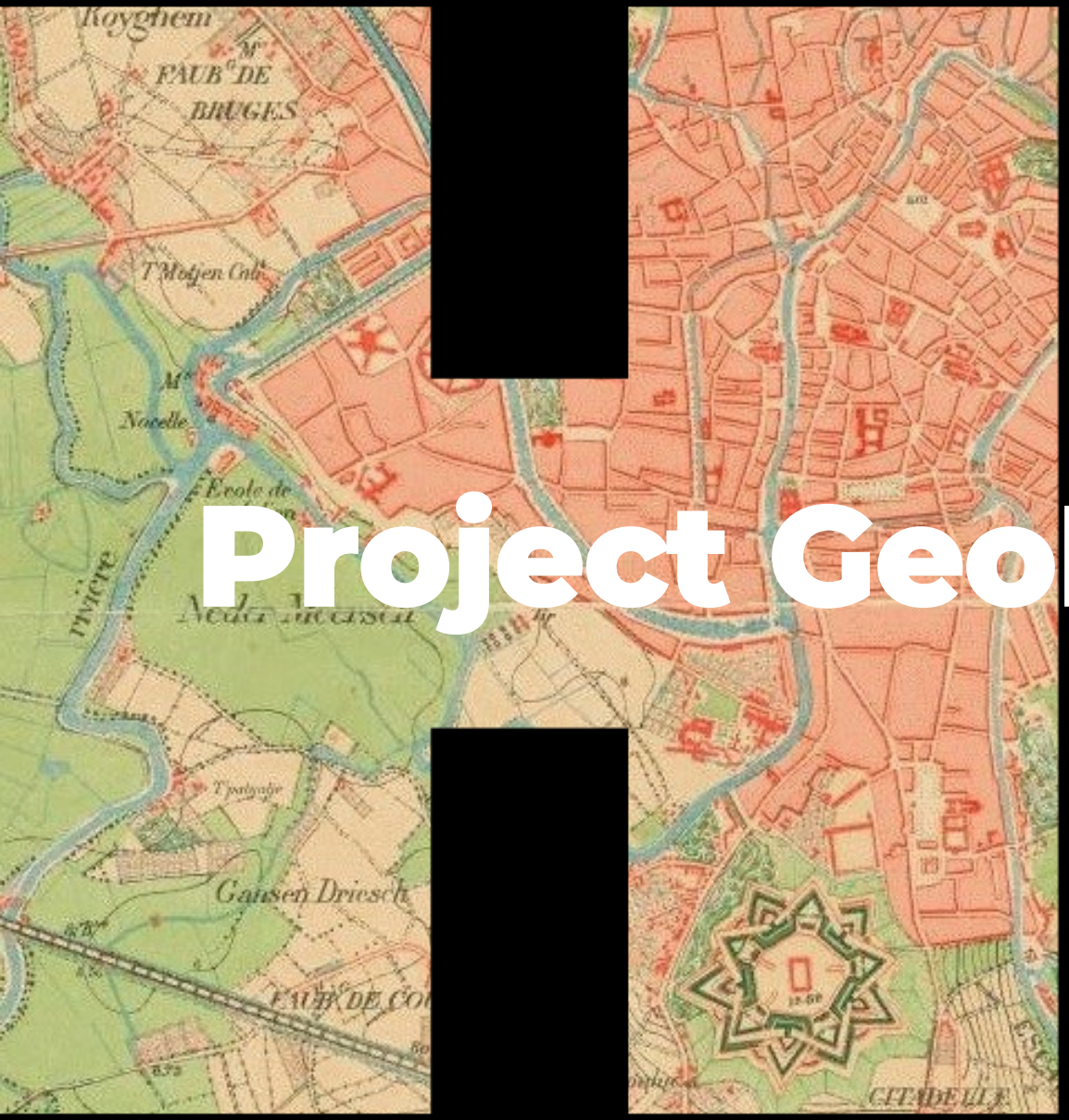

Project GeoICT

2021-2022

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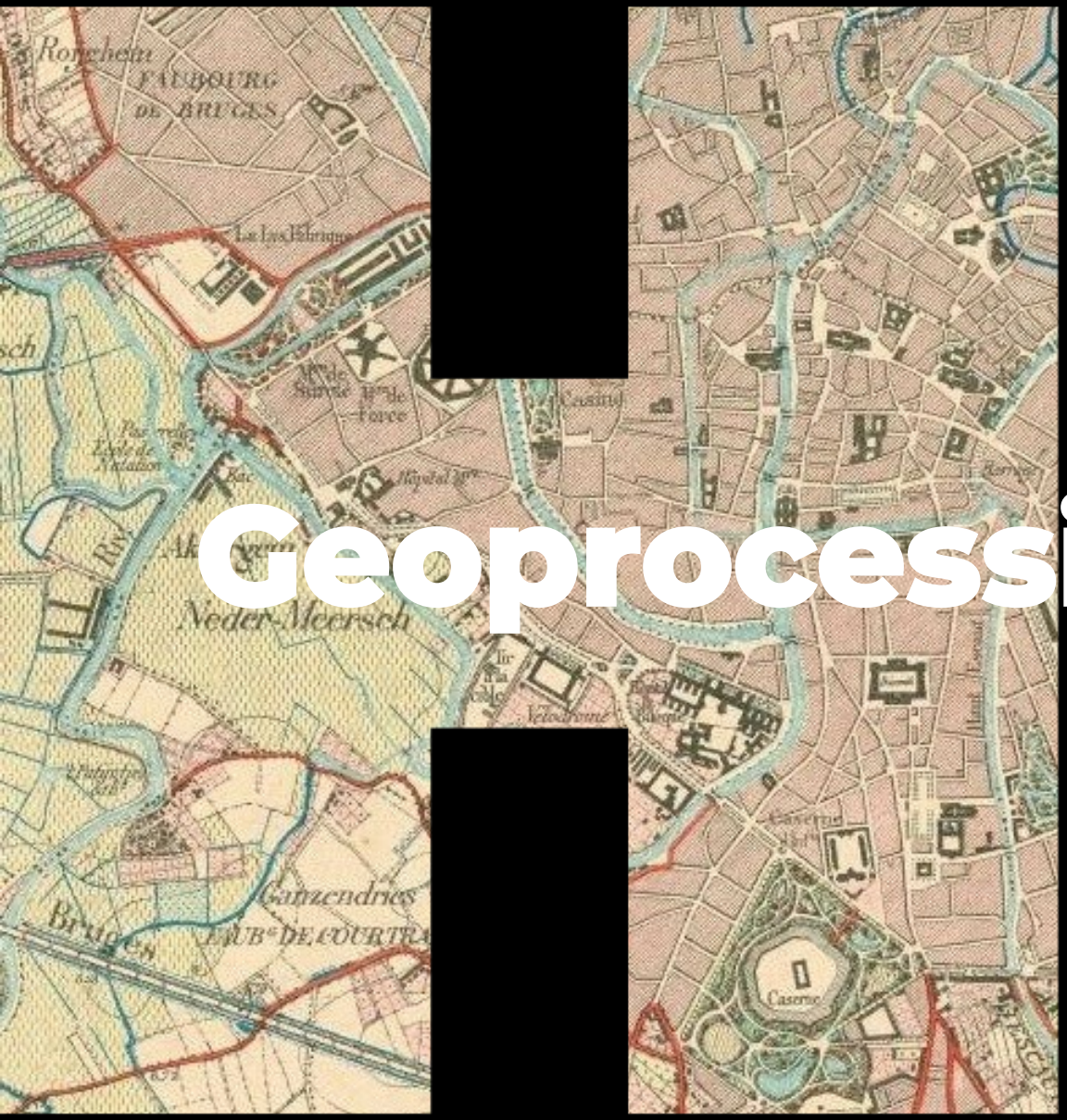

Geoprocessing

Project GeoICT

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Introduction

Geoprocessing

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Why geoprocessing

- Some data does not (always) give answers
  - Answer given by parts of features
  - Answer given by complex relations with other features
