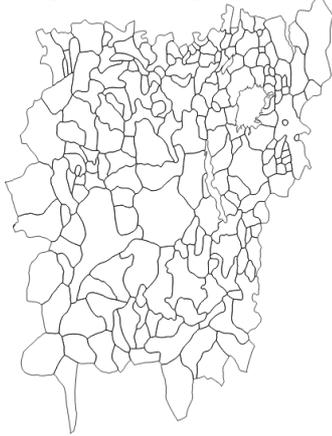


Exercise 2A – Validating Topology:

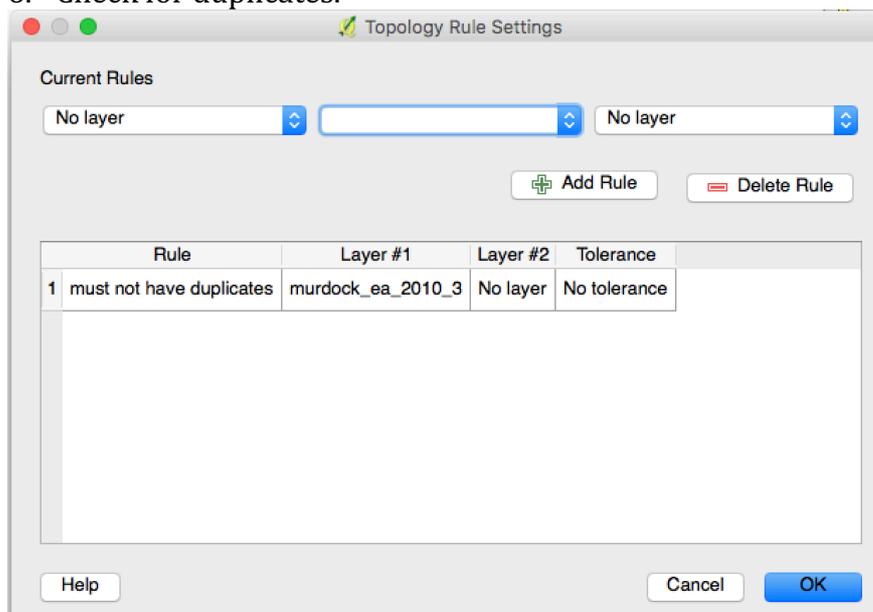
1. Install plugin **Topology Checker**.
[Note: If is already installed, but you cannot find the button go to Plugins | Manage and Install Plugins and see if the box in front of the Topology Checker is checked.]
2. From folder Exercise 2 load shapefile murdock_sample.shp
3. Change to transparent fill



4. Click on Topology Checker 

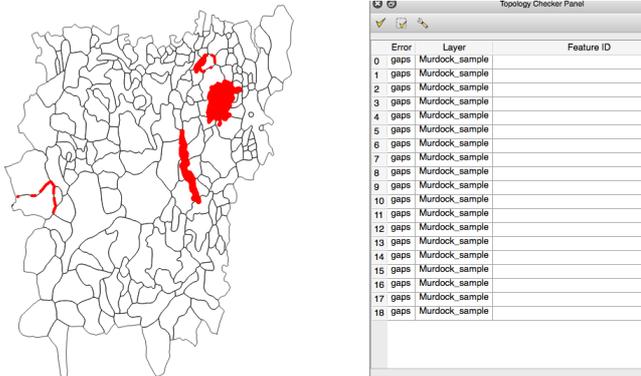
5. Click on Configure to set topology rules 

