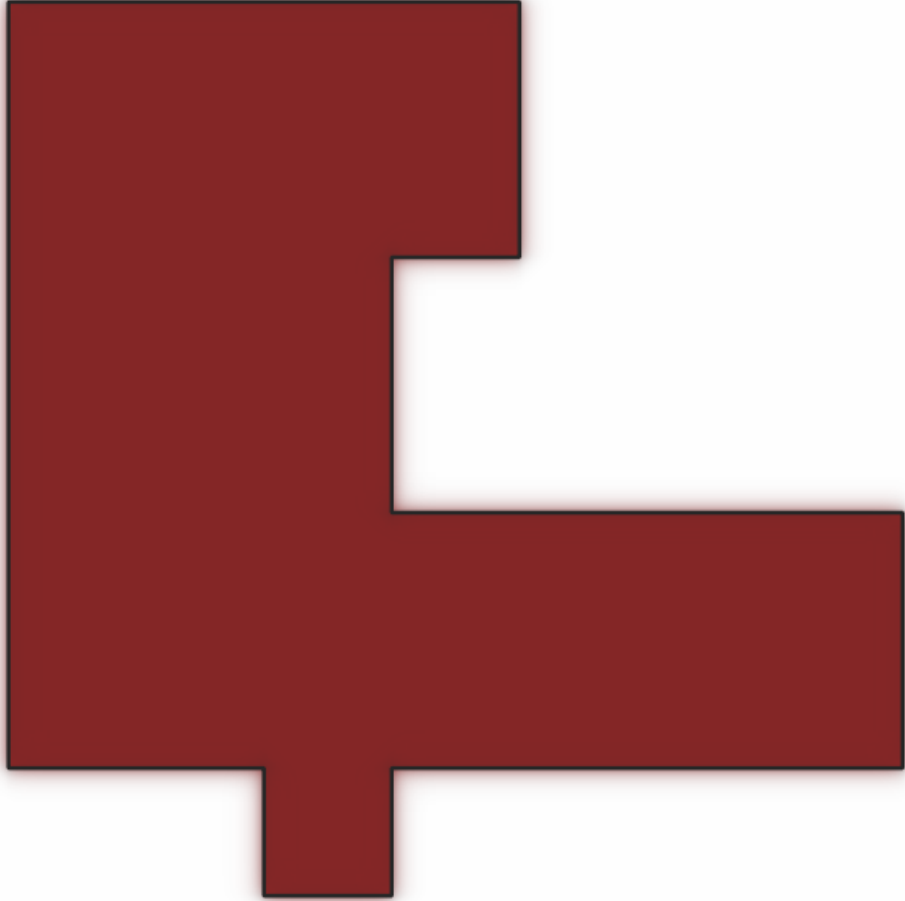
Draw mode

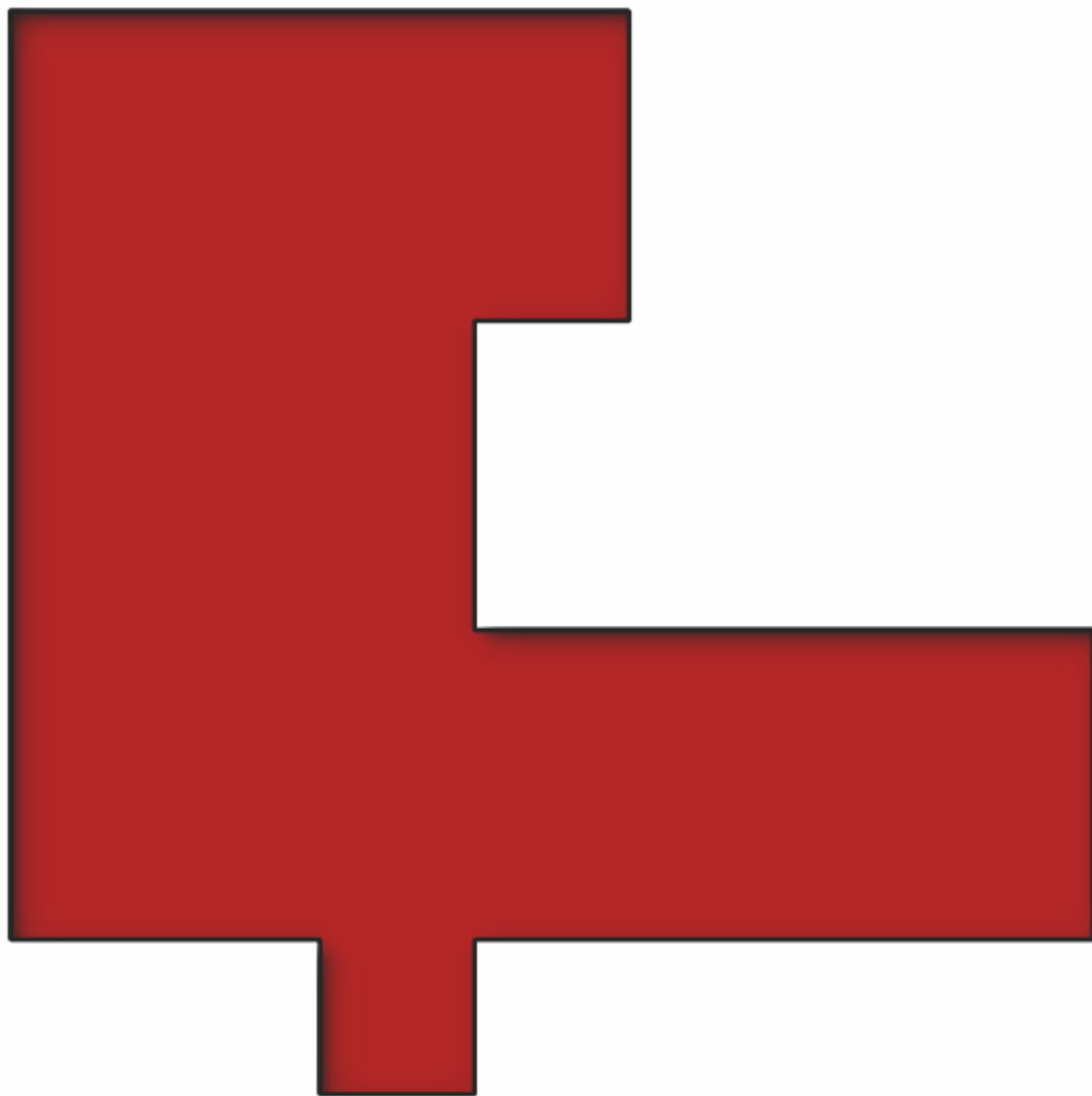
Render and modify

OK Cancel

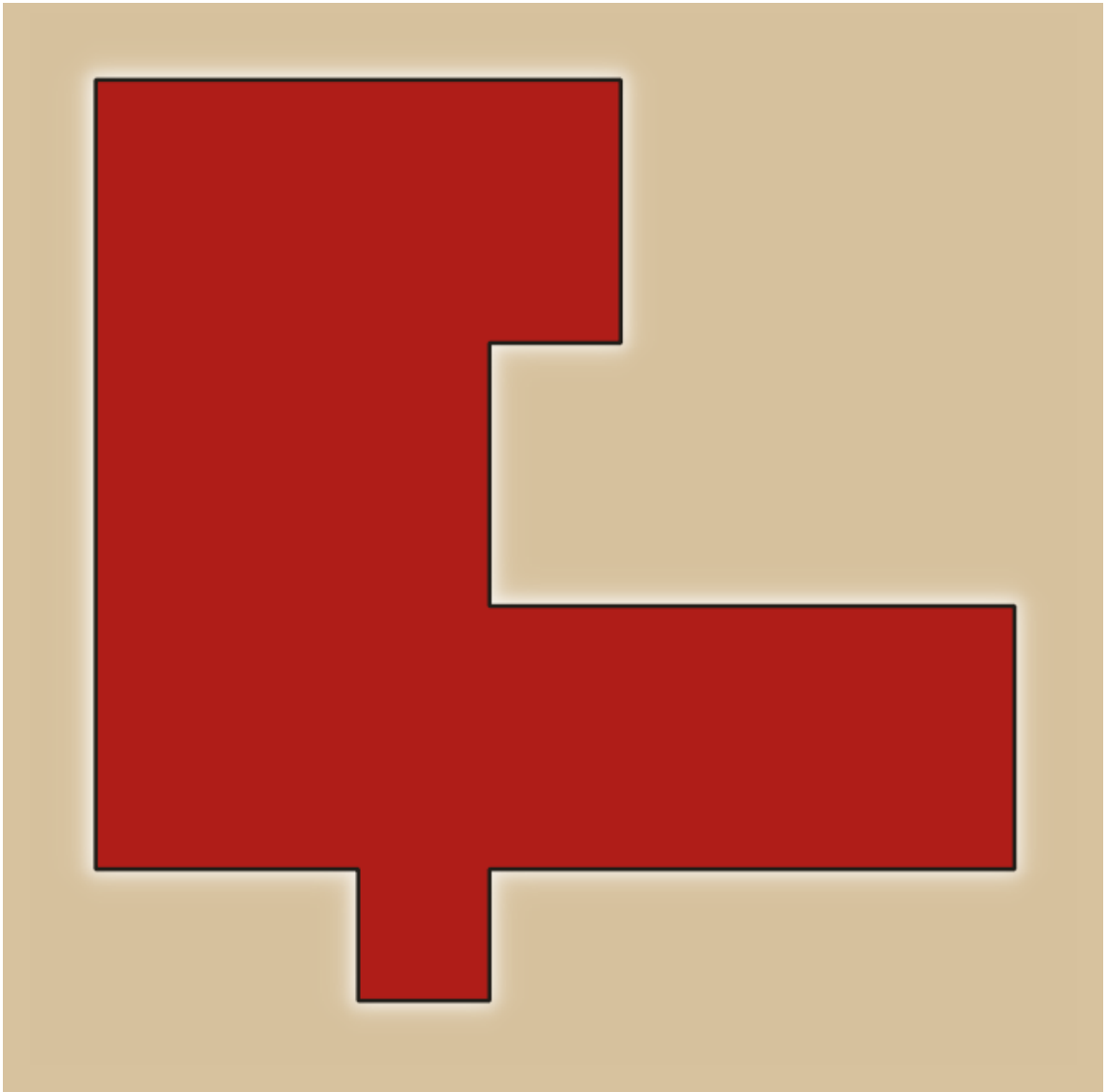


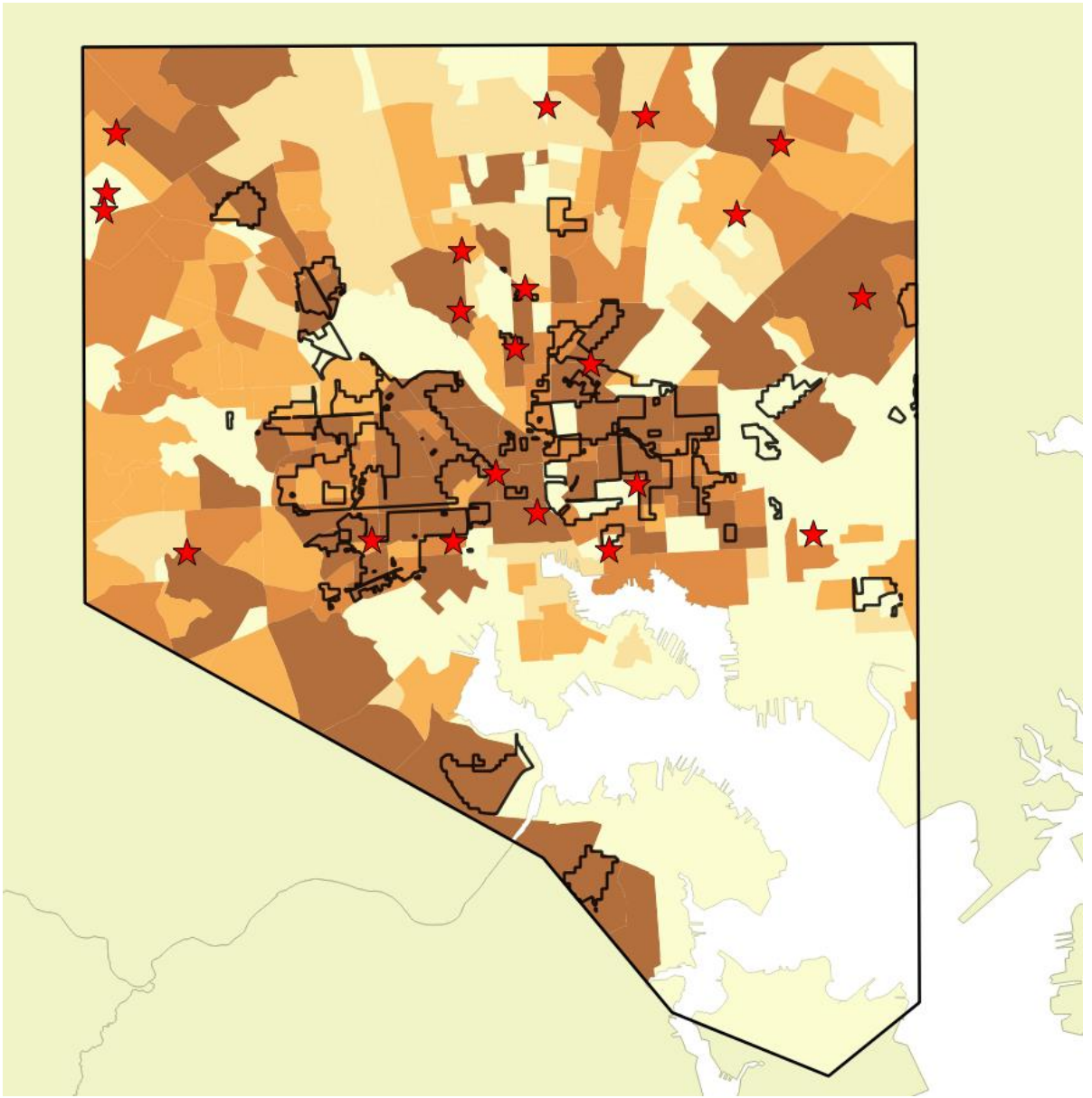












Layer Properties - MD\_County\_boundaries copy | Style


General **Inverted Polygons**

Style

Sub renderer: **Single Symbol**

Merge polygons before rendering (slow)

Symbol layer type: **Outline: Simple line**

Color: 

Pen width:  **Millimeter**

Offset:  **Millimeter**

Pen style: **Solid Line**

Join style: **Bevel**

Cap style: **Square**

Use custom dash pattern **Change** **Millimeter**

Draw line only inside polygon

Draw effects

**Layer rendering**

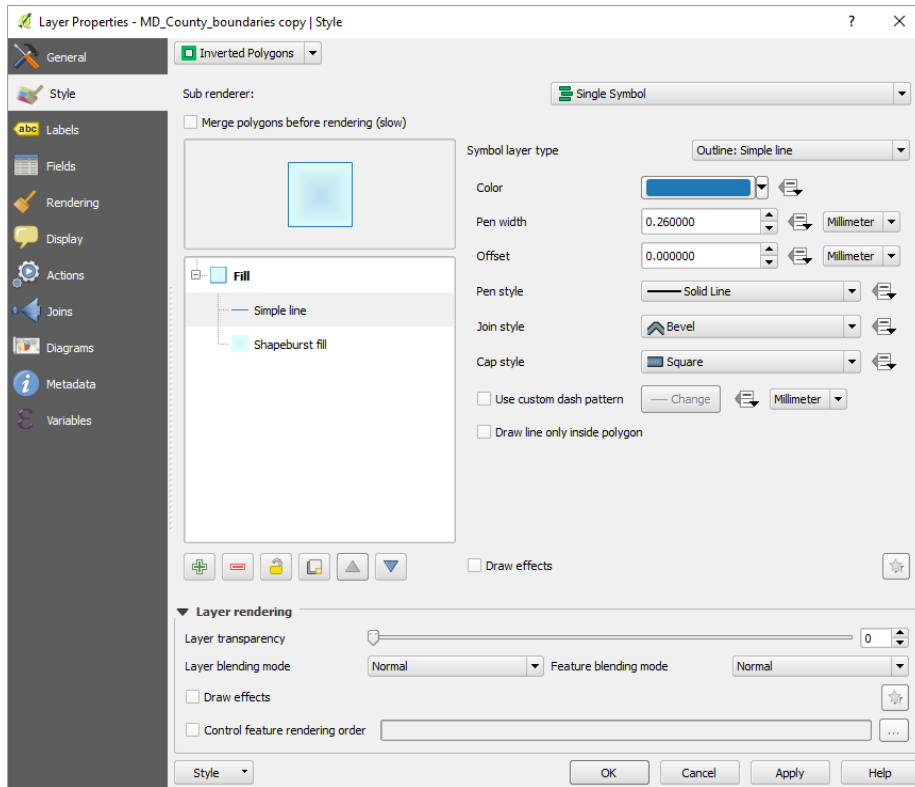
Layer transparency:

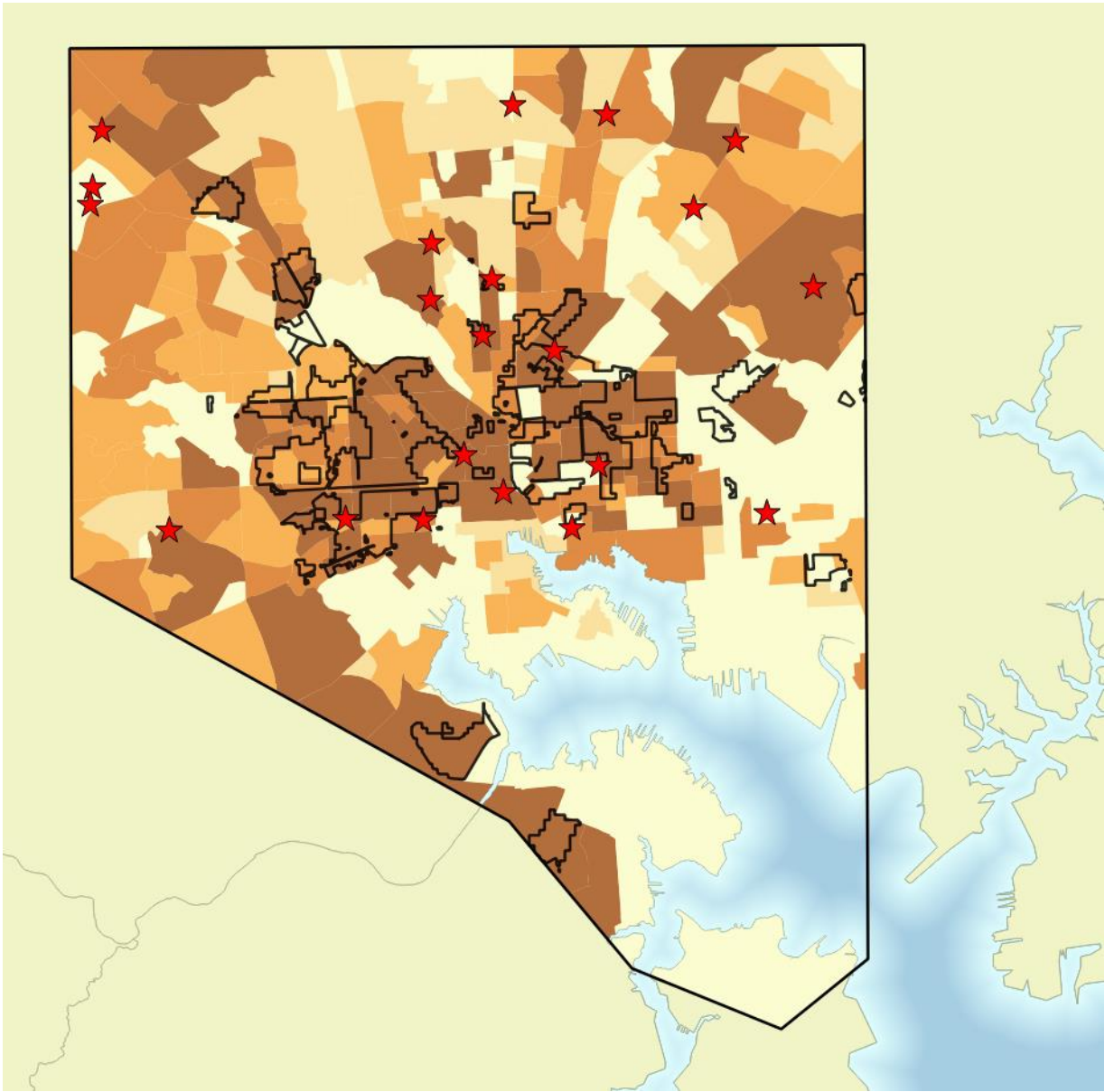
Layer blending mode: **Normal** Feature blending mode: **Normal**

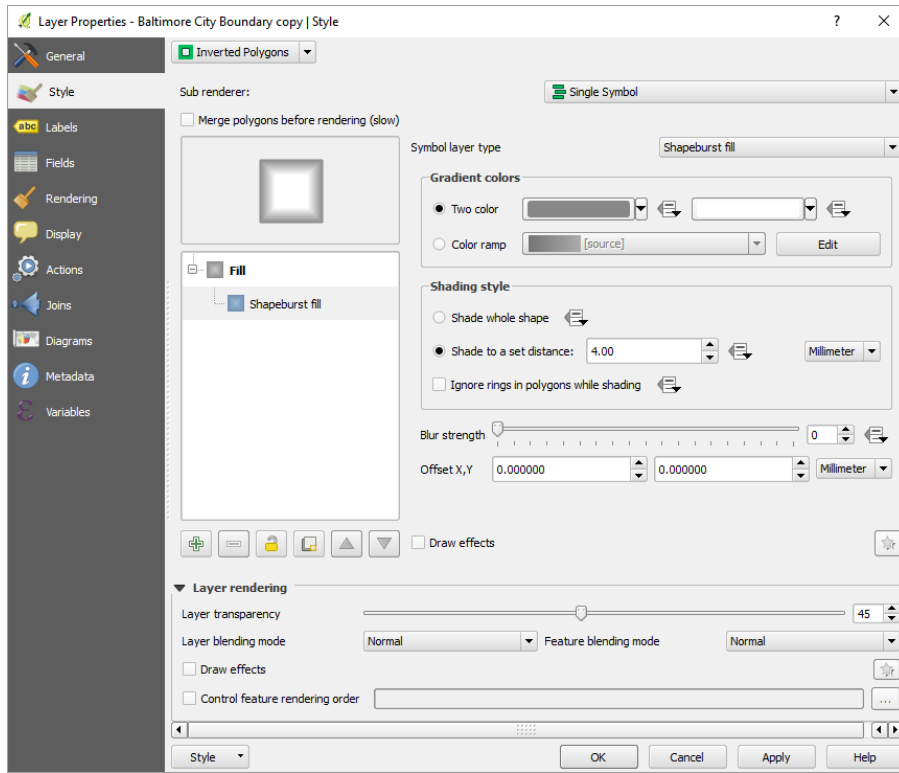
Draw effects

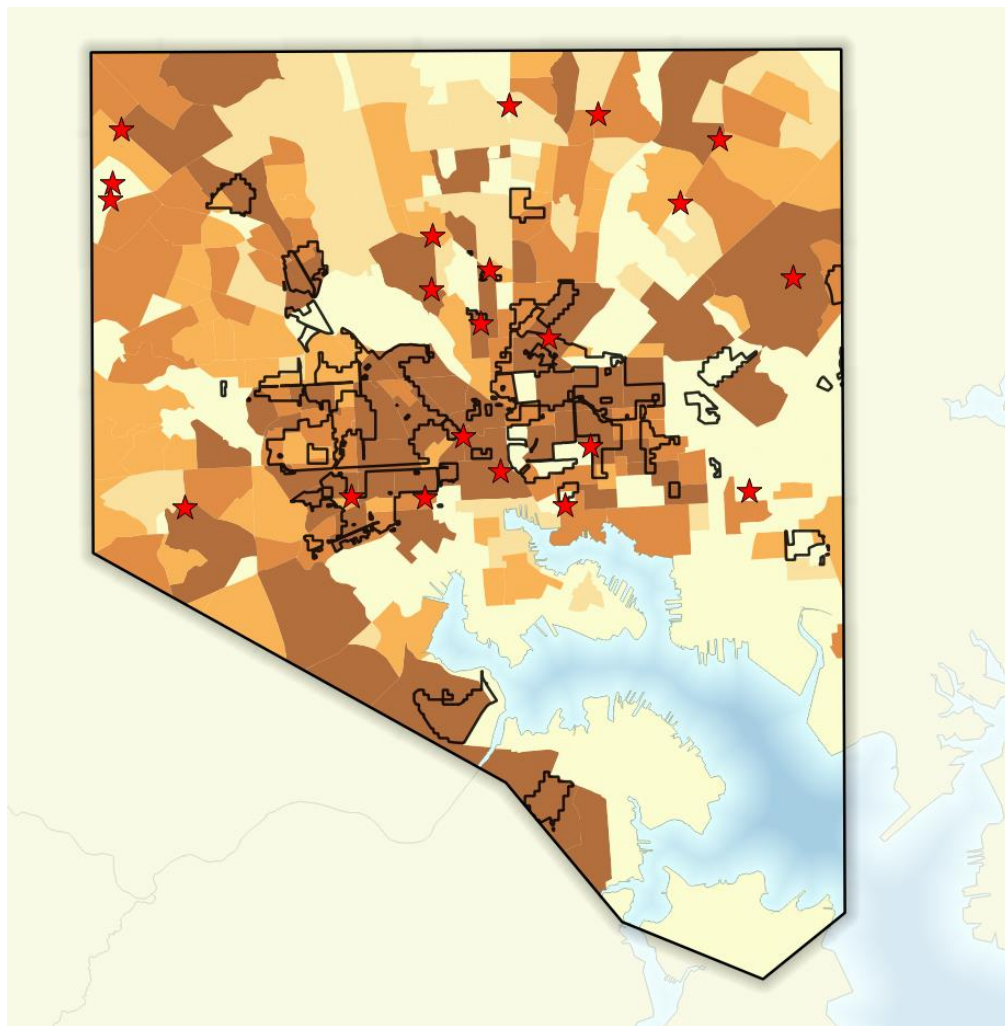
Control feature rendering order

Style **OK** **Cancel** **Apply** **Help**









Layer Properties - lower\_manhattan\_buildings | Style

2.5 D

General

Style

Height NUM\_FLOORS\* #4

Angle 70°

Advanced Configuration

Roof Color

Wall Color

Shade walls based on aspect

Shadow

Color

Size 4.00

**Advanced Styling**

This page helps to configure the 2.5D effect as easily as possible with some basic parameters.

Once you have finished the basic styling, you can convert this to another renderer (single, categorized, graduated) and fine-tune the appearance to your liking.

**Overlay problems**

Features are rendered based on their distance to the camera. It is sometimes possible that parts of a feature are in front of another feature by mistake. This happens if any part of the overlapped feature is closer to the camera than the overlapping feature.

In such cases you can avoid rendering problems by cutting the feature in front into smaller pieces.

Layer rendering

Layer transparency 0

Layer blending mode Normal Feature blending mode Normal

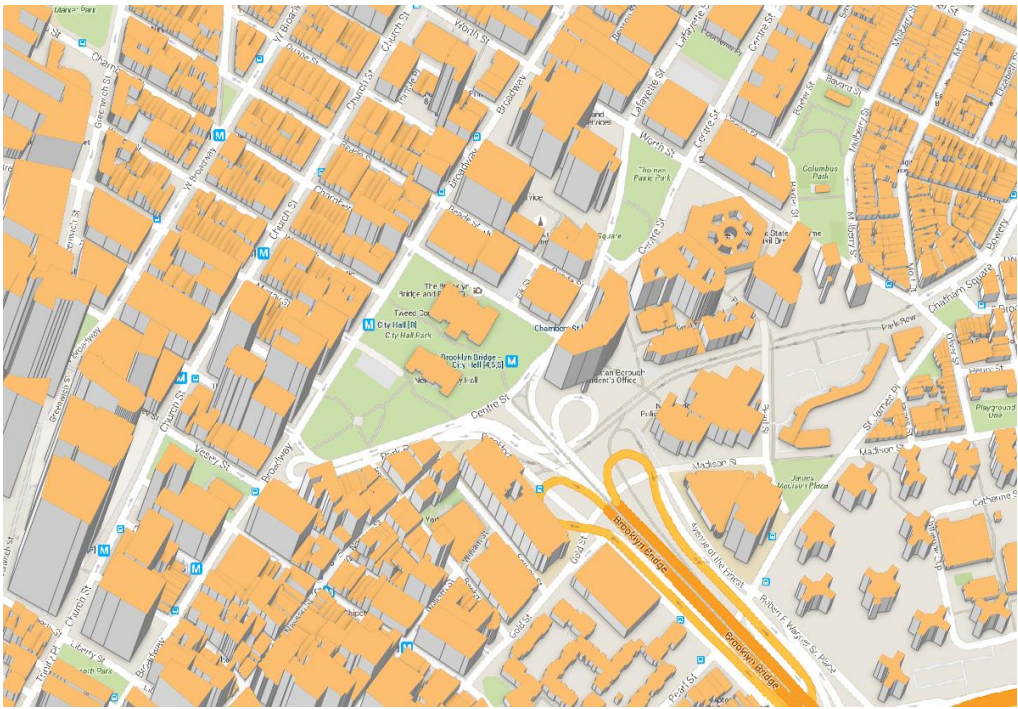
Draw effects

Control feature rendering order @map\_extent\_width \* sin( radians( @qgis\_25d\_angle + 180 ) ) DESC NULLS FIRST

Style

OK Cancel Apply Help







Layer Properties - lower\_manhattan\_buildings | Style

General

Style

Labels

Fields

Rendering

Display

Actions

Joins

Diagrams

Metadata

Variables

Graduated

Column: 1.2 NUM\_FLOORS

Symbol: Change...