- Data processing and data analysis required to convert data to information
- Allows to answer (complex) spatial questions

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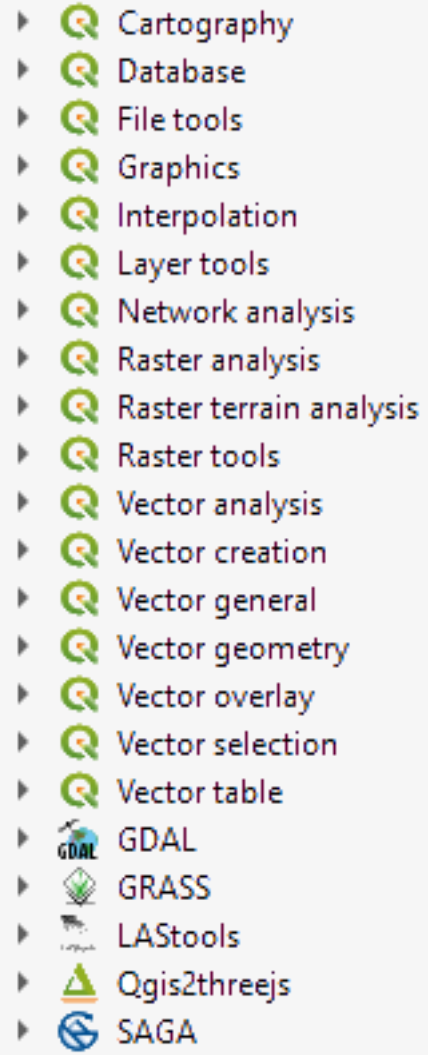
Difference with spatial queries

- Geoprocessing frequently preceded to allow asking questions
- Queries limited to attributes and entire features, rather than looking inside parts of the feature or complex relations between features
- Queries results in subsets of input dataset

What kind of data?

