

Intro to QGIS

QGIS to process data

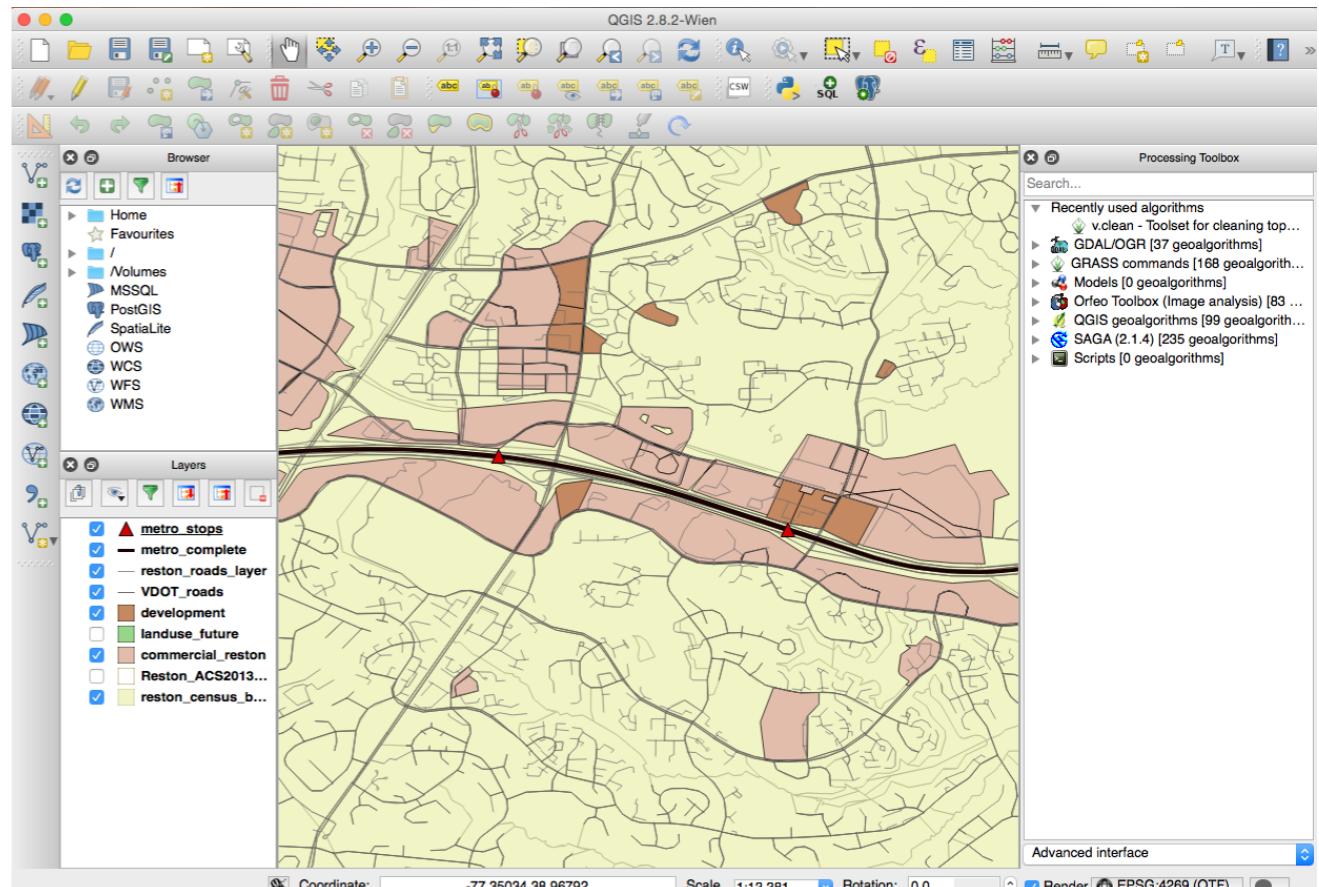
- Intro to QGIS
- Review data
- Reproject, filter, simplify, clean data
- Save to data folder

This tutorial covers the most common tasks you would have to do to prep GIS data for Netlogo

QGIS to View Process GIS

**QGIS: to view/process
GIS data**

<https://www.qgis.org/en/site/forusers/download.html>



QGIS is a free open source GIS software for manipulating and creating geographic data. Most often I use it to view the GIS data before I load it into a model. Sometimes I use it to *reproject*, *edit*, *trim*, *simplify*, and *clean* datasets for a model. I also use it to create additional GIS data layers if needed for the model. QGIS is not needed for this exercise.

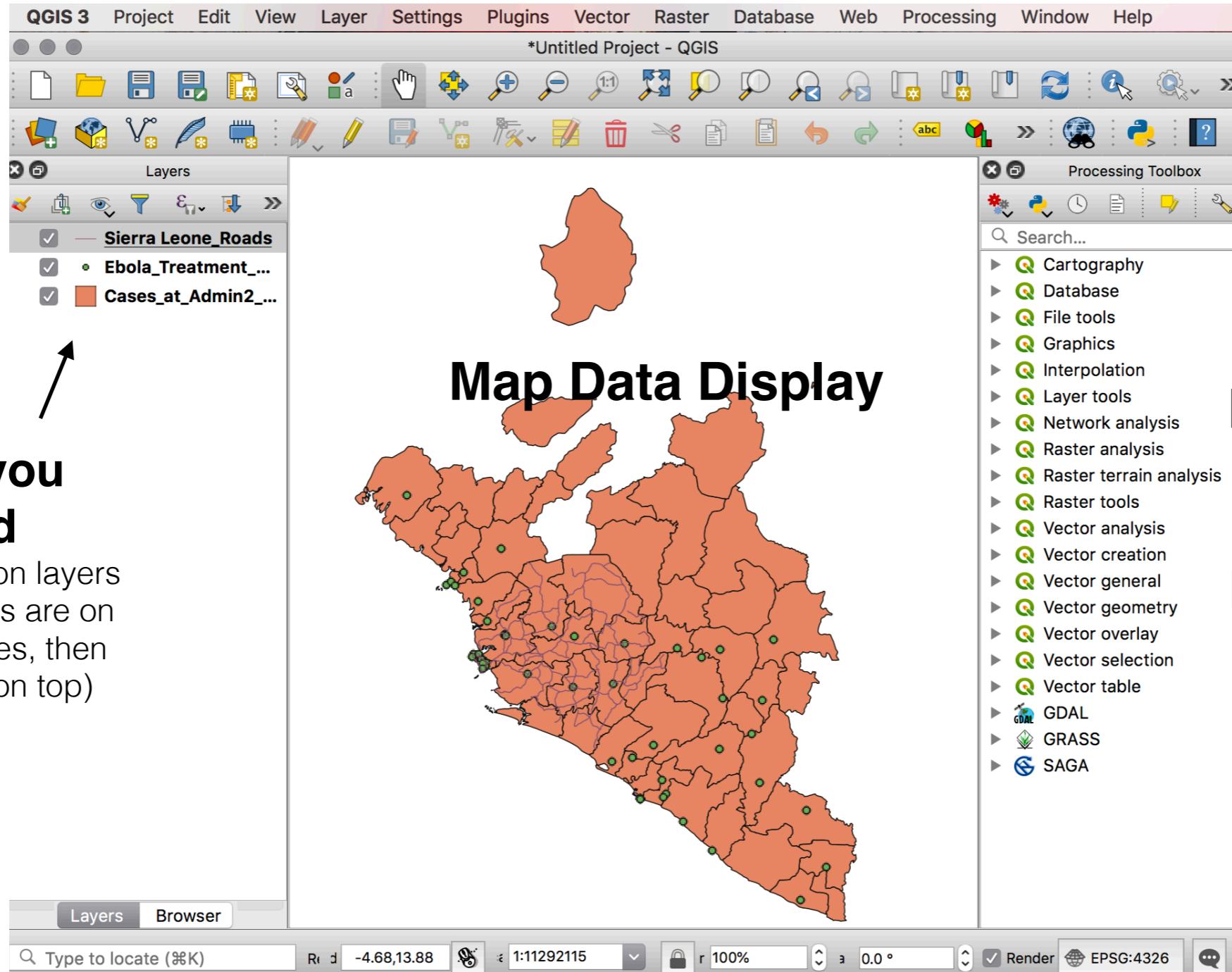
QGIS Interface

Toolbars



Layers you loaded

(move the polygon layers with square icons are on bottom, then lines, then point features on top)



Lat Long
of mouse

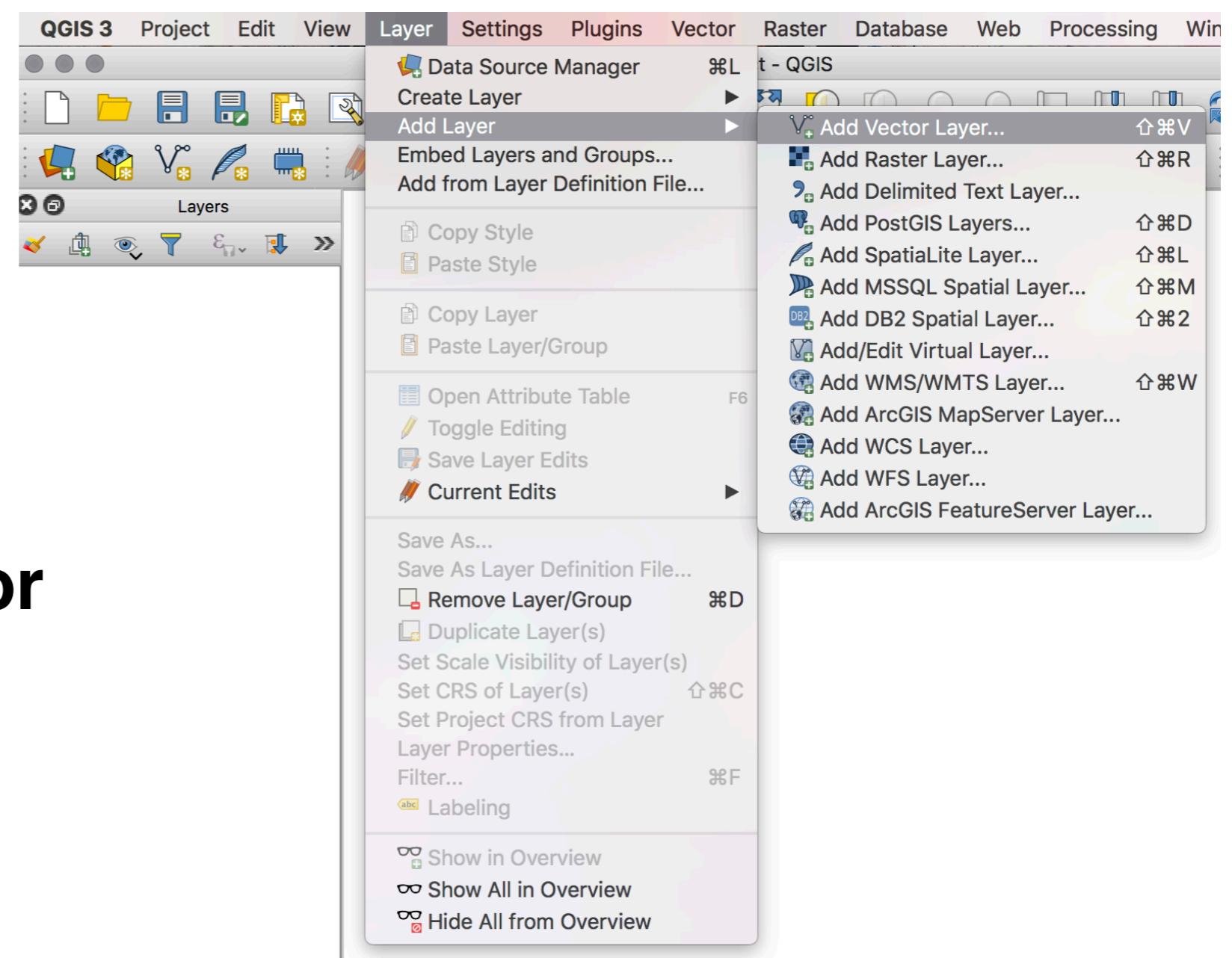
Zoom scale

Current projection

Additional processing tools from the Processing menu

Load GIS Data into QGIS

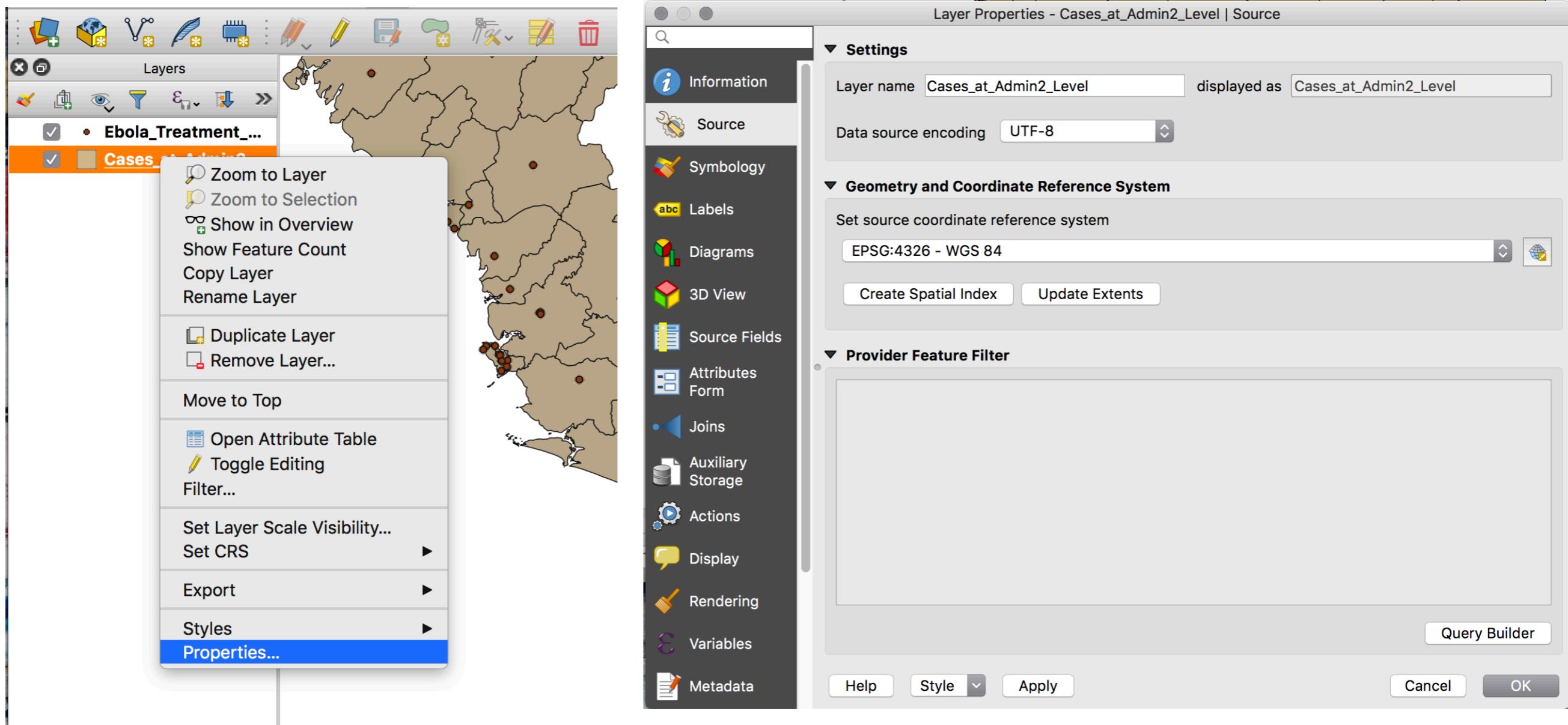
- Two ways to load shp files into QGIS: a) **drag-and-drop** just the .shp file, b) QGIS menu> Layer>**Add Vector Layer**