6. Check for duplicates.

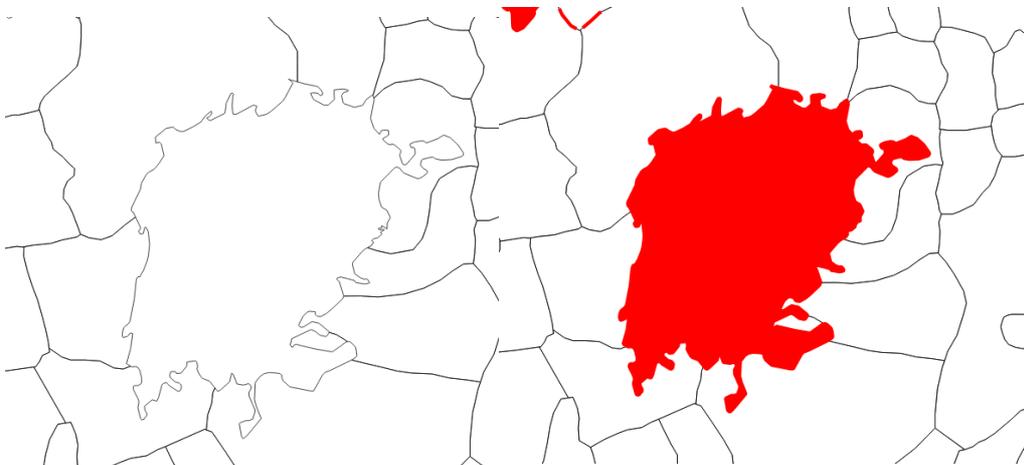


7. Click OK and then click “validate All” 

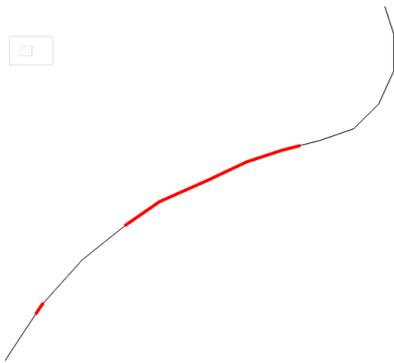
8. No errors.
9. Click on Configure
10. Select rule 1 and "Delete Rule"
11. Add new rule "must not have gaps"
12. Click OK and then click "validate all"
13. Errors



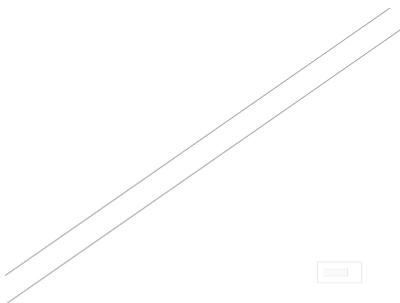
14. Some Gaps are fine



... others are not



zoom in (a lot)



15. Processing | Toolbox
Search for "v.clean"

v.clean

▼ Recently used algorithms

▼ v.clean - Toolset for cleaning topology of vector map.

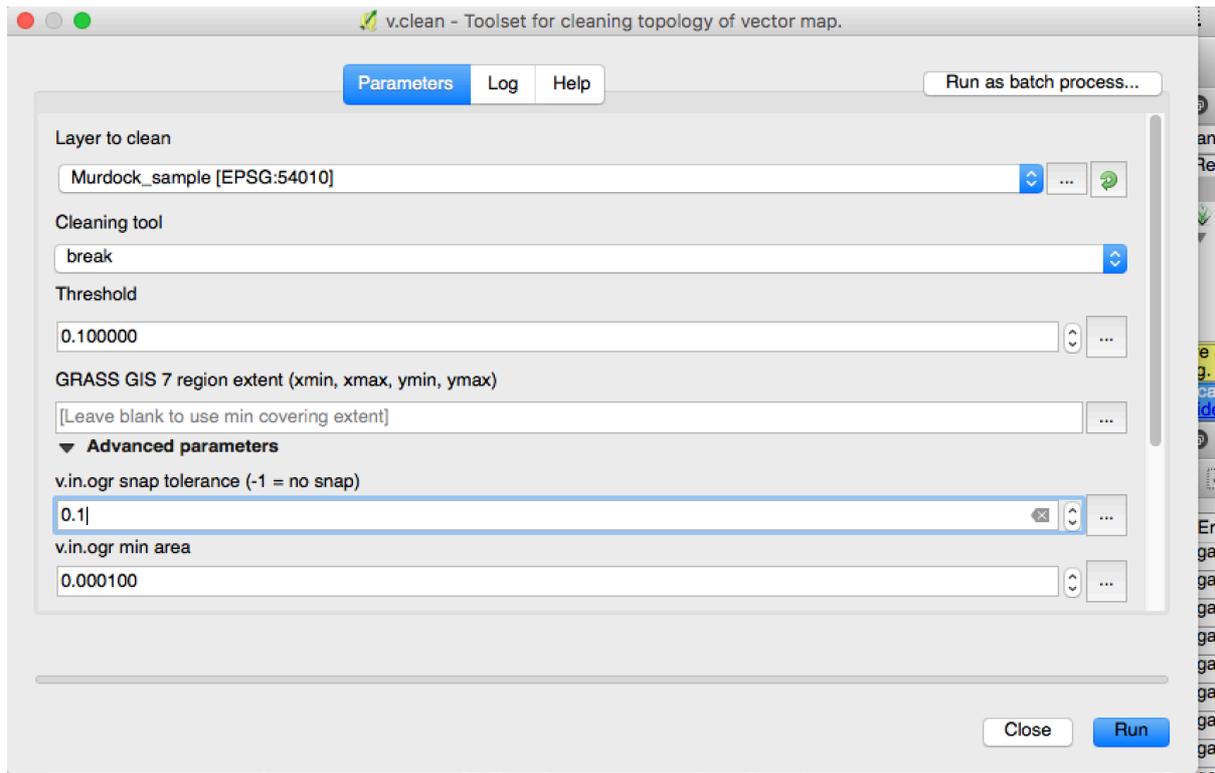
▼ GRASS GIS 7 commands [314 geocommands]