- Geoprocessing-algorithms are frequently suitable for either vector data, or raster data (not both)
- Here: primary focus on vector data



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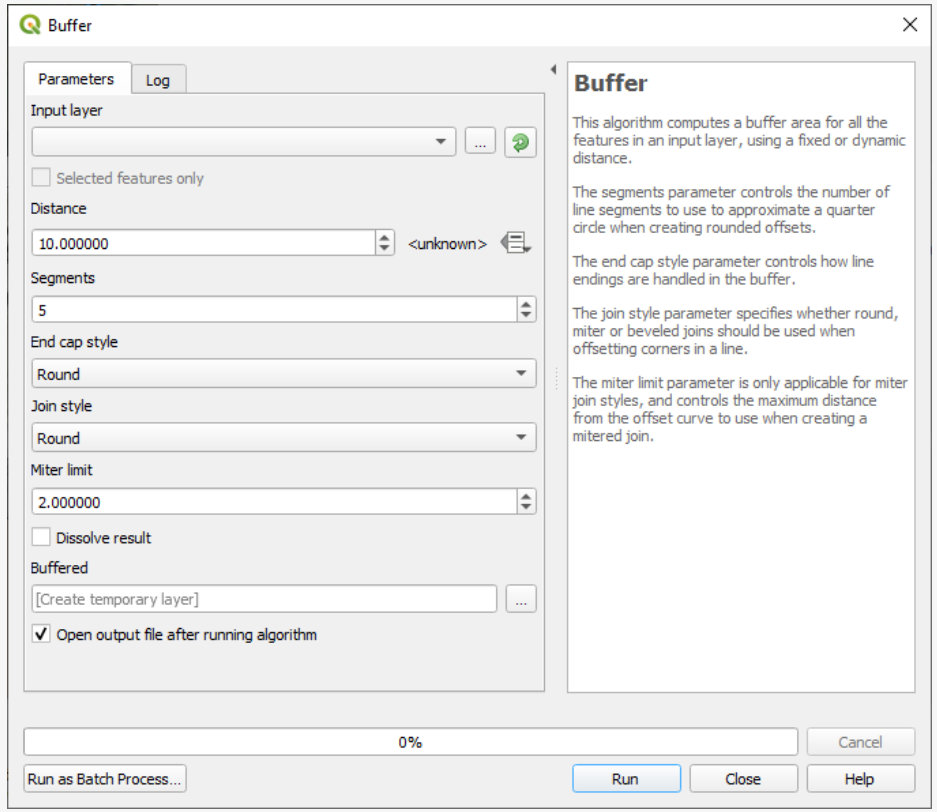
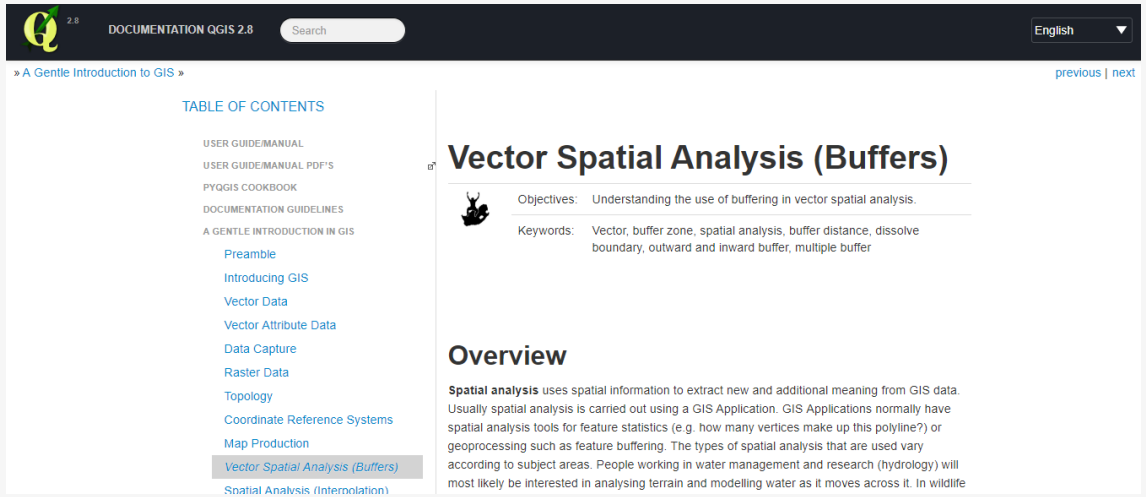
Help and support

- QGIS: limited explanation of various tools
- QGIS website and forums: are full of information
- Conceptual descriptions…





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Important geoprocessing tools in QGIS

Geoprocessing

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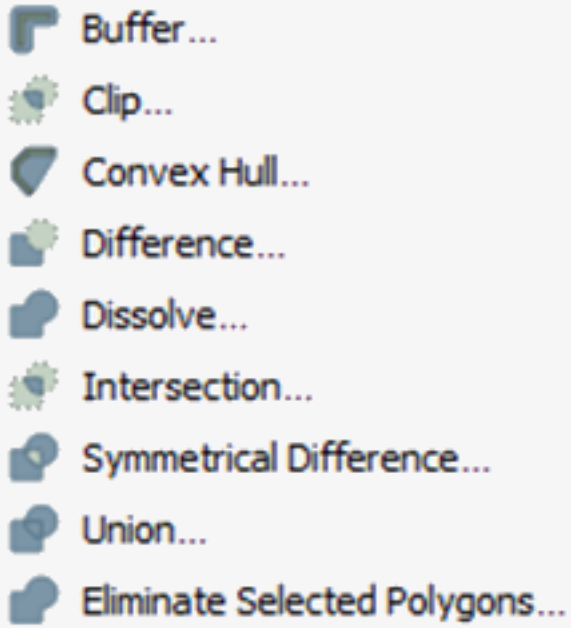
Geoprocessing tools in QGIS