Review Data

Right-click on layer name>then **Properties**

The Source tab shows the projection info and coordinate system

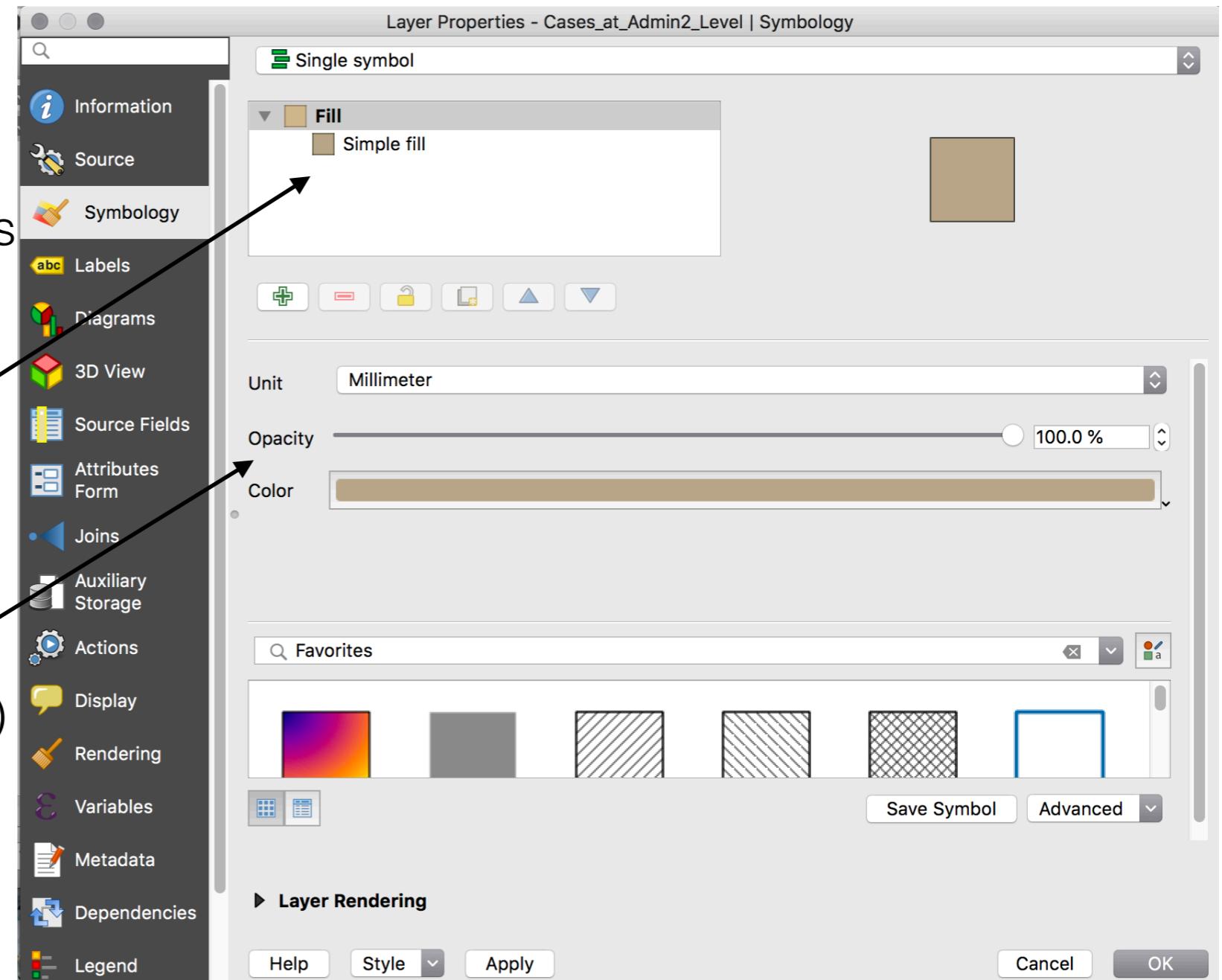


Change color on Symbology

Change the way a layer is displayed by right clicking on layer name, choose properties then select Symbology

Modify outline color and thickness or fill color by clicking on Simple fill then adjust parameters

Adjust transparency (Opacity)

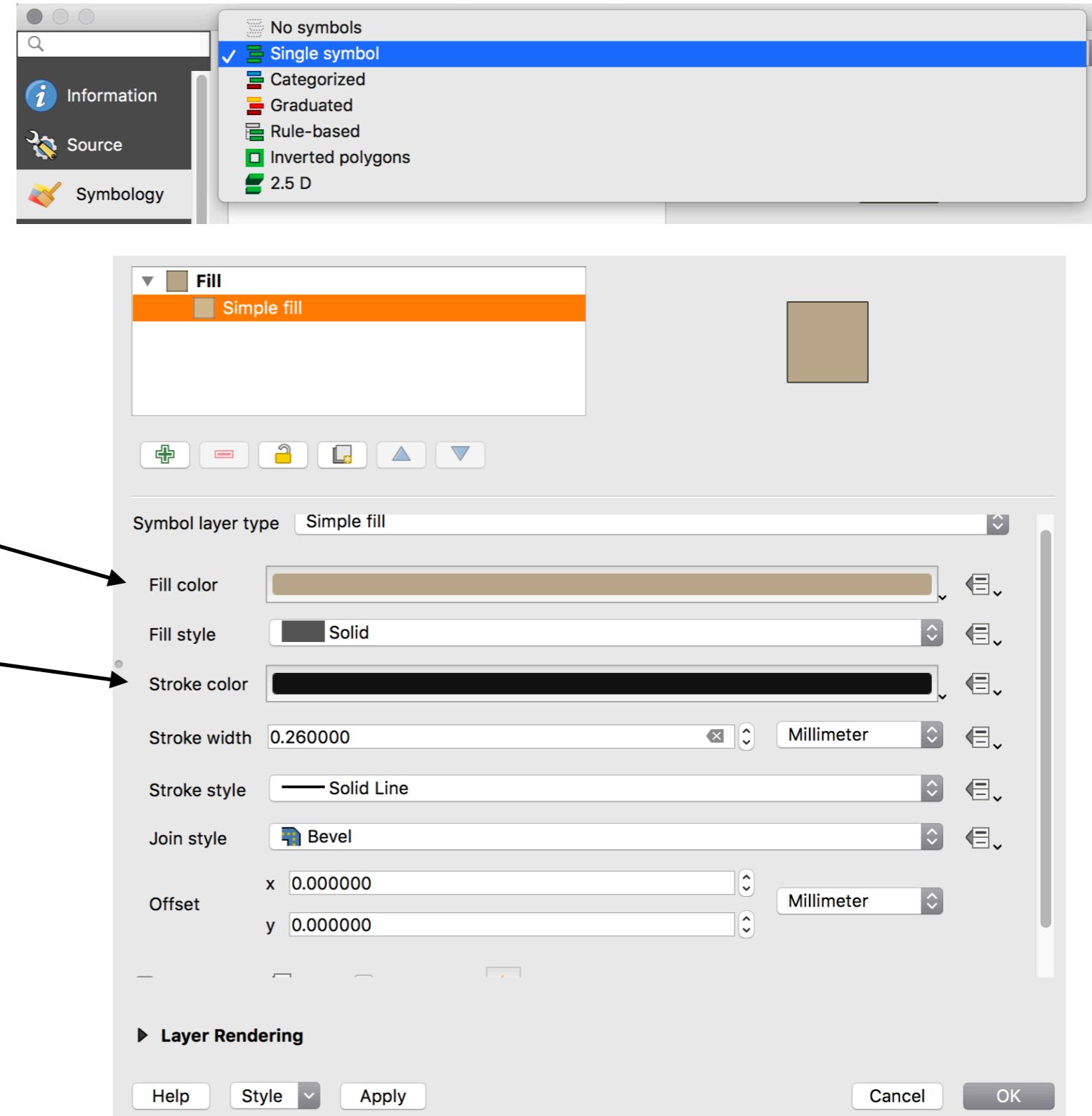


Symbology Tab

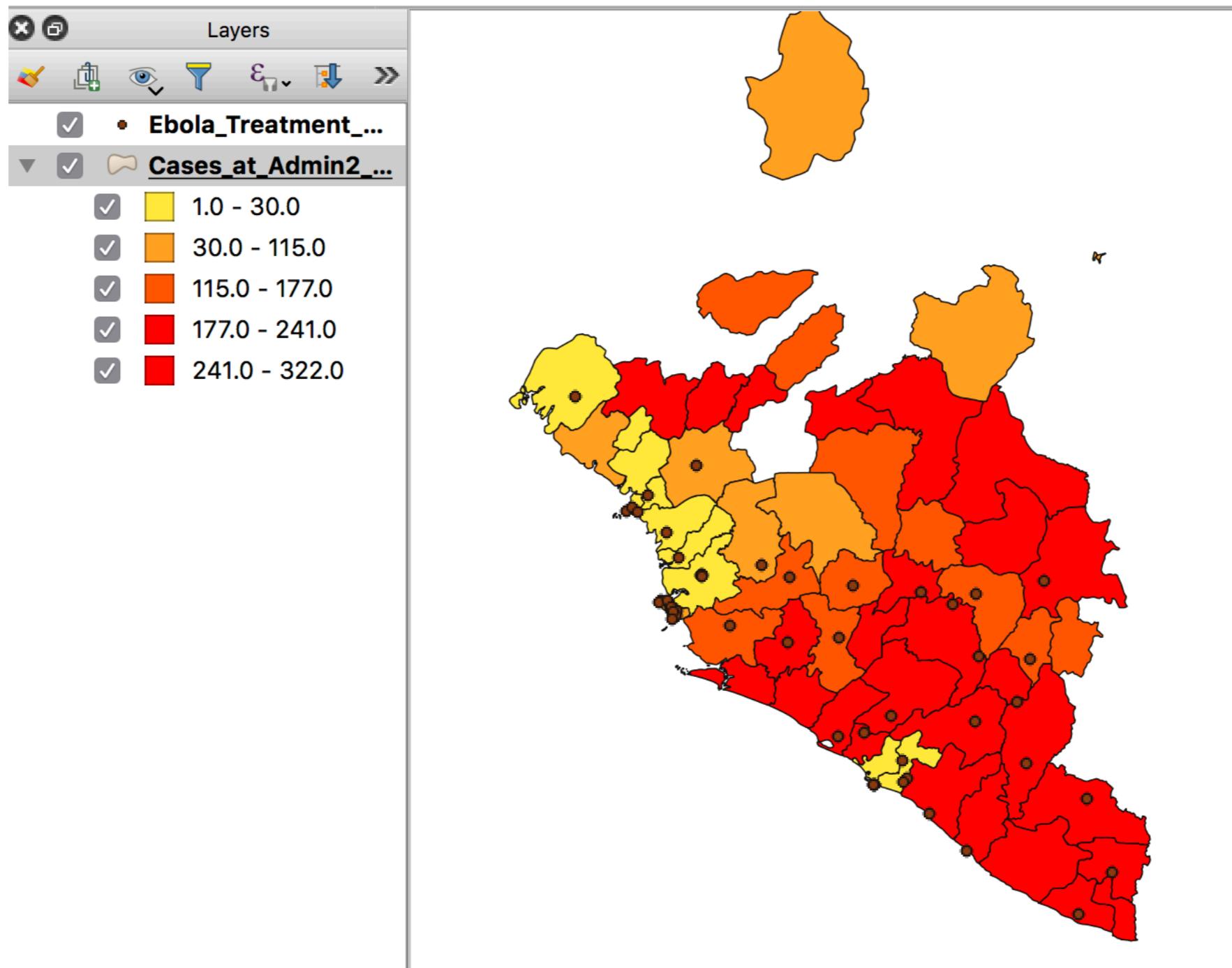
Modify outline color and thickness or fill color by clicking on Simple fill then adjust parameters

like fill color for

and outline color and weight (stroke)