▼ Vector (v.*)

▼ v.clean - Toolset for cleaning topology of vector map.

▼ v.clean.advanced - Toolset for cleaning topology of vector ..

16. Set v.in.ogr tolerance to 0.1



17. Creates new layer cleaned

18. Save as Murdock_nogaps.shp

19. **Try for yourself:**

Check if there are still gaps in Murdock_nogaps.shp

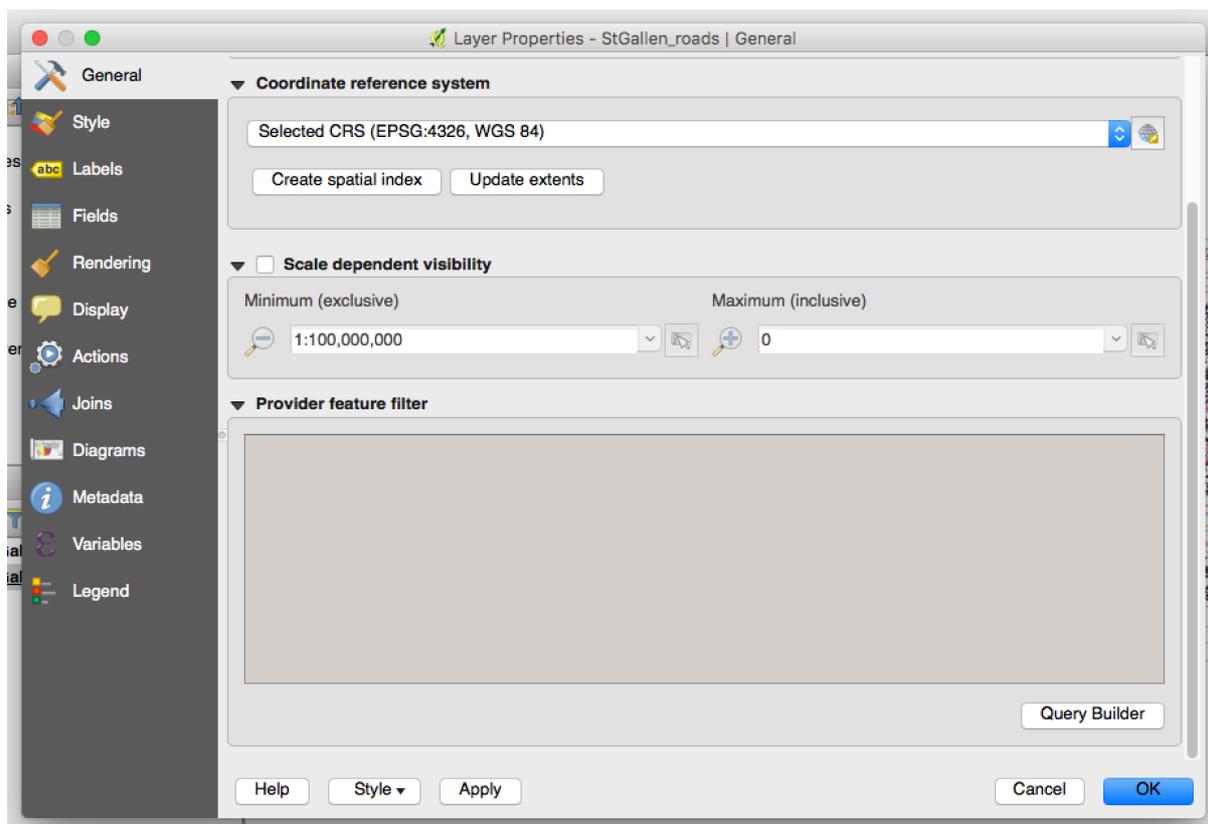
20. **Try for yourself:**

Check for

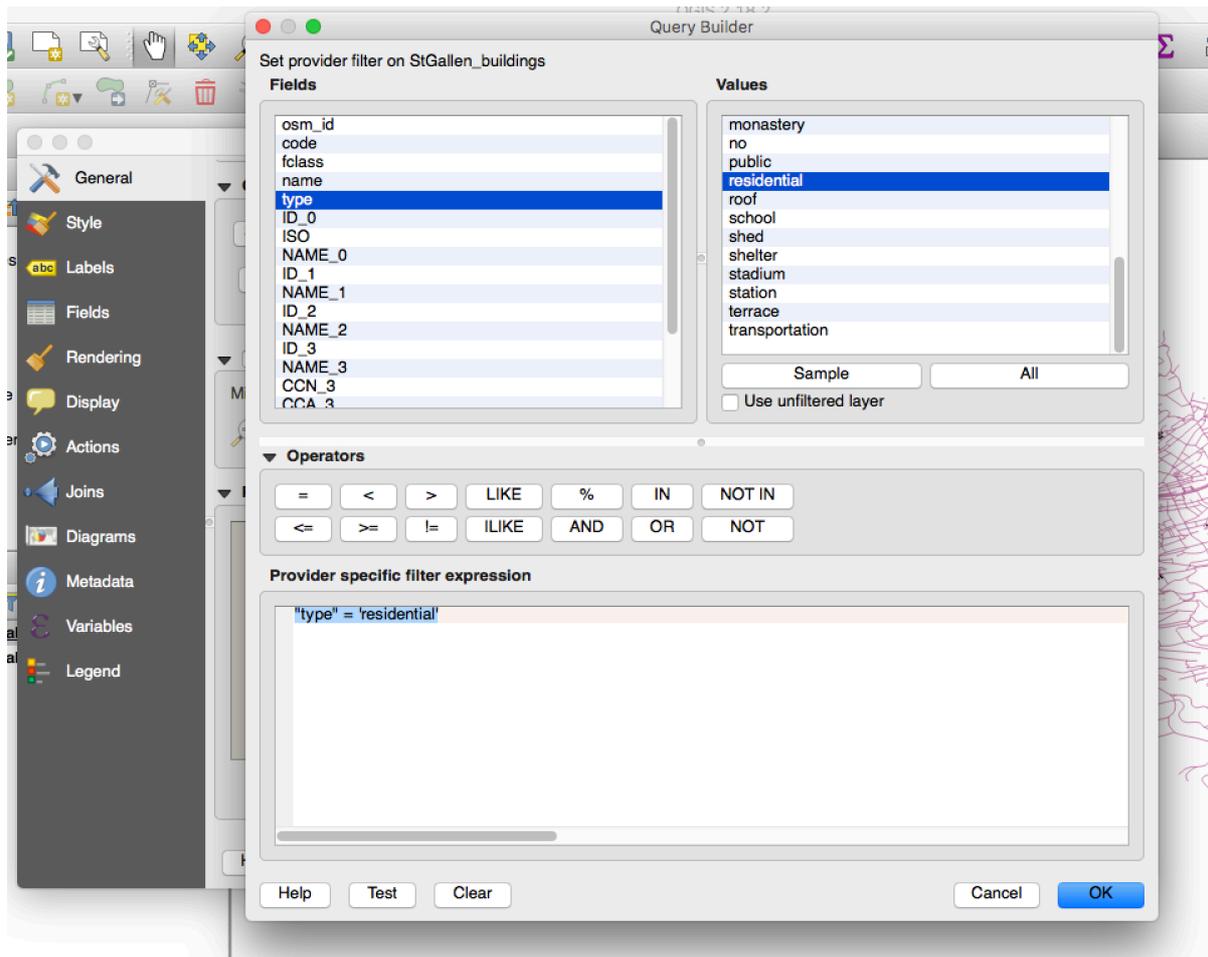
- invalid geometries
- multipart geometries
- overlaps.

Exercise 2B – Query Builder:

1. From the folder Exercise 1 load shapefile StGallen_roads.shp and StGallen_buildings.shp.
2. Double Click on StGallen_buildings.shp
3. Open Tab “General”
4. Click “Query Builder”



5. In “Fields” click on type and in “Values” click on “All”
6. Set a filter that only displays residential buildings
"type" = 'residential'



7. Click test
8. Click Ok and Ok
9. Duplicate StGallen_buildings.shp
10. Save duplicate as "StGallen_residential.shp"
11. Remove StGallen_buildings.shp
12. Repeat steps 2-11 for StGallen_roads.shp.

In steps 5 and 6 use fclass and set a filter that displays "motorway" and "primary".