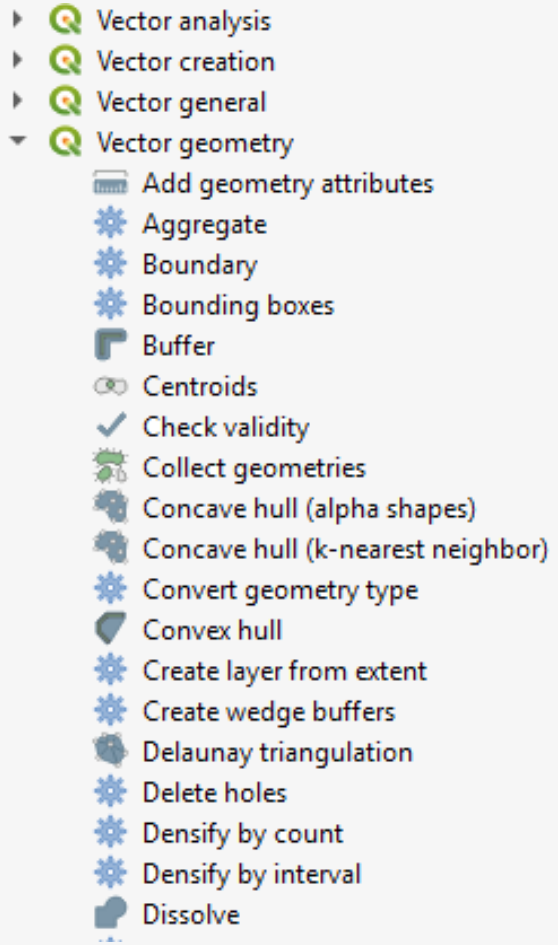
Vector →

Geoprocessing tools:



Toolbox →

Vector ...:



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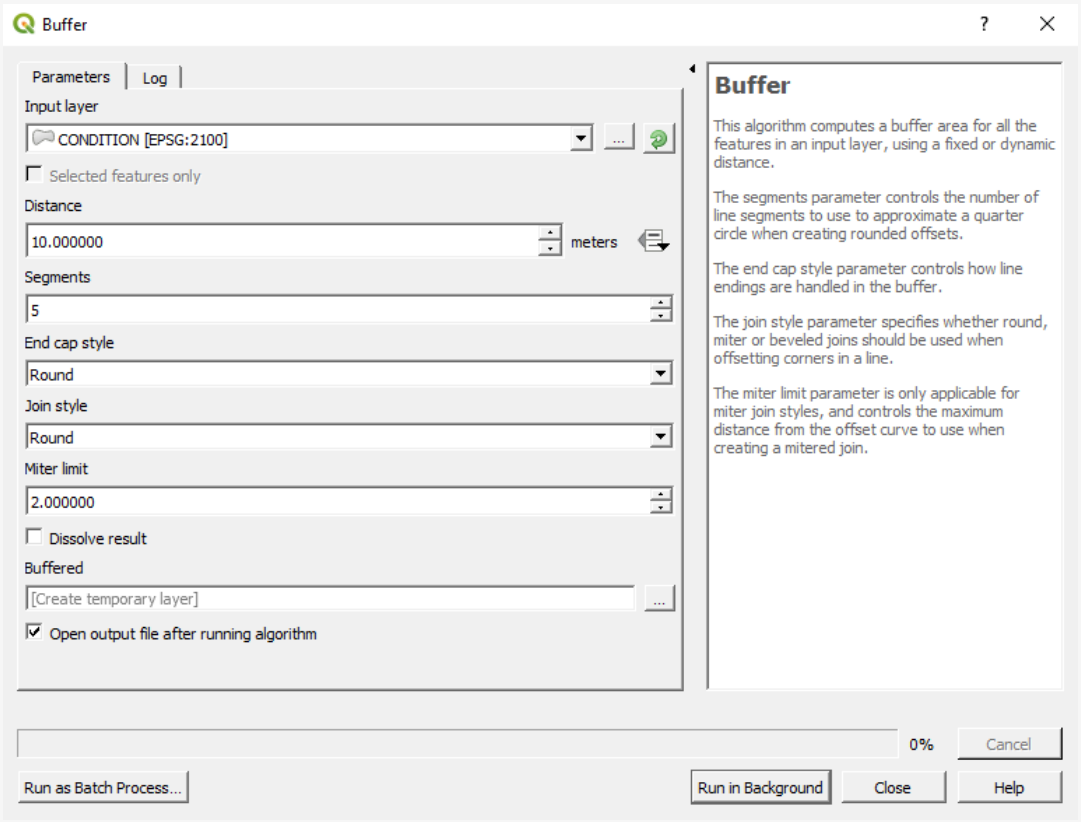
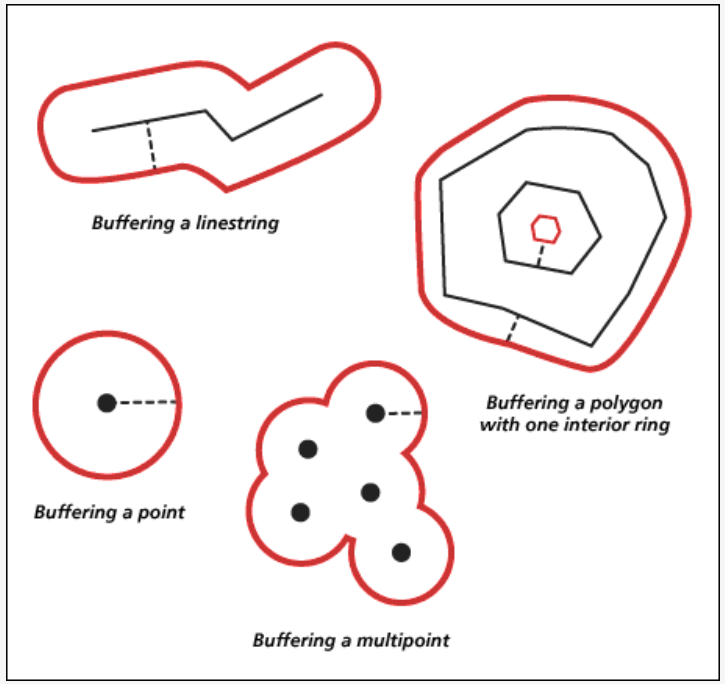
Fixed or variable buffer distance