Legend Format: %1 - %2 Precision: 0 Trim:

Method: Color

Color ramp: [source] Edit  Invert

Classes Histogram

Mode: Equal Interval Classes: 5 Classify

Symbol	Values	Legend
<input checked="" type="checkbox"/>	0.00 - 20.80	0.0000 - 20.8000
<input checked="" type="checkbox"/>	20.80 - 41.60	20.8000 - 41.6000
<input checked="" type="checkbox"/>	41.60 - 62.40	41.6000 - 62.4000
<input checked="" type="checkbox"/>	62.40 - 83.20	62.4000 - 83.2000
<input checked="" type="checkbox"/>	83.20 - 104.00	83.2000 - 104.0000

Add class Delete Delete all  Link class boundaries

Advanced

Layer rendering

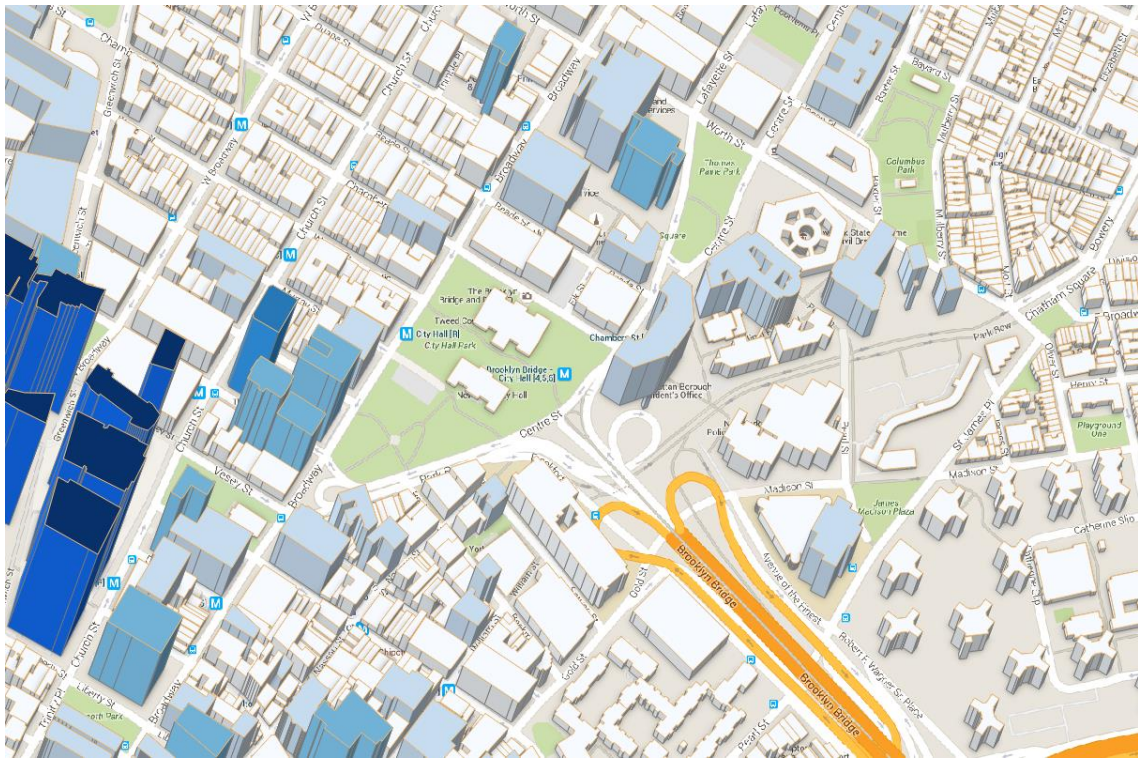
Layer transparency: 0

Layer blending mode: Normal Feature blending mode: Normal

Draw effects

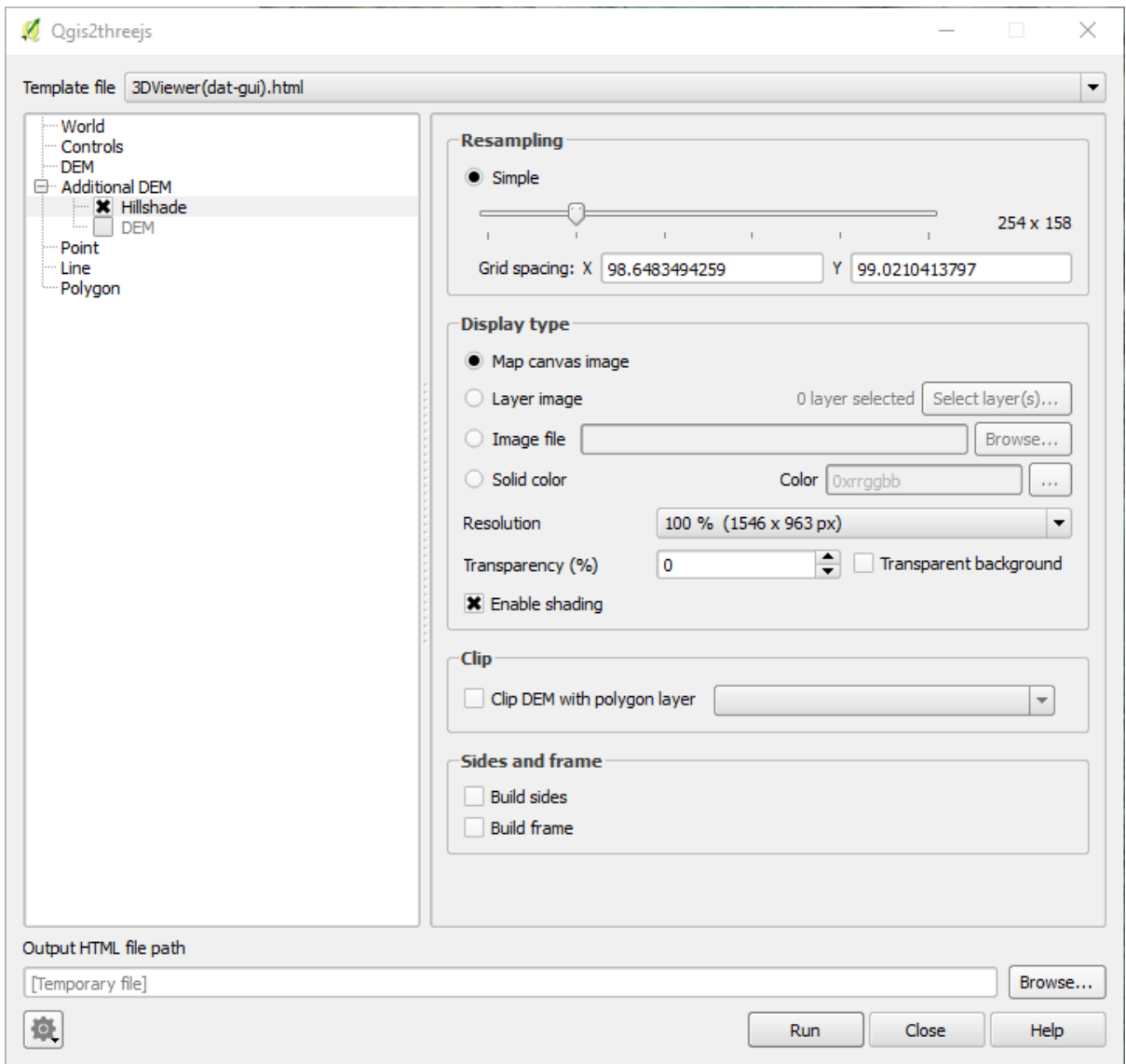
Control feature rendering order: @map\_extent\_width \* sin( radians( @qgis\_25d\_angle + 180 ) ) ) DESC NULLS FIRST

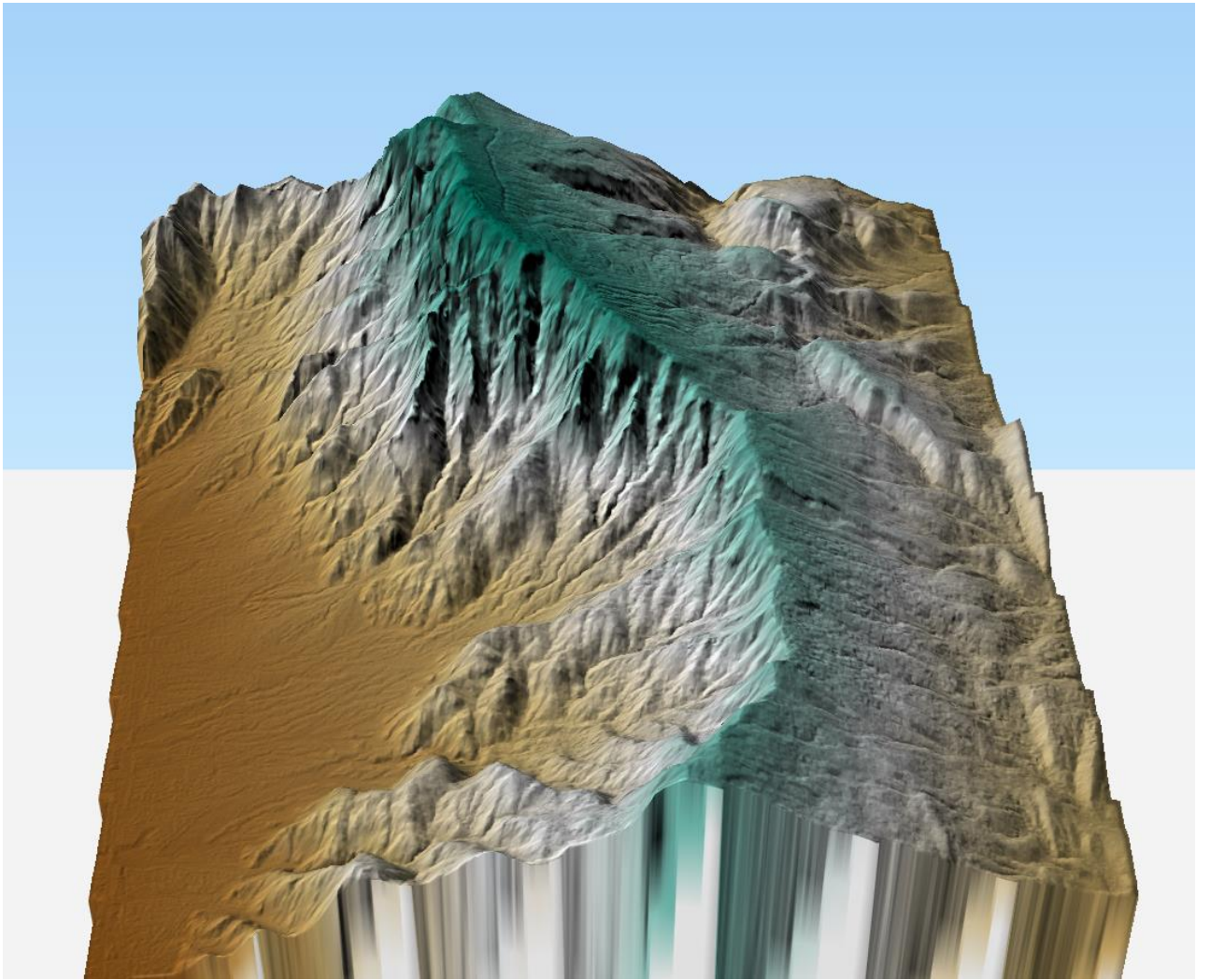
Style OK Cancel Apply Help



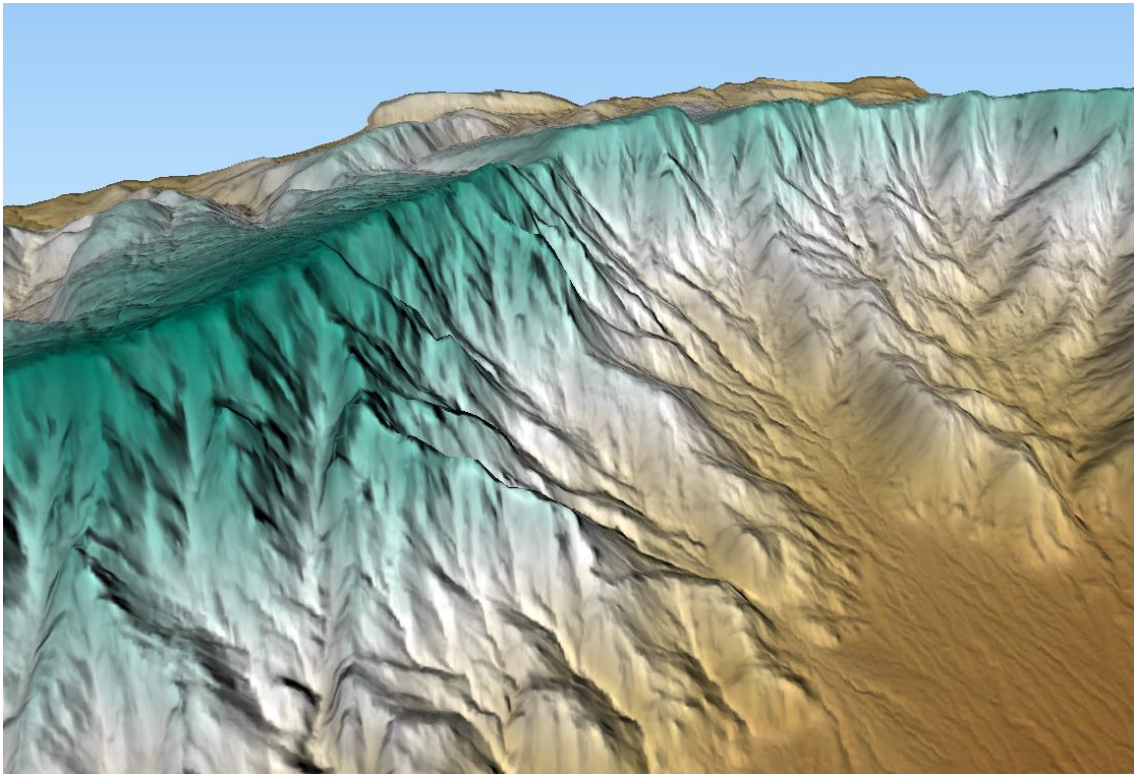
**Define order** ? X

	Expression	Asc / Desc	NULLS handling
1	$\_25d\_angle + 180$ ), $1000 * @map\_extent\_width * \sin(\text{radians}( @qgis\_25d\_angle + 180 ))$ )	Descending	NULLS first
2		Ascending	NULLS last









Layers

DEM

Visible

Sides and bottom

Opacity  1

Hillshade

Visible

Opacity  1

Custom Plane

Color #ffffff

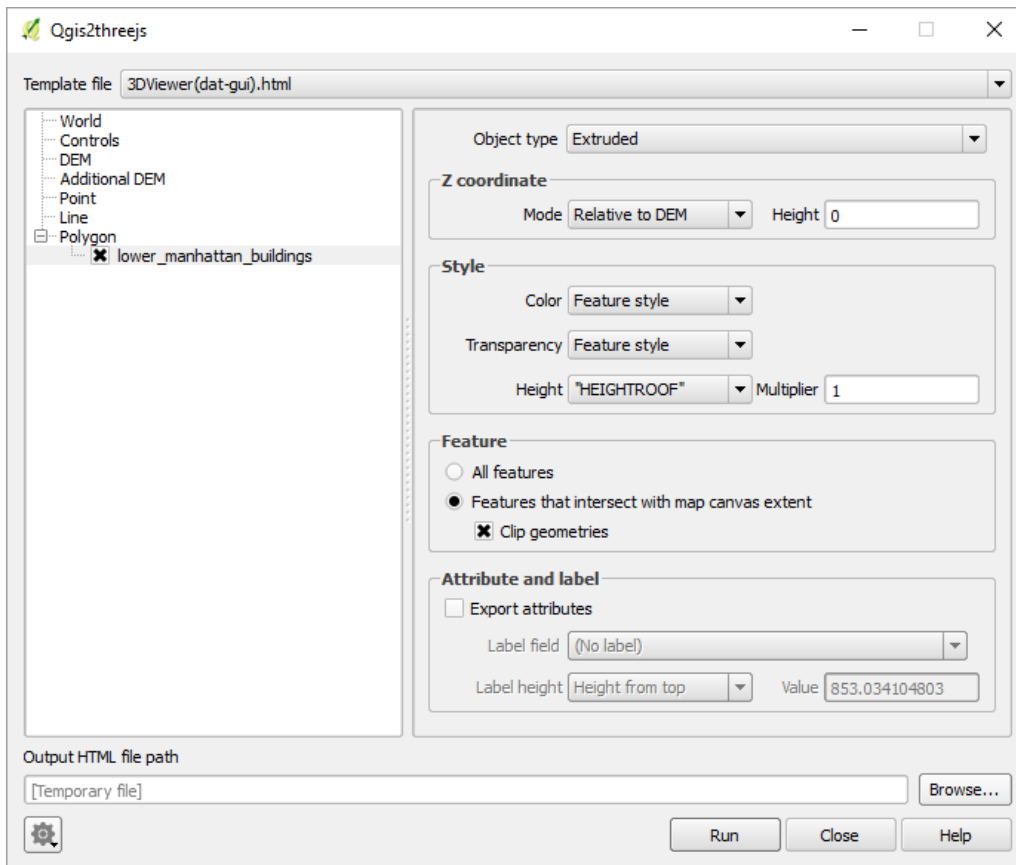
Plane height -500

Opacity (0-1)  1


Enlarge

Help

Close Controls





 Qgis2threejs

Template file 3DViewer(dat-gui).html

World  
Controls  
DEM  
Additional DEM  
Point  
Line  
Polygon  
  NYC\_buildings

Controls OrbitControls.js

OrbitControls

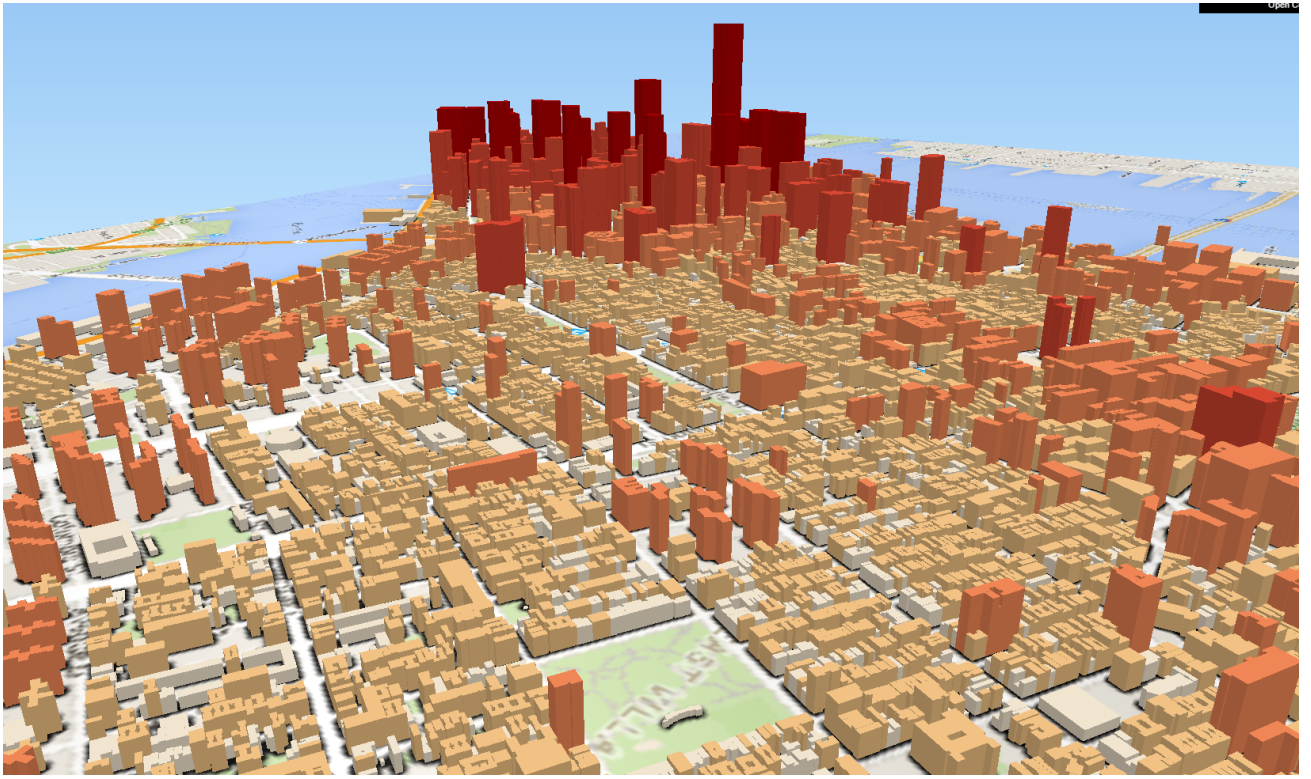
\* Mouse  
Left button + Move : Orbit  
Middle button + Move : Zoom  
Right button + Move : Pan

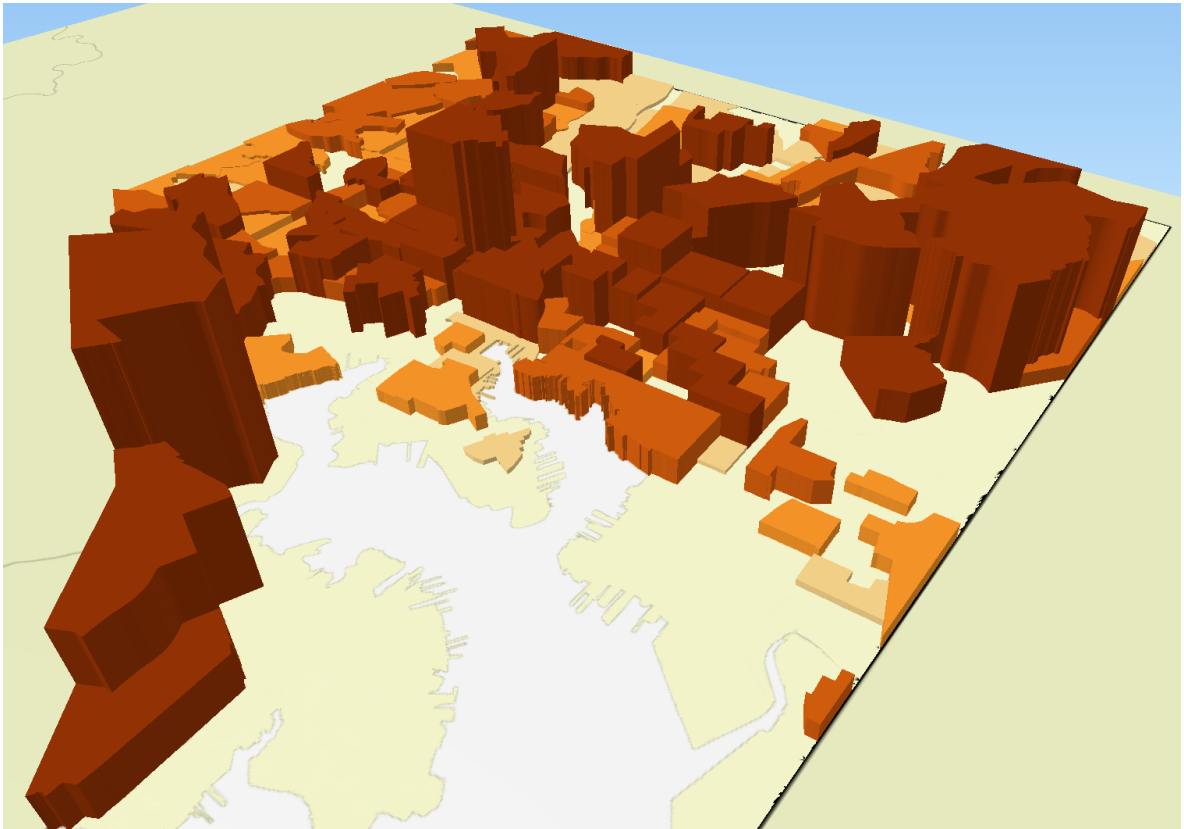
\* Keys  
Arrow keys : Move Horizontally  
Shift + Arrow keys : Orbit  
Ctrl + Arrow keys : Rotate  
Shift + Ctrl + Up / Down : Zoom In / Out

R : Auto Rotate On / Off  
U : Switch Upside Down (controls are also reversed)

I : Show Information About Page  
L : Toggle Label Visibility  
W : Wireframe Mode  
Shift + R : Reset View  
Shift + S : Save Image







Composition   Item properties   Atlas generation

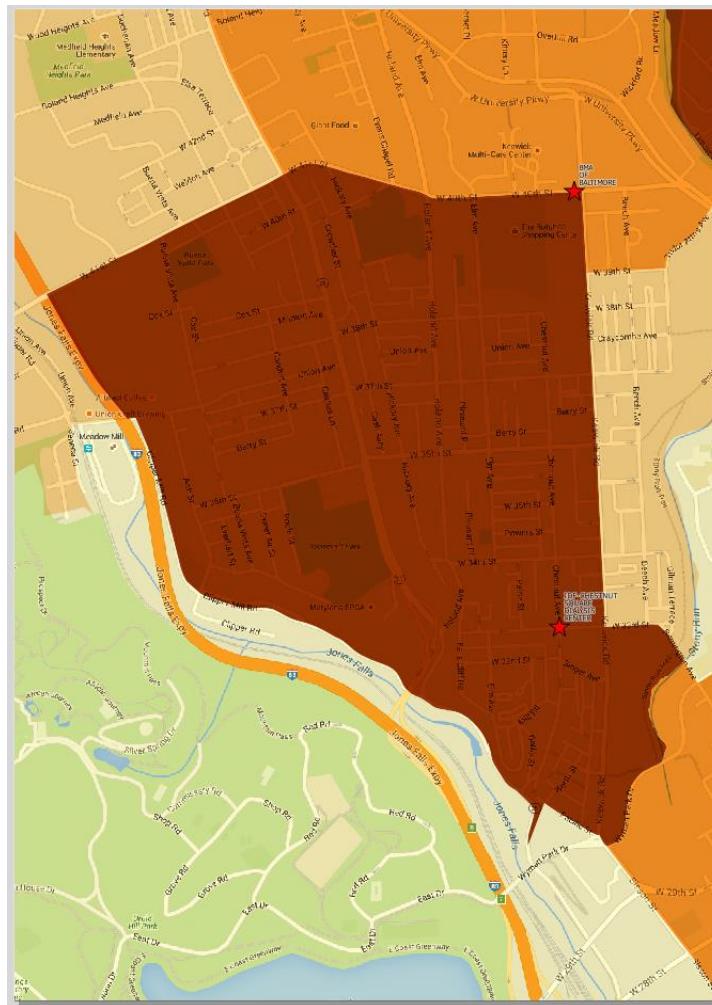
Atlas generation

Generate an atlas

▼ Configuration

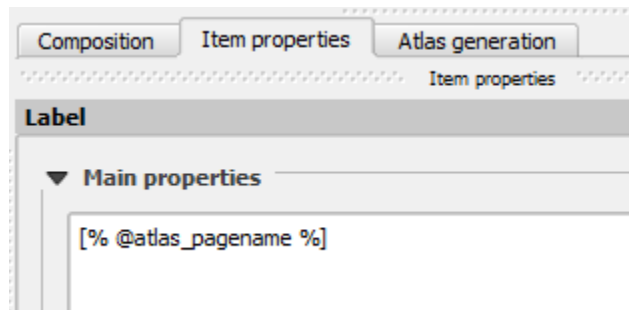
Coverage layer

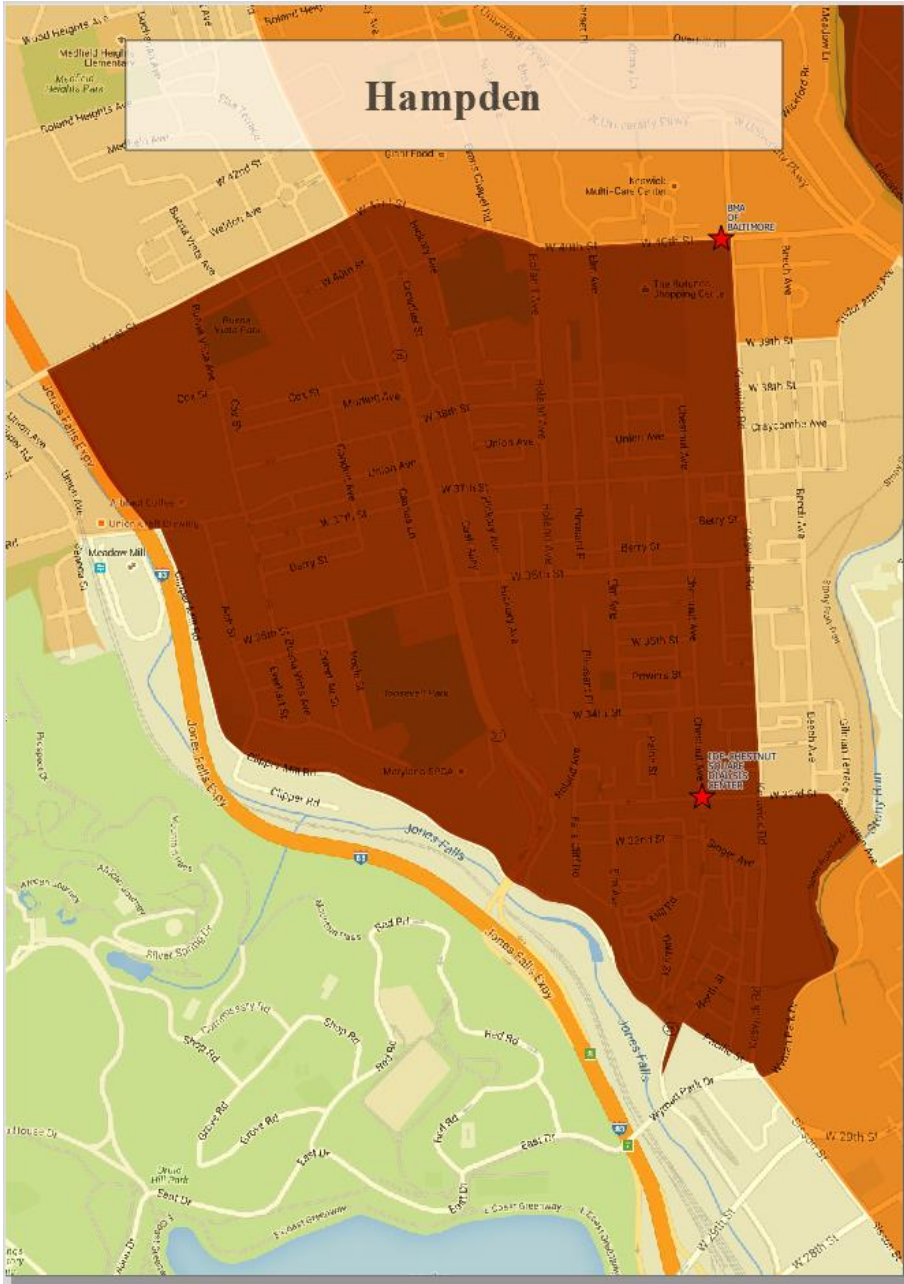
Navigation toolbar: Home, Previous, 2, Next, Print, Save, Help



▼ Variables







Variable	Value
▼ Atlas	
atlas_feature	
atlas_featureid	0
atlas_featurenumber	1
atlas_filename	output_1
atlas_geometry	
atlas_pagename	Abell
atlas_totalfeatures	271






**Legend items**

Auto update

-  **Baltimore Neighborhood**
-  **Baltimore City Boundary**
-  **Dialysis Centers**
-  **Food Deserts**
-  **Diabetes by Neighborhood**  
 105 - 272

Only show items inside current atlas feature

 **Rule properties**

Label

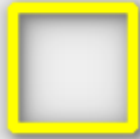
Filter

Description

**Scale range**

Minimum (exclusive)

**Symbol**



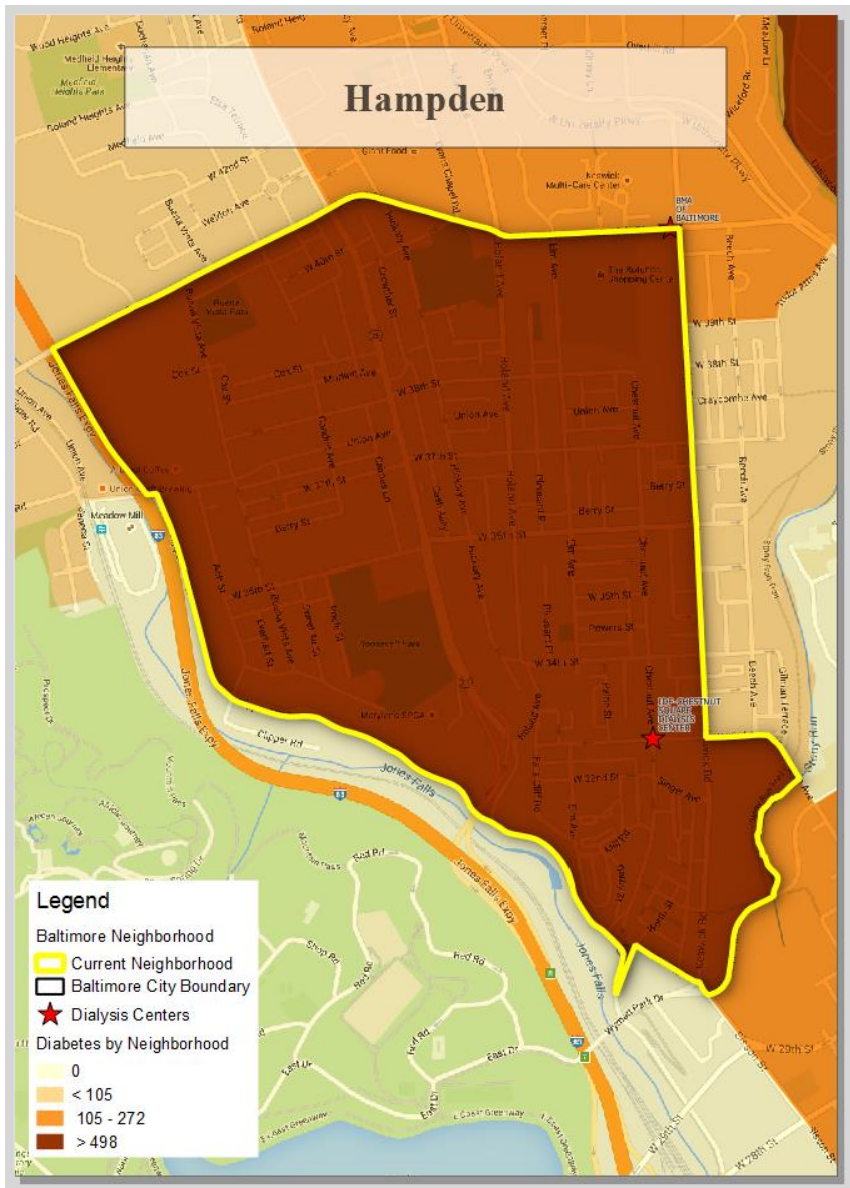
Unit

Transparency 0%

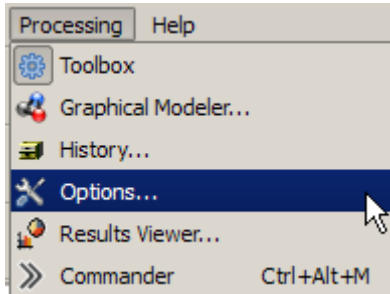
Color

Symbols in group

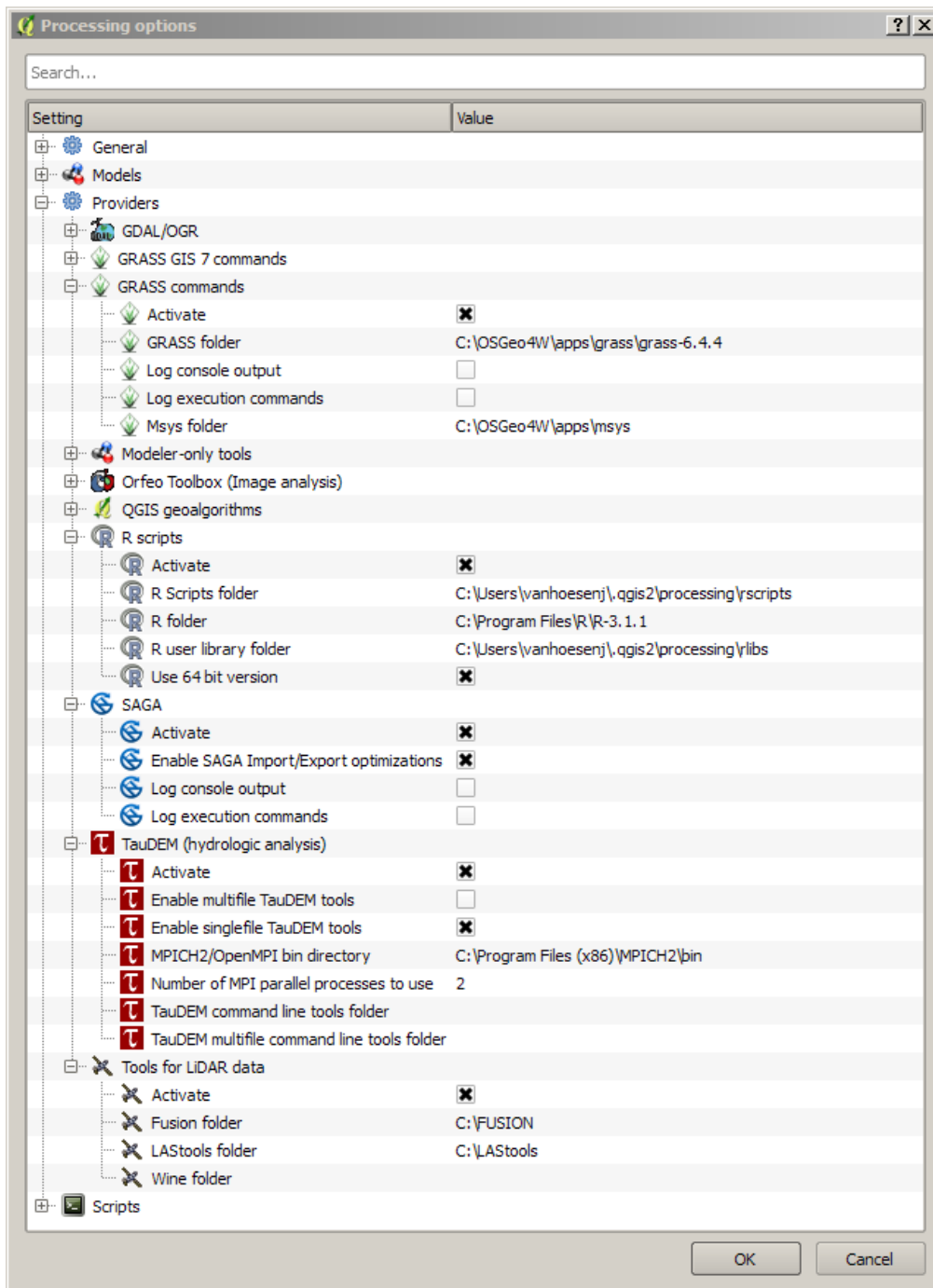


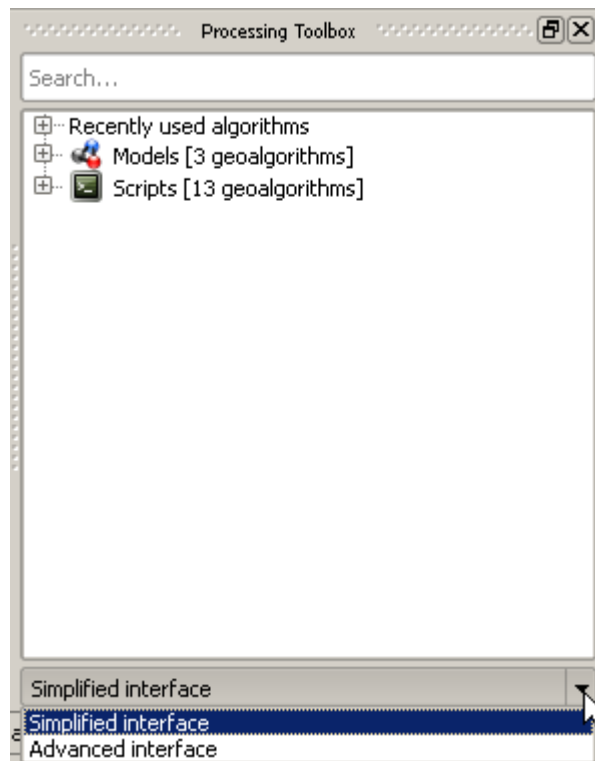
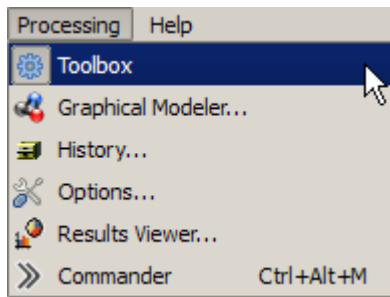