13. Export the image StGallen_Homes_near_Motorway.png

Spatial Query

Spatial Query

Select source features from

StGallen_Post

Selected geometries

Where the feature

Within

Reference features of

StGallen_residential

Selected geometries

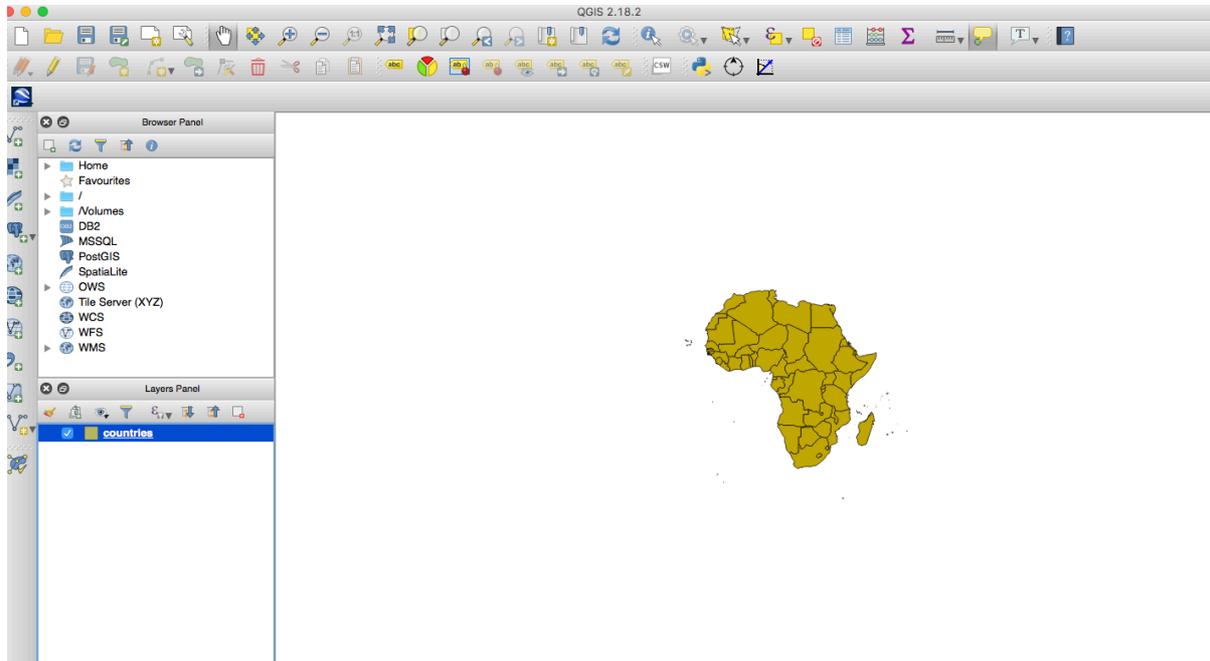
And use the result to

Create new selection

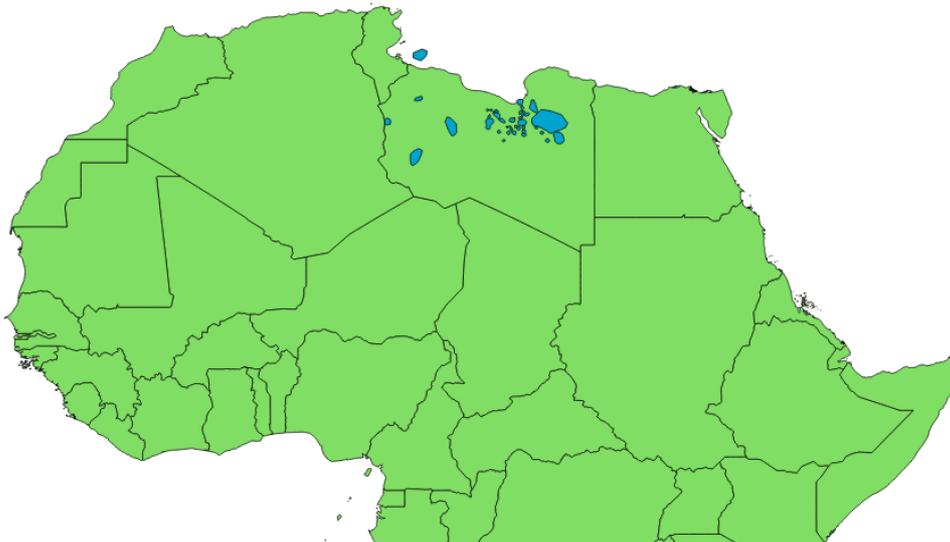
Apply Close

Exercise 2C – Erase Gas Flares:

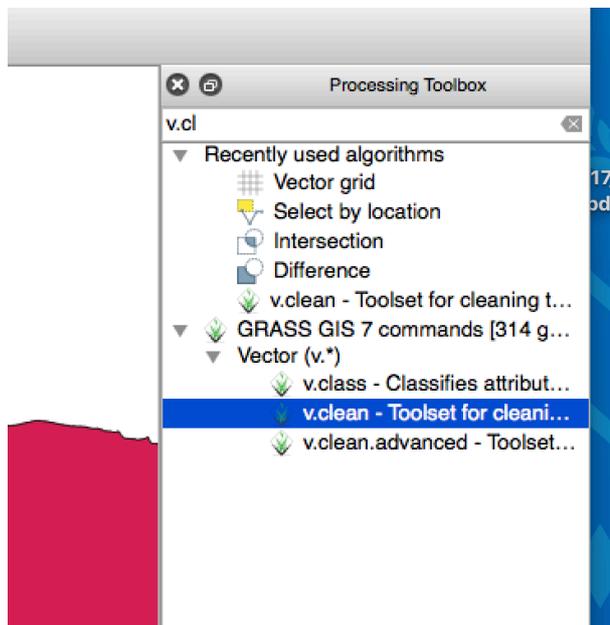
1. From the folder Exercise 1 load shapefile countries.shp.
2. Create a Query that filters only African countries (continent = Africa)



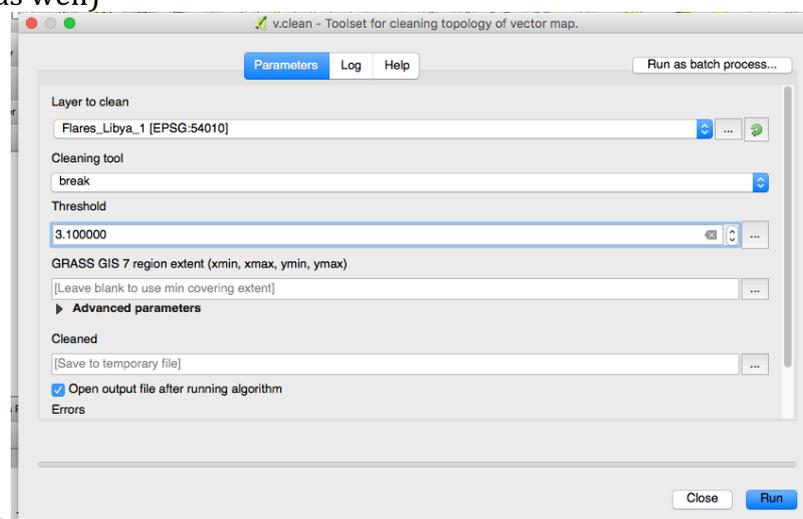
3. Save as Africa_country_bnd
4. From the folder Exercise 2 load shapefile Flares_Lybia1.shp.



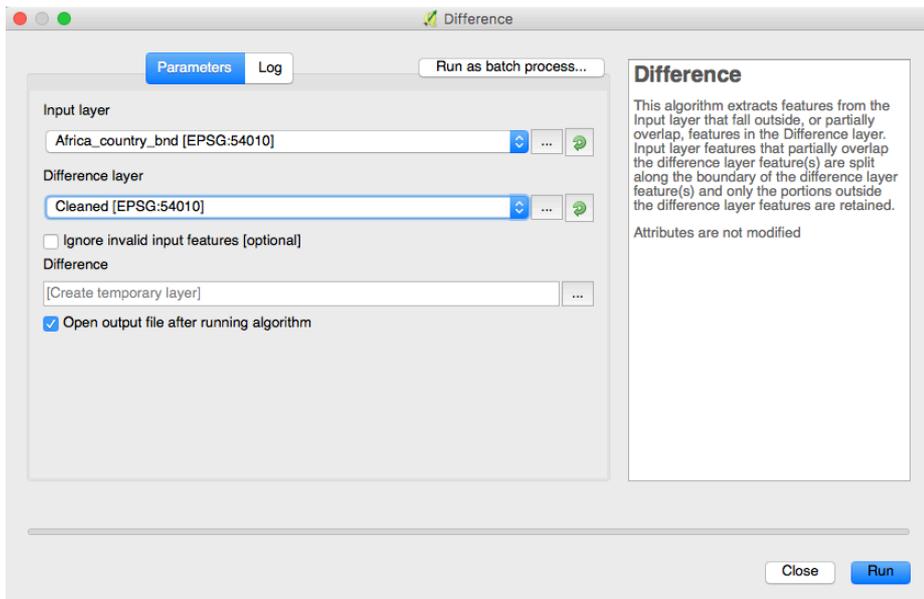
5. Change the CRS of both Layers to World Eckert VI
6. Clean Flares_Lybia1.shp
 - Processing | Toolbox
 - Search for v.clean