Choropleth map



Graduated on Symbology

For graduated color of values

specify column with data

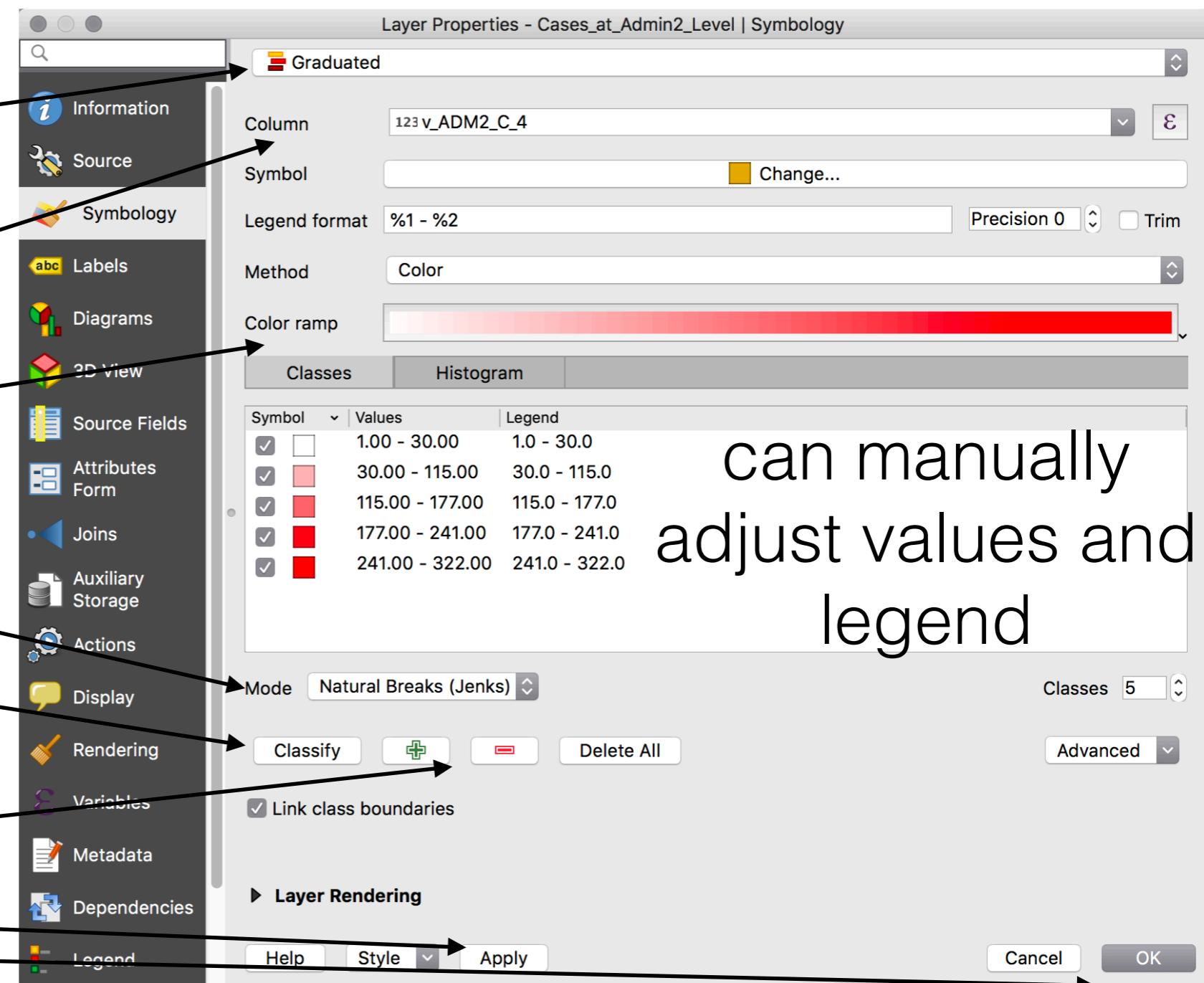
color ramp

mode

press classify

add/remove/modify classes

press apply, OK



Categorized on Symbology

For random colors of polygons use categorized

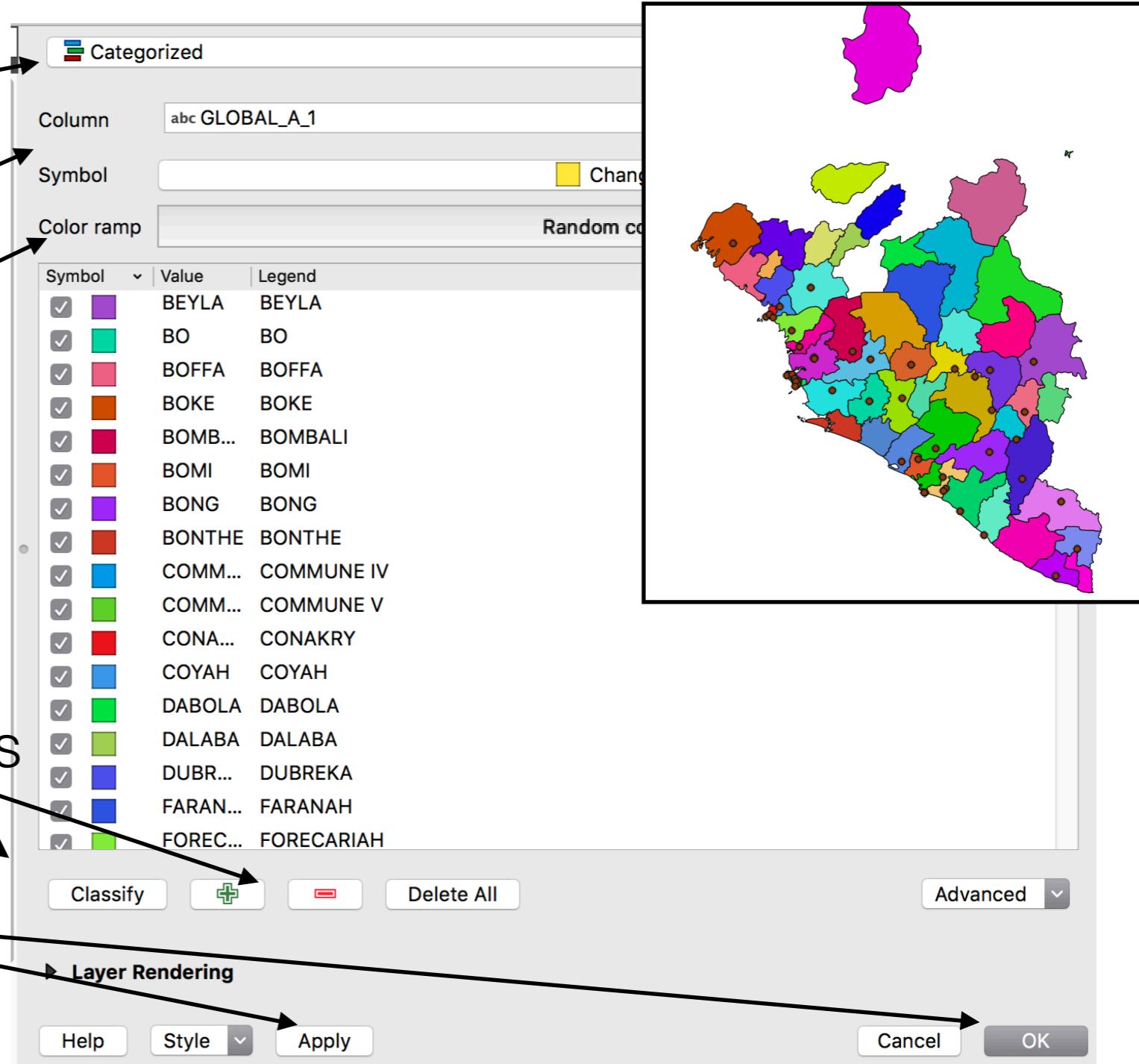
specify column

color ramp

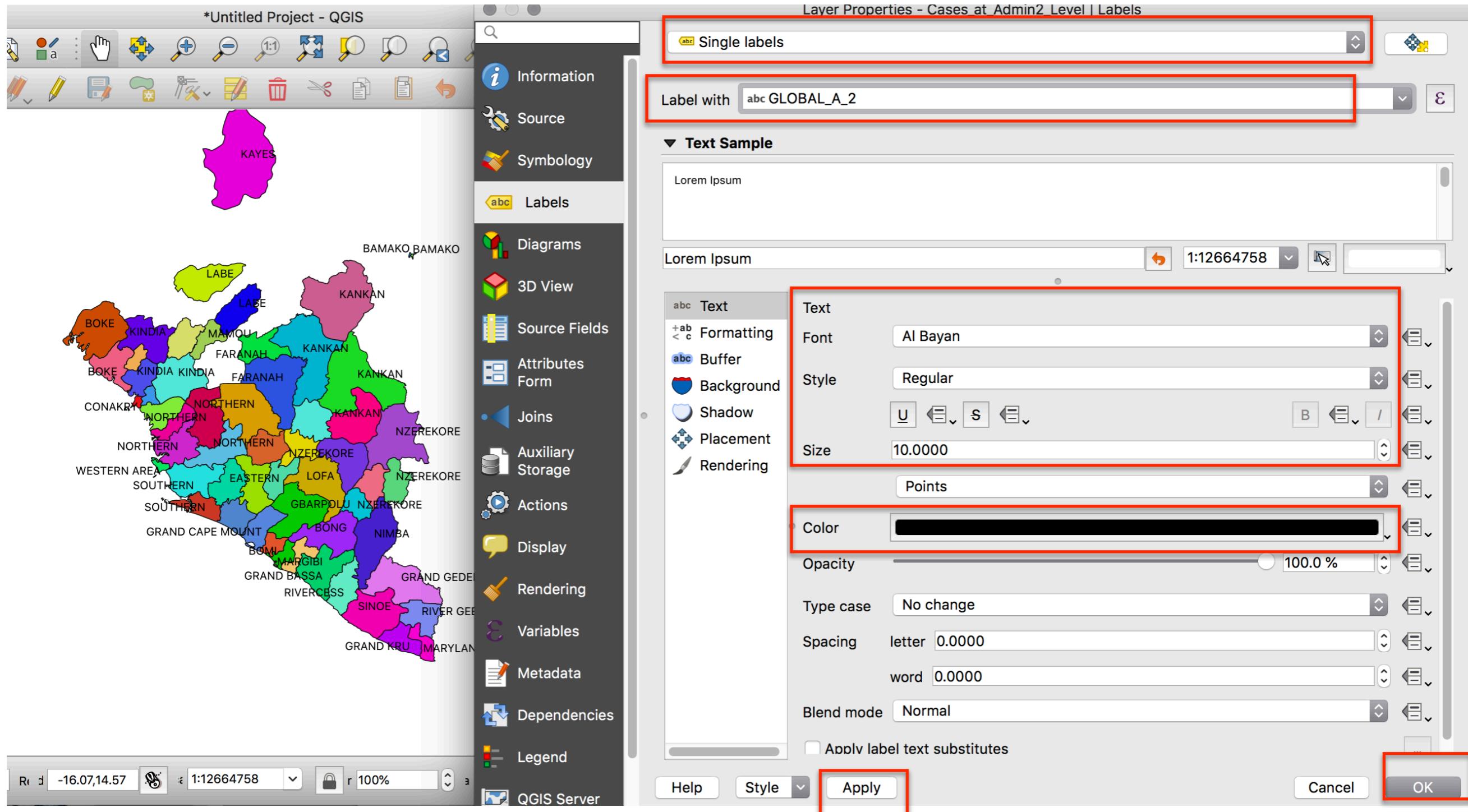
press classify

add/remove/modify classes

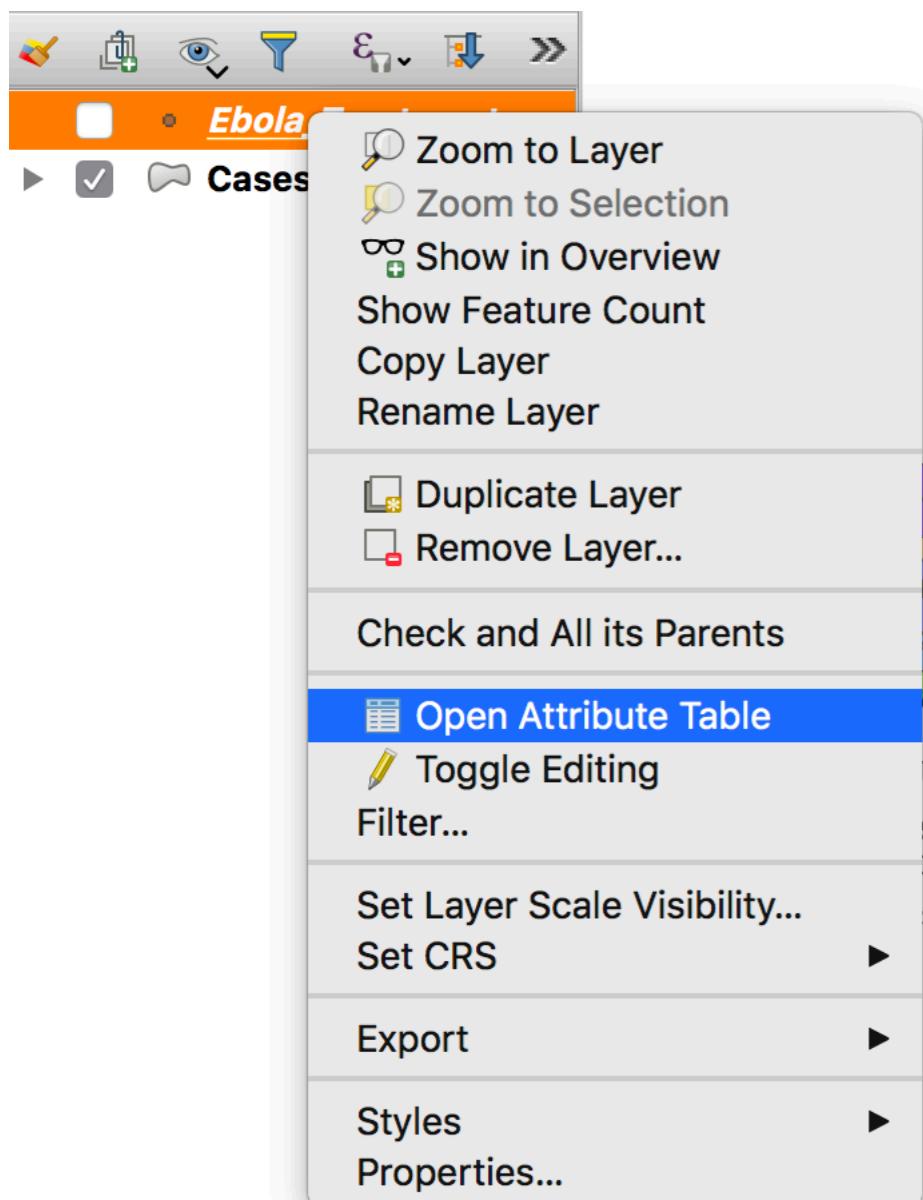
press apply, OK



Label feature



Review Attributes



To inspect data, open the attribute data:
Right-click on layer name>then **Open Attribute Table**