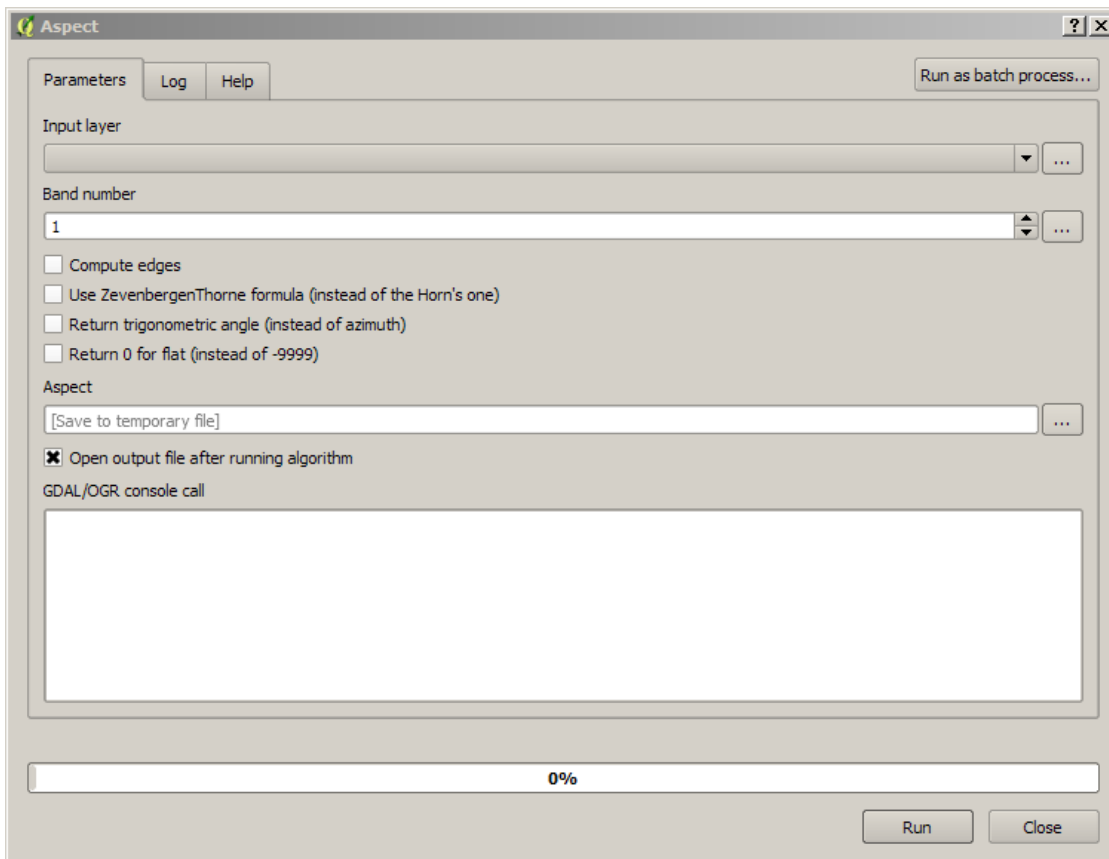
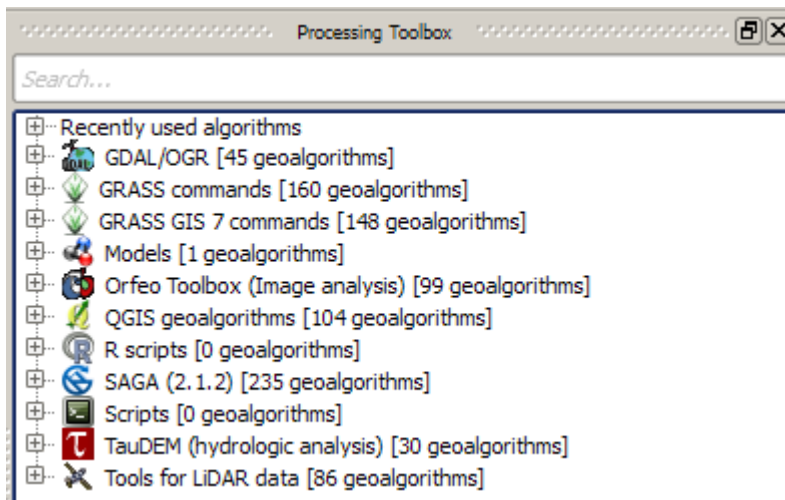
## Chapter 8 – The Processing Toolbox

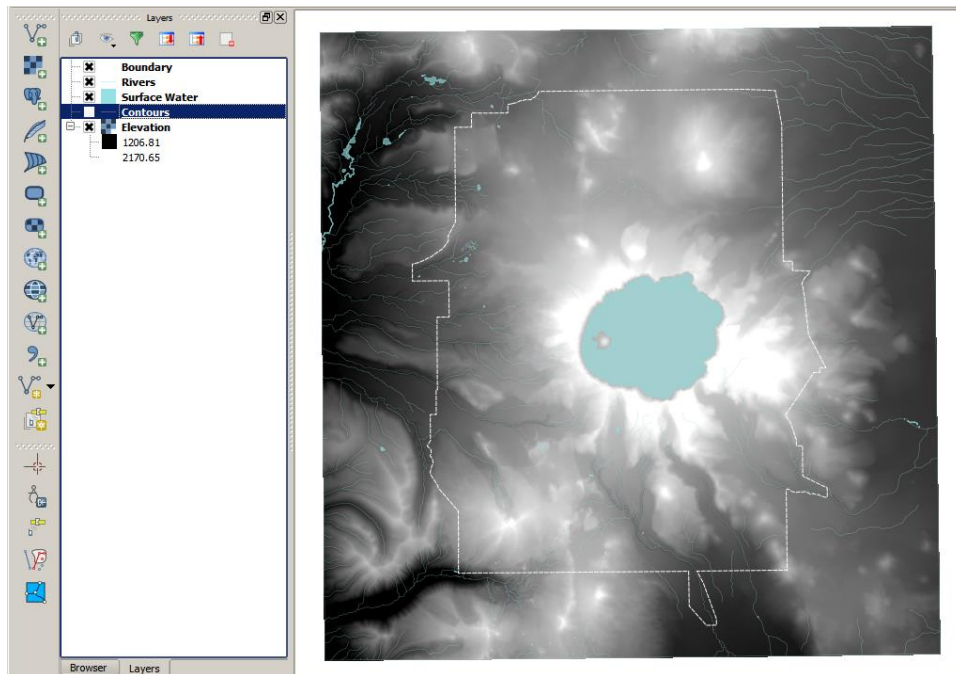
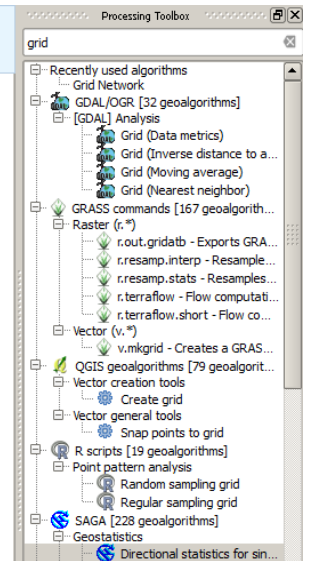
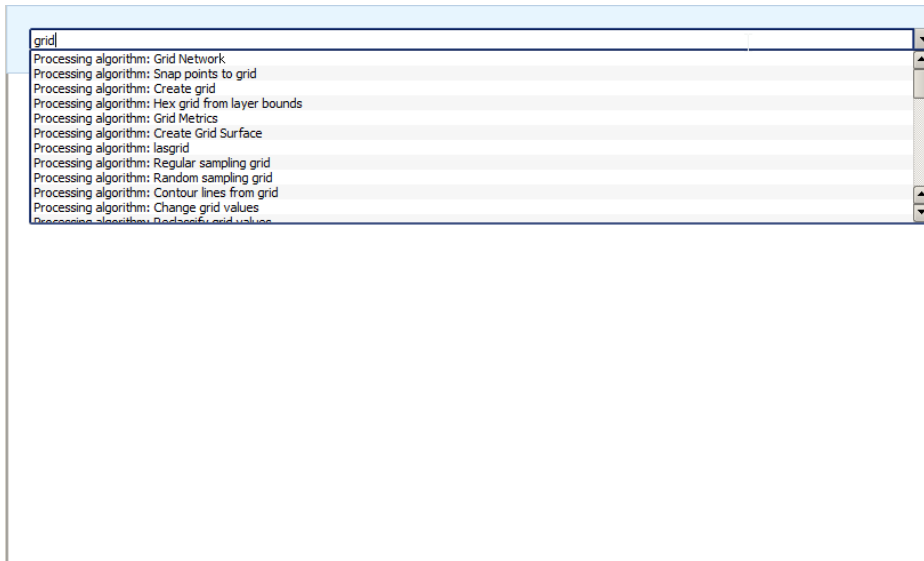


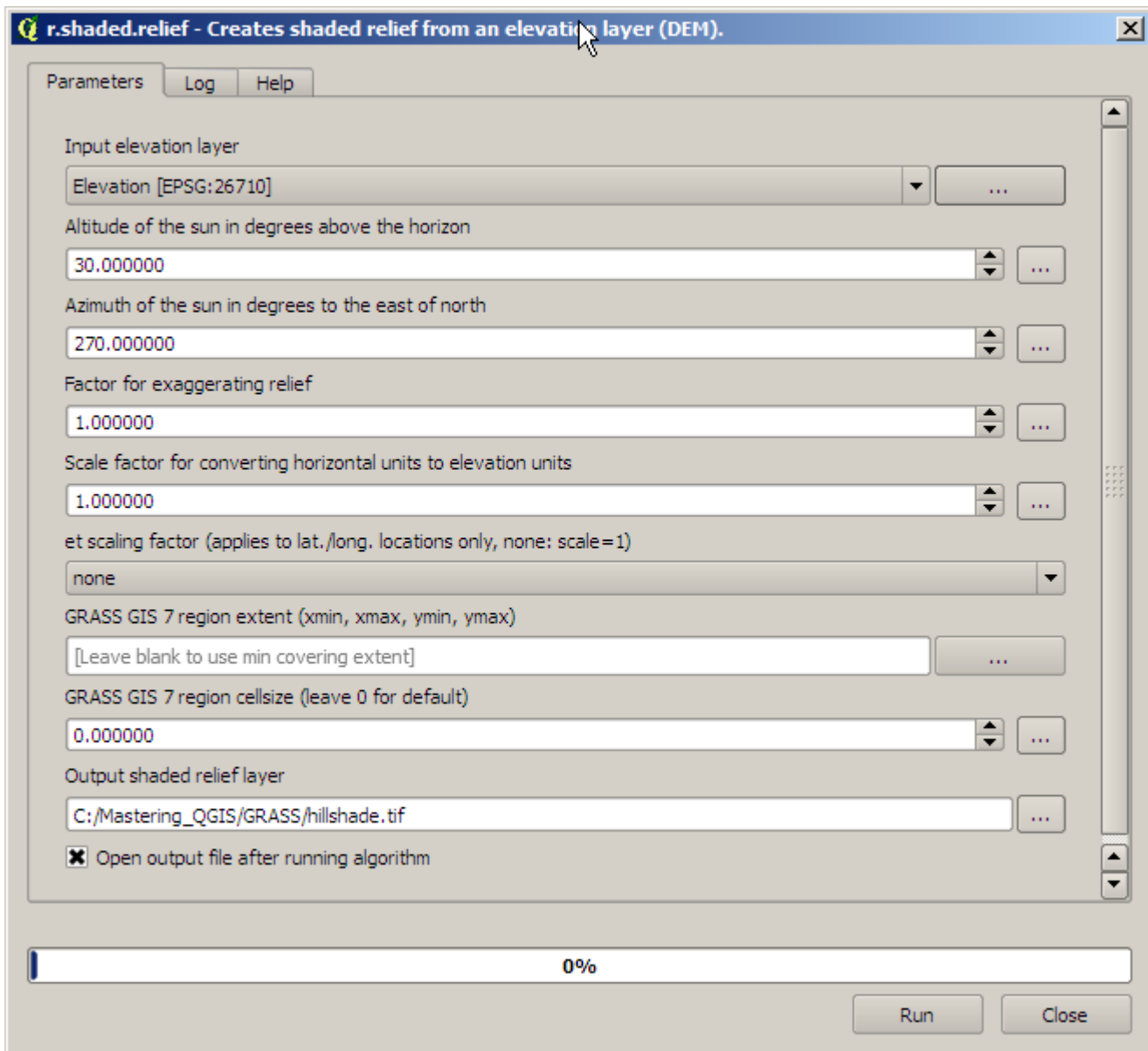


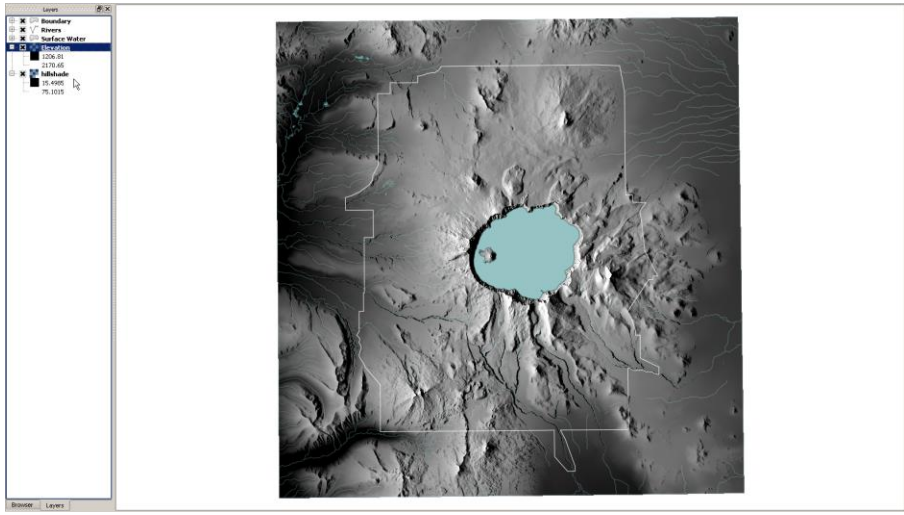


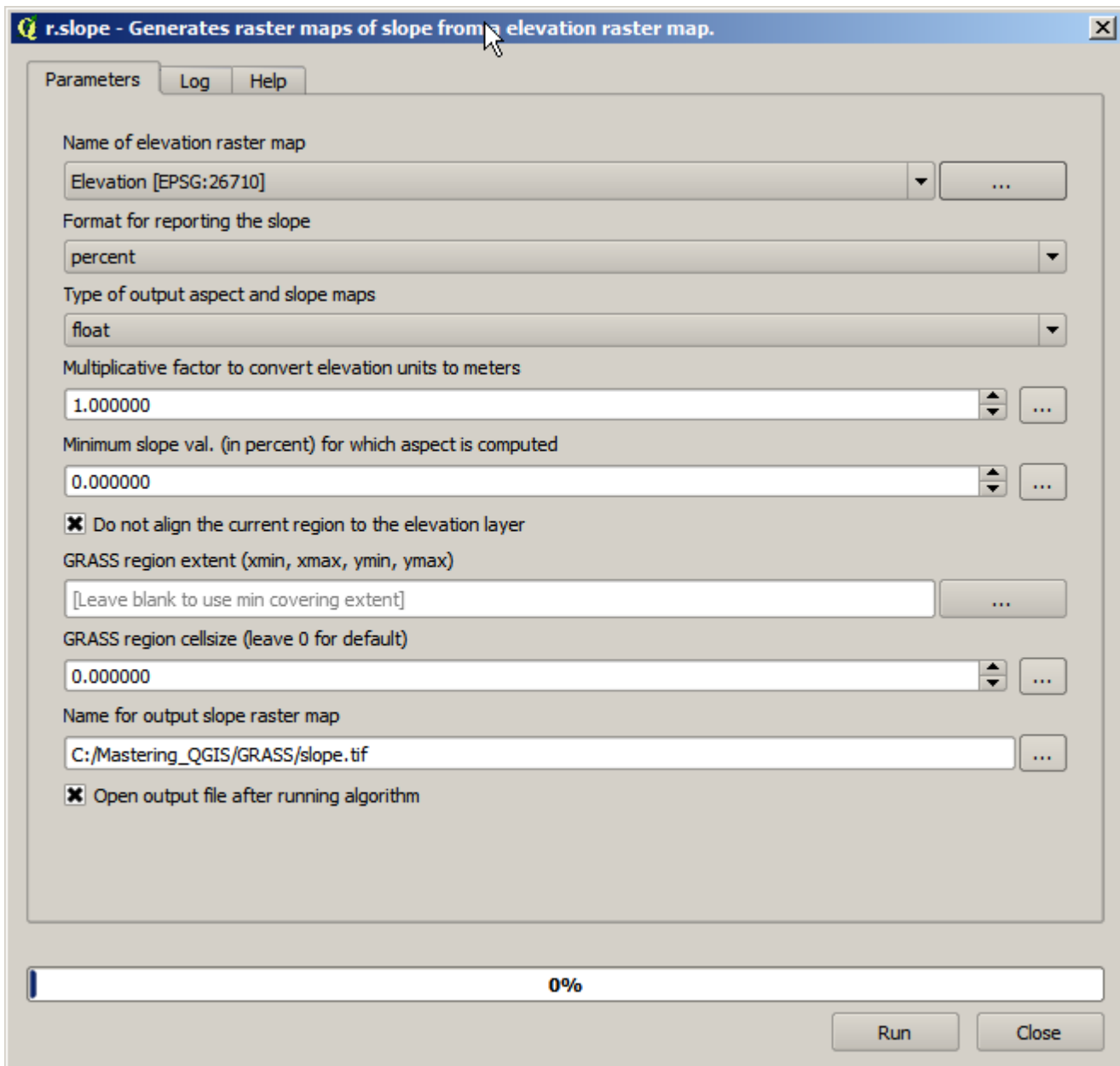


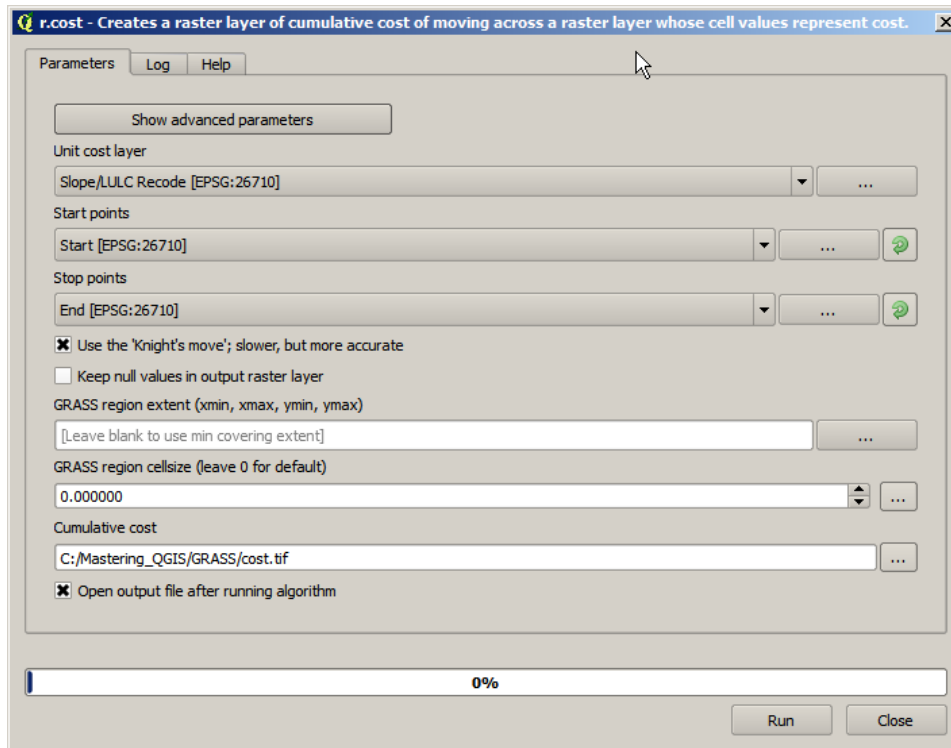
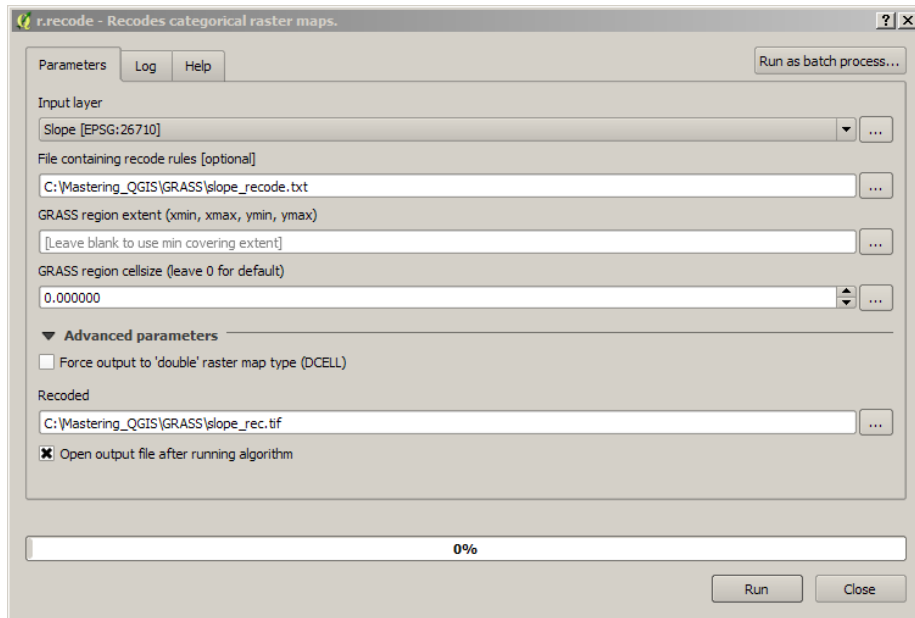




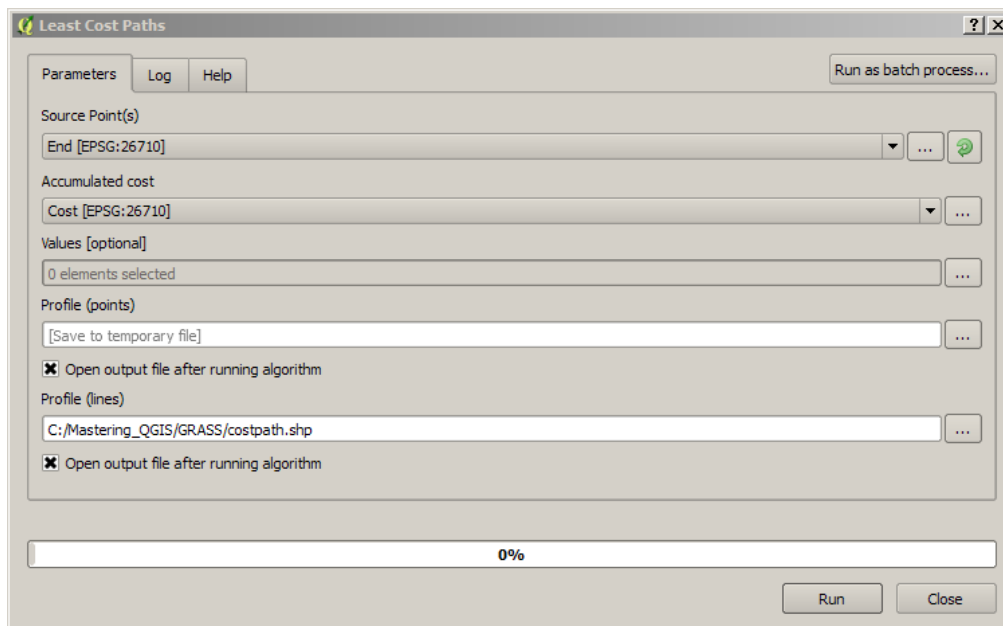
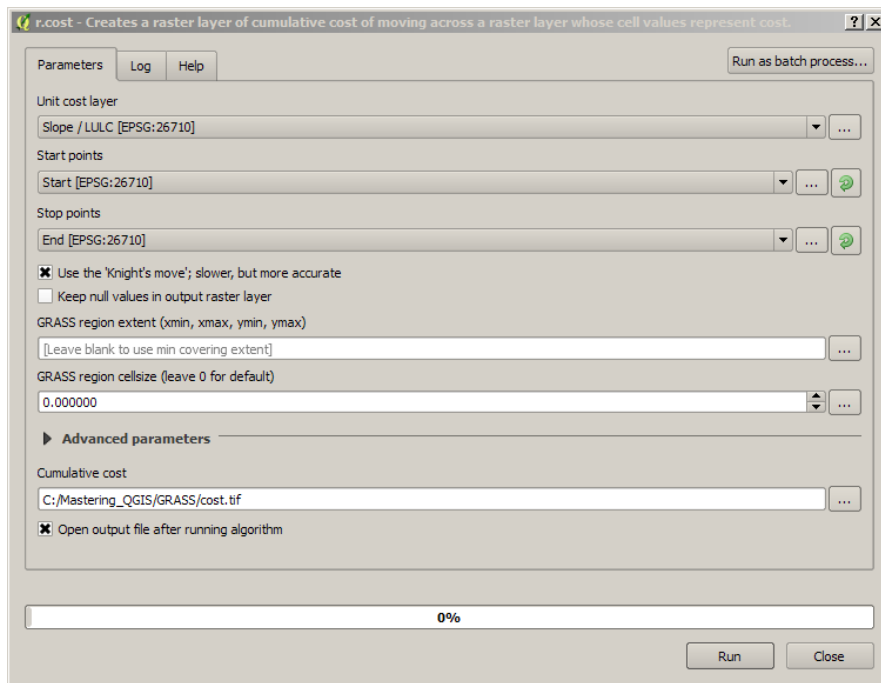








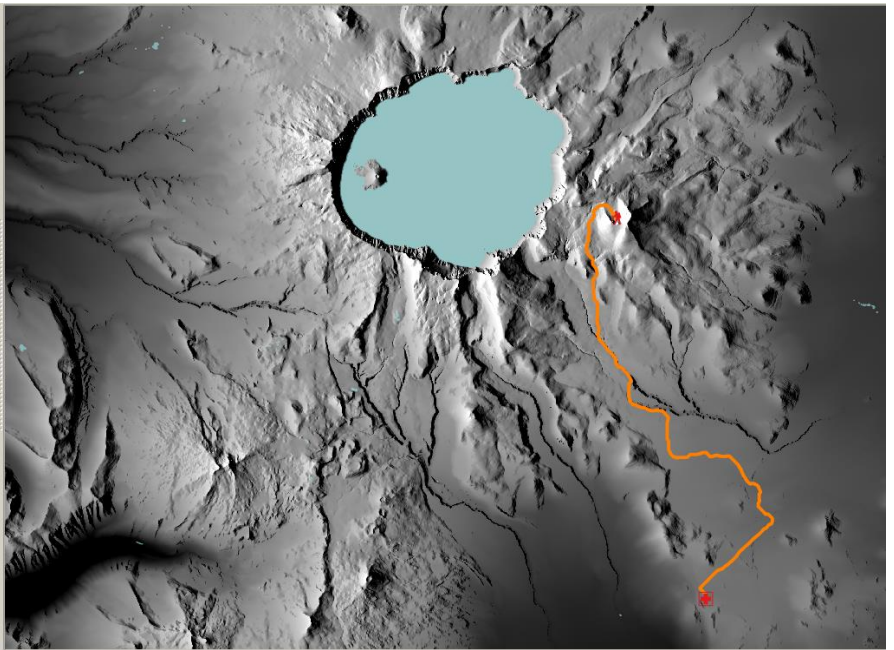


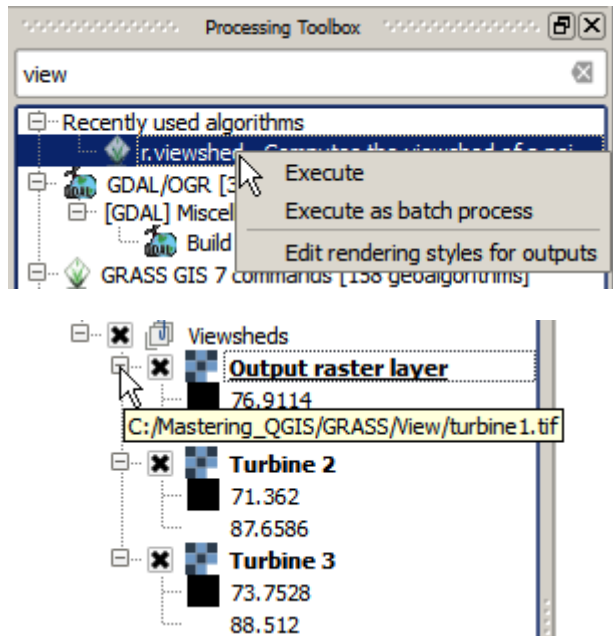
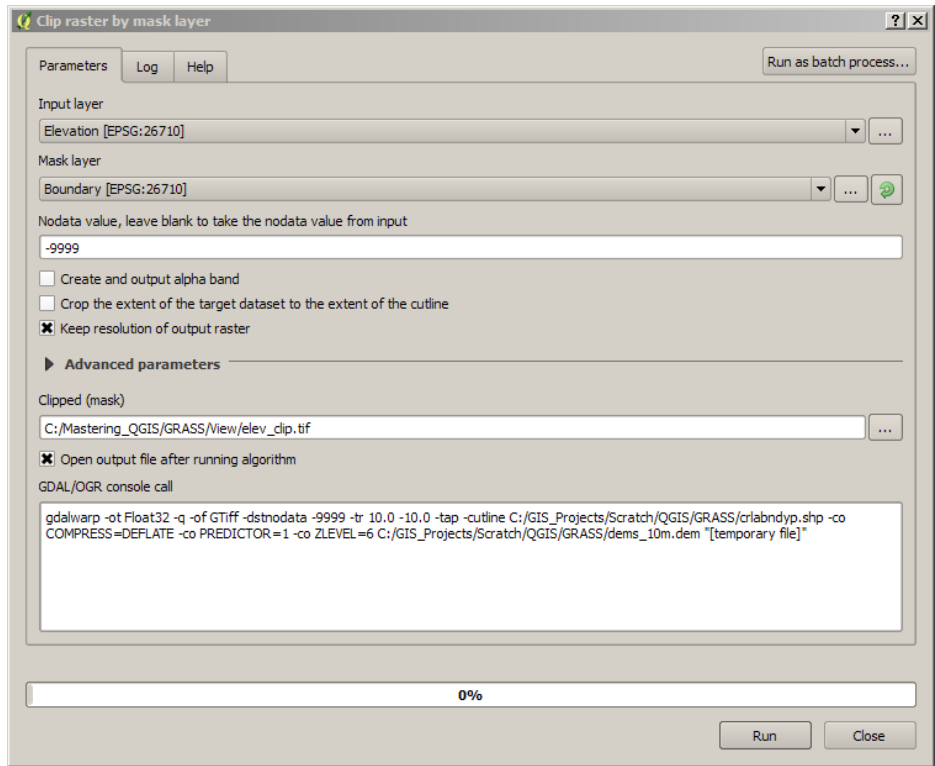