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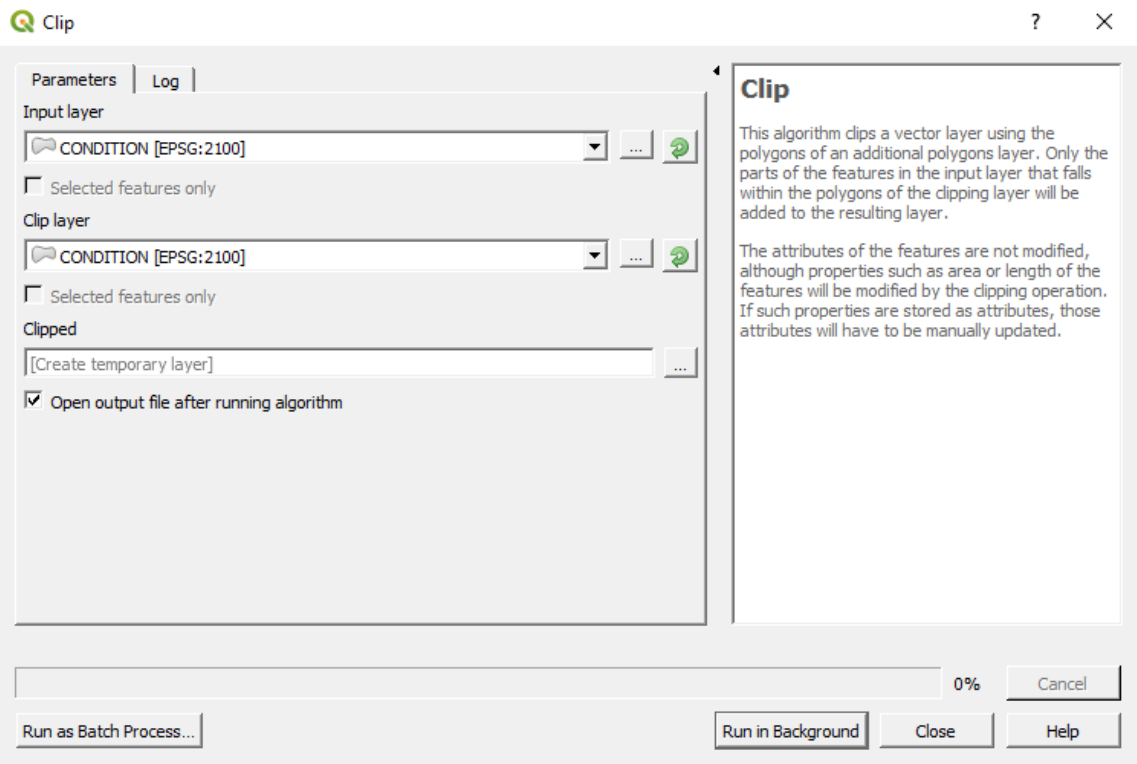
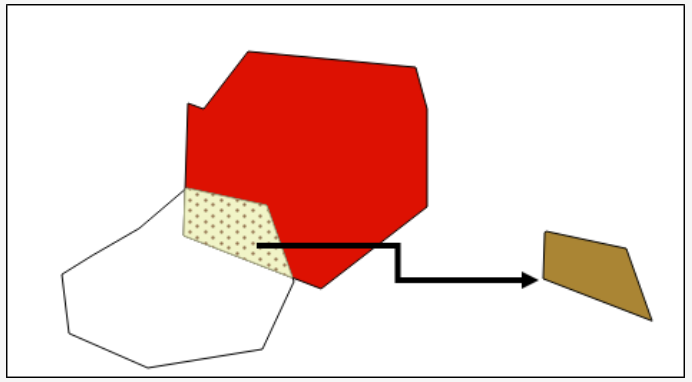
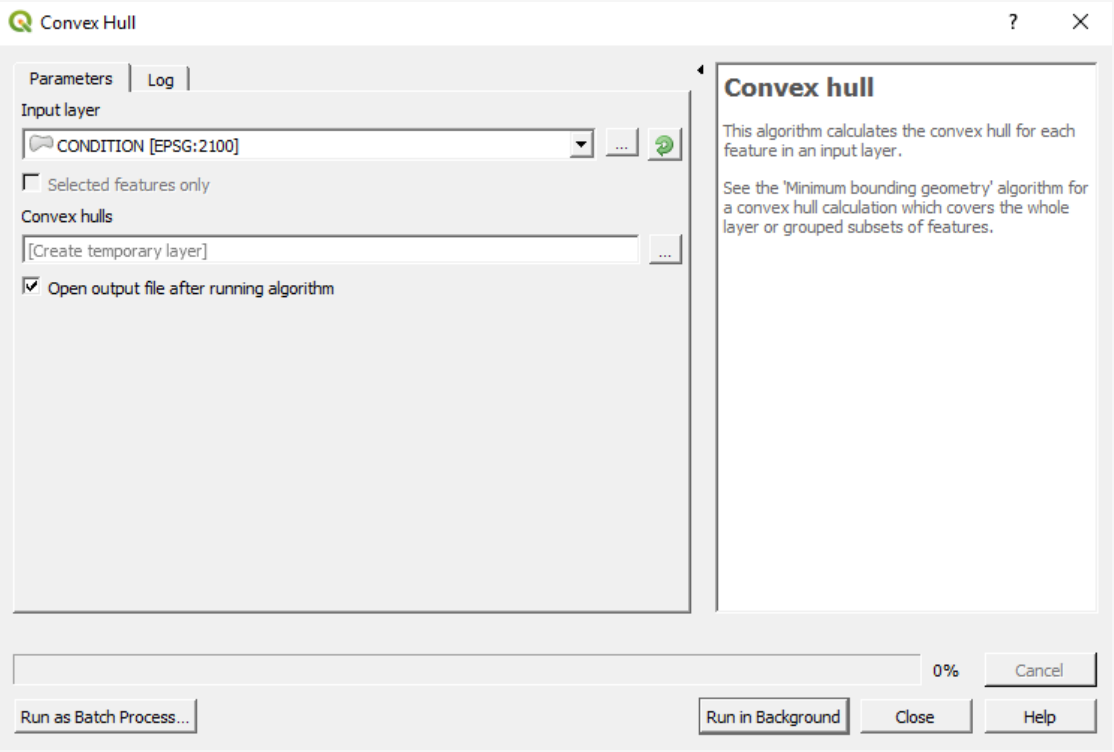
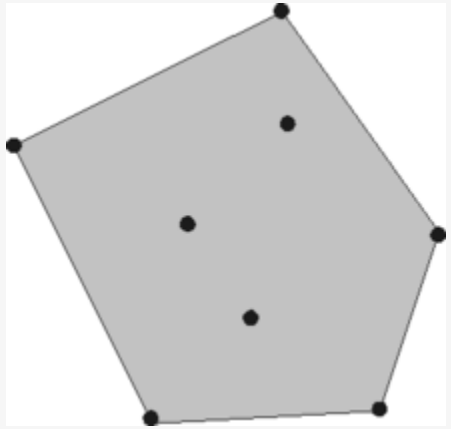
Clip