notice the title of column and types of values

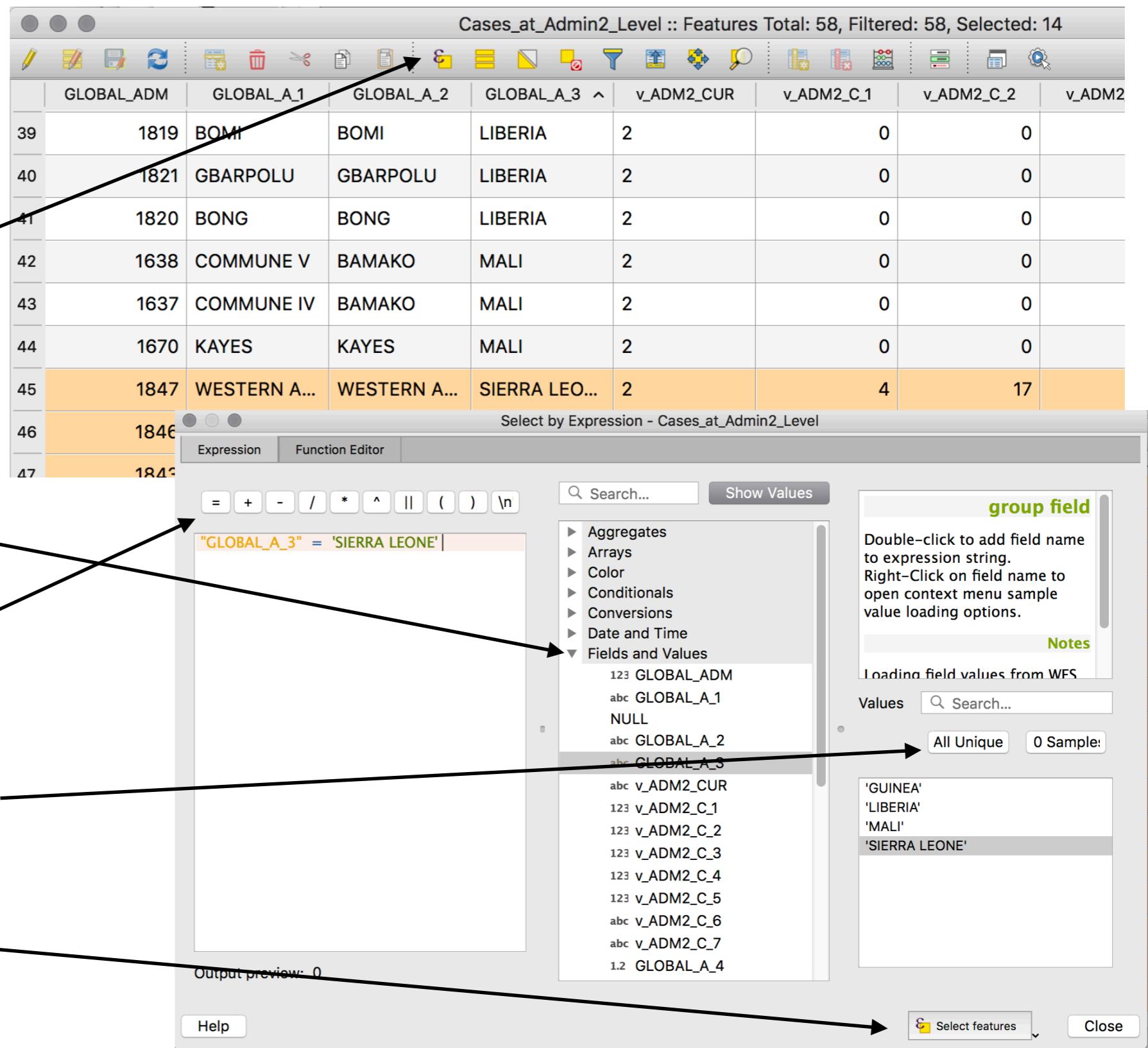
	ETC_STATUS	ETC_STAT_1	ETC_STAT_2	TreatmentC	Treatmen_1	Treatmen_2	ETC_STAT_3	Treatmen_3	Treatmen_4
1	36	ETC-SLE-022	Tonkolili	SLE	Tonkolili	5		52	ETU
2	36	ETC-SLE-022	Tonkolili	SLE	Tonkolili	5		52	ETU
3	36	ETC-SLE-022	Tonkolili	SLE	Tonkolili	5		52	ETU
4	43	ETC-SLE-013	Western Pro...	SLE	SL Friendship hospital ETU Jui	5		51	ETU
5	43	ETC-SLE-013	Western Pro...	SLE	SL Friendship hospital ETU Jui	5		51	ETU
6	43	ETC-SLE-013	Western Pro...	SLE	SL Friendship hospital ETU Jui	5		51	ETU
7	30	ETC-SLE-004	Eastern Prov...	SLE	Rural Kenema Field Hospital	5		50	ETU
8	30	ETC-SLE-004	Eastern Prov...	SLE	Rural Kenema Field Hospital	5		50	ETU
9	30	ETC-SLE-004	Eastern Prov...	SLE	Rural Kenema Field Hospital	5		50	ETU
10	1275	ETC-SLE-033	Western Rural	SLE	PTS MSF	4		49	ETU
11	1275	ETC-SLE-033	Western Rural	SLE	PTS MSF	4		49	ETU
12	1275	ETC-SLE-033	Western Rural	SLE	PTS MSF	4		49	ETU
13	33	ETC-SLE-007	Northern Pr...	SLE	Port Loko ETU	4		48	ETU
14	33	ETC-SLE-007	Northern Pr...	SLE	Port Loko ETU	4		48	ETU
15	33	ETC-SLE-007	Northern Pr...	SLE	Port Loko ETU	4		48	ETU
16	40	ETC-SLE-015	Western Pro...	SLE	Police Training Station (PTS) (...	4		47	ETU
17	ETC-SLE-015	Western Pro...	SLE	Police Training Station (PTS) (...				47	ETU

Select by Expression

Select by Expression

To select data by expression from attribute table:

- Click on E looking symbol with yellow box (expression)
- Click on Fields and Values and double-click on field of interest
- add to expression using or typing = and boolean logic
- select all unique to get values then double click value of interest
- click on select features

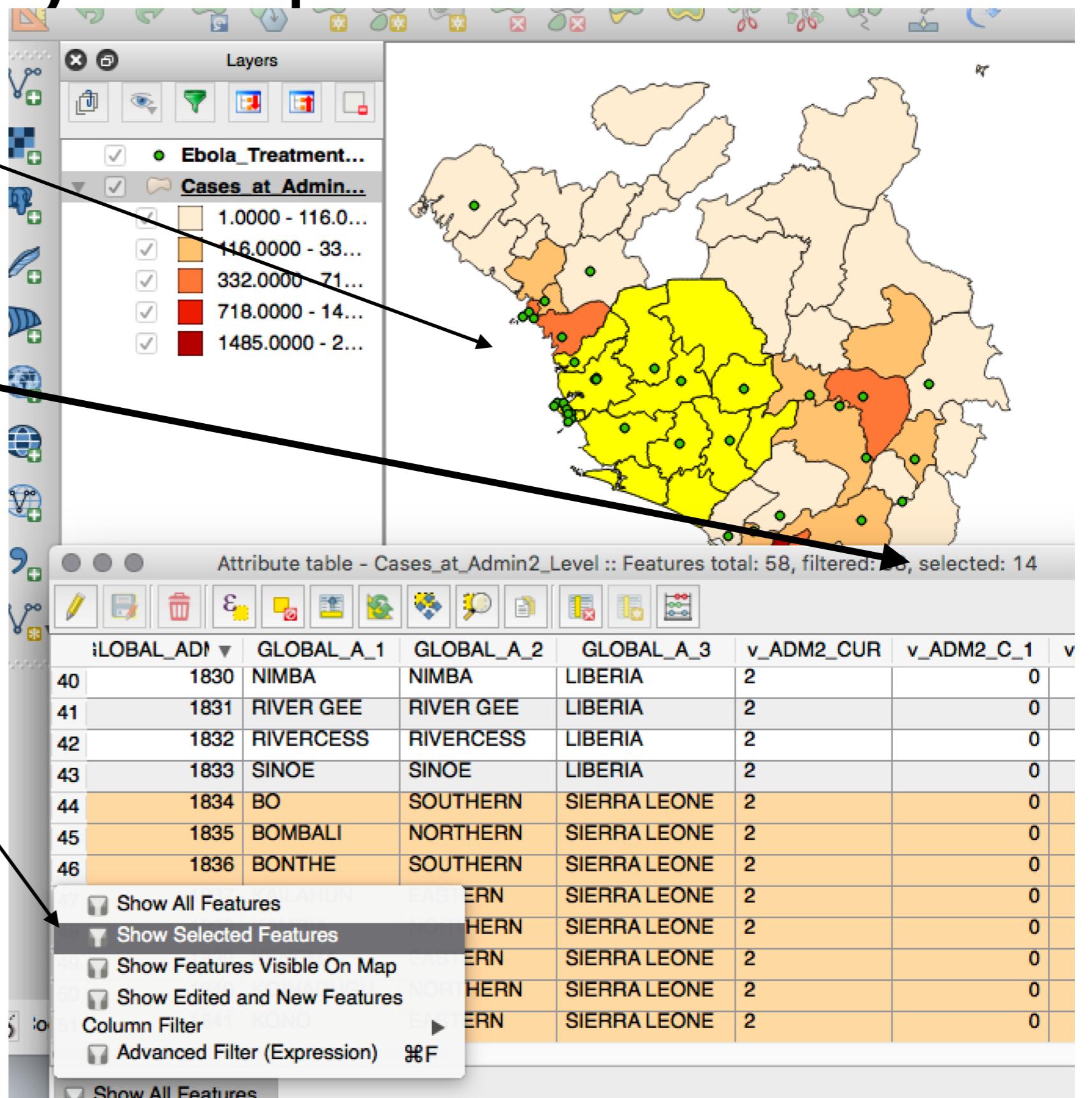


Select by Expression

Selected data turns yellow in map

Number of selected results indicated in table

Show just selected data by clicking on Show All Features drop-down and choosing Show Selected Features



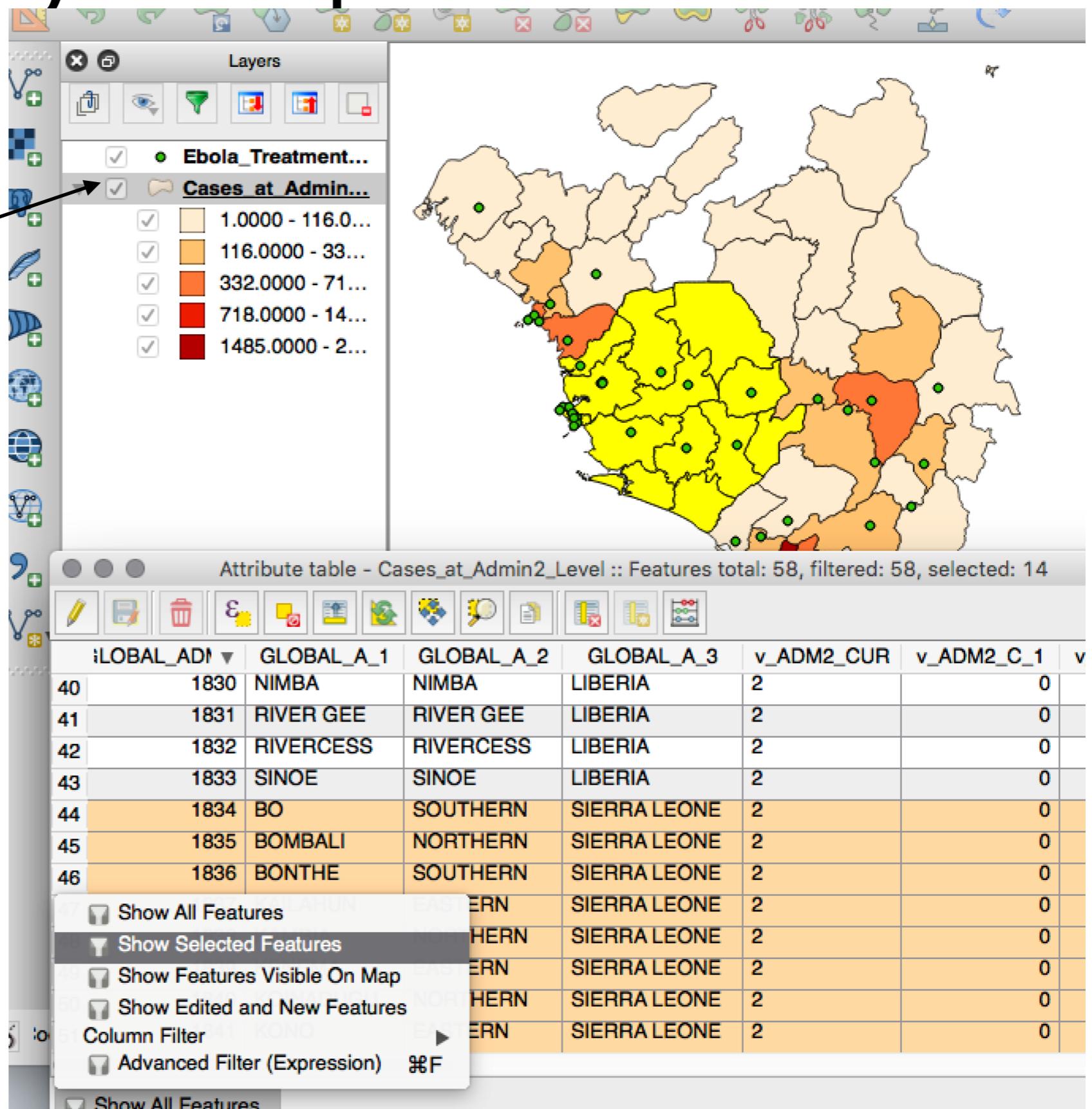
Select by Map

To select by clicking on map:

1) highlight the layer in the layers menu,

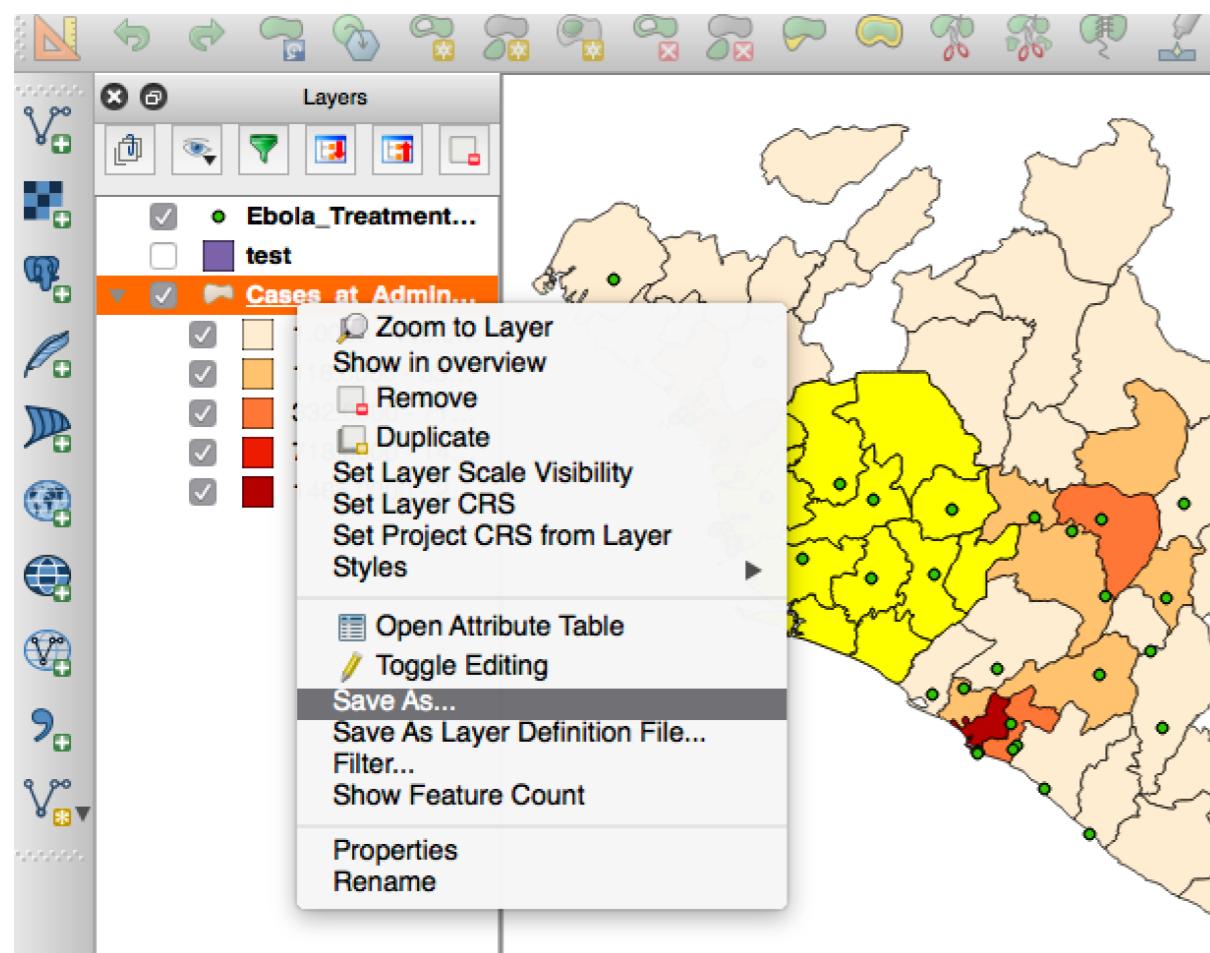


2) click on the select tool
may have to expand window

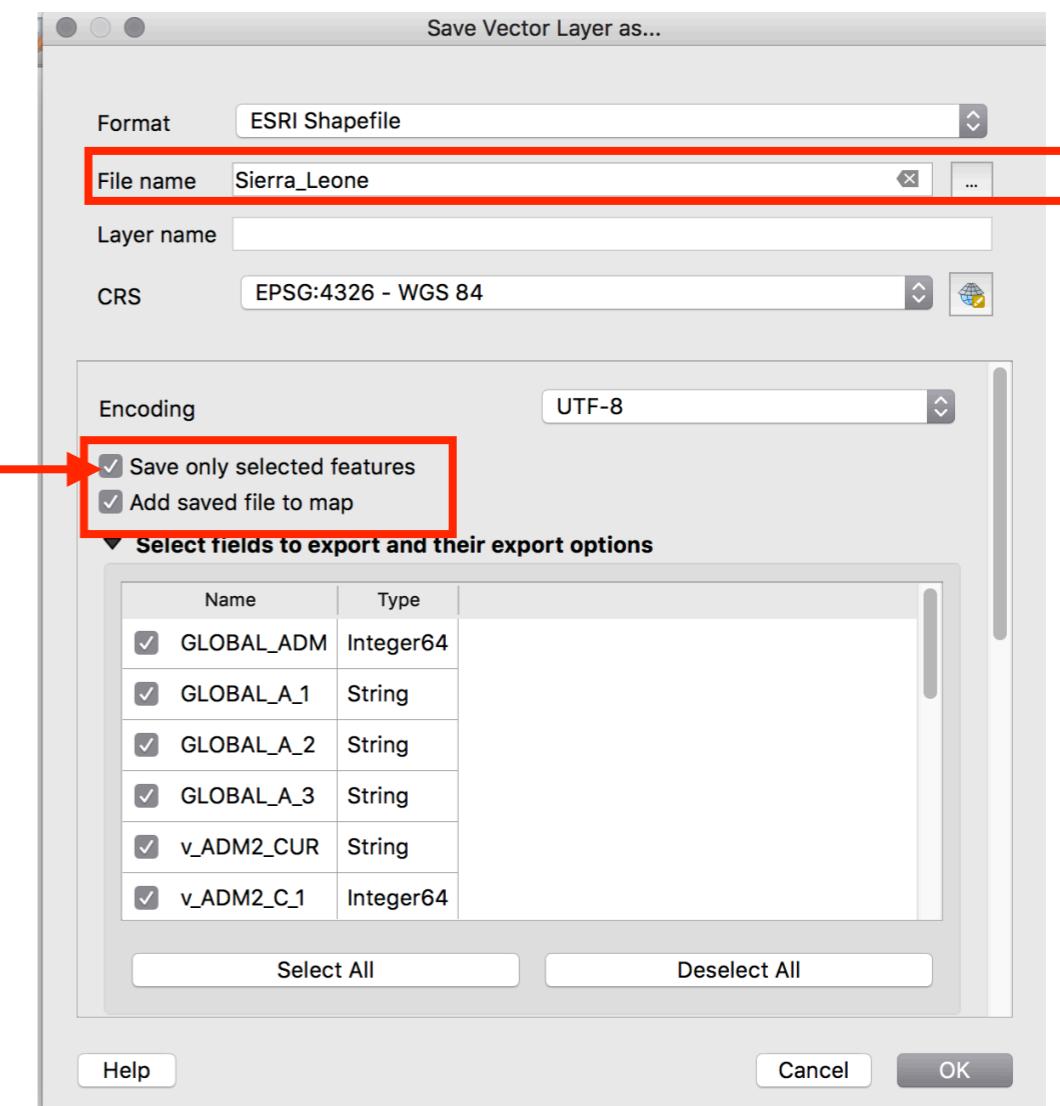


Save filtered data

To save, copy a layer, right click on the name, choose Export>Save As

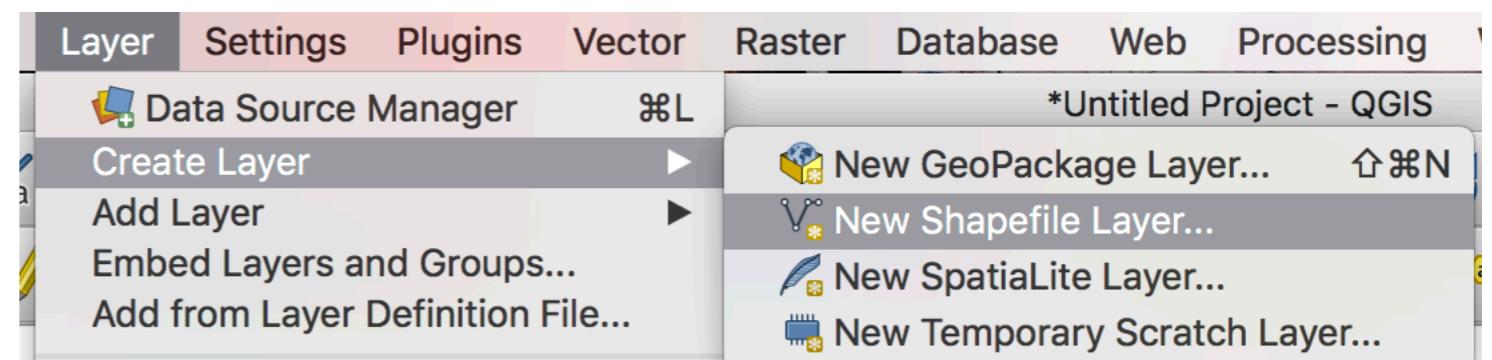


NOTE: Navigate to a location, specify filename, Check to Save only selected features, hit ok



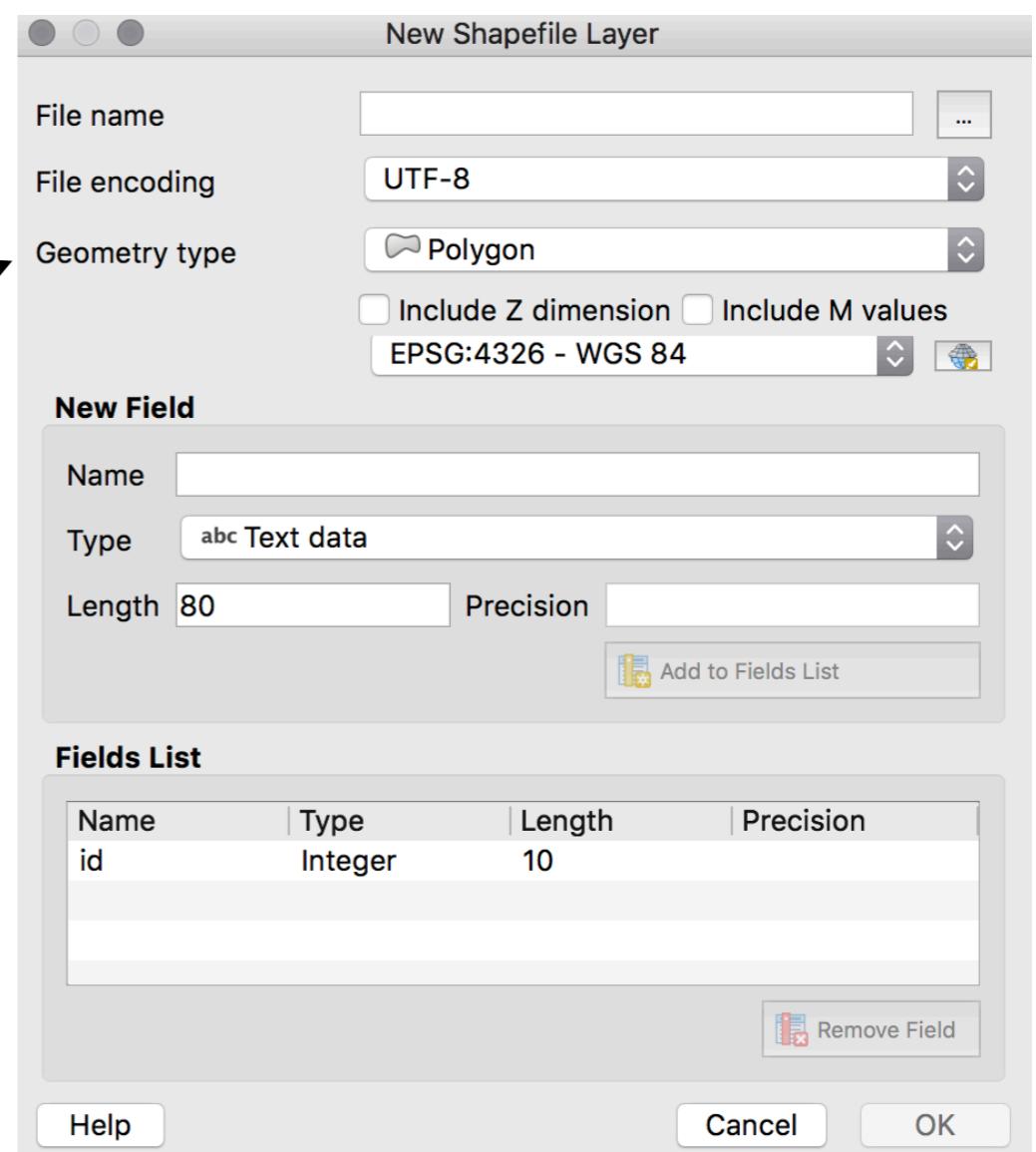
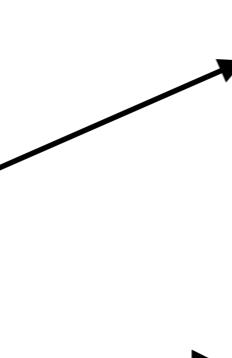
Make your own layer

To create a new layer, such as to draw an AOI box, on the menu choose Layer>Create Layer>New Shapefile Layer