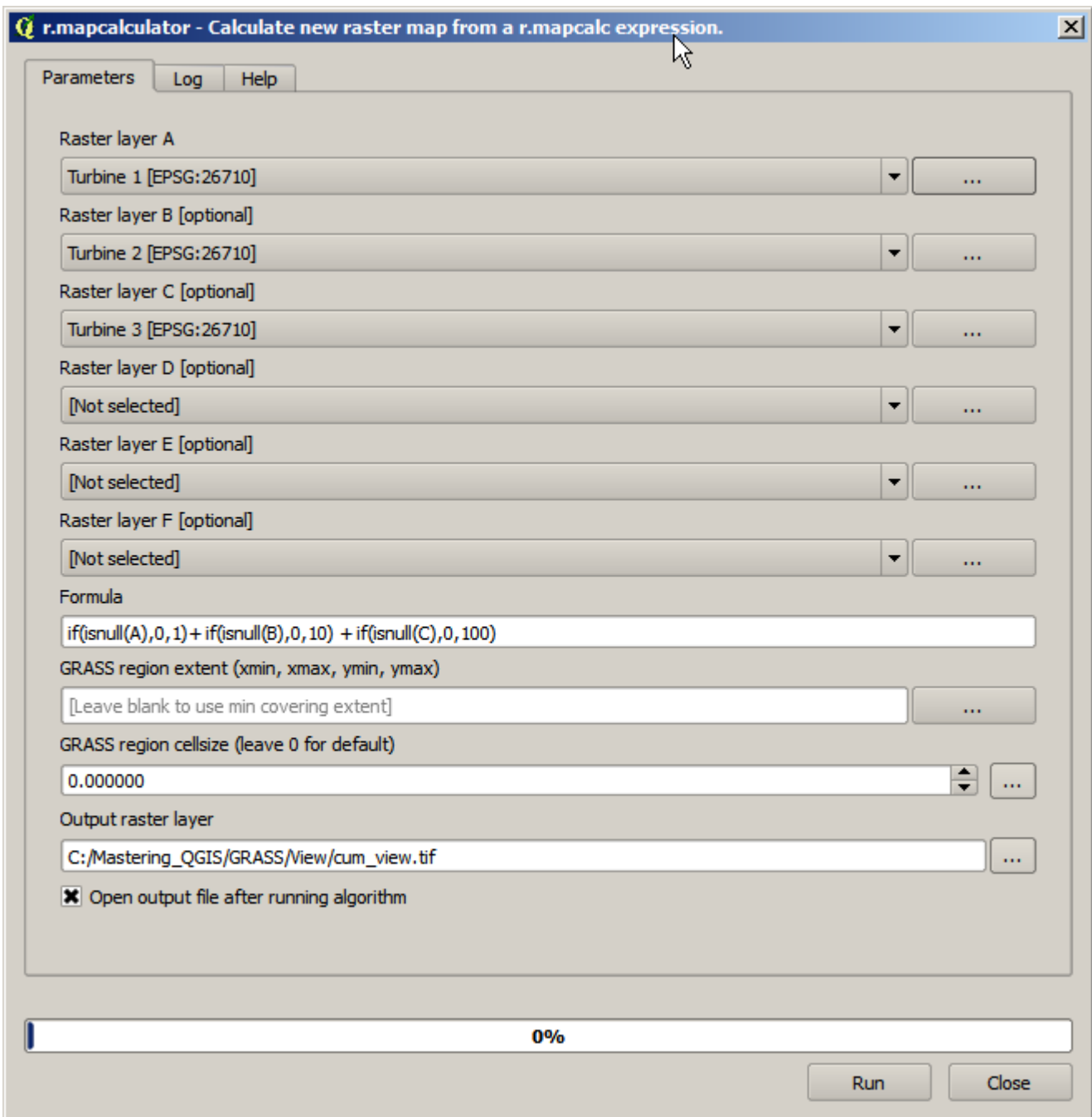
Layers

- Final Product
  - End
  - Start
  - Profile (lines)
- Vector Layers
  - drain C:\Mastering\_QGIS\GRASS\costpath.shp
  - Rivers
  - Surface Water
  - Contours
  - Roads
- Elevation
  - hillshade
  - Analysis layers

Browser Layers







Value	Color	Label
0.000000		Not Visible
1.000000		Tower 1
10.000000		Tower 2
11.000000		Tower 1 and 2
100.000000		Tower 3
101.000000		Towers 1 and 3
110.000000		Towers 2 and 3
111.000000		Towers 1, 2 and 3

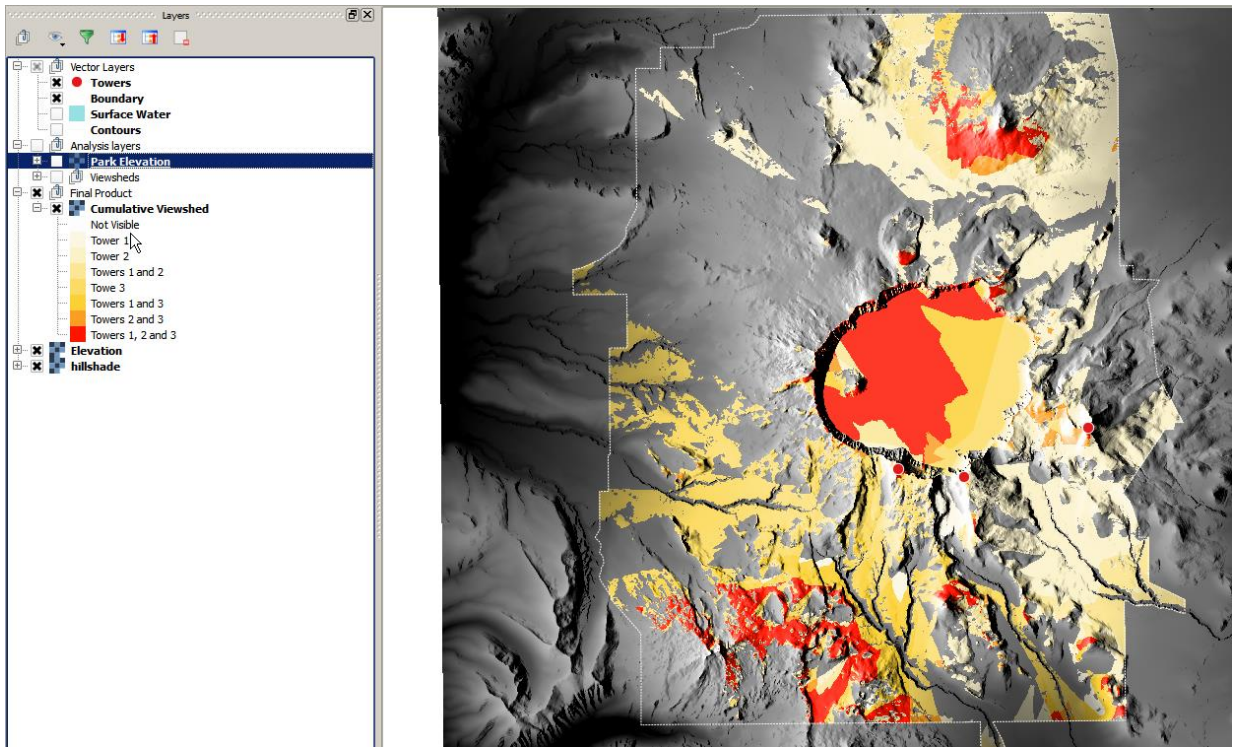


**r.stats**

```

0 623402400.000000
1 7756000.000000
10 128996100.000000
11 31945300.000000
100 85009000.000000
101 33947700.000000
110 8058800.000000
111 63800700.000000

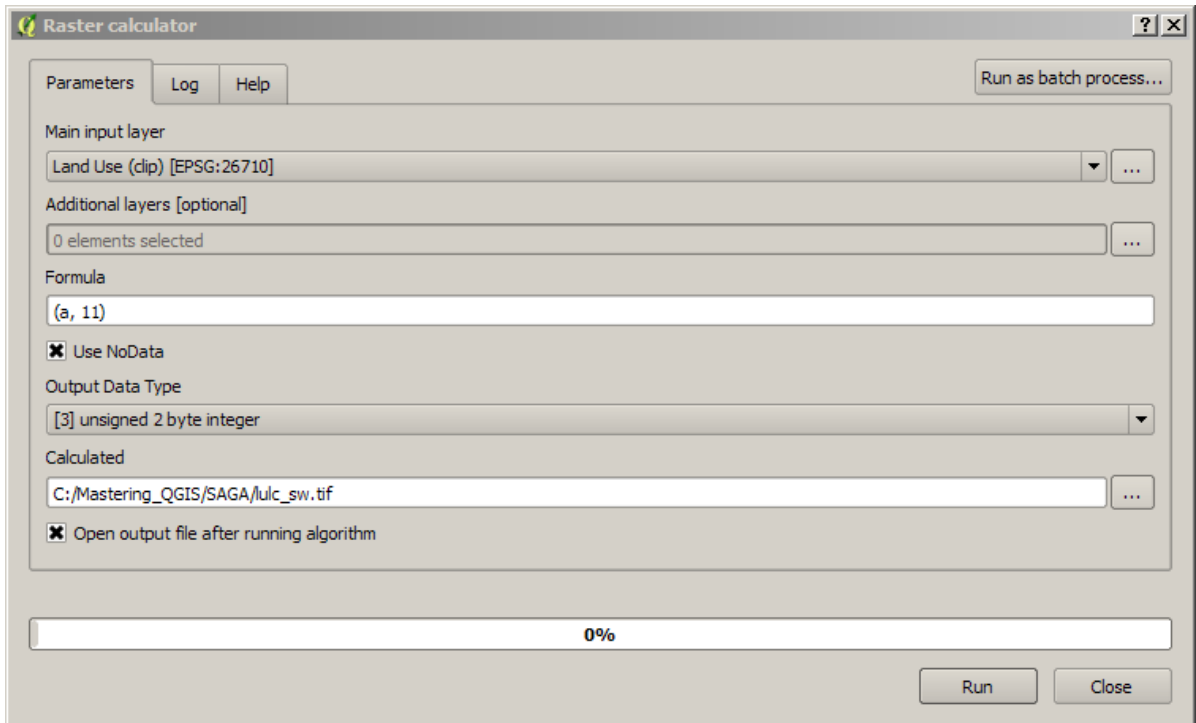
```

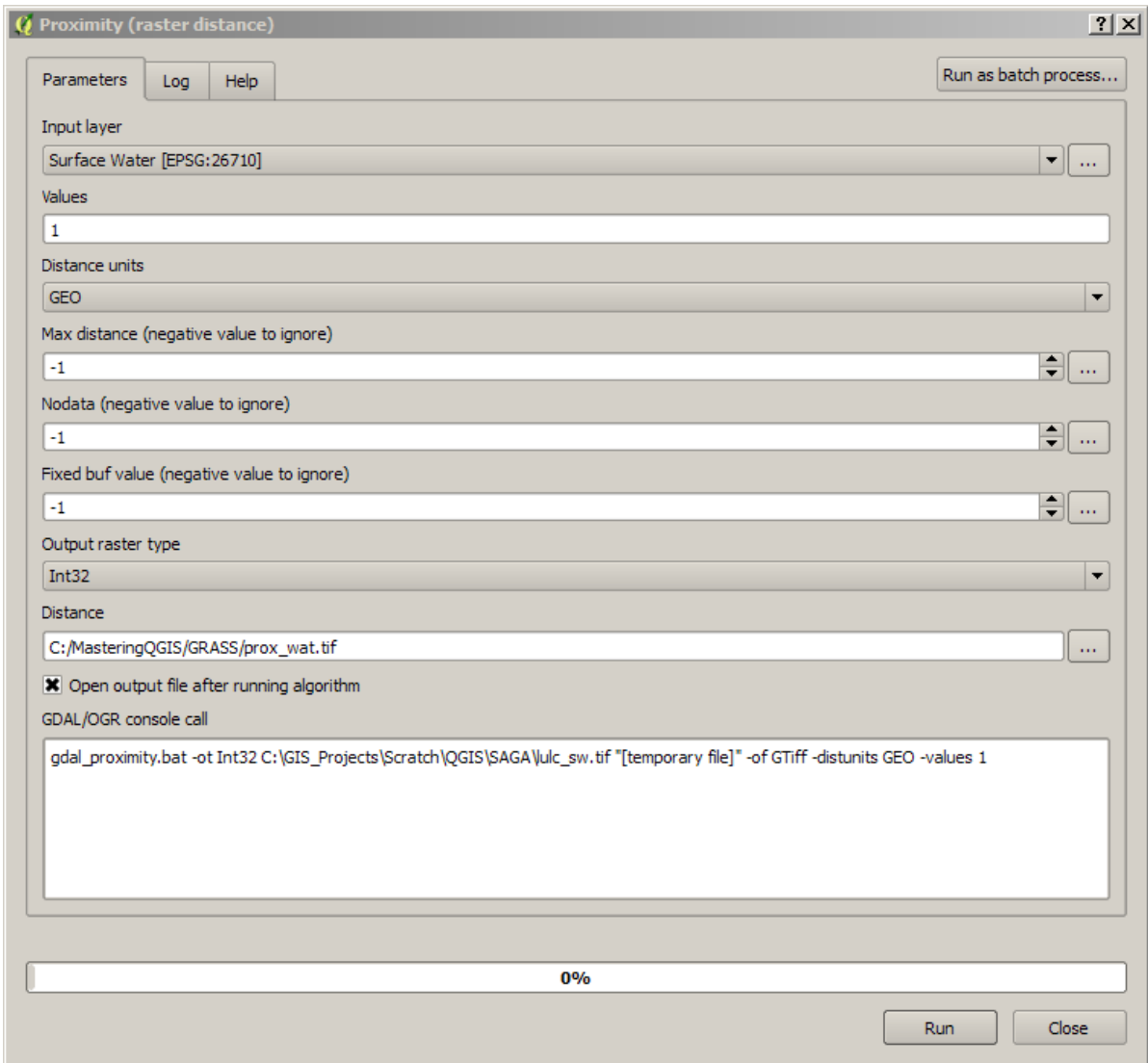


The Raster calculator dialog box is shown with the following parameters:

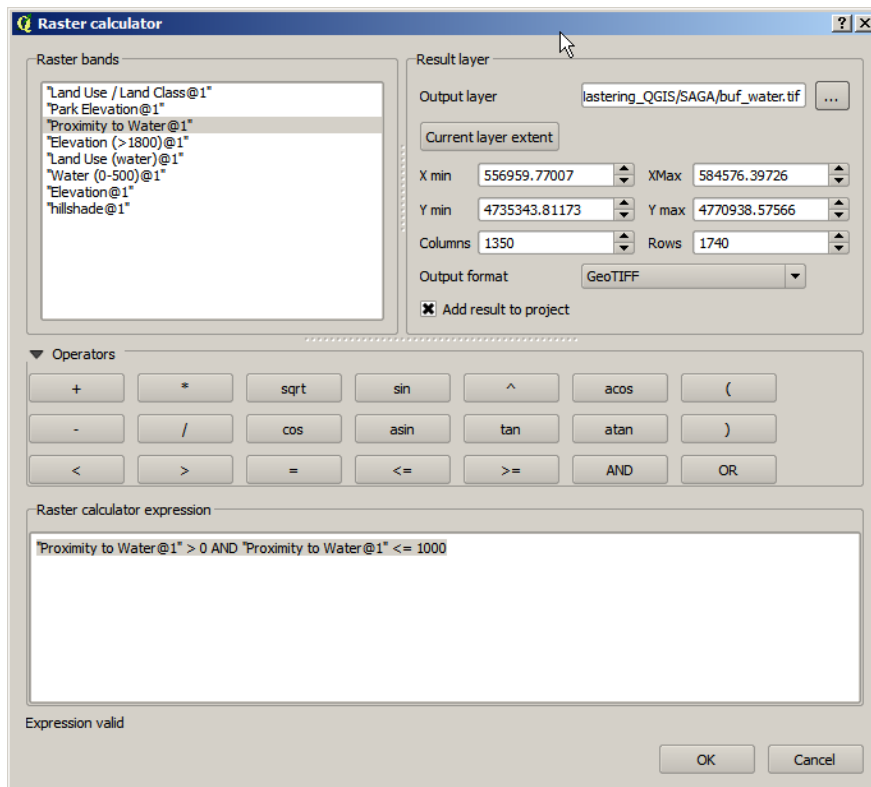
- Parameters:** Log, Help, Run as batch process...
- Main input layer:** Elevation [EPSG:26710]
- Additional layers [optional]:** 0 elements selected
- Formula:**  $gt(a, 1800)$
- Use NoData
- Output Data Type:** [3] unsigned 2 byte integer
- Calculated:** C:/Mastering\_QGIS/SAGA/elev\_1800.tif
- Open output file after running algorithm

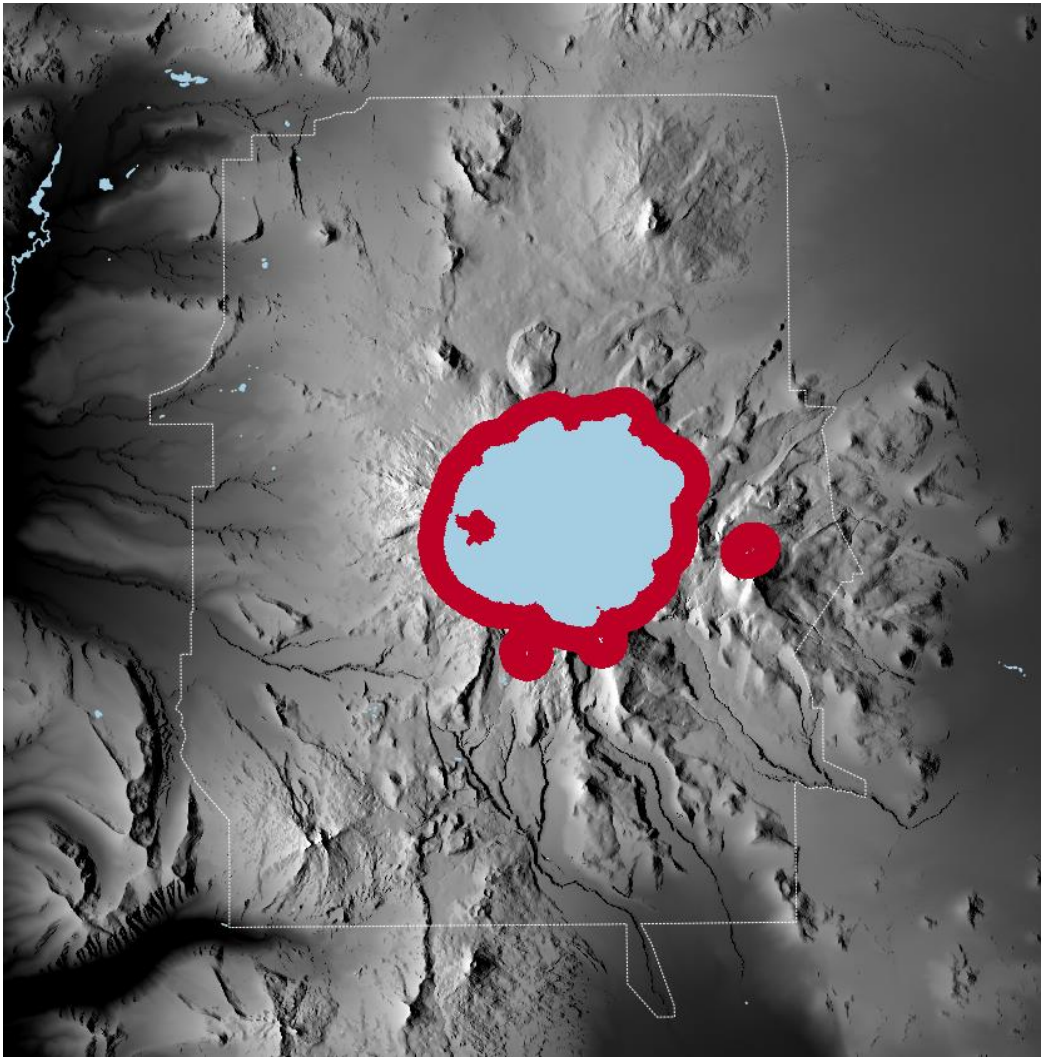
The progress bar at the bottom shows 0% completion. The Run and Close buttons are visible at the bottom right.











minimum	maximum	new
0	11	1
11	12	0
12	42	1
42	43	3
43	52	1
52	53	2
53	255	1

**Raster calculator**

Parameters Log Help

Main input layer  
 Elevation (Reclass) [EPSG:26710]

Additional layers [optional]  
 2 elements selected

Formula  
 $a*b*c$

Result  
 C:/Mastering\_QGIS/SAGA/habitat.tif

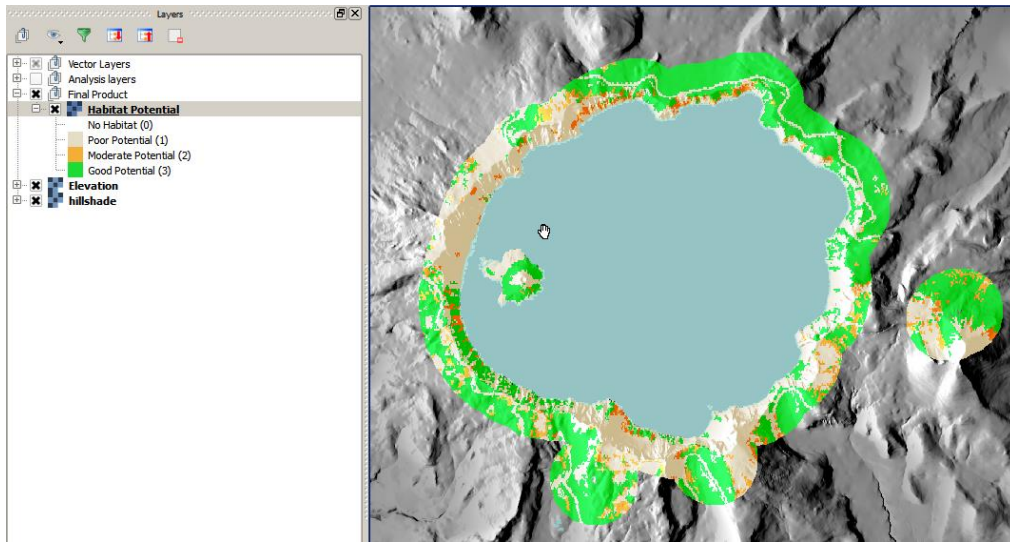
Open output file after running algorithm

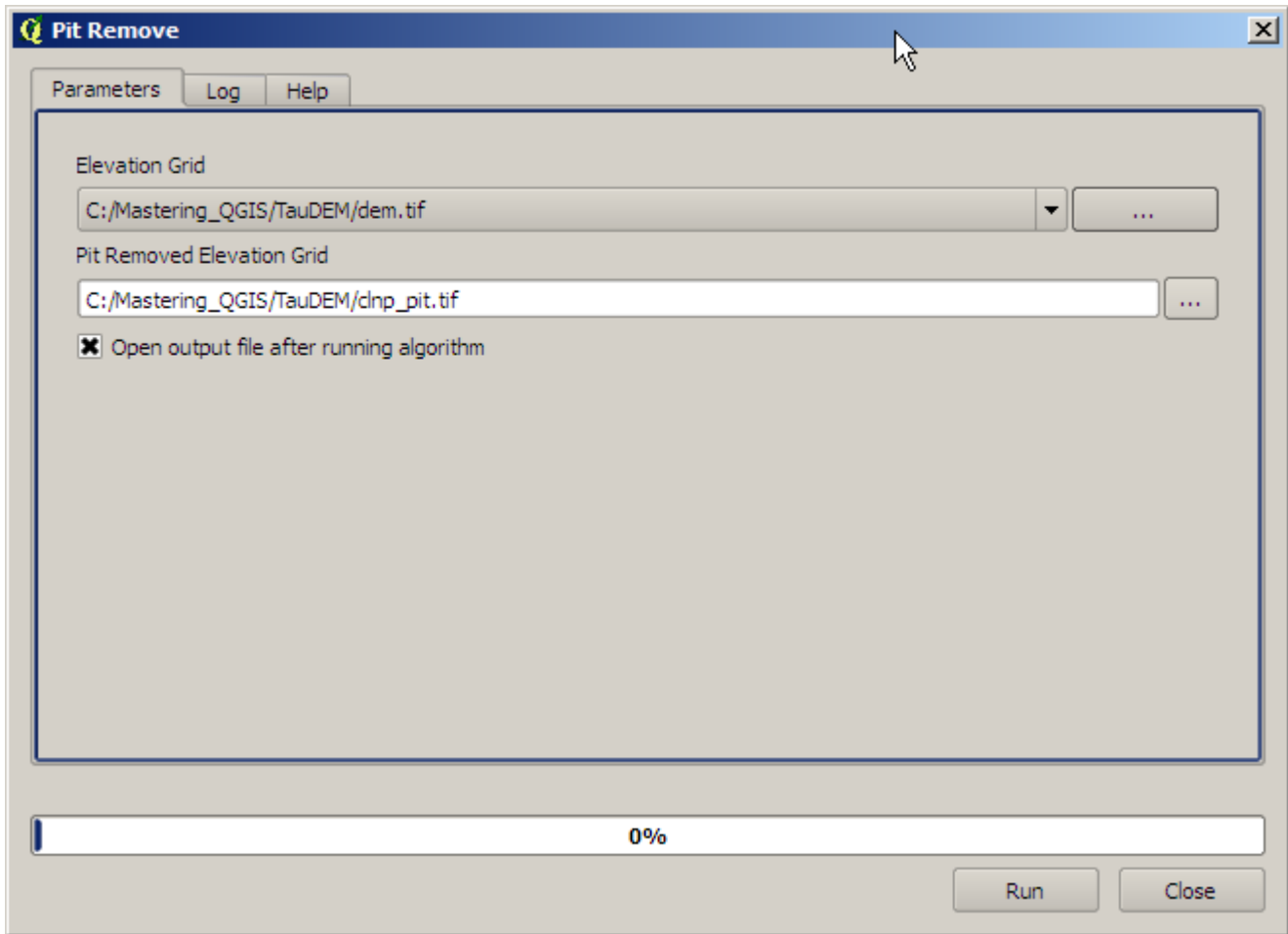
**Multiple selection**

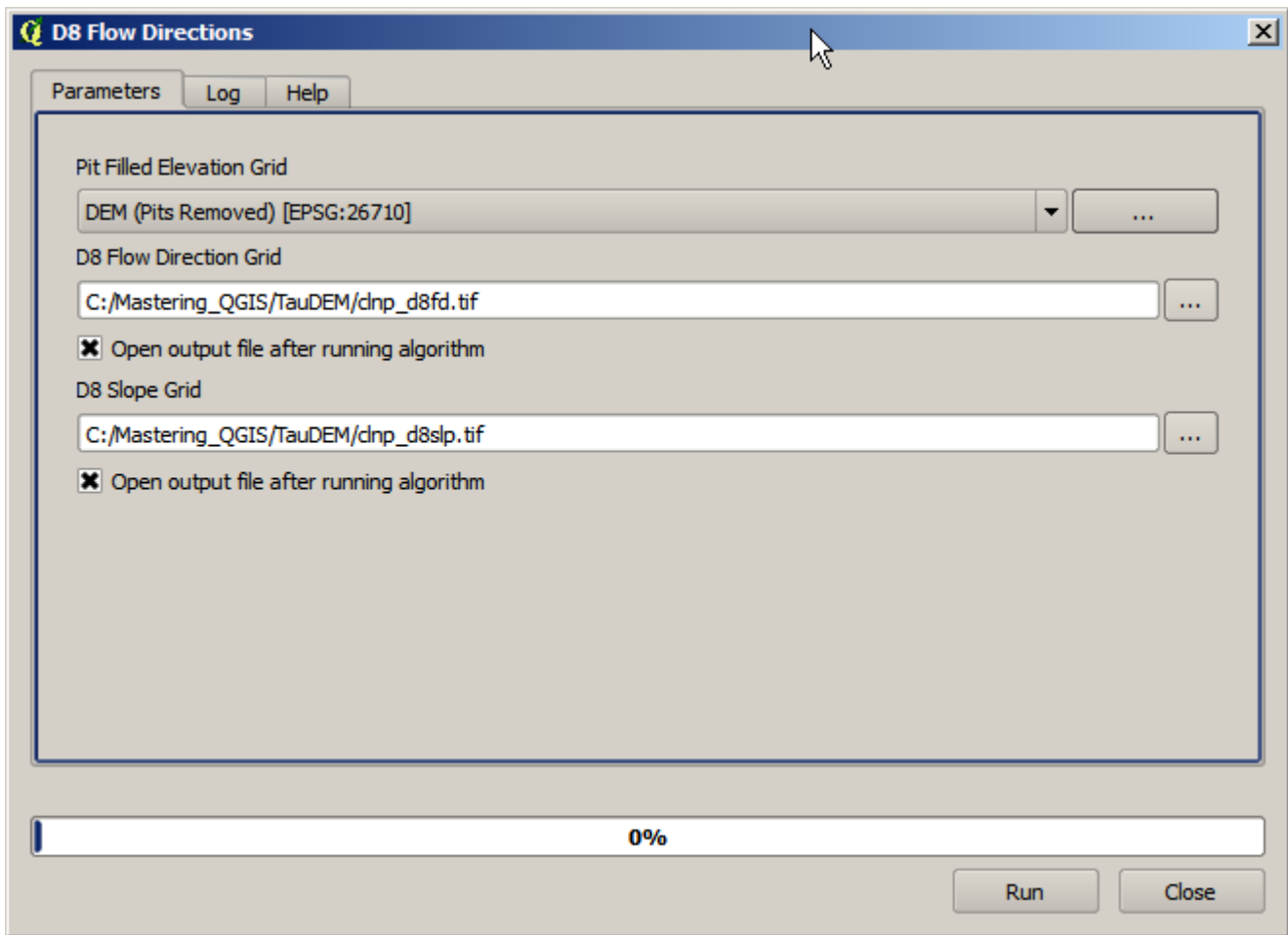
- Habitat Potential [EPSG:26710]
- Water (Reclass) [EPSG:26710]
- Proximity to Water [EPSG:26710]
- Land Use (water) [EPSG:26710]
- Elevation (Reclass) [EPSG:26710]
- LULC (Reclass) [EPSG:26710]
- Land Use / Land Class [EPSG:26710]
- Park Elevation [EPSG:26710]
- Elevation [EPSG:26710]
- hillshade [EPSG:26710]