- Select Gas flares layer and increase threshold to 3.1 (smaller values might work as well)



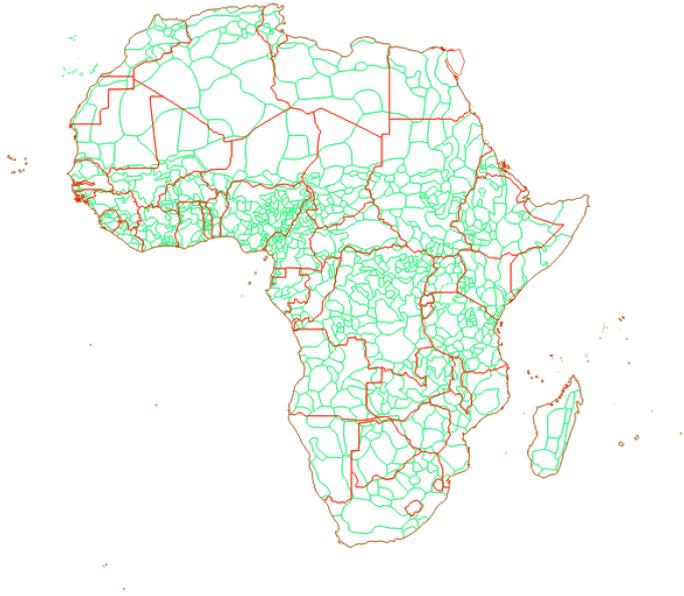
7. Vector | Geoprocessing Tools | Difference
 - Input Layer "Africa_country_bnd"
 - Difference Layer "cleaned"



8. Save new layer "Difference" as Lybia_Clipped
9. Export Image Lybia_Clipped.png

Exercise 2D – Union: Murdock Ethnic Homelands and African Country Boundaries

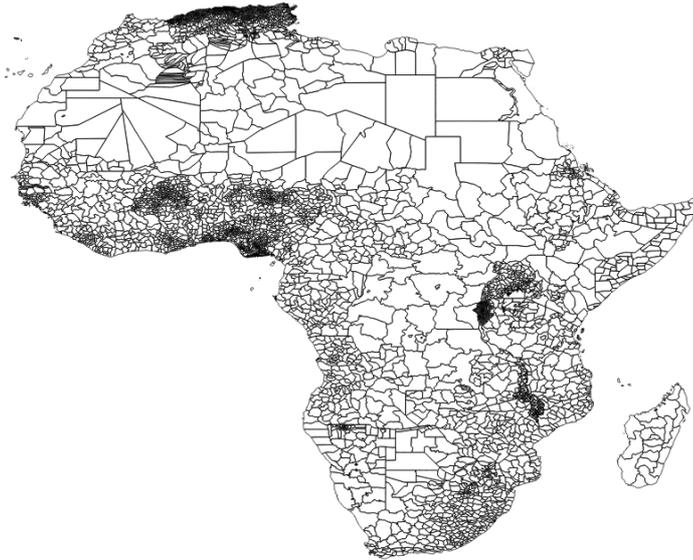
1. From Exercise 1 folder load shapefile Africa_country_bnd.shp
2. From Exercise 1 folder load shapefile murdock_ea_2010_3.shp
3. Check if CRS of both shapefiles is consistent.
4. Generate transparent fill for both shapefiles.
5. Change to different boundary colours.



6. Vector | Geoprocessing Tools | Union
7. Input 1 Africa, Input 2 Murdock.
8. Check Results
9. Slivers?

Exercise 2E – Spatial Join: Conflict, Mines, and ADM2

1. From Exercise 2 folder load shapefile admin_Merge_Corrected_Africa.shp
2. Transparent Fill
3. Check CRS (World Eckert VI)



4. Add XY Data
Layers | Add Layer | Add Delimited Text Layer

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

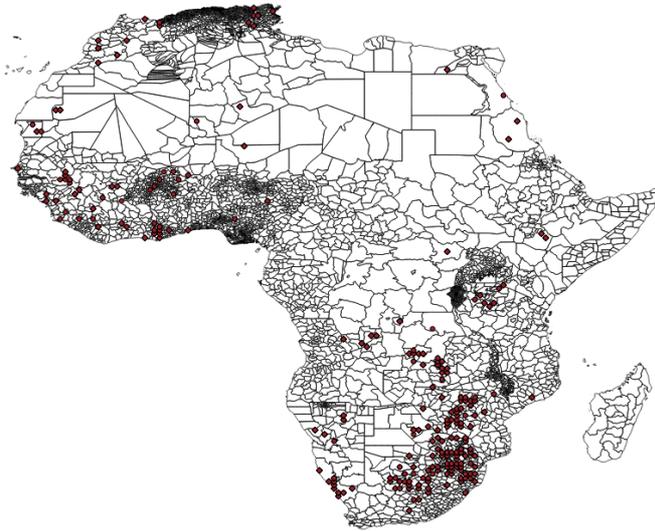
Layer settings Use spatial index Use subset index Watch file

	latitude	longitude	year	iso_1	mines	mines_a	main_lprice	main_lprice_a
1	-32.25	24.75	1997	ZAF	1	1	4.3174882	0
2	-32.25	24.75	1998	ZAF	1	1	4.3174882	0
3	-32.25	24.75	1999	ZAF	1	1	4.3438053	0
4	-32.25	24.75	2000	ZAF	1	1	4.4067192	0
5	-32.25	24.75	2001	ZAF	1	1	4.4067192	0

5. From Folder Exercise 2 import

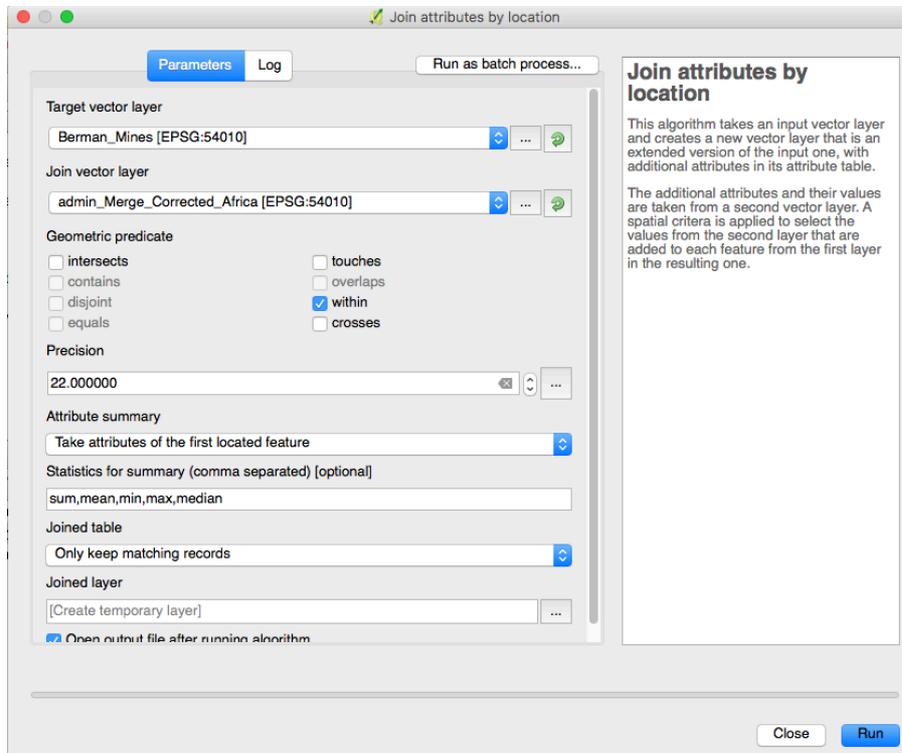
- Berman_Mines.csv
- Berman_Acled.csv

IMPORTANT, pick World Eckert VI CRS.



6. Save Berman_Mines and Acled as layers. (CRS!!!)

7. Vector |Data Management Tools | Join Attributes by Location



8. Save new Layer

9. Save as .. | Change File type to .csv | OK to save the attribute table.

Classroom Discussion 1:

If you would like to replicate Table 2 of Berman et al (2017) at the ADM2 level, how would you proceed?

Classroom Discussion 2:

If you would like to replicate Table 2 of Berman et al (2017) at the grid cell level, what would you do?