Clip
Parameters
Log
Input layer
CONDITION [EPSG:2100]
Selected features only
Clip layer
CONDITION [EPSG:2100]
Selected features only
Clipped
[Create temporary layer]
Open output file after running algorithm
Clip
This algorithm clips a vector layer using the polygons of an additional polygons layer. Only the parts of the features in the input layer that falls within the polygons of the clipping layer will be added to the resulting layer.
The attributes of the features are not modified, although properties such as area or length of the features will be modified by the clipping operation. If such properties are stored as attributes, those attributes will have to be manually updated.
0%
Cancel
Run as Batch Process...
Run in Background
Close
Help



Convex hull





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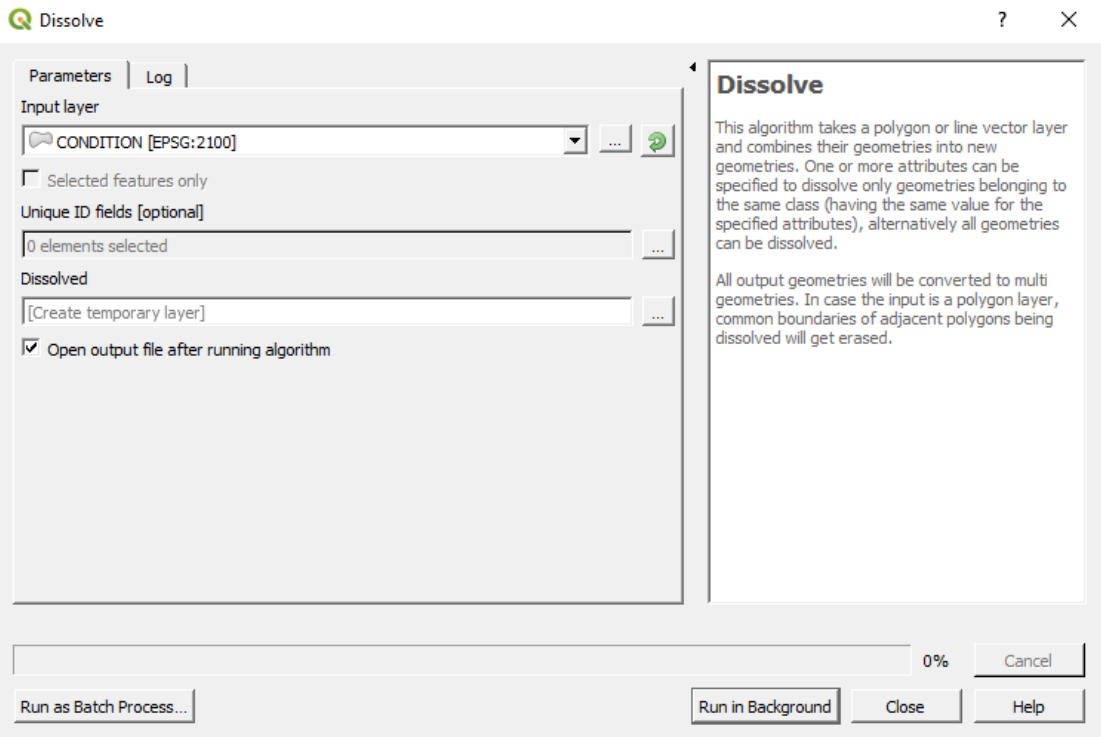
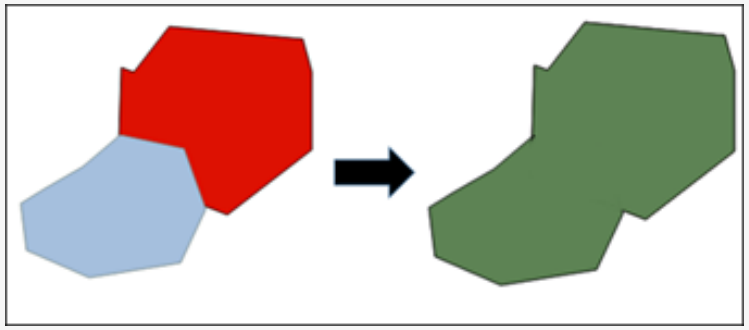
Dissolve: all or based on unique id





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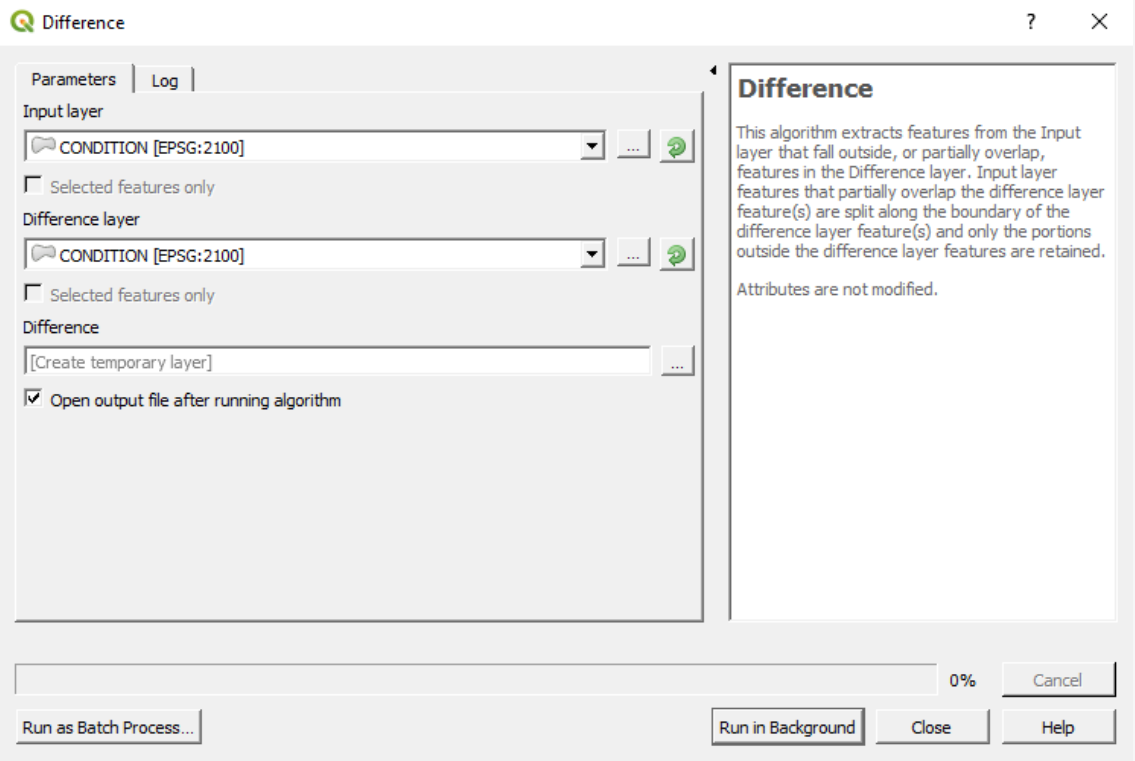
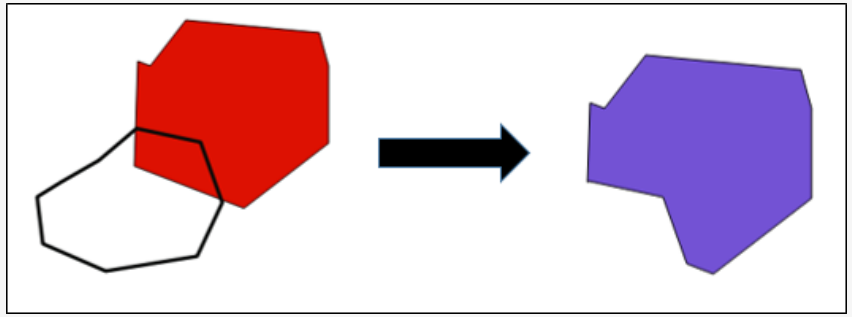
Difference





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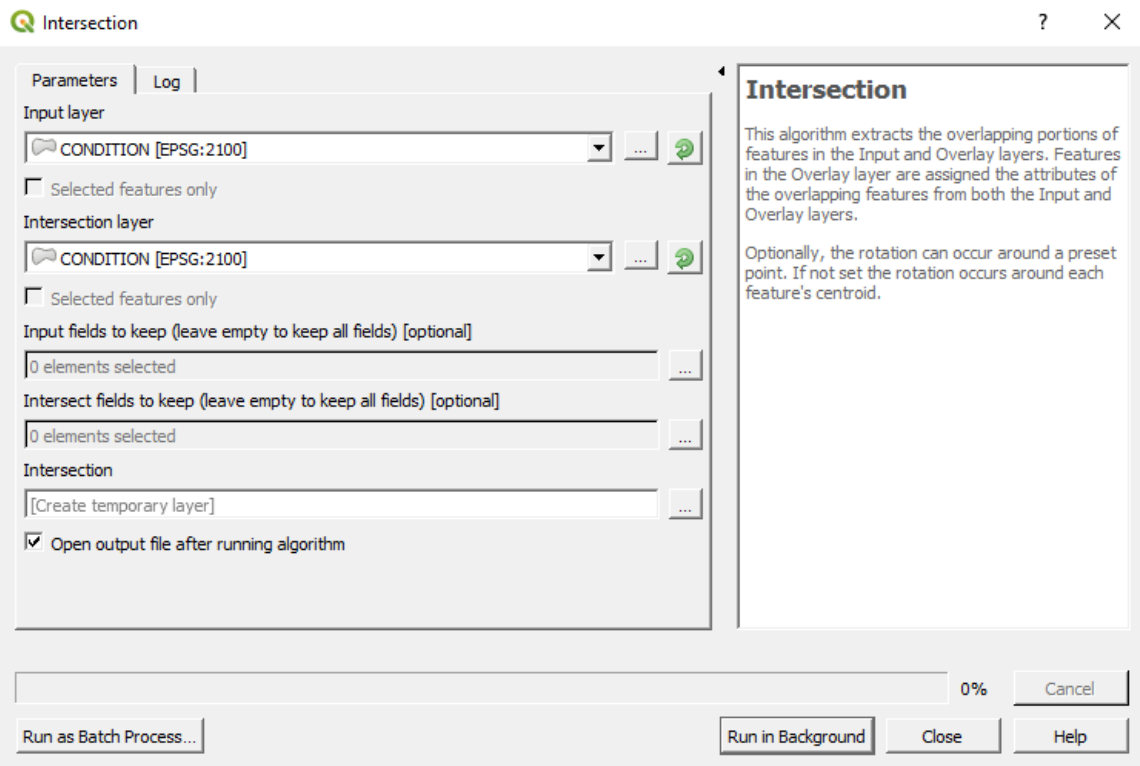
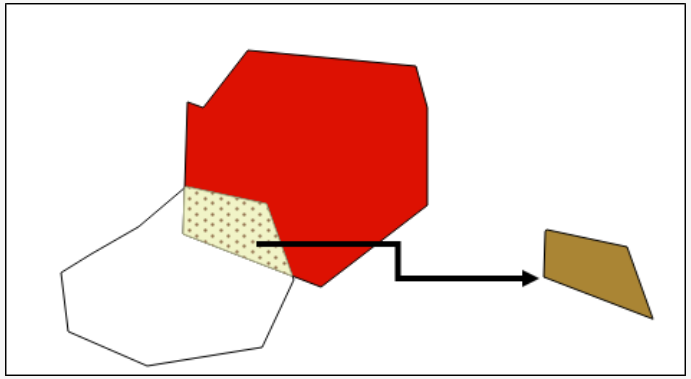