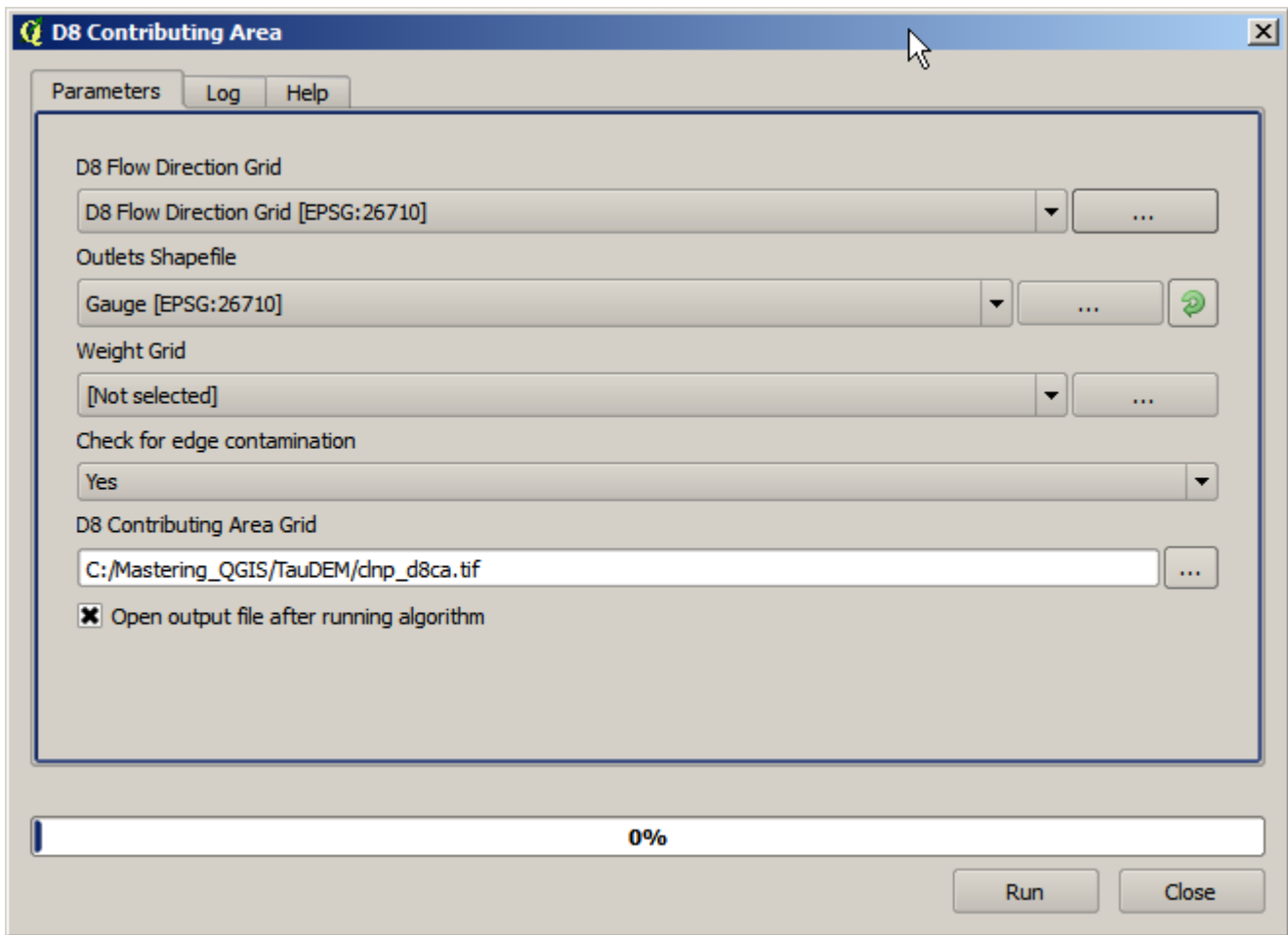
0%

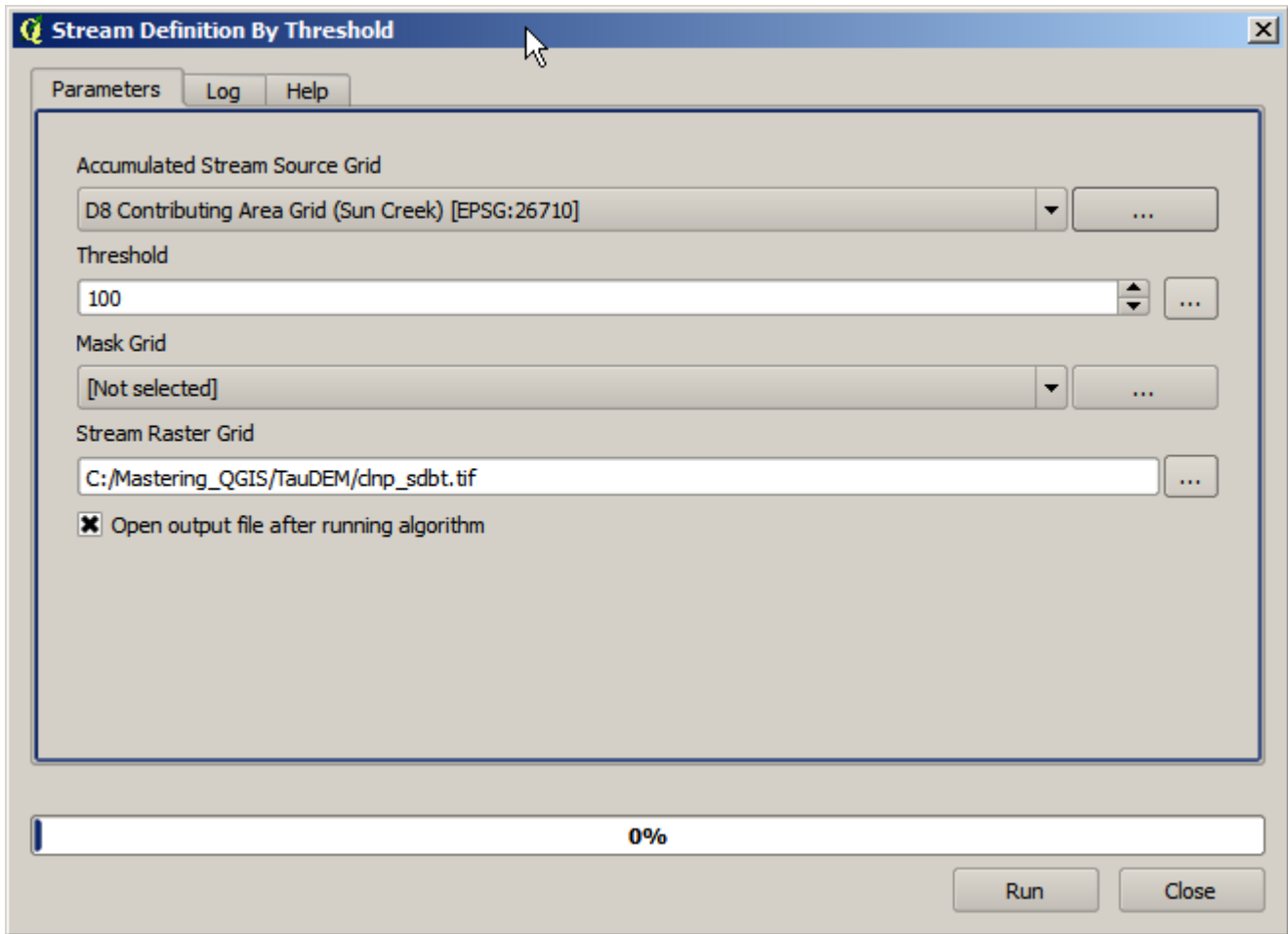
Run Close



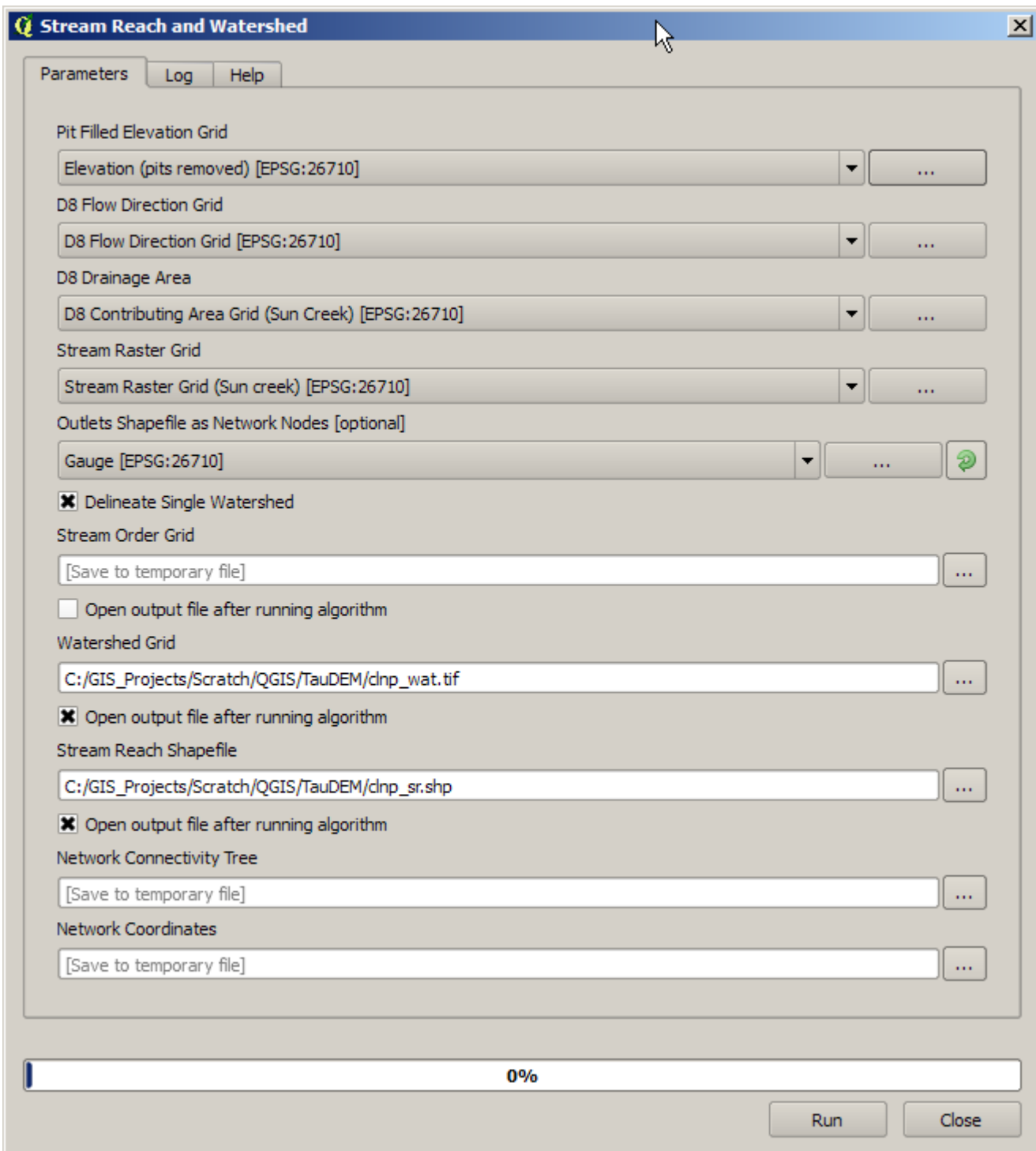


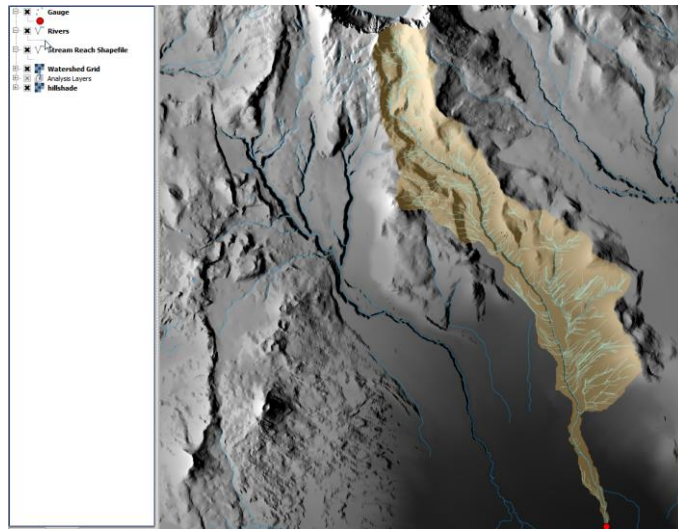


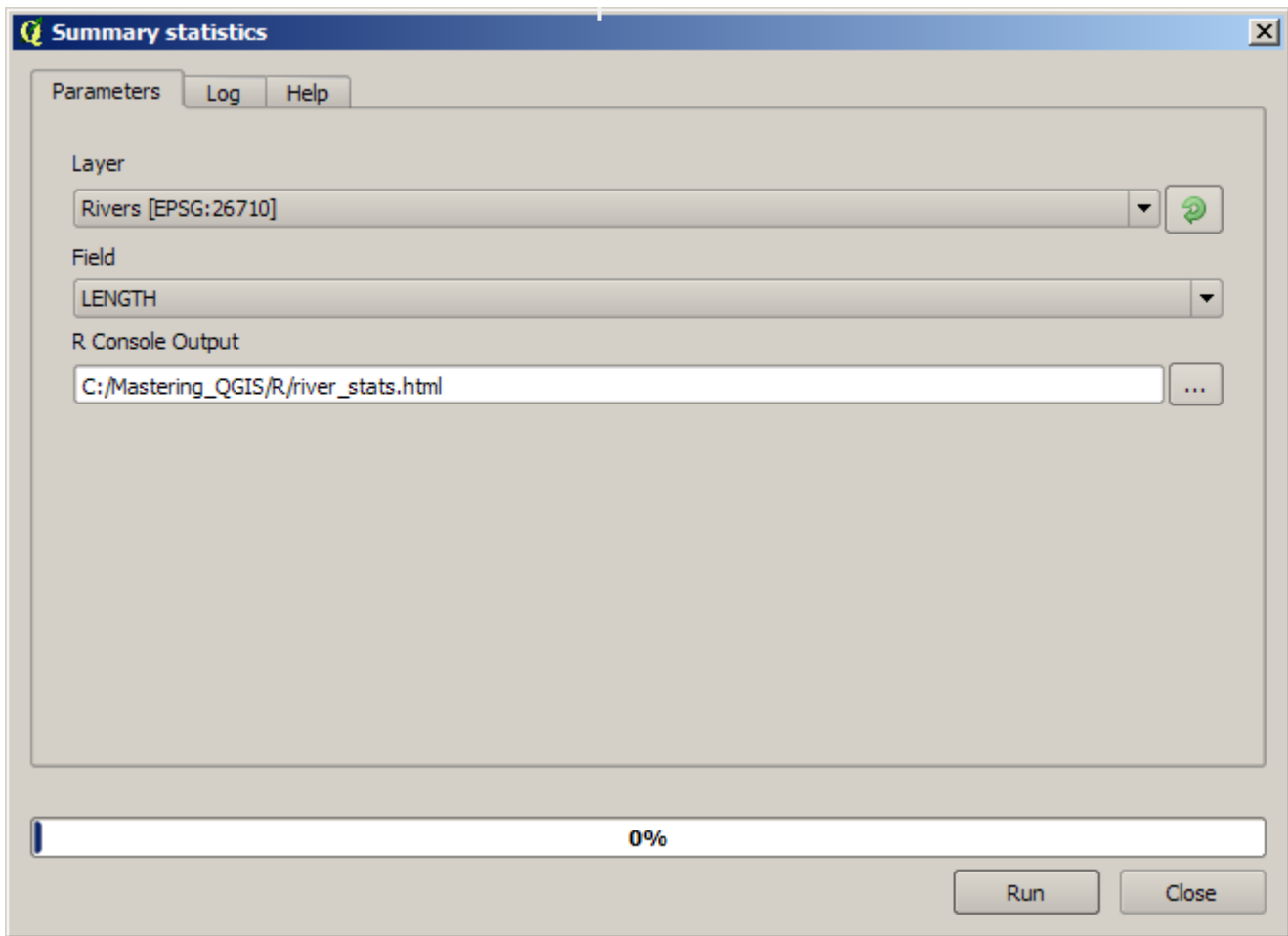




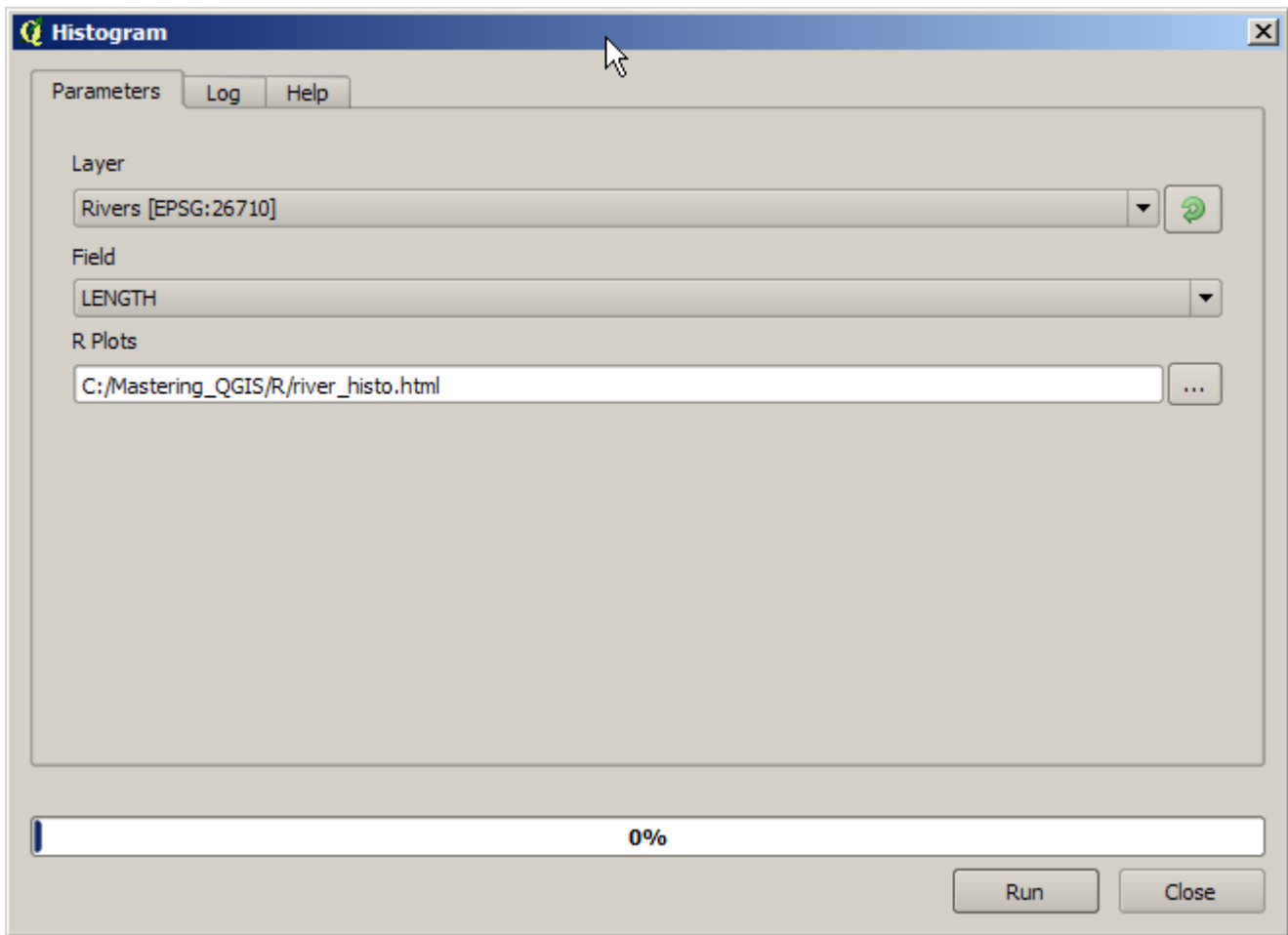




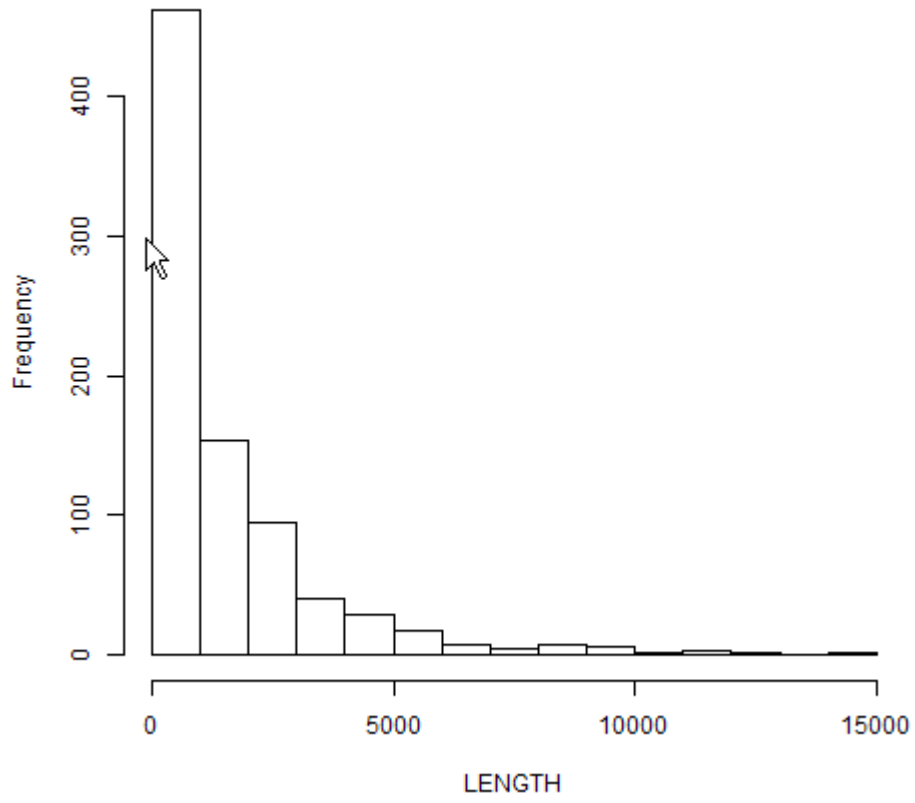


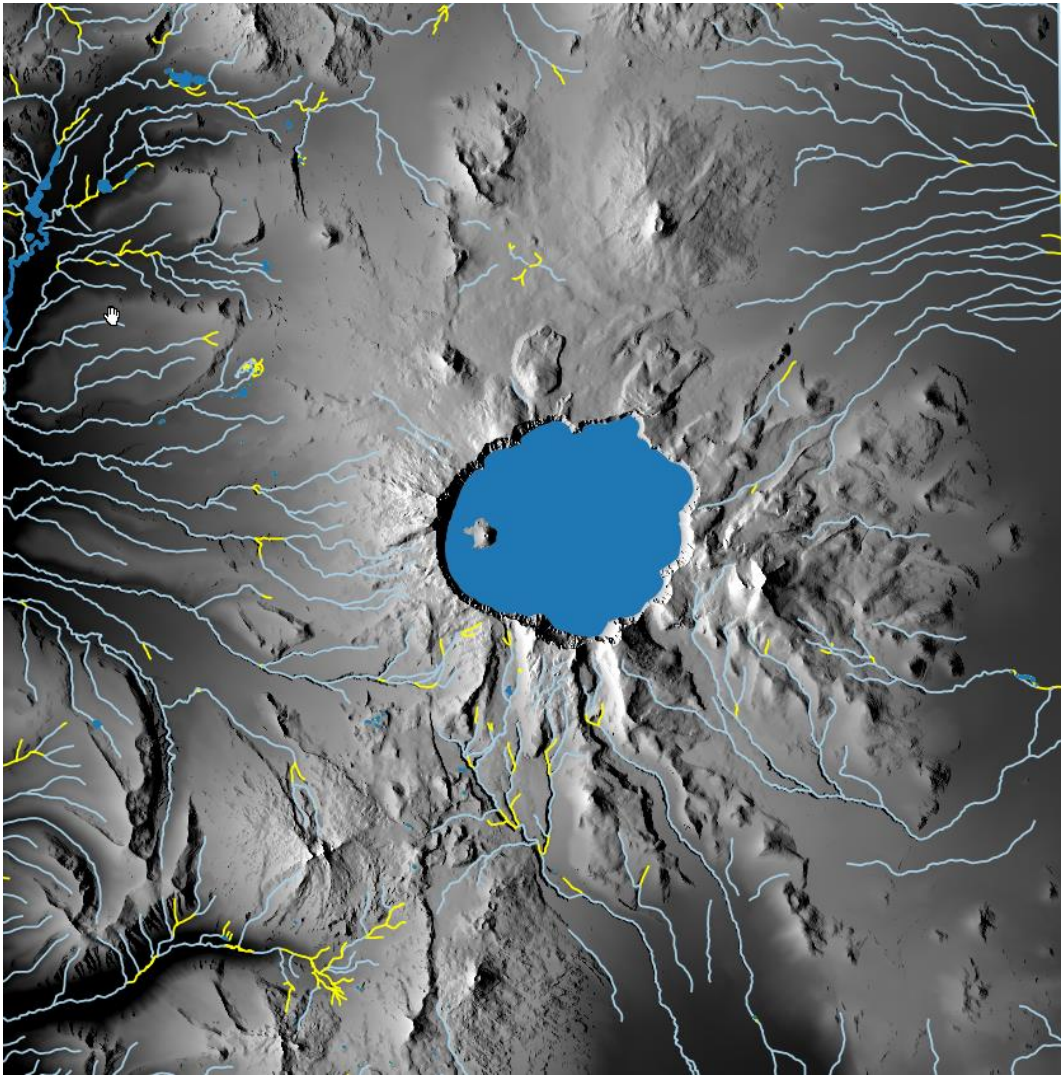


```
Summary_statistics
LENGTH
Sum: 1.269272e+06
Count: 8.280000e+02
Unique values: 8.280000e+02
Minimum value: 5.627340e+00
Maximum value: 1.412734e+04
Range: 1.412172e+04
Mean value: 1.532937e+03
Median value: 8.335031e+02
Standard deviation: 1.978282e+03
```

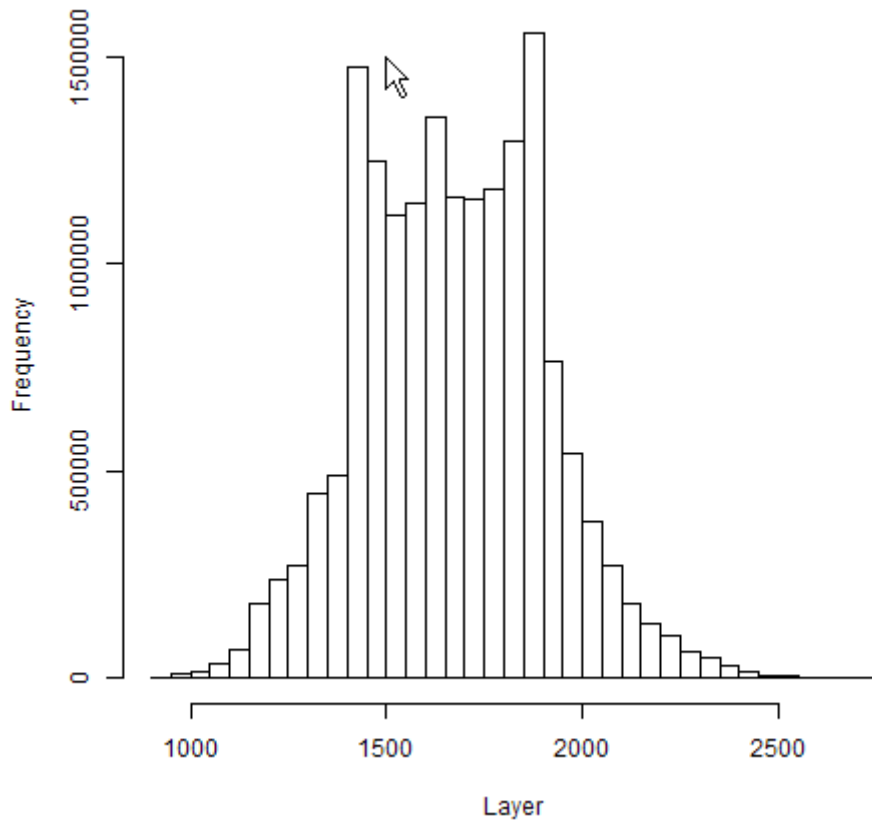


**Histogram of LENGTH**

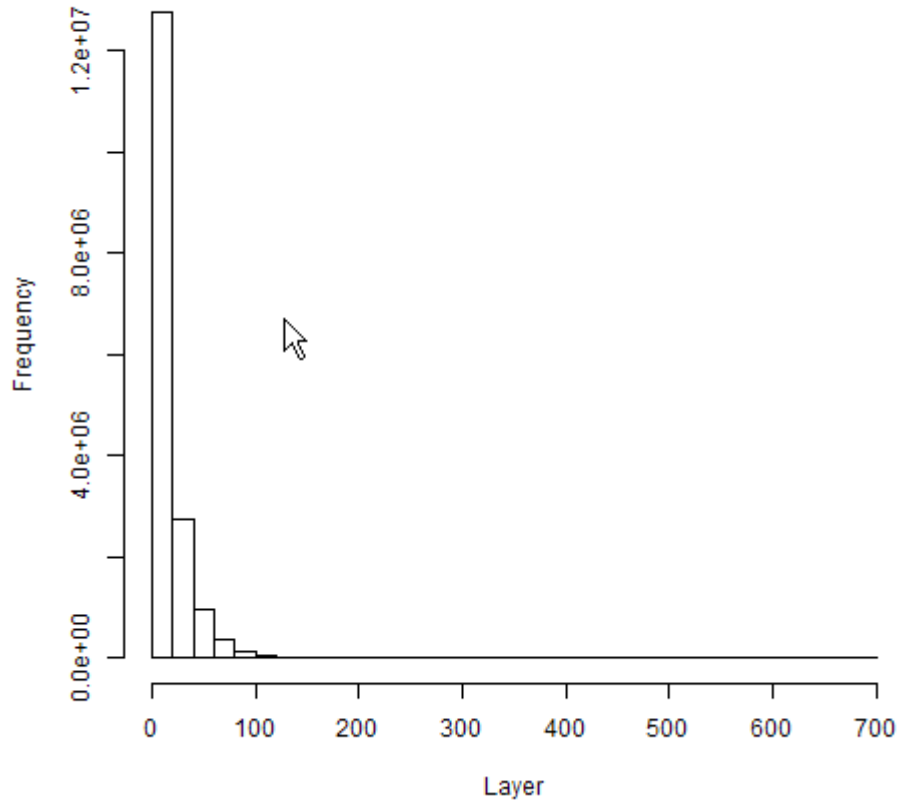




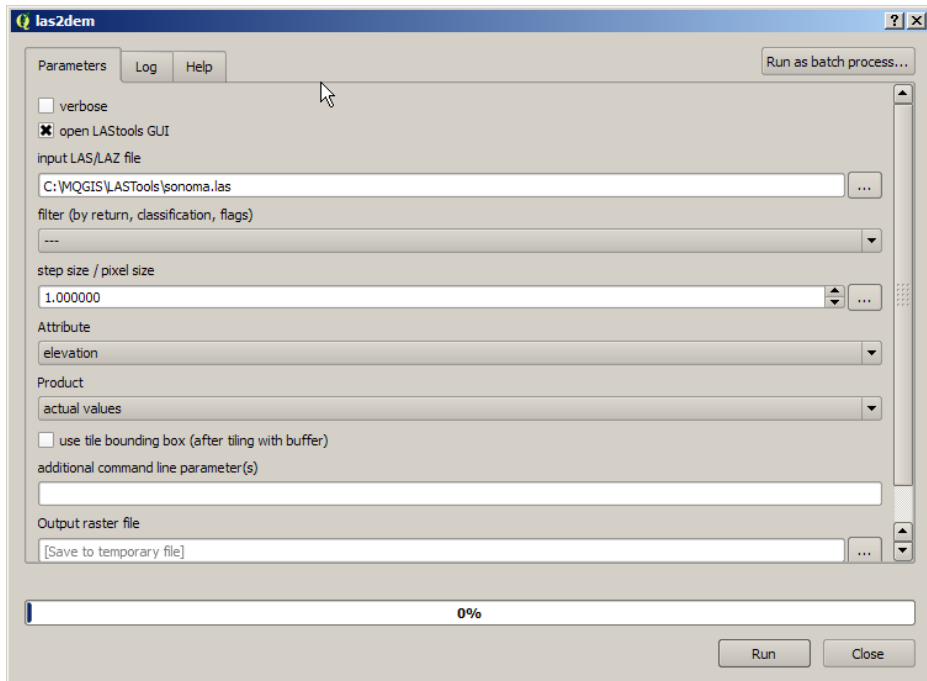
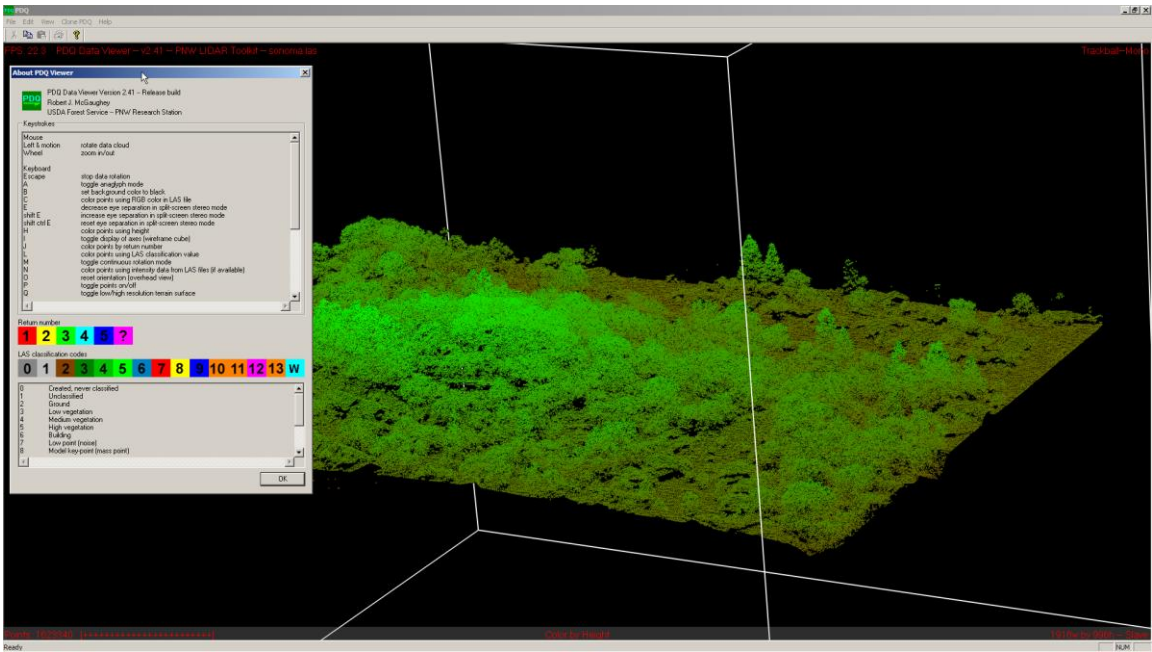
**Histogram**



# Histogram







las2dem - rasters LiDAR (via a temporary TIN) to hillshade/slope/elevation/intensity/rgb/false color grids

sonoma.las

browse ... +

filter ... +

transform ... +

projection ...

state plane NAD83

zone / name: CA\_1

northern hemisphere

false easting: 0

false northing: 0

units: meter

center long: 0

nat origin lat: 0

1st std parallel: 0

2nd std parallel: 0

scale factor: 0

ellipsoid:

elevation units: meter

vertical datum:

overlays ...

shp:

shp:

shp:

LAS version: 1.2  
source ID: 0 created: 28/2016  
'LASools (c) by Martin Isenburg'  
'LasMonkey 1.6.5 + OT'  
# of points: 774123  
point type: 3 point size: 34  
x: 6236250.84 6239479.67  
y: 1923682.93 1924671.12  
z: -14.12 187.01

LICENSE  
LASools (c) 2015  
== unlicensed ==  
by Martin Isenburg  
(version 151130)