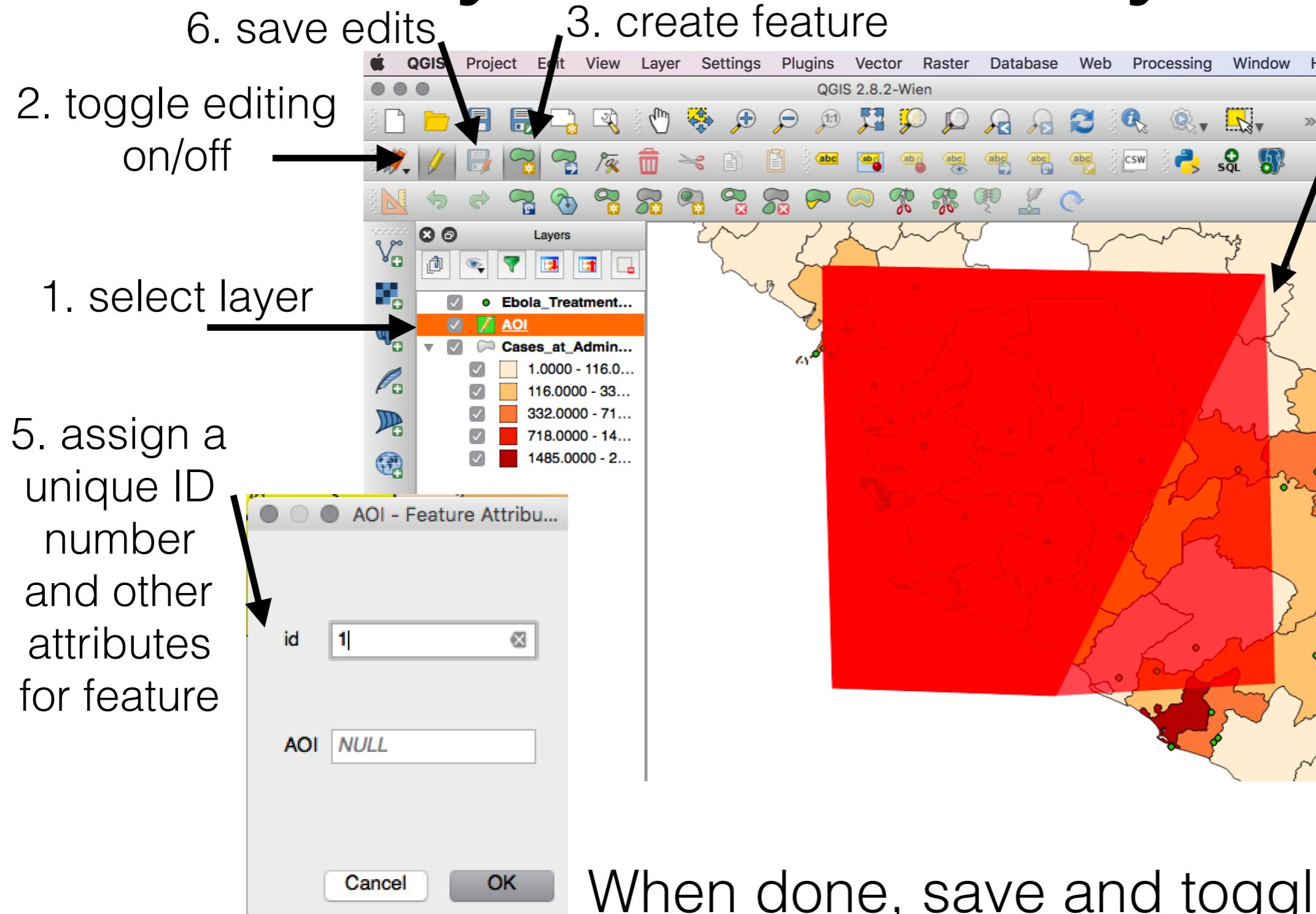


Specify whether point, line, or poly

If entering attributes specify field name, type, width, then add to attribute list



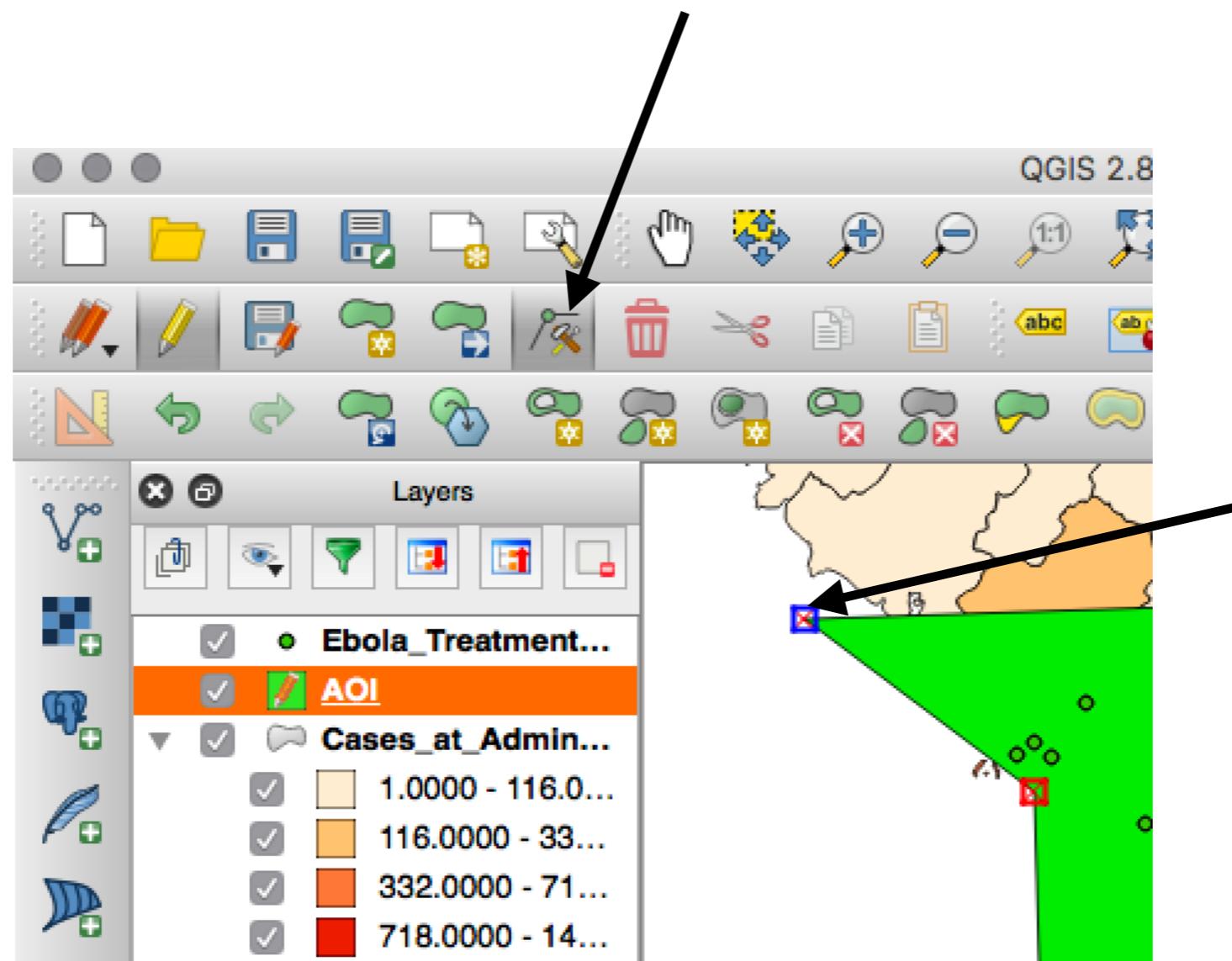
Make your own layer



When done, save and toggle editing off

Modify feature

Select vertex tool



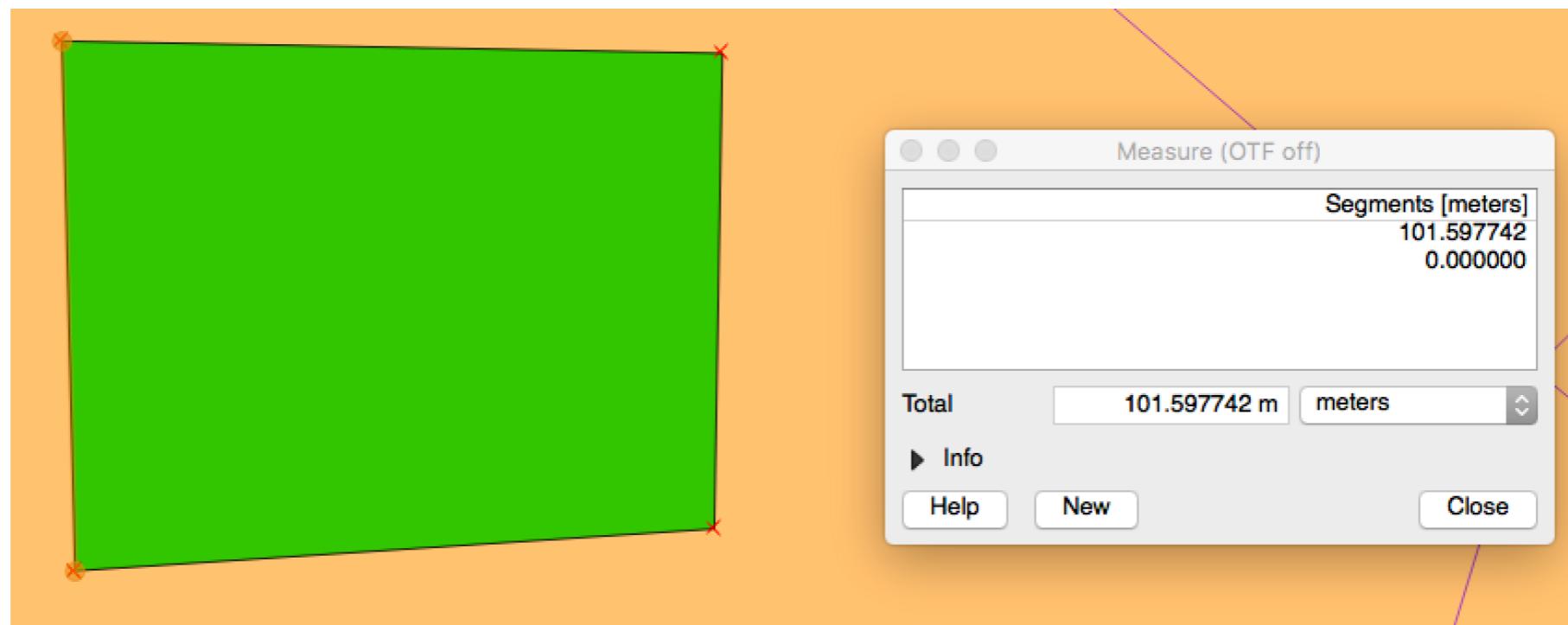
Select vertex,
it turns blue,
click and drag
to new
position,
select delete
to remove it,
or double
click on edge
to create new
vertex, then
drag to new
position

Create a reference polygon

In QGIS create a square polygon you can use as reference for your patches, such as a 1km or 10km sized polygon.

Zoom in to area on map with some features and zoom to 10,000 scale. Create a new layer of polygon and draw a square four point polygon.

Use measure tool and edit/modify layer to move vertices to desired location for size of poly.



Note about projections:

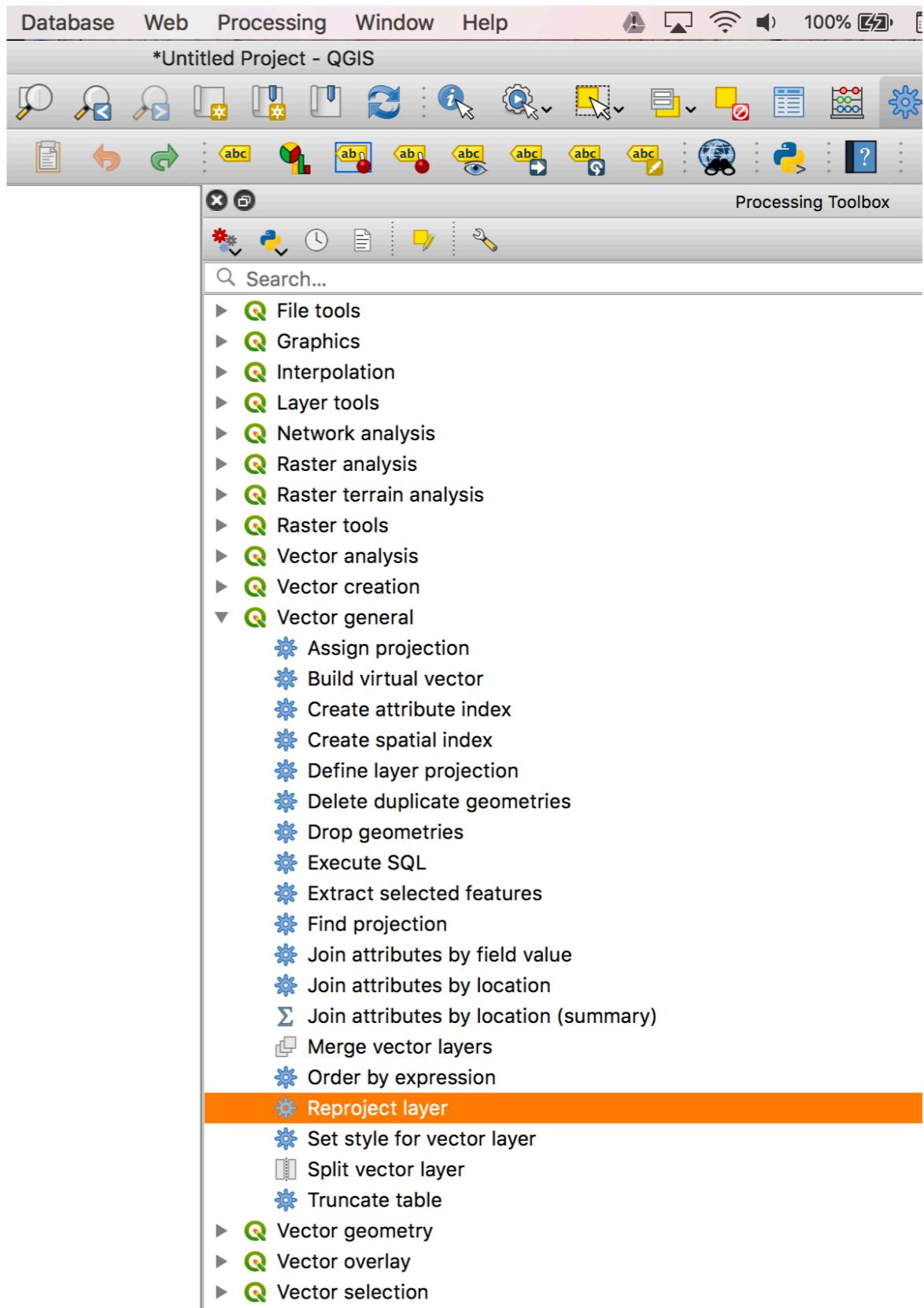
Keep in mind Netlogo patches are squares. You will ideally use a geographic lat long or UTM projection for your data to preserve the square shape.