Reset Rotate Move Zoom

1 job on 8 cores +

selected file only

process all files

merge files into one

output ... +

verbose

VIEW

sample points: 5000000

step: 1

kill triangles > 100

item: elevation

actual values

hillside shading

gray ramp

false colors

set min max

min: 0

max: 0

invert ramp:

extra pass

use tile bounding box

specify size of raster

ncols: 512

nrows: 512

specify lower left

lix:

liy:

breaklines ... +

format: asc

RUN

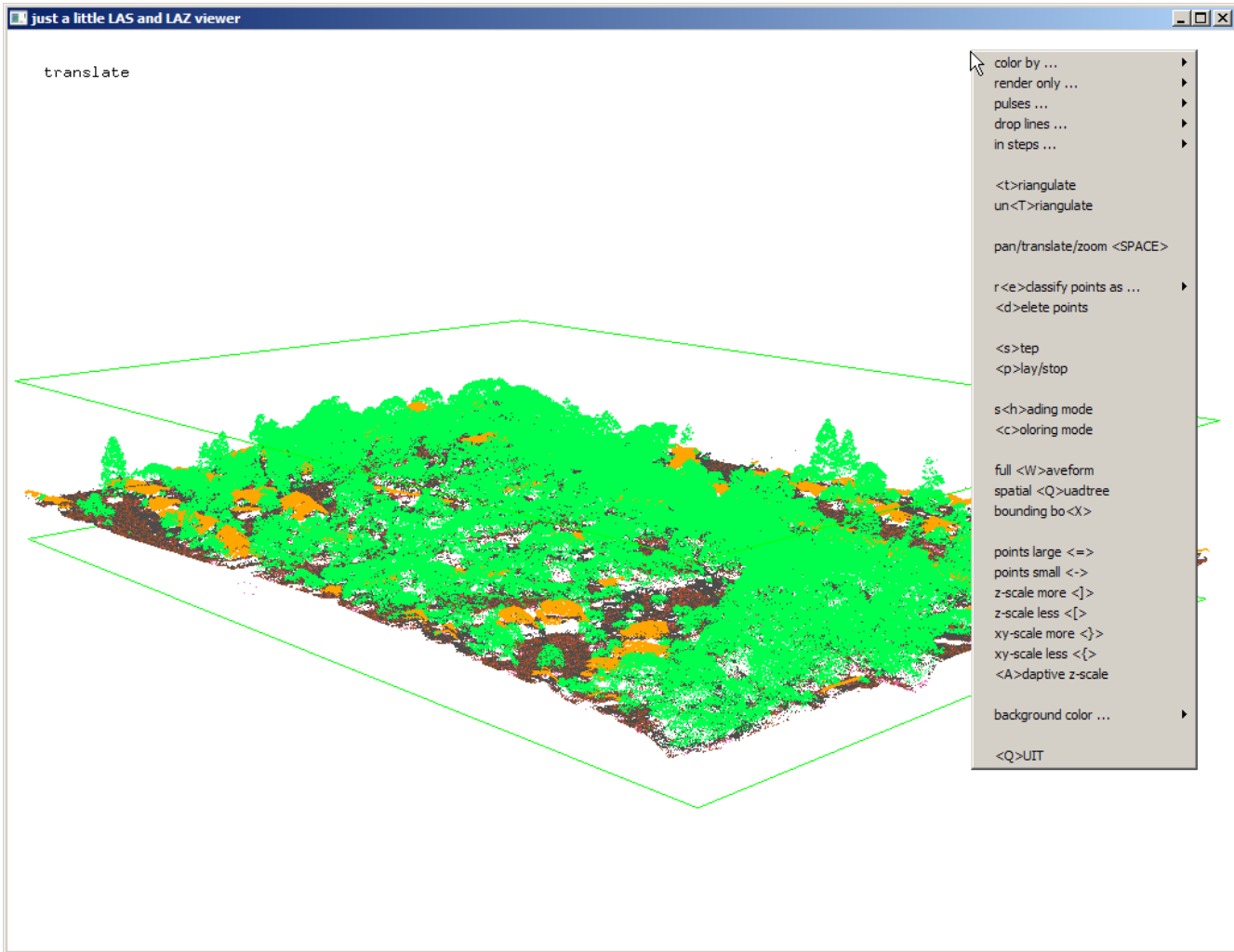
README <Q>UIT

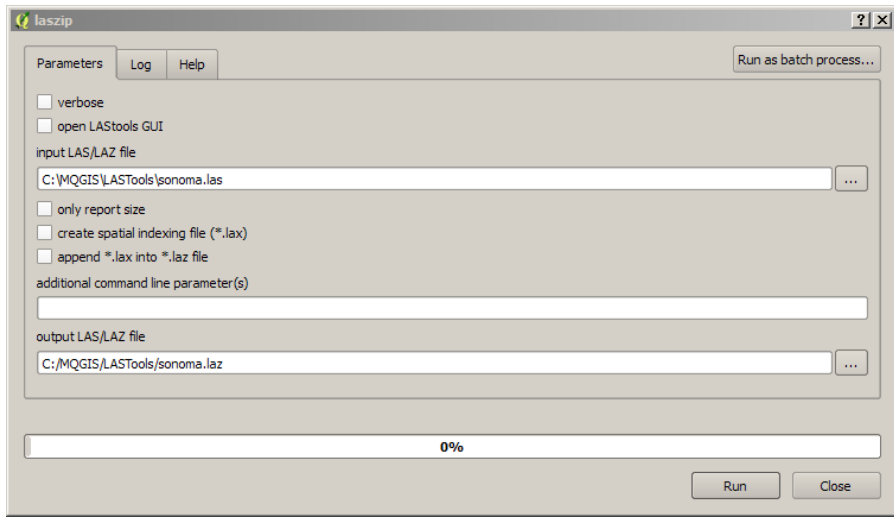
clip input

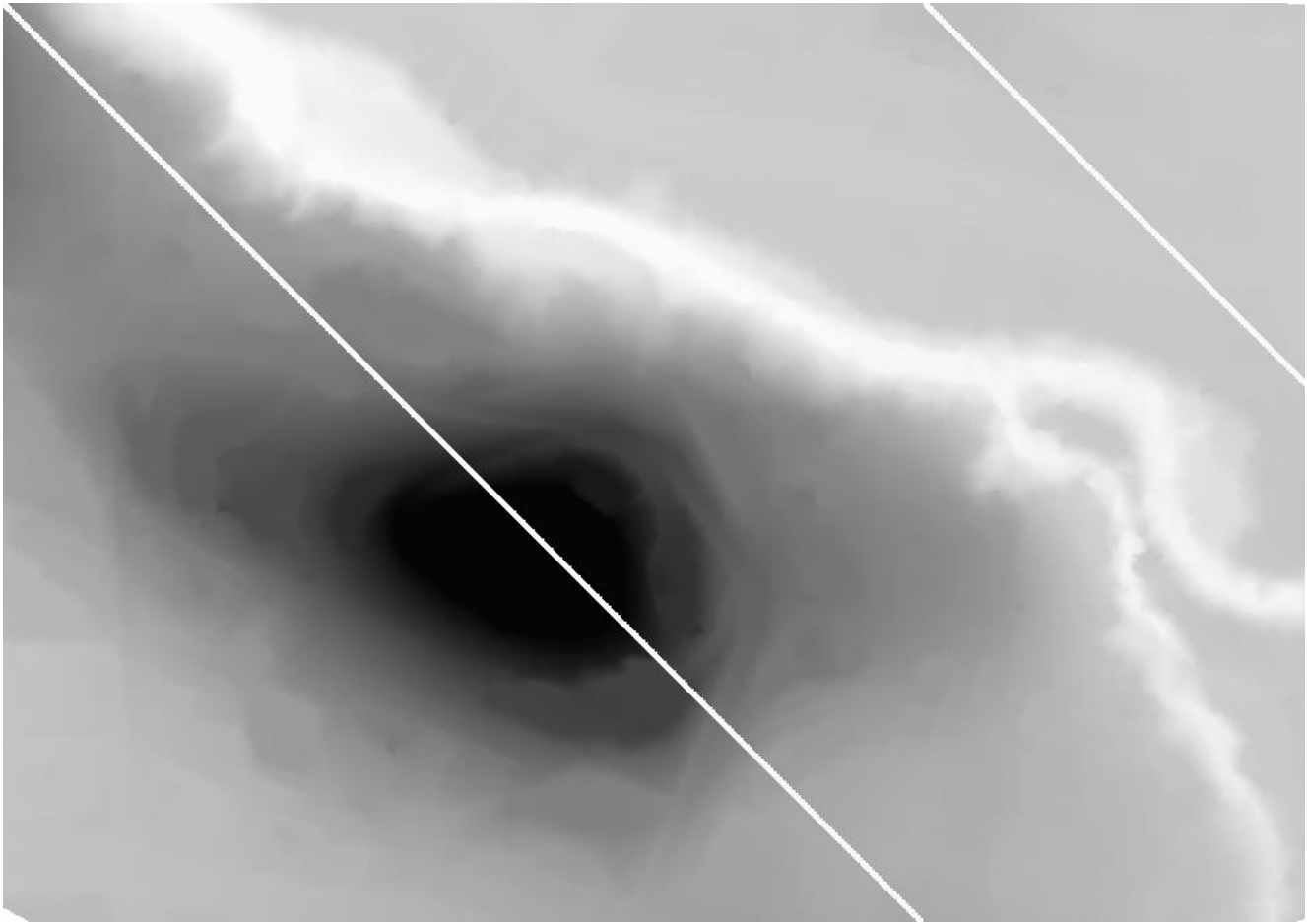
pick lower left x: 0 upper right x: 0 use square tile

disable lower left y: 0 upper right y: 0 tile size: 1000

selected file: C:/GIS\_Projects/Scratch/QGIS/LASools/sonoma.las







**Grid Surface Create** [?] [X]

Parameters Log Help Run as batch process...

Input LAS layer [optional]  
C:\MQGIS\LASTools\sonoma.las ...

Cellsize  
3.000000 ...

XY Units  
Meter

Z Units  
Feet

▼ **Advanced parameters**

Spike (set blank if not used) [optional]  
...

Median [optional]  
...

Smooth [optional]  
...

Slope [optional]  
...

Minimum (set blank if not used)

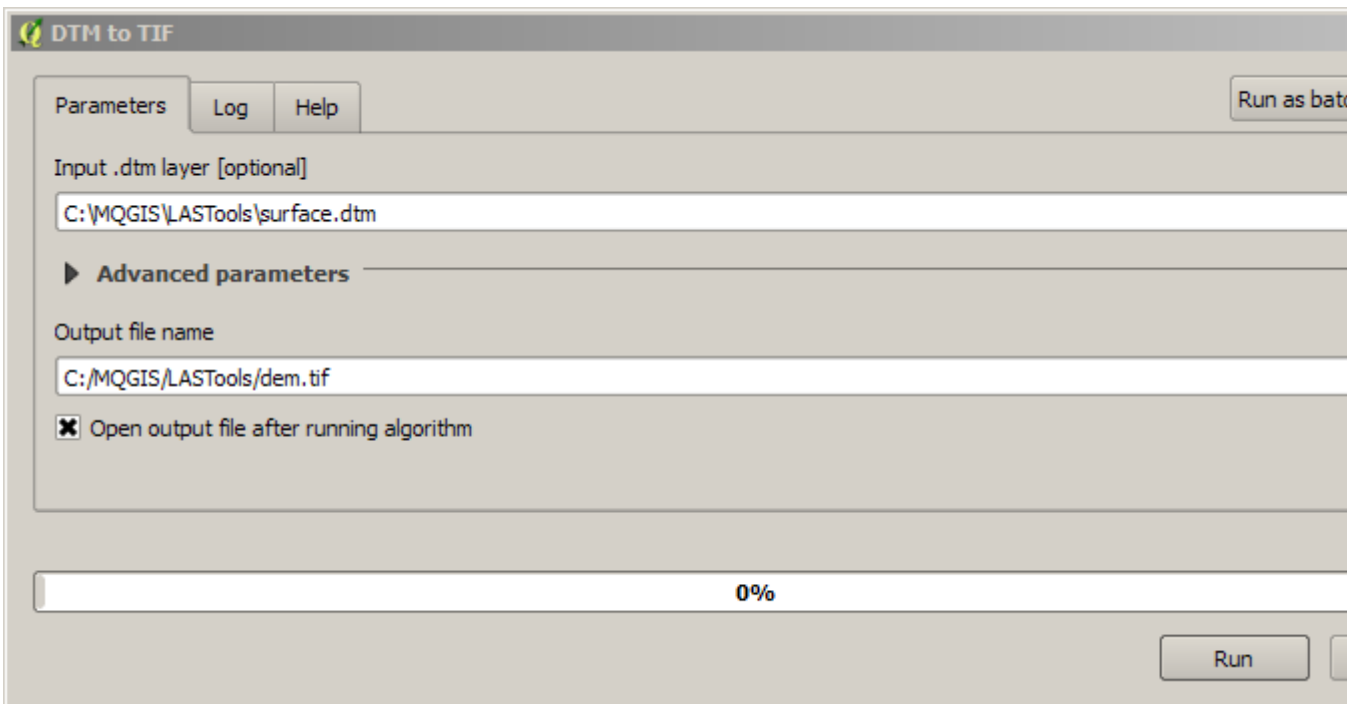
Class(es) [optional]  
2

Additional modifiers [optional]  
...

DTM Output Surface  
C:\MQGIS\LASTools\BE\_surface.dtm ...

0%

Run Close



Layers Panel

- DEM  
8  
224
- Hillshade  
35,448  
234,318





Canopy Model [?] [X]

Parameters Log Help Run as batch process...

Input LAS layer [optional]  
C:\MQGIS\LASTools\sonoma.las ...

Cellsize  
3.000000 ...

XY Units  
Meter

Z Units  
Feet

▼ Advanced parameters

Input ground DTM layer [optional]  
...

Median [optional]  
5

Smooth [optional]  
...

Slope [optional]  
...

Class [optional]  
3,4,5

Additional modifiers [optional]  
...

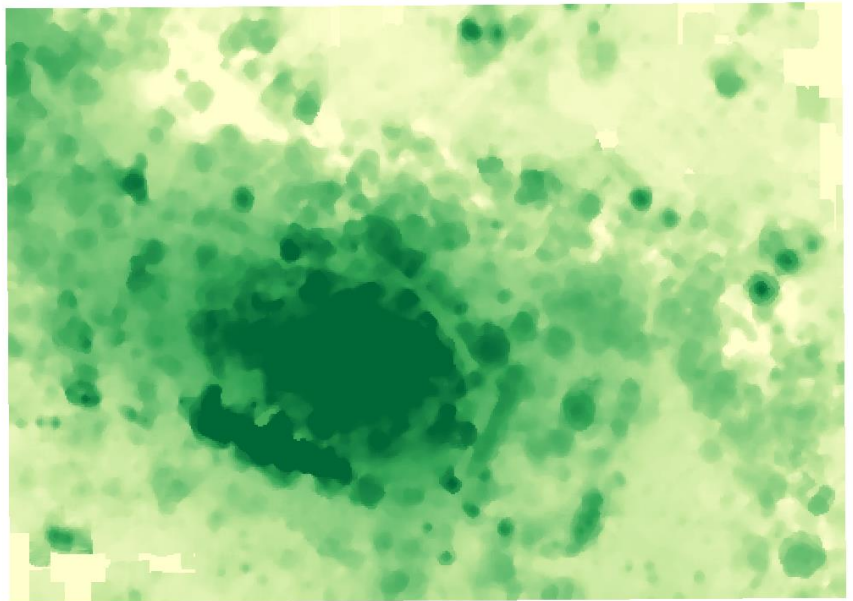
DTM Output Surface  
C:/MQGIS/LASTools/canopy.dtm ...

0%

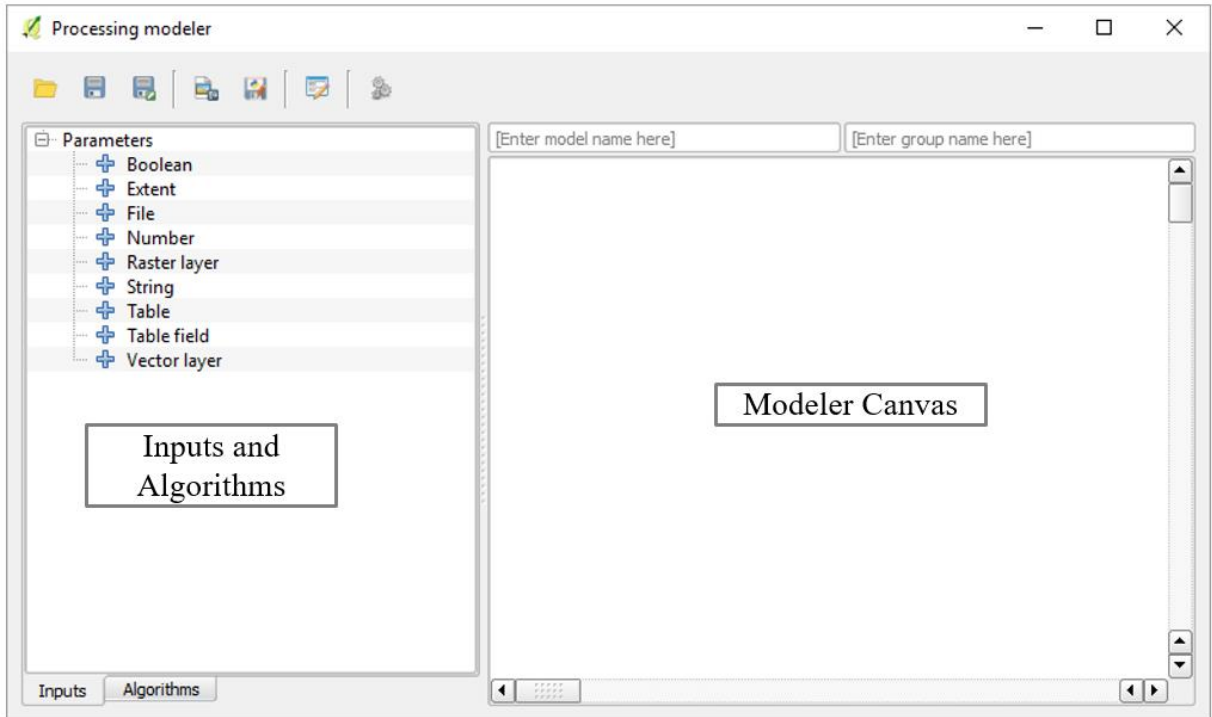
Run Close

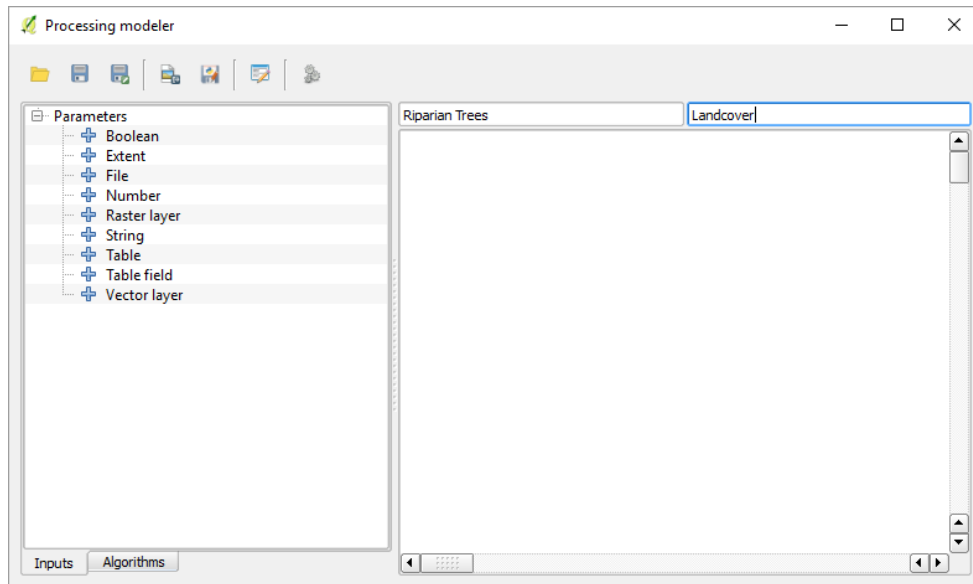
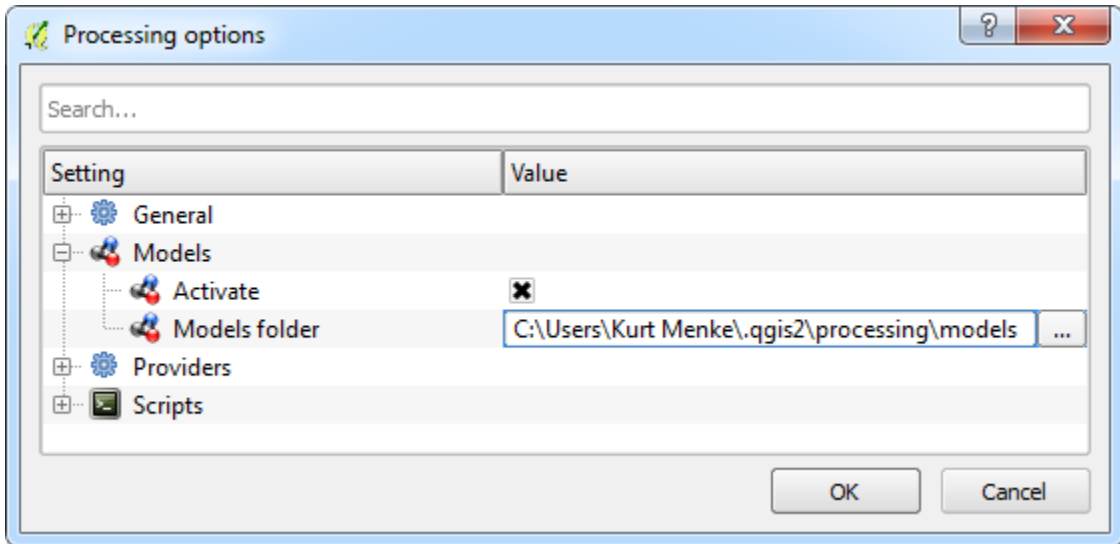
Layers Panel

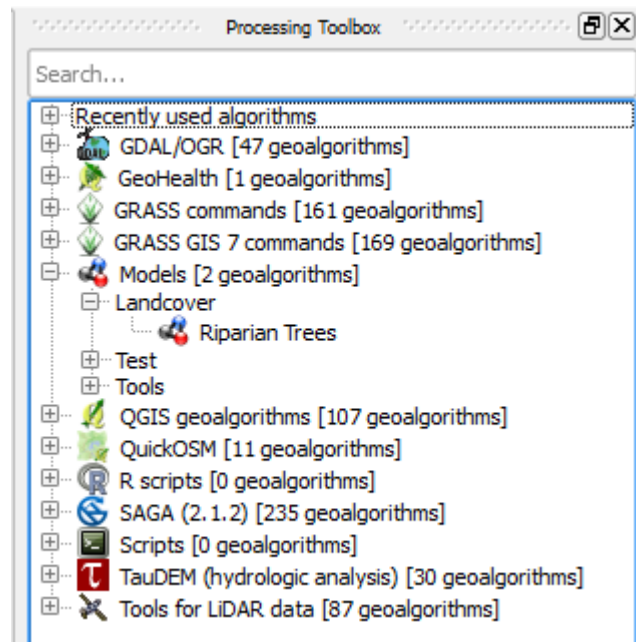
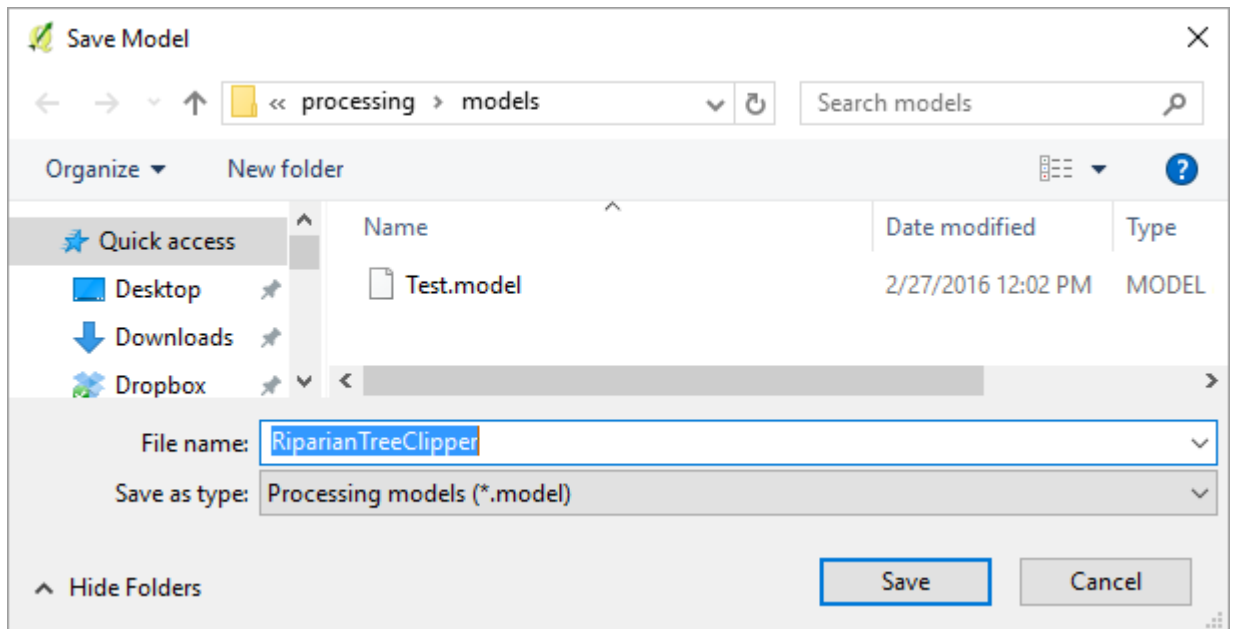
- Canopy Model Height (ft)
  - 24.000000
  - 59.500000
  - 95.000000
  - 130.500000
  - 166.000000
- DEM
  - 8
  - 224
- Hillshade
  - 35.4408
  - 234.318



## Chapter 9 – Automating Workflows with the Graphical Modeler







Parameter definition ? X

Parameter name

Shape type

Required

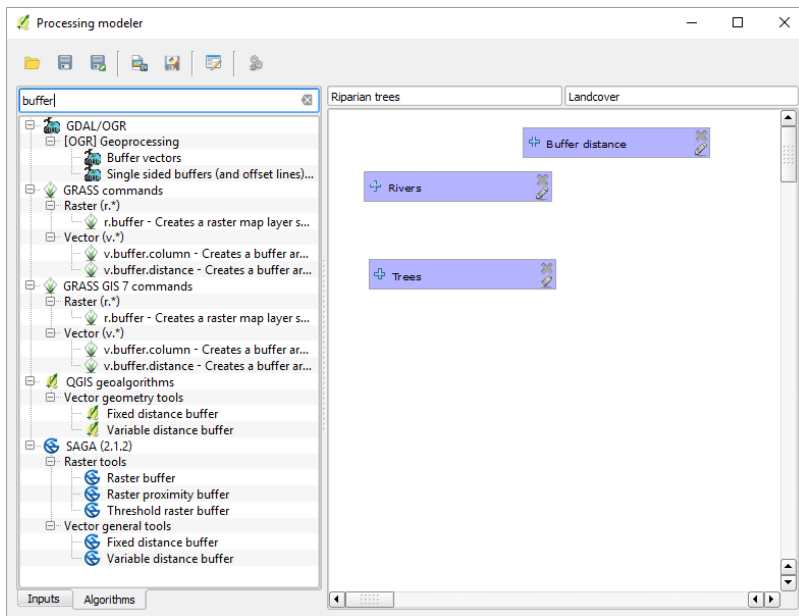
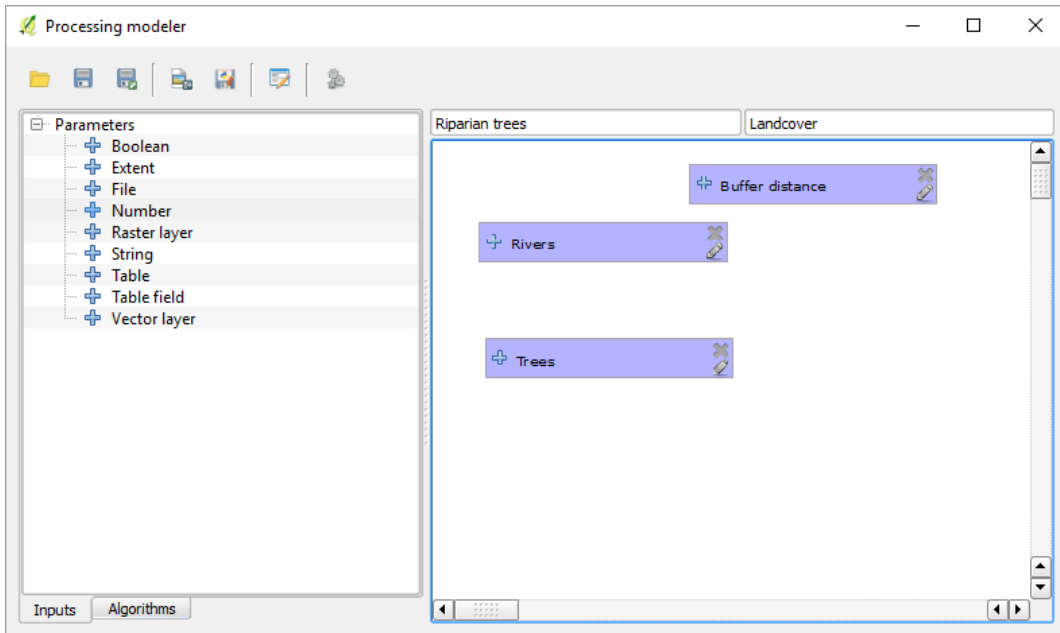
Parameter definition ? X

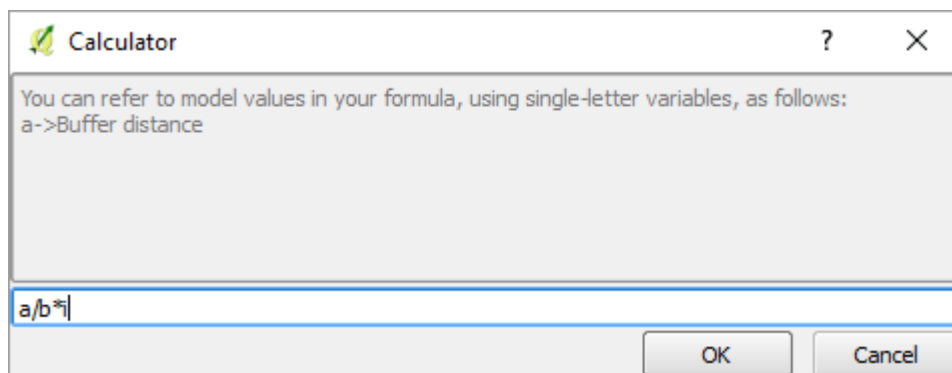
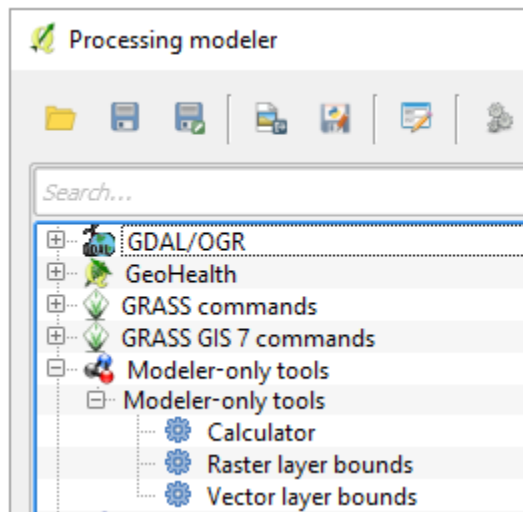
Parameter name

Min/Max values

Default value

Required







Fixed distance buffer

Parameters Help

Description Fixed distance buffer

Input layer  
Rivers

Distance  
Buffer distance

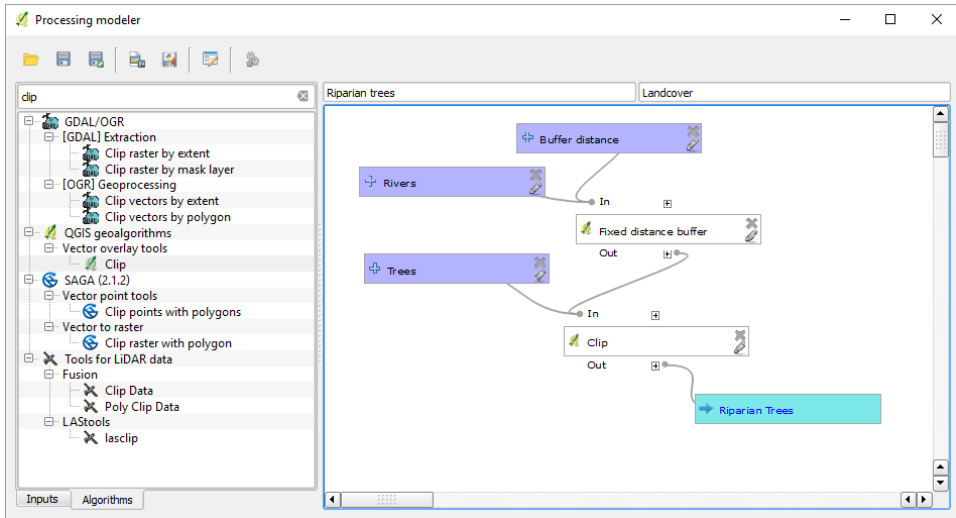
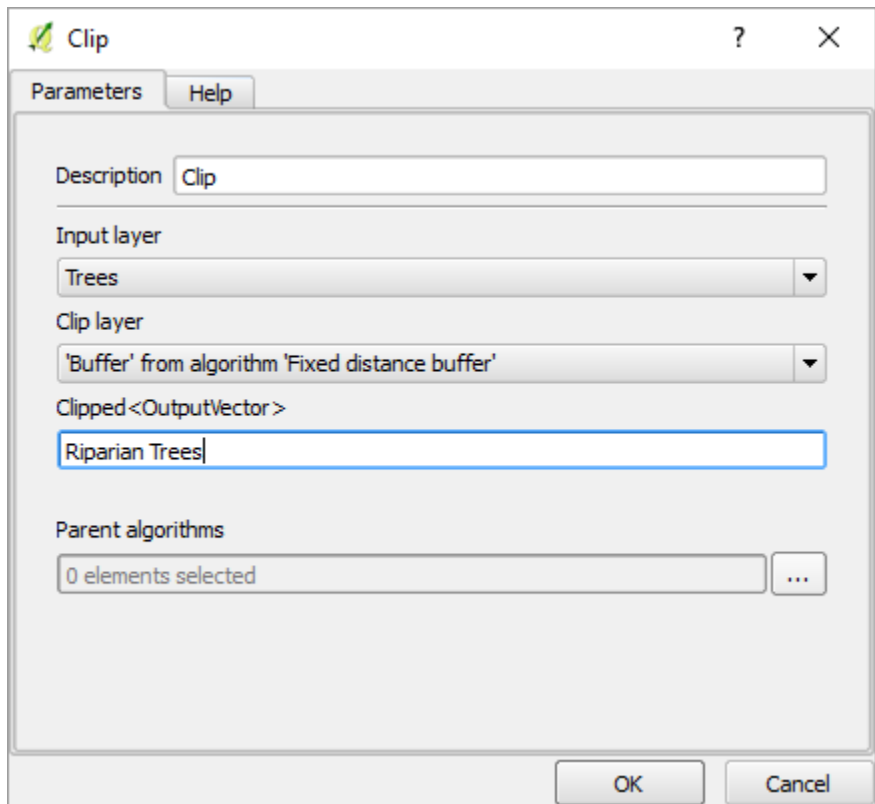
Segments  
20

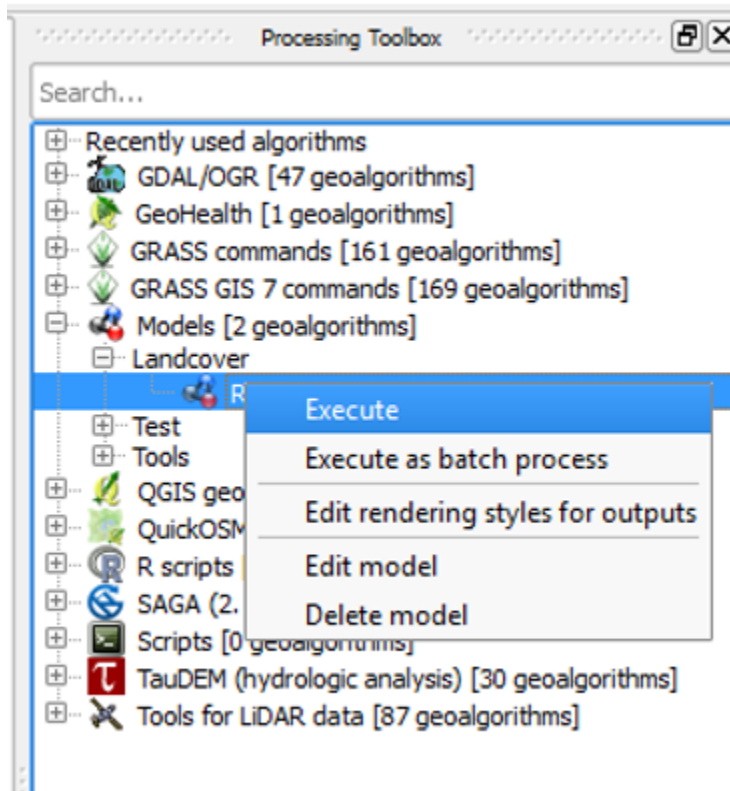
Dissolve result  
Yes

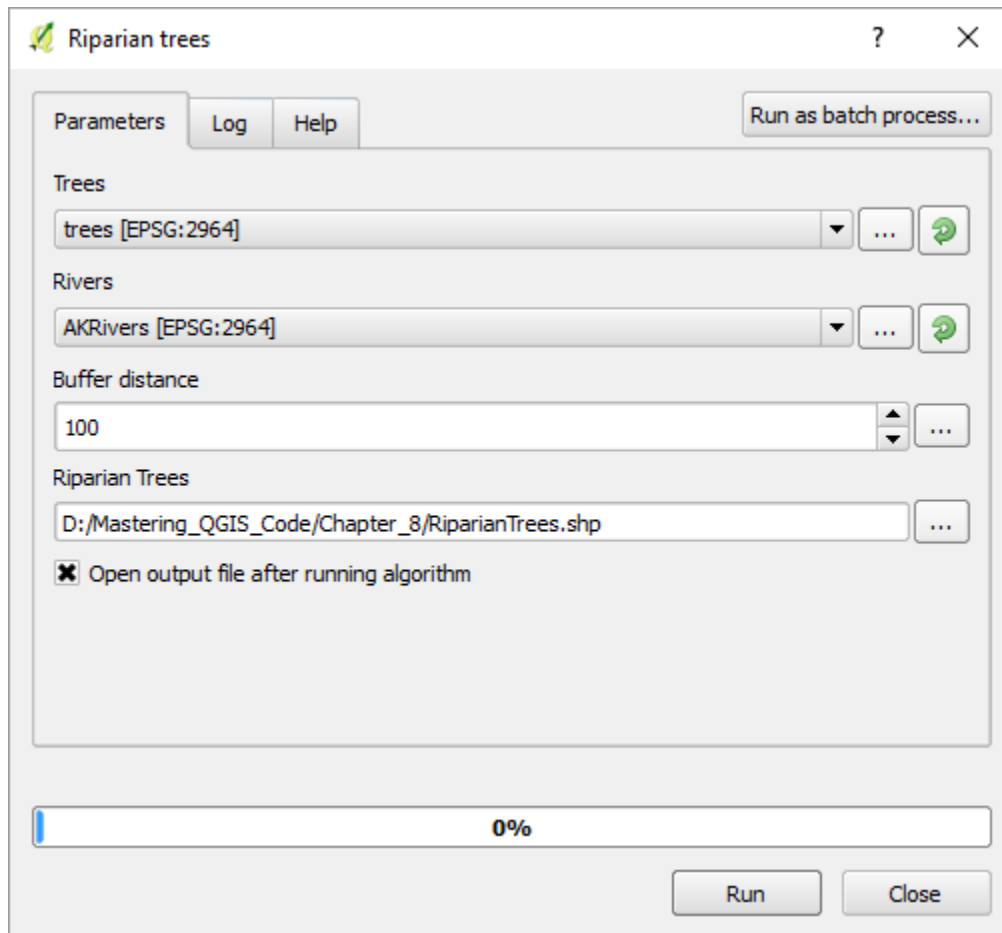
Buffer <OutputVector >  
[Enter name if this is a final result]

Parent algorithms  
0 elements selected

OK Cancel







Riparian trees

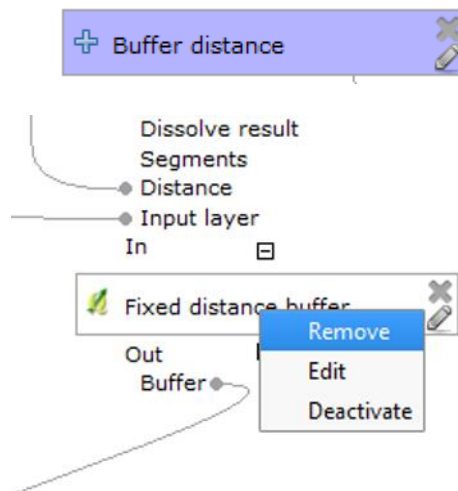
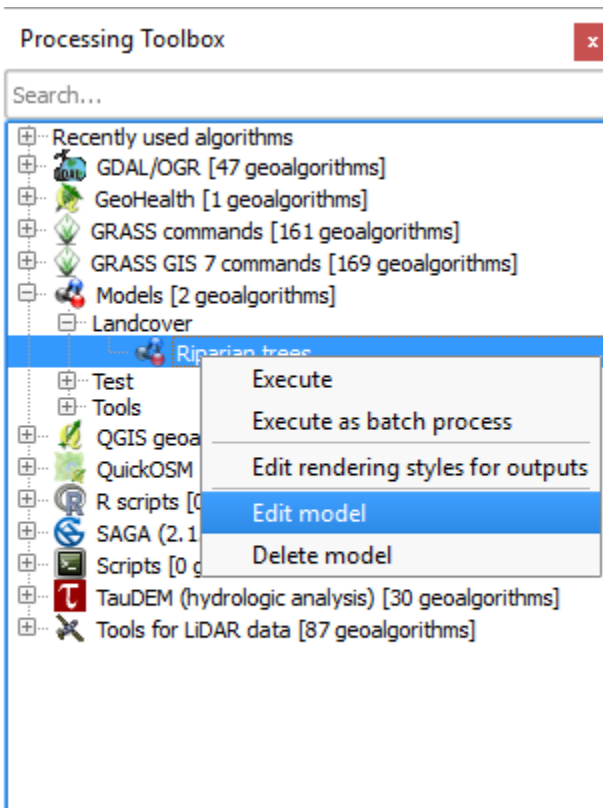
Parameters Log Help Run as batch process...

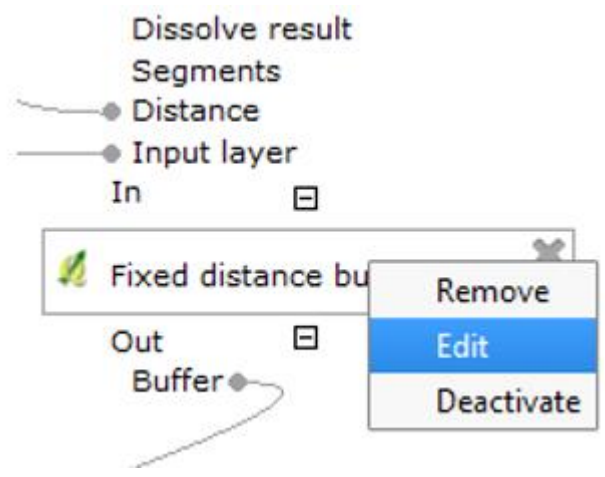
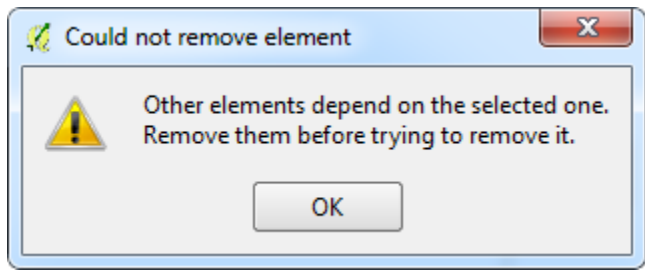
**Algorithm Riparian trees starting...**  
Prepare algorithm: QGISFIXEDDISTANCEBUFFER\_1  
Running Fixed distance buffer [1/2]  
Parameters: INPUT =D:\Mastering\_QGIS\_Code\Chapter\_8\AKRivers.shp, DISTANCE =100,  
SEGMENTS =20, DISSOLVE =True  
Converting outputs  
OK. Execution took 0.423 ms (1 outputs).  
Prepare algorithm: QGISCLIP\_1  
Running Clip [2/2]  
Parameters: INPUT =D:\Mastering\_QGIS\_Code\Chapter\_8\trees.shp, OVERLAY =C:  
\Users\KURTME~1\AppData\Local\Temp\processing71b95ce587904025822db17f3bedffc5\14181  
c2ed236436db0ee3f2bb4fb358e\OUTPUT.shp

Running Clip [2/2]

34%

Run Close





Help editor

## Algorithm description

This is a simple model that identifies riparian woodlands. It uses streams and polygon forest data as inputs. The rivers are buffered and the buffer data is used to clip the trees to create riparian tree data.

## Input parameters

### Trees

Polygonal tree data for Alaska

### Rivers

Perennial streams of Alaska

### Buffer distance

Distance in meters to streams

## Outputs

### Riparian Trees

Forest within 100 meters of perennial streams.

Select element to edit

- Algorithm description
- Input parameters
- Outputs
- Algorithm created by**
- Algorithm help written by
- Algorithm version

Element description

Walter Sobchak

OK Cancel



Riparian trees ? X

Parameters Log Help Run as batch process...

### Algorithm description

This is a simple model that identifies riparian woodlands. It uses streams and polygon forest data as inputs. The rivers are buffered and the buffer data is used to clip the trees to create riparian tree data.

### Input parameters

#### Trees

Polygonal tree data for Alaska

#### Rivers

Perennial streams of Alaska

#### Buffer distance

Distance in meters to streams

### Outputs

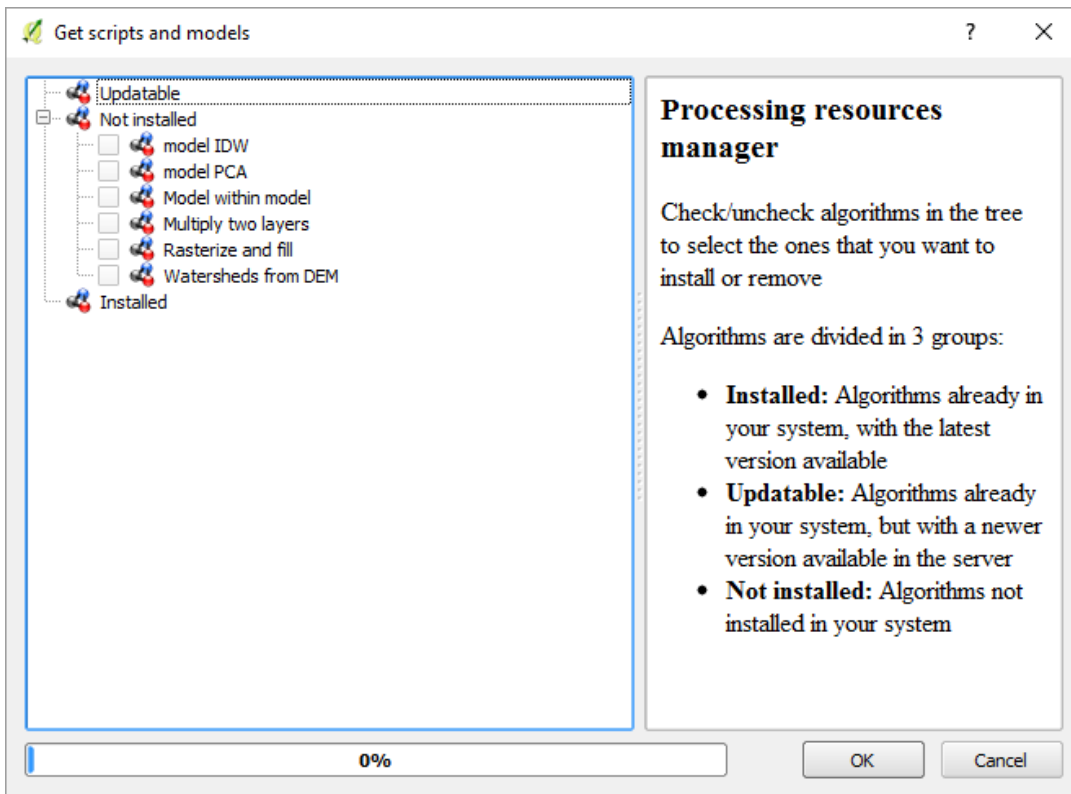
#### Riparian Trees

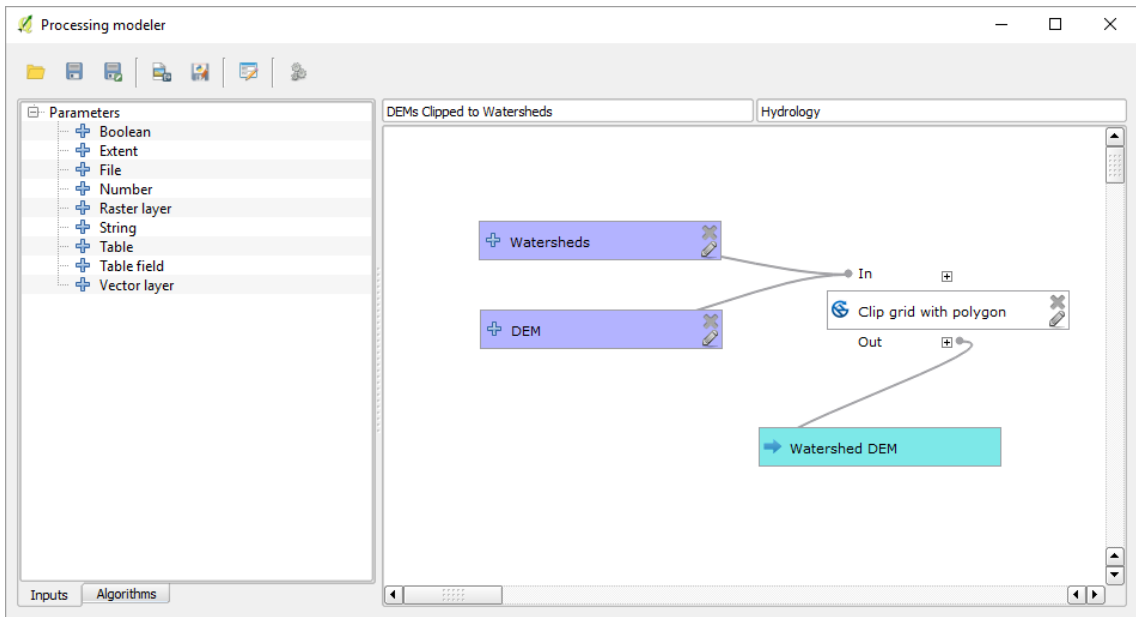
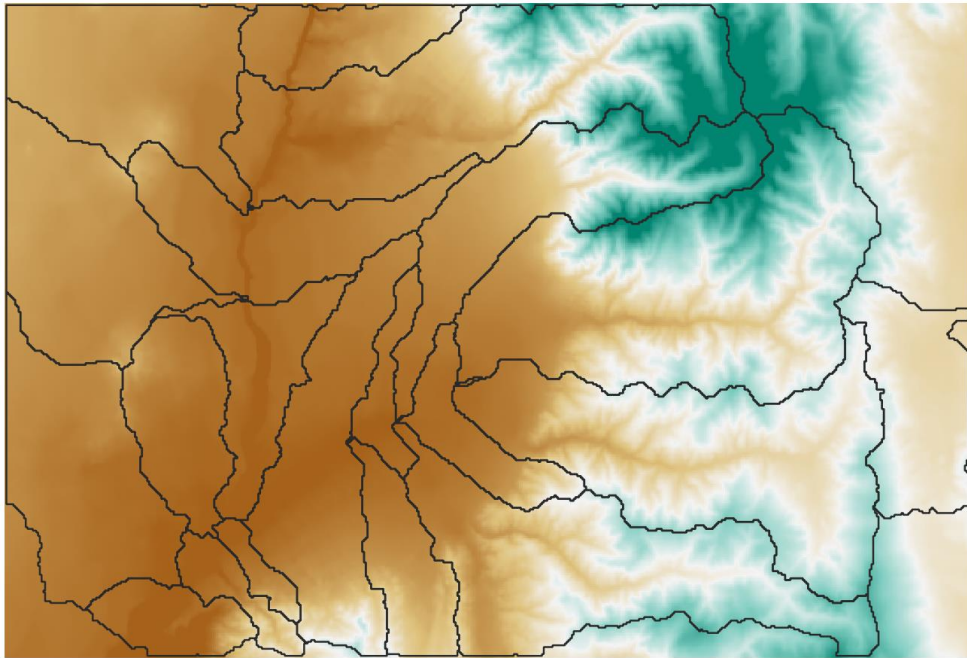
Forest within 100 meters of perennial streams.

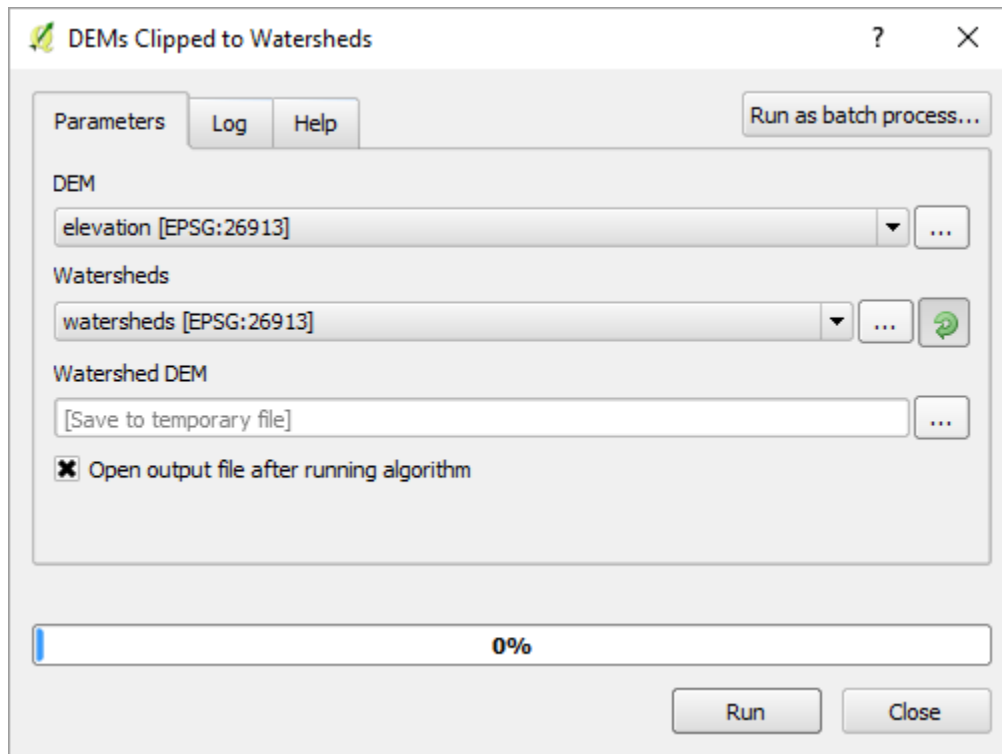
Algorithm author: Walter Sobchak  
Help author:  
Algorithm version:

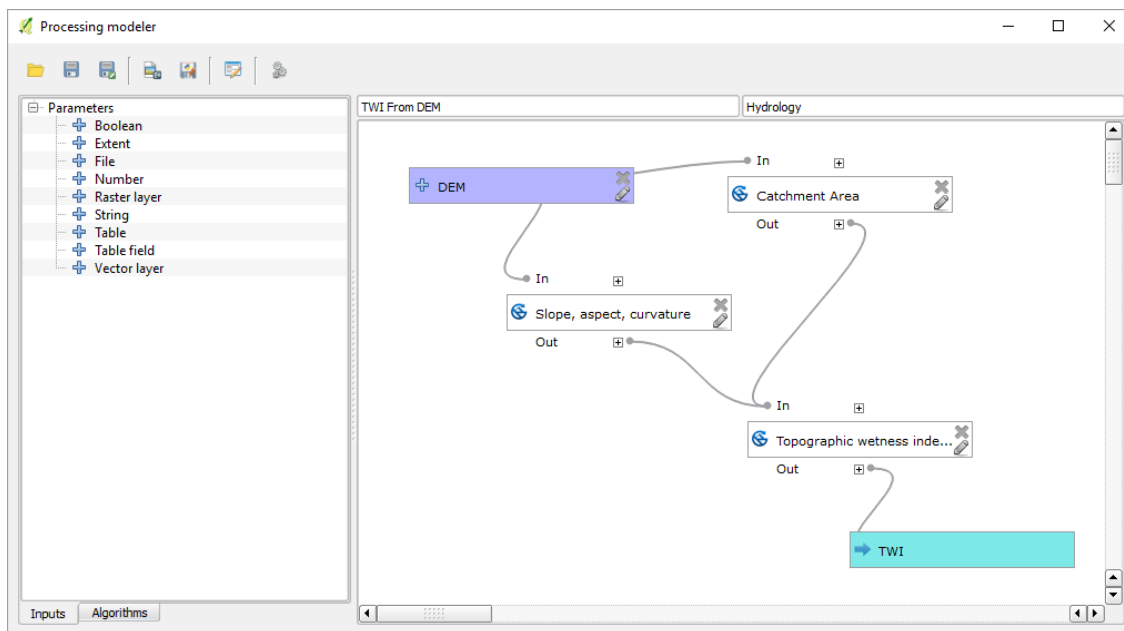
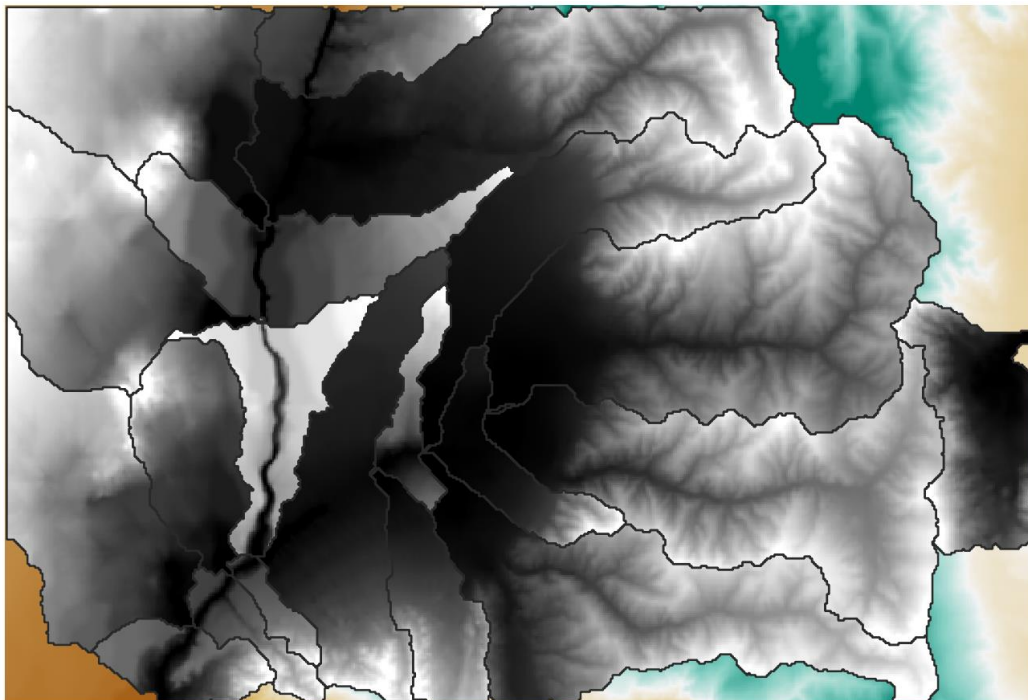
0%

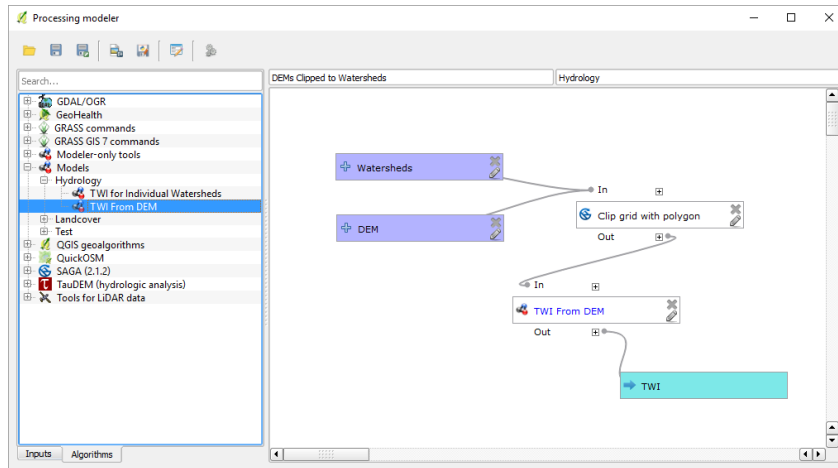
Run Close











### DEMs Clipped to Watersheds

Parameters Log Help Run as batch process...

**DEM**  
elevation [EPSG:26913]

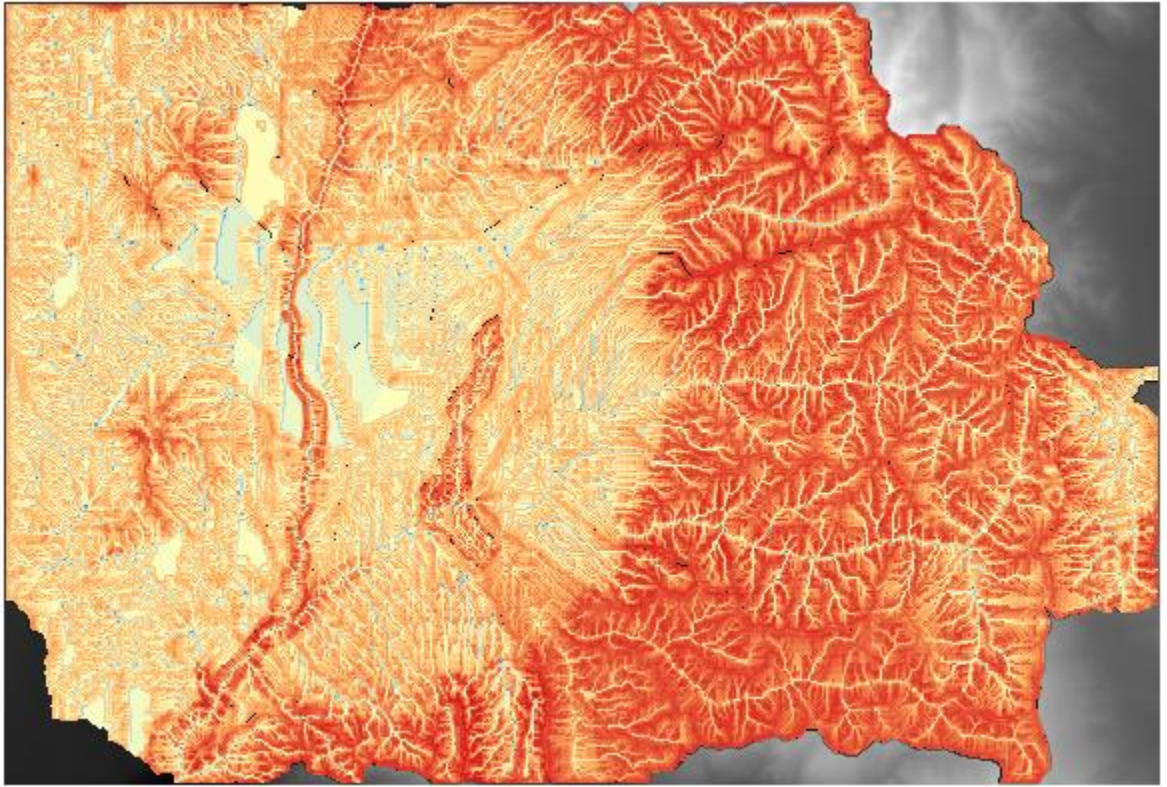
**Watersheds**  
watersheds [EPSG:26913]

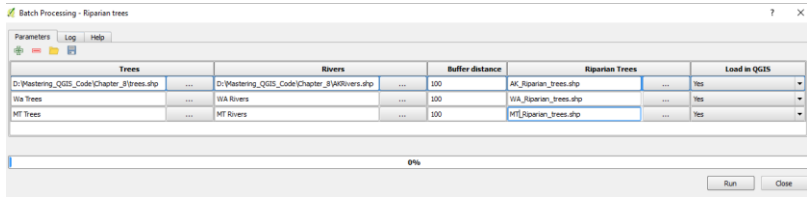
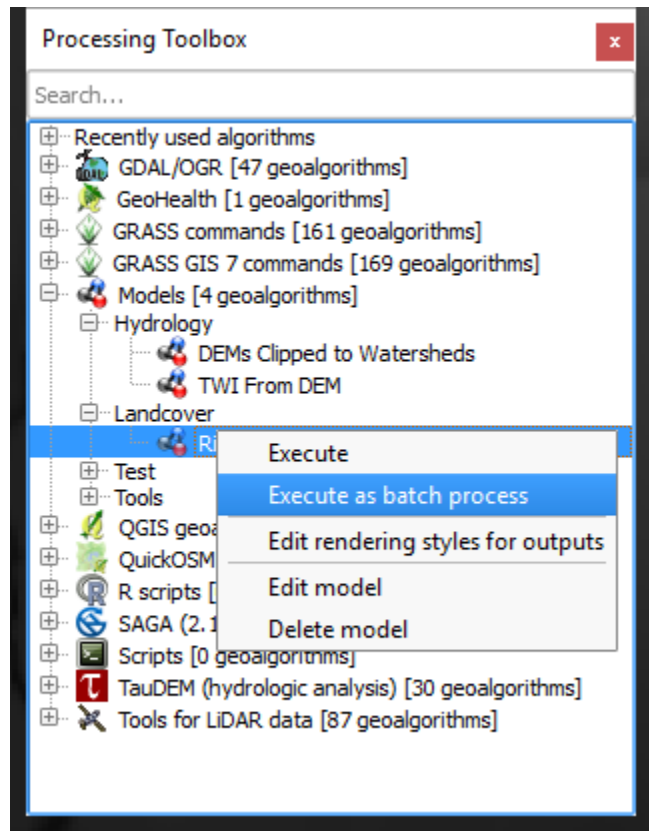
**TWI**  
[Save to temporary file]

Open output file after running algorithm

0%

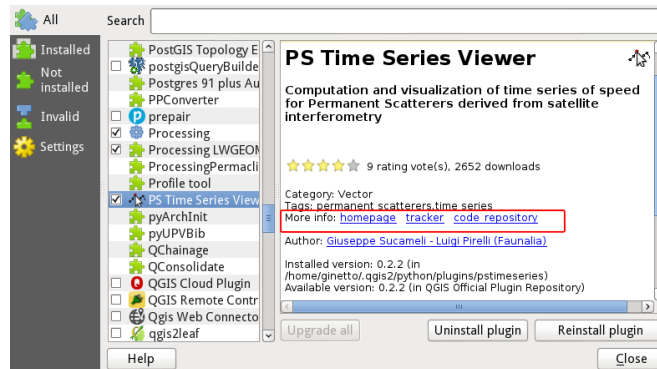
Run Close







## Chapter 10 – Creating QGIS Plugins with PyQGIS and Problem Solving



Project Edit View Layer Settings Plugins Vector Raster Database Web Processing Help

The screenshot displays the QGIS desktop environment. At the top, a menu bar includes 'Project', 'Edit', 'View', 'Layer', 'Settings', 'Plugins', 'Vector', 'Raster', 'Database', 'Web', 'Processing', and 'Help'. Below the menu is a toolbar with various icons for navigation and editing. The main map area shows a raster image of Alaska with a color-coded land cover overlay. On the left, the 'Layers' panel contains a single layer named 'MyFirstRaster'. At the bottom, the 'Python Console' window is open, showing a list of instructions and a code block. The code defines a raster layer and adds it to the map. The status bar at the very bottom shows the coordinate as -2794653,5450800, a scale of 0,557,437, and the EPSG:2964 projection.