Reproject data

If you have to reproject data, use the Processing Toolbox.

In menu > clicking on Processing,

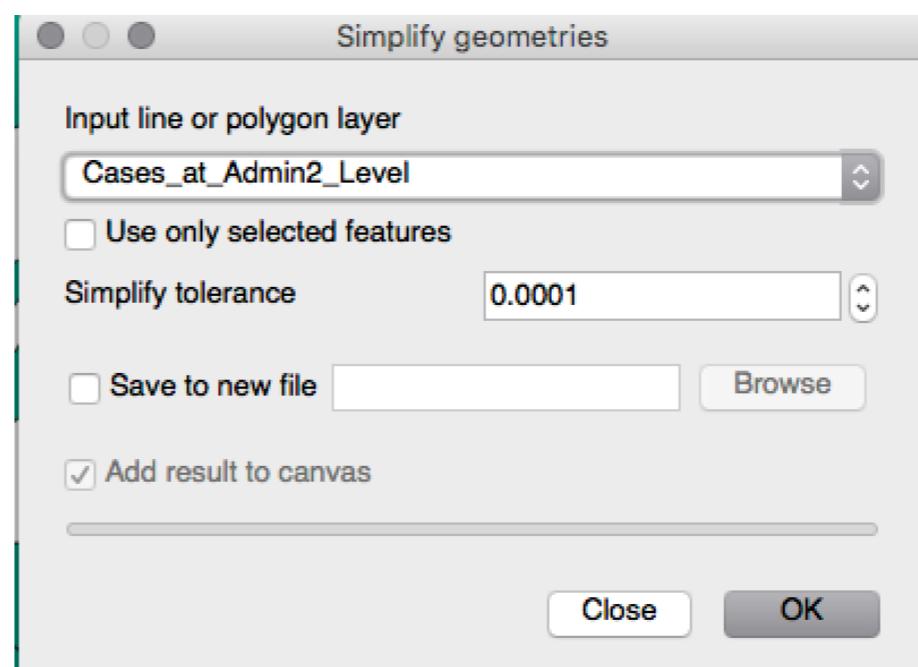
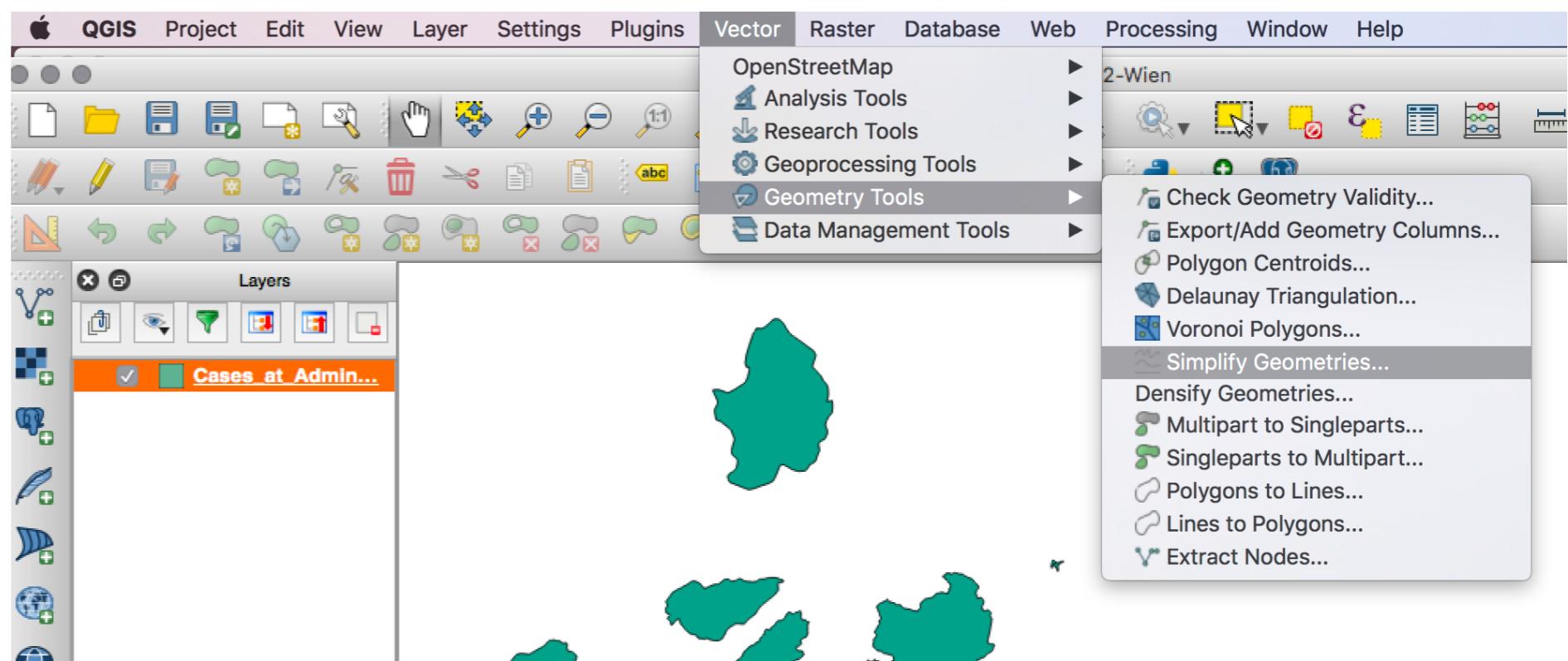
Then in the Processing Toolbox>Vector General> Reproject layer



Simplify features

Simplify if you have a really large file size, or very detailed feature like a coastline, you may want to simplify the feature to get rid of some of the vertices and details of the linework.

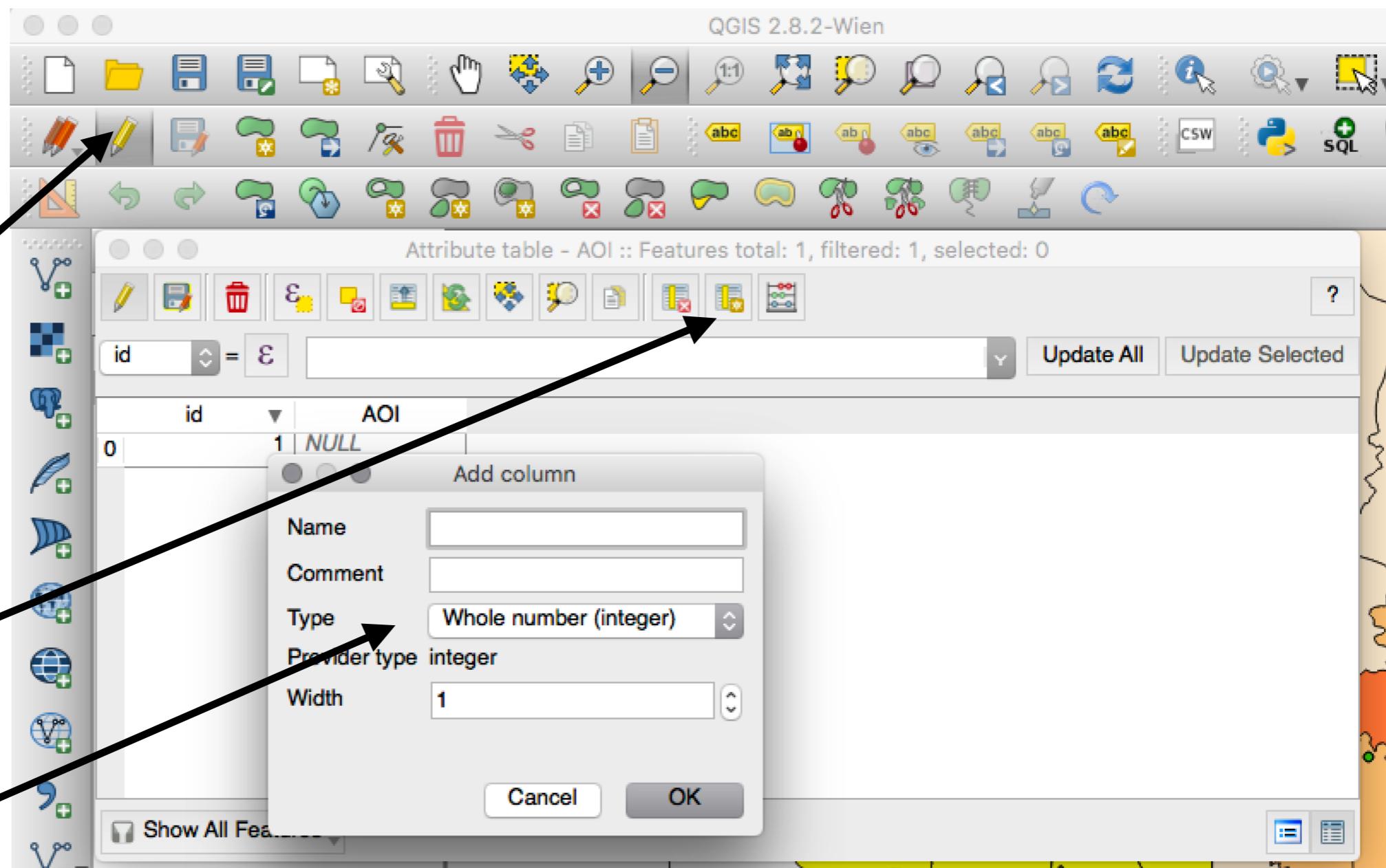
Start with the default for tolerance then try .001, then .05, etc



Add new attributes

To add a new field to a layer's attribute table:

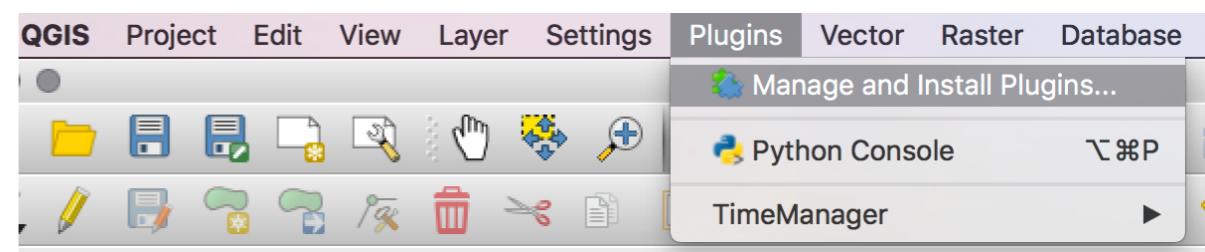
- Select layer
- toggle editing
- Open attribute table
- Insert column
- fill out information for field name
- in table fill in values
- save edits



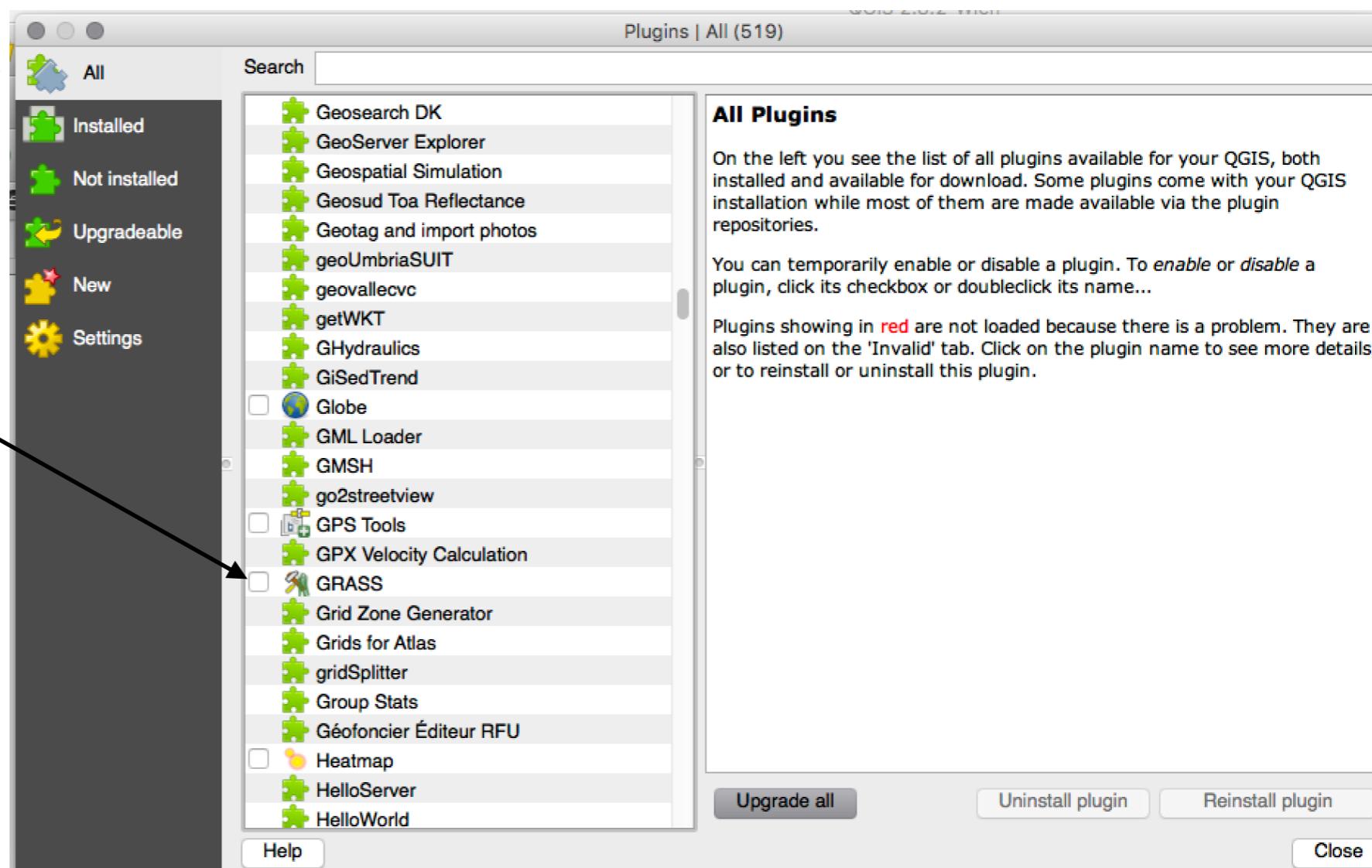
Clean topology

Anytime you modify, edit attributes, reproject, or create a new layer in QGIS, in order to bring the data into NetLogo you have to clean the data.

Get the GRASS plugin on the
menu>Plugins>Manage and Install Plugins



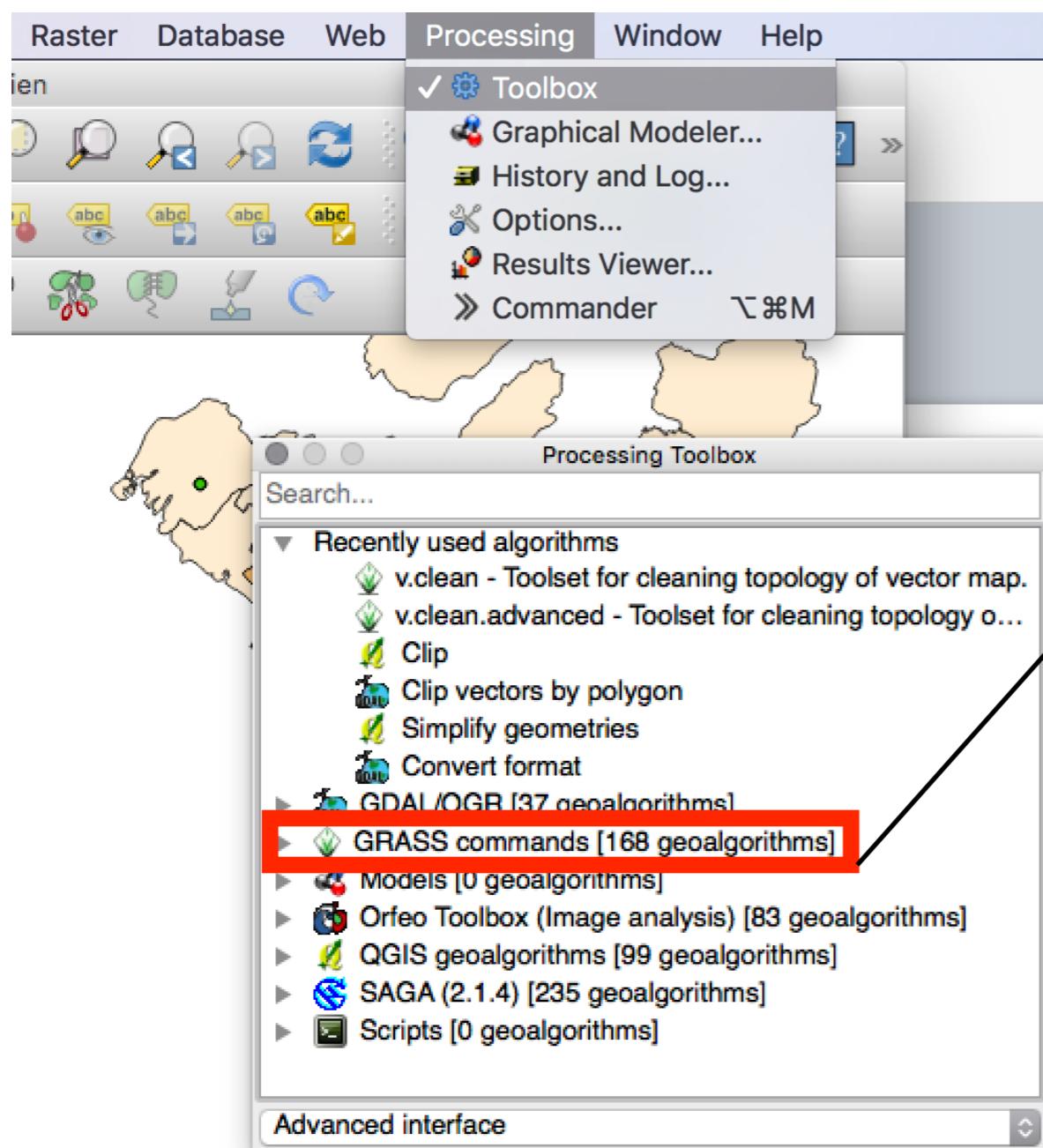
- Select All
- Scroll down to GRASS
- Select GRASS
- Install if not already



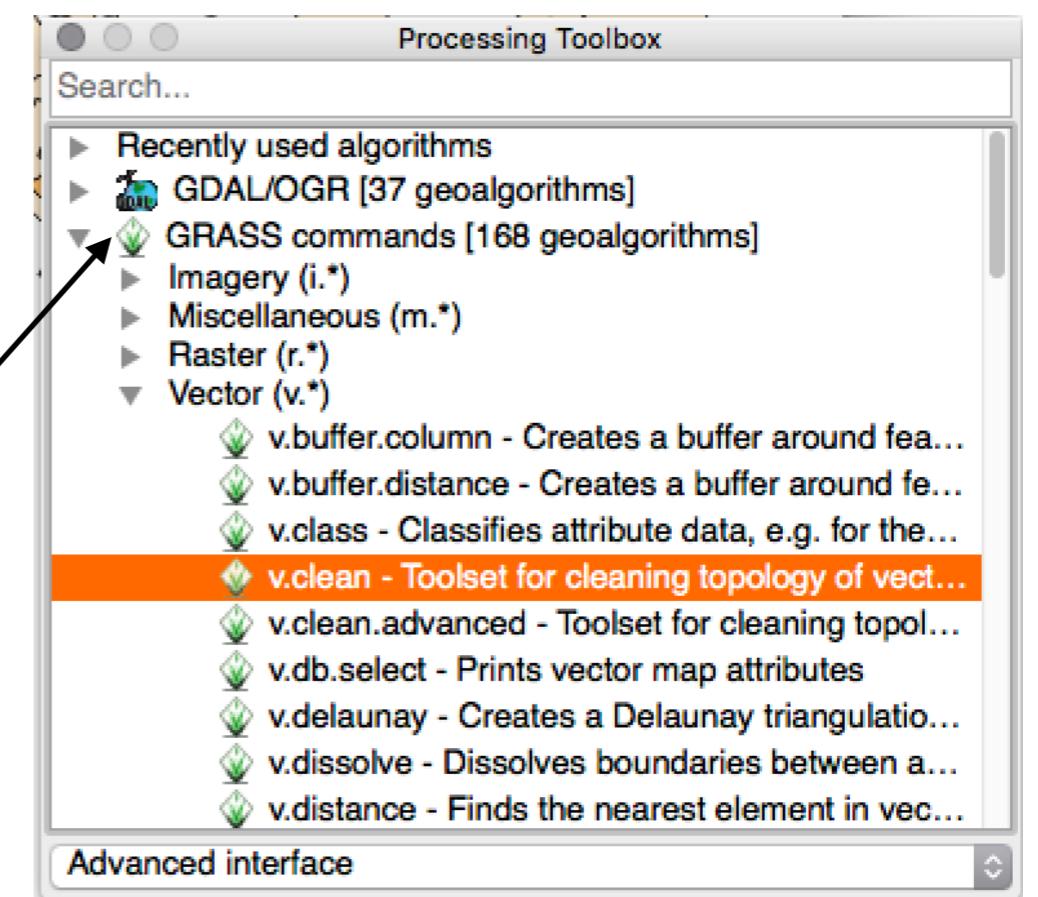
Clean topology

Anytime you modify or create a new layer in QGIS, in order to bring the data into Netlogo you have to clean the data.

On the menu choose Processing>Toolbox

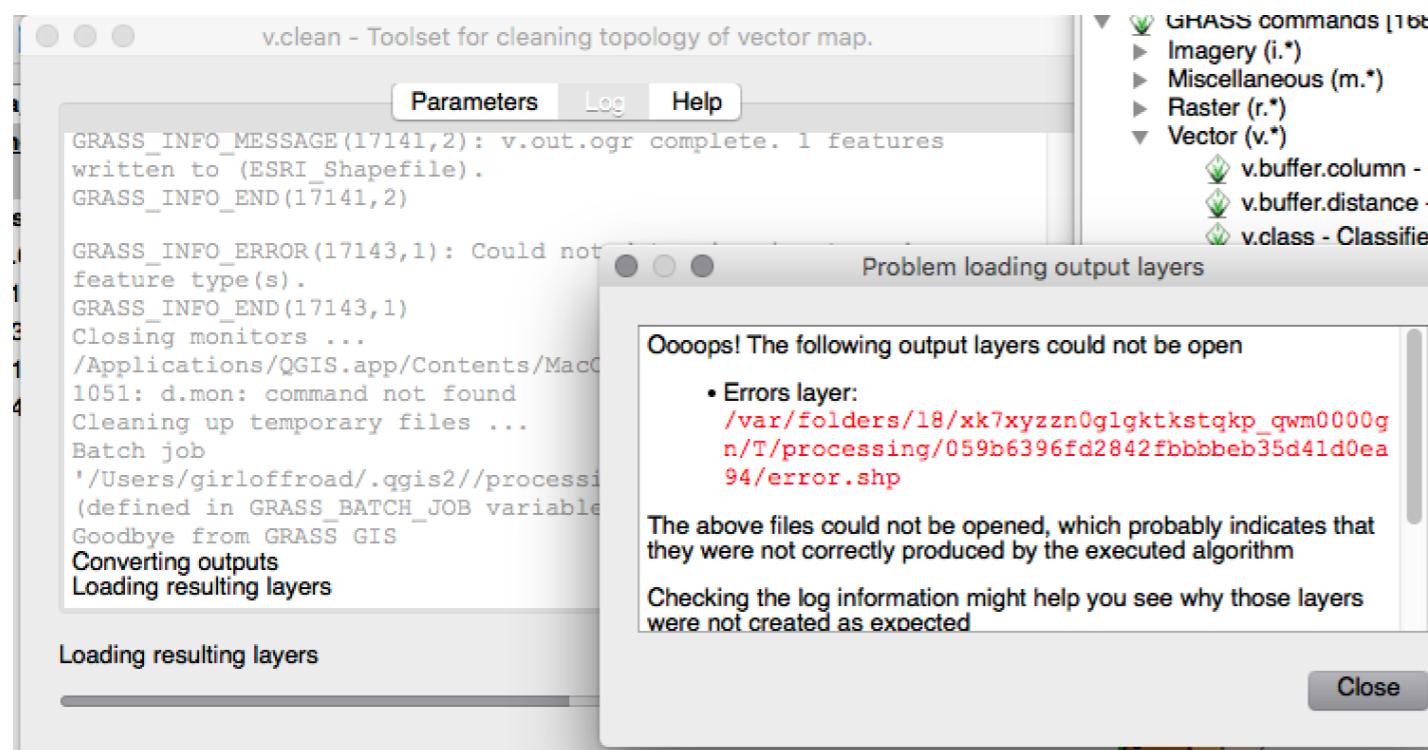
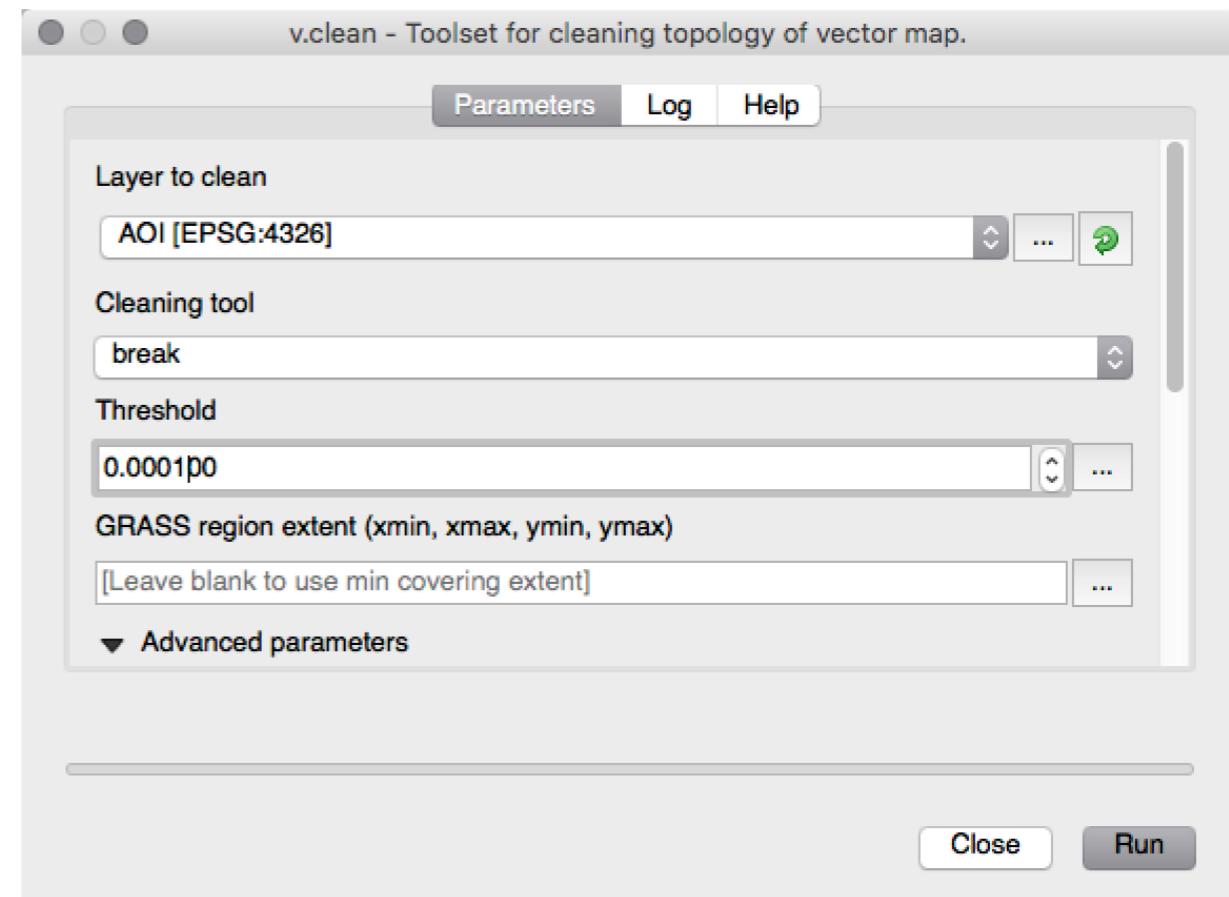


Expand GRASS>Vector>choose v.clean



Clean topology

- Select layer name
- Change threshold to .001 or .001
- Select Run



Ignore errors