Layers

MyFirstRaster

Python Console

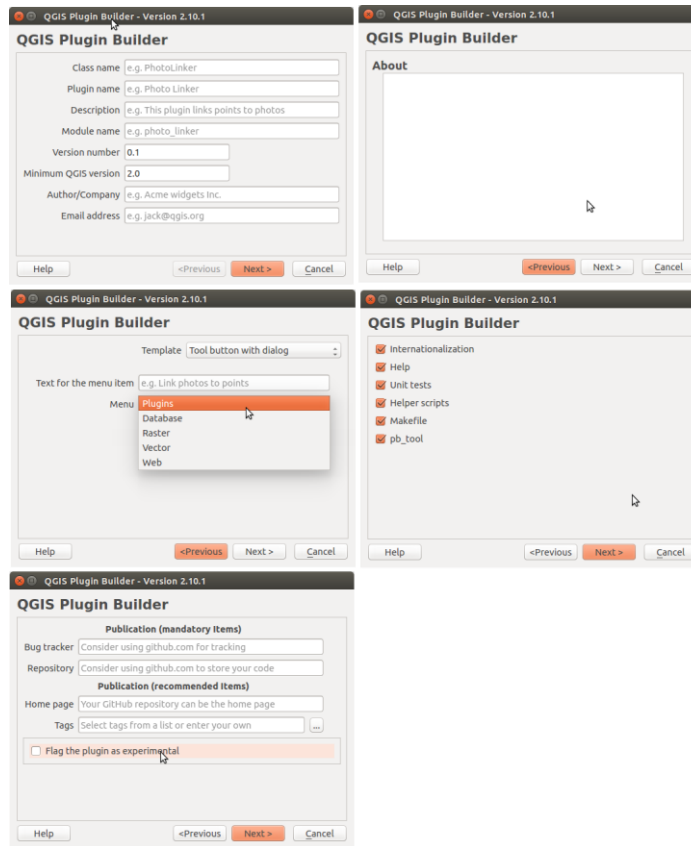
```
1 Python Console
2 Use iface to access QGIS API interface or Type help(iface) for more info
3 >>> myRaster = QgsRasterLayer("/mnt/data/PROGRAMMING/GIS/GISDATA/qgis_sample_data/raster/landcover.img", "MyFirstRaster")
4 >>> QgsMapLayerRegistry.instance().addMapLayers([myRaster])
5 [<qgis._core.QgsRasterLayer object at 0x955f3b0>]
6
```

>>> |

Coordinate: -2794653,5450800 Scale {0,557,437} Render EPSG:2964

Cancel

OK



```

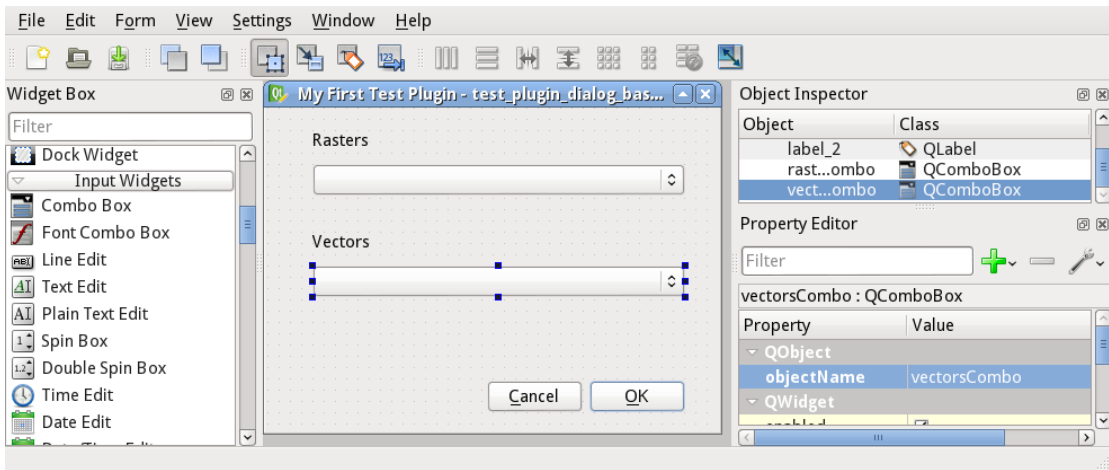
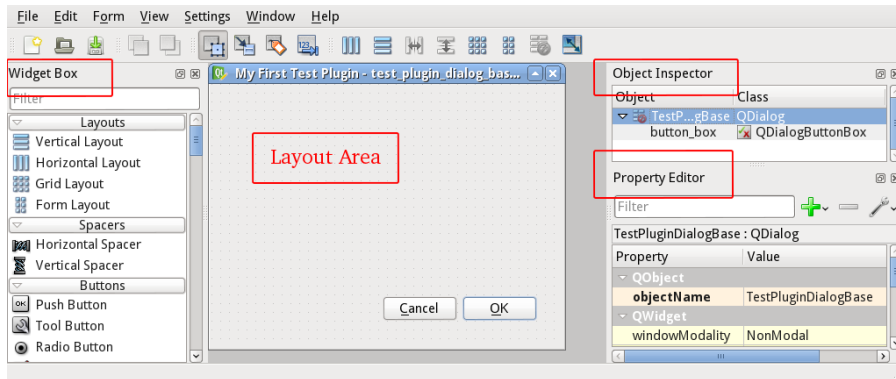
OSGeo4W Shell
2014-09-24 04:29 PM          934 README.txt
2014-09-24 04:29 PM          101 resources.qrc
2014-09-24 05:05 PM          5,443 resources_rc.py
2014-09-24 05:09 PM          1,932 resources_rc.pyc
2014-09-02 01:26 PM      <DIR> scripts
2014-09-24 04:29 PM      <DIR> test
2014-09-25 01:56 PM          8,309 test3.py
2014-09-29 11:51 AM          8,167 test3.pyc
2014-09-25 12:52 PM          7,896 test3_csv_nonfunziona.py
2014-09-25 01:13 PM          2,295 test3_dialog.py
2014-09-25 01:13 PM          2,767 test3_dialog.pyc
2014-09-25 10:20 PM          2,396 test3_dialog_base.ui
2014-09-25 10:13 AM          3,504 ui_used_in_developing.py
2014-09-24 05:40 PM          1,455 __init__.py
2014-09-24 05:42 PM          1,662 __init__.pyc
19 File(s)          68,933 bytes
6 Dir(s)          23,884,546,048 bytes free

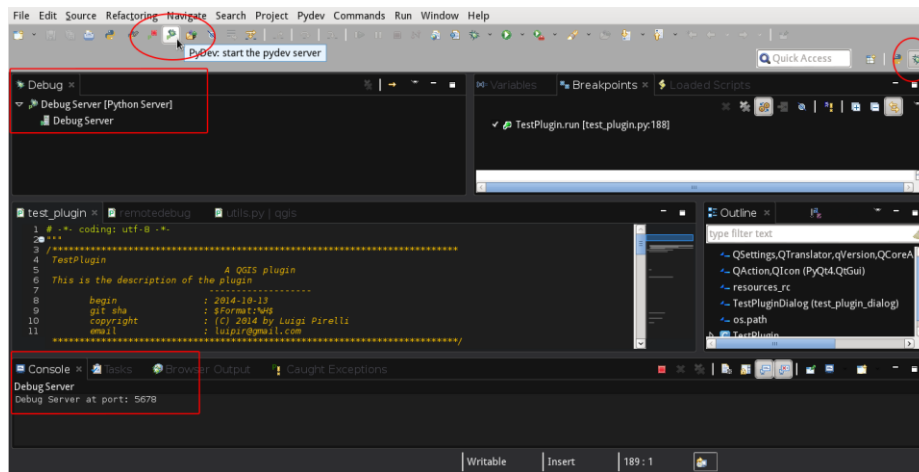
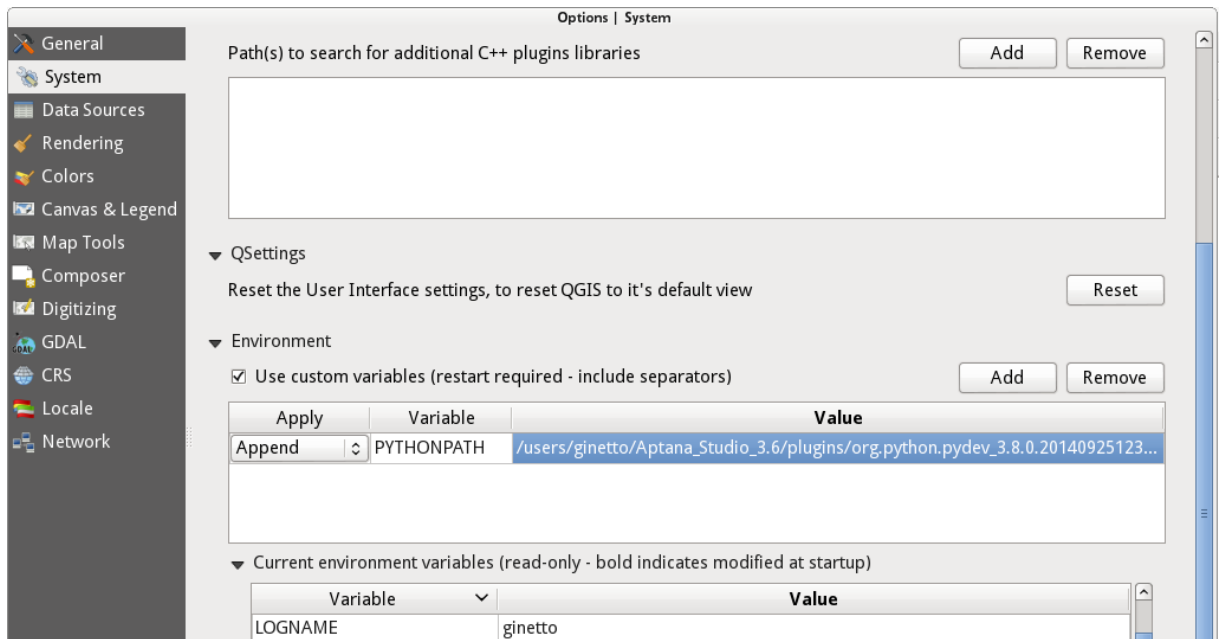
C:\Users\gino\.qgis2\python\plugins\Test3>MAKE
pyrcc4 -o resources_rc.py resources.qrc

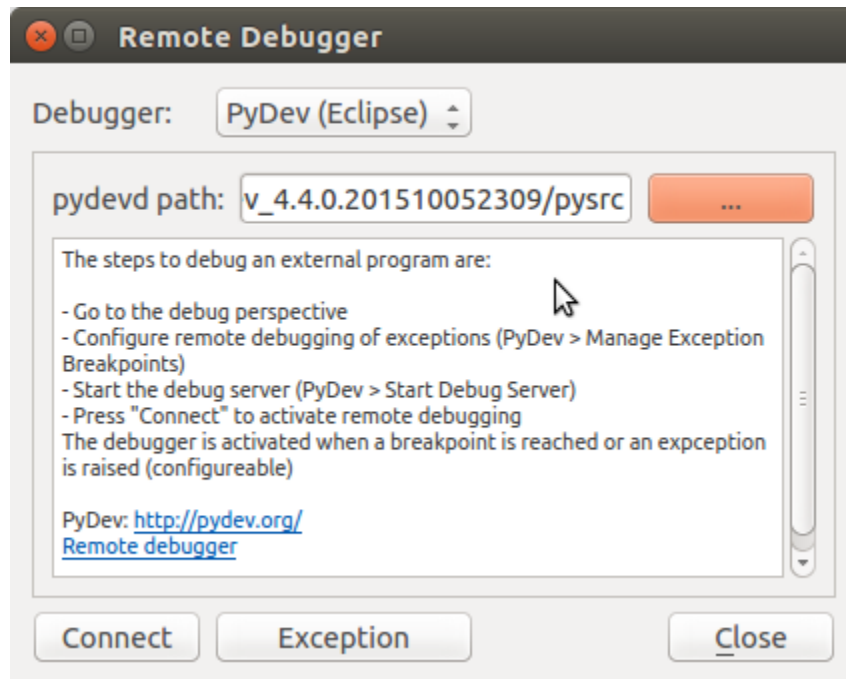
C:\Users\gino\.qgis2\python\plugins\Test3>make
pyrcc4 -o resources_rc.py resources.qrc

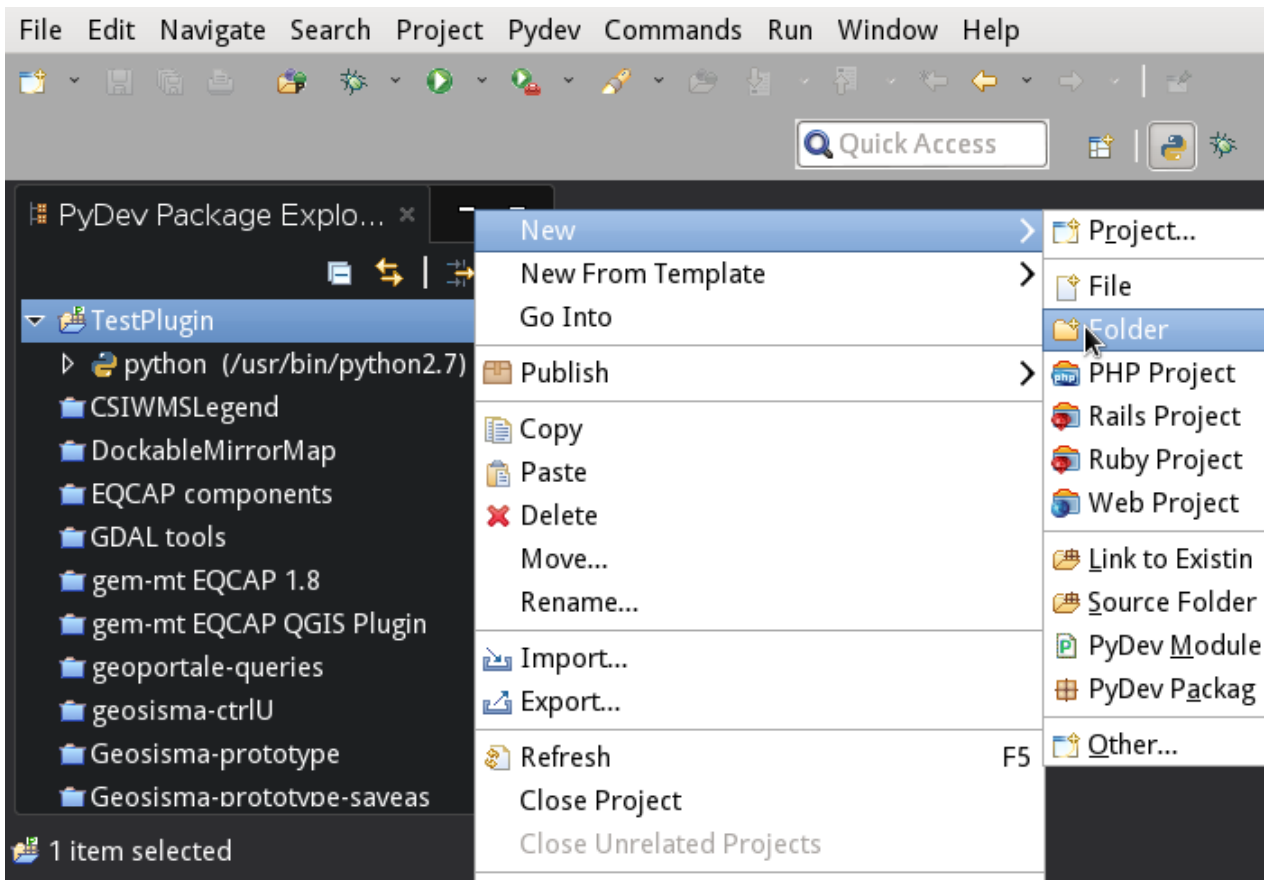
C:\Users\gino\.qgis2\python\plugins\Test3>

```











## Folder

Create a new folder resource.






Enter or select the parent folder:



 TestPlugin

Folder name:

<< Advanced

-  Use default location
-  Folder is not located in the file system (Virtual Folder)
-  Link to alternate location (Llinked Folder)

Browse...

Variables...

Resolved location: file:/home/ginnetto/.qgis2/python/plugins/TestPlugin

Resource Filters...



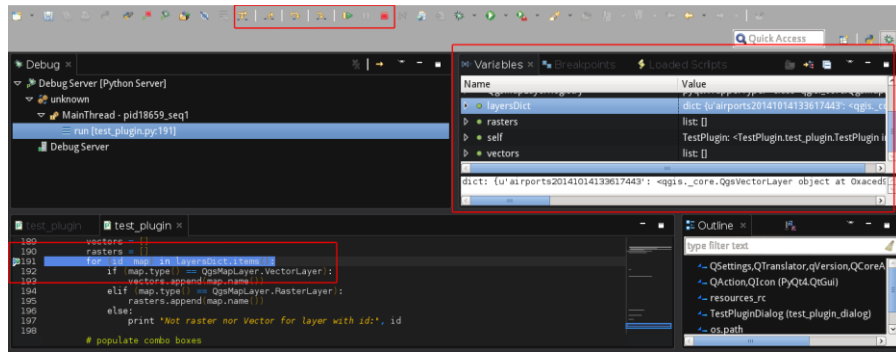
Cancel

Finish

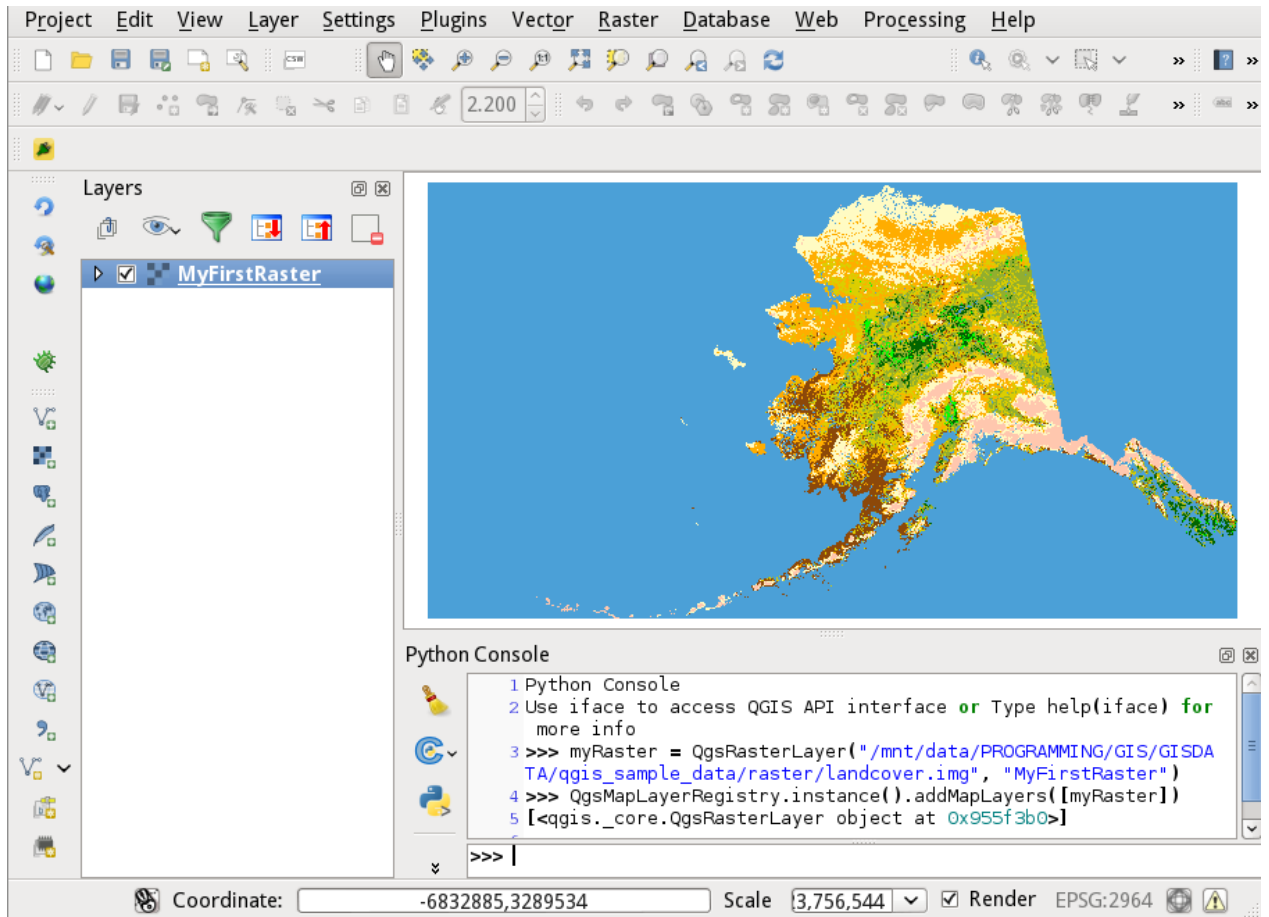
The image shows the PyDev Package Explorer on the left, displaying a project structure for 'TestPlugin'. The main editor shows the code for 'test\_plugin.py' with the following content:

```
176         action)
177         self.iface.removeToolBarIcon(action)
178
179
180     def run(self):
181         """Run method that performs all the real work"""
182
183         # get all layers
184         from qgis.core import QgsMapLayerRegistry
185         layersDict = QgsMapLayerRegistry.instance().mapLayers()
186
187         # classify layers
188         from qgis.core import QgsMapLayer
189         vectors = []
190         rasters = []
191         for (id, map) in layersDict.items():
192             if (map.type() == QgsMapLayer.VectorLayer):
193                 vectors.append(map.name())
194             elif (map.type() == QgsMapLayer.RasterLayer):
195                 rasters.append(map.name())
196             else:
197                 print "Not raster nor Vector for layer with id:", id
198
199         # populate combo boxes
200         self.dlg.rastersCombo.insertItems(0, rasters)
201         self.dlg.vectorsCombo.insertItems(0, vectors)
202
203         # show the dialog
204         self.dlg.show()
205         # Run the dialog event loop
206         result = self.dlg.exec_()
207         # See if OK was pressed
208         if result:
209             # Do something useful here - delete the line containing pass and
210             # substitute with your code.
211             pass
```

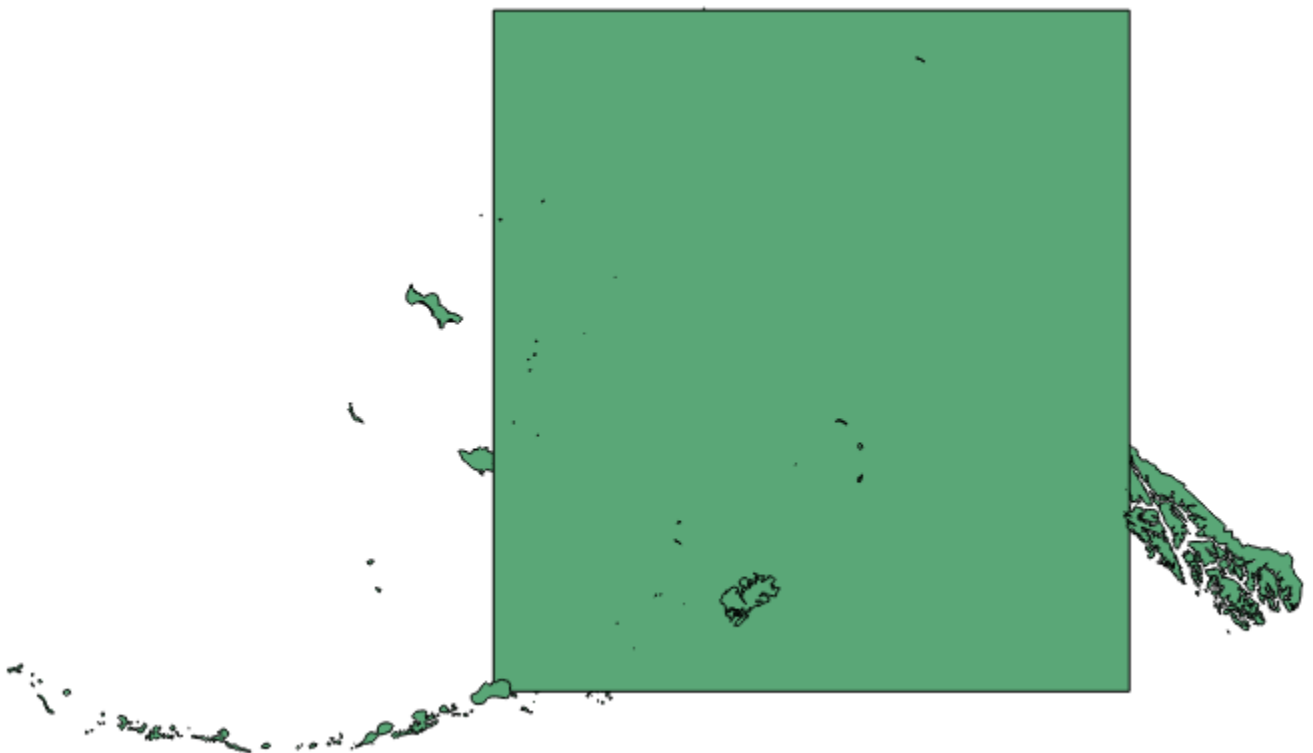
The image shows the PyDev IDE interface during a debug session. The 'Debug' window at the top shows a terminated debug server. The 'Loaded Scripts' window lists the current script: 'TestPlugin.run [test\_plugin.py:191]'. The main editor shows the code from the previous image, with a red box highlighting the loop starting at line 191. The 'Outline' window on the right shows the class structure, including 'TestPlugin' and its methods. The 'Console' window at the bottom shows the debug server's status.



## Chapter 11 – PyQGIS Scripting



		<u>QgsFields</u>			
Header		QgsField	...	QgsField	
		<u>QgsFeature</u>			
Row 0		QgsAttributes[0]	...	QgsAttributes[n]	QgsGeometry
		⋮			
		<u>QgsFeature</u>			
Row <u>featureCount()-1</u>		QgsAttributes[0]	...	QgsAttributes[n]	QgsGeometry

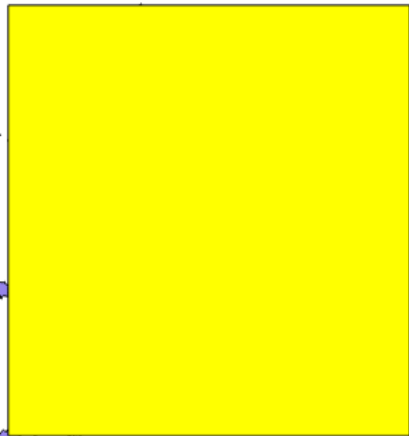


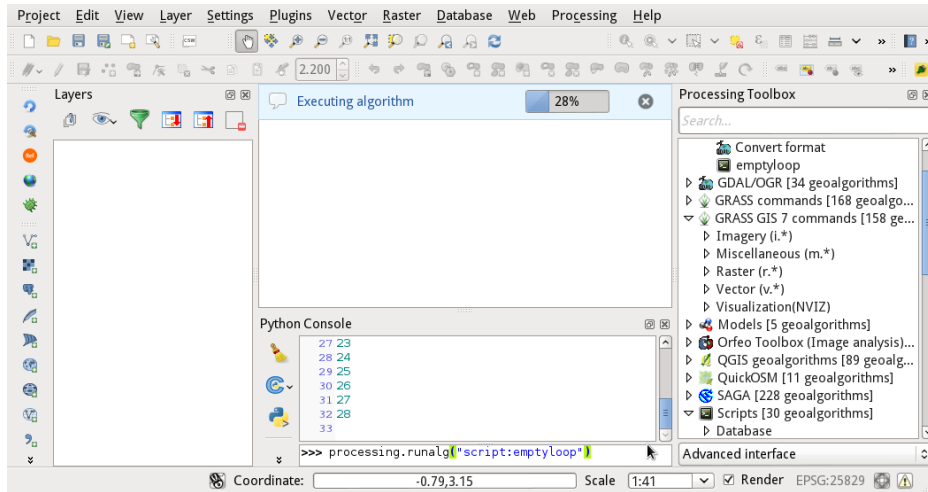
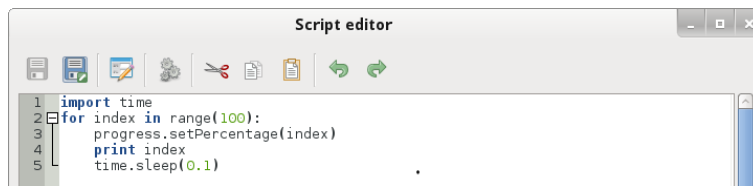
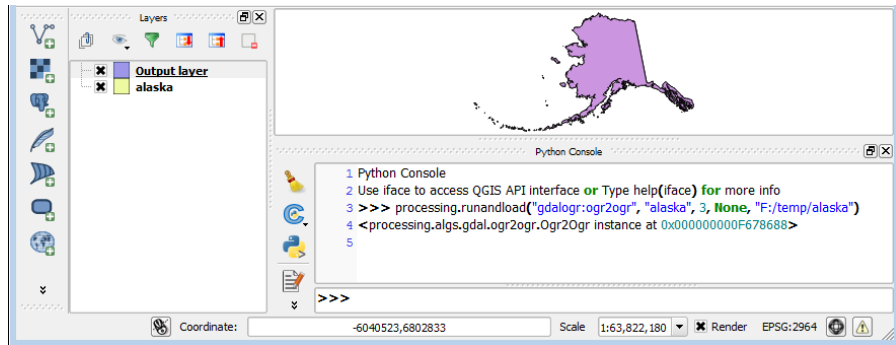


Attribute table - alaska :: Features total

	cat	NAME	AREA_MI
645	650	Alaska	0.56325500...
646	651	Alaska	0.44360500...
647	652	Alaska	1.71062900...
648	653	Alaska	1582.43105...
649	655	Alaska	0.03638900...
650	657	Alaska	3.81719400...
651	658	Alaska	4.29708100...
652	665	Alaska	15.1785739...
653	1000	Alaska	2.00000000...

Show All Features





Settings Plugins Vector Raster Database Web Processing

Parameters Log Help

Algorithm running starting...

Processing algorithm... 70%

Python Console

```

1 Python Console
2 Use iface to access QGIS API interface
3 PING localhost (127.0.0.1) 56(84)
4
5 64 bytes from localhost (127.0.0.1): icmp_seq=1 ttl=64 time=0.046 ms
6
7 64 bytes from localhost (127.0.0.1): icmp_seq=2 ttl=64 time=0.046 ms
8
9 64 bytes from localhost (127.0.0.1): icmp_seq=3 ttl=64 time=0.046 ms
10
11 64 bytes from localhost (127.0.0.1): icmp_seq=4 ttl=64 time=0.046 ms
12
13 64 bytes from localhost (127.0.0.1): icmp_seq=5 ttl=64 time=0.046 ms
14
15 64 bytes from localhost (127.0.0.1): icmp_seq=6 ttl=64 time=0.046 ms
16
17 64 bytes from localhost (127.0.0.1): icmp_seq=7 ttl=64 time=0.046 ms
18
19
>>>

```

Run Close

runping  
runthreademptypool  
Utils  
Vector  
Vector Layer

Advanced interface

Python Console

```

1 Python Console
2 Use iface to access QGIS API interface
3 r Type help(iface) for more info
4 move coordinate -31012892 - 1461082
5 move coordinate -31012892 - 1541545
6 move coordinate -30932428 - 1622009
7 move coordinate -30932428 - 1702473
8 move coordinate -30932428 - 1782936
9 Clicked on -30932428 - 1782936
10 move coordinate -30932428 - 1863400
11 Clicked on -30851965 - 1863400
12 move coordinate -30771501 - 1863400
13 move coordinate -30691037 - 1863400
14 move coordinate -30610574 - 1943864
15 Clicked on -30610574 - 1943864
16 Clicked on -30610574 - 1943864
17
>>>

```

Untitled-0

```

1 from qgis.gui import QgsMapToolEmitPoint
2
3 previousMapTool = iface.mapCanvas().mapTool()
4 myMapTool = QgsMapToolEmitPoint( iface.mapCanvas() )
5 # set map canvas event handler
6 -def showCoordinates( currentPos ):
7     print "move coordinate-%d - %d" % ( currentPos.x(), currentPos.y() )
8     iface.mapCanvas().xyCoordinates.connect( showCoordinates )
9
10 ## import the Qt module that contain mouse button definitions
11 from PyQt4.QtCore import Qt
12 # create handler
13 -def manageClick( currentPos, clickedButton ):
14     if clickedButton == Qt.LeftButton:
15         print "Clicked on %d - %d" % ( currentPos.x(), currentPos.y() )
16     if clickedButton == Qt.RightButton:
17         # reset to the previous mapTool
18         iface.mapCanvas().setMapTool( previousMapTool )
19         # remove handler from the myMapTool
20         myMapTool.deleteLater()
21
22 myMapTool.canvasClicked.connect( manageClick )
23 # set new map tool
24 iface.mapCanvas().setMapTool( myMapTool )

```

Coordinate: -30610574,1943864 Scale 2,694,119 Render EPSG:2964

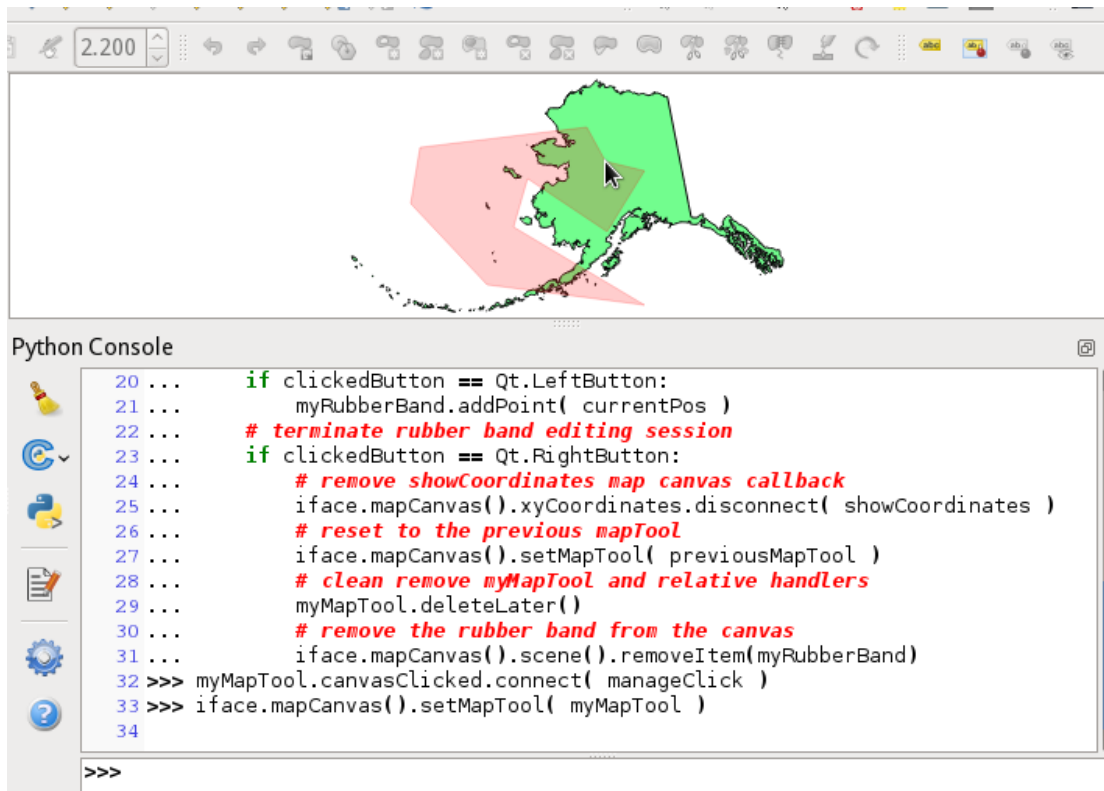




### Python Console

```
3 >>> execfile(u'/mnt/data/Libri
/GIS/PyQGIS/Link to Dropbox QG
IS Mastering Packt Book/raster
Identify.py'.encode('UTF-8'))
4 Value at -540057 - 4274114
5 {1: 7.0}
6 Value at 10501 - 5414559
7 {1: 6.0}
8 Value at 679038 - 5886467
9 {1: 6.0}
10 Value at 1111620 - 5257256
11 {1: 6.0}
12 Value at 1229597 - 4942651
13 {1: 12.0}
14 Value at 2134088 - 3133670
15 {1: 0.0}
16
>>>
```

```
rasterIdentify.py
1 from PyQt4.Qt
2 from qgis.cor
3 from qgis.gui
4
5 previousMapTo
6 myMapTool = ..
7
8 - def manageCli
9 -     if ..click
10         provi
11         resul
12         if ..re
13         p
14         p
15 -     if ..click
16         # ..res
17         iface
```



The screenshot displays a GIS application window with a toolbar at the top and a map area below. The map shows a green outline of Alaska with a red rubber band drawn over it. A mouse cursor is positioned over the map. Below the map is a Python Console window with the following code:

```
20 ...     if clickedButton == Qt.LeftButton:
21 ...         myRubberBand.addPoint( currentPos )
22 ...     # terminate rubber band editing session
23 ...     if clickedButton == Qt.RightButton:
24 ...         # remove showCoordinates map canvas callback
25 ...         iface.mapCanvas().xyCoordinates.disconnect( showCoordinates )
26 ...         # reset to the previous mapTool
27 ...         iface.mapCanvas().setMapTool( previousMapTool )
28 ...         # clean remove myMapTool and relative handlers
29 ...         myMapTool.deleteLater()
30 ...         # remove the rubber band from the canvas
31 ...         iface.mapCanvas().scene().removeItem(myRubberBand)
32 >>> myMapTool.canvasClicked.connect( manageClick )
33 >>> iface.mapCanvas().setMapTool( myMapTool )
34
```

>>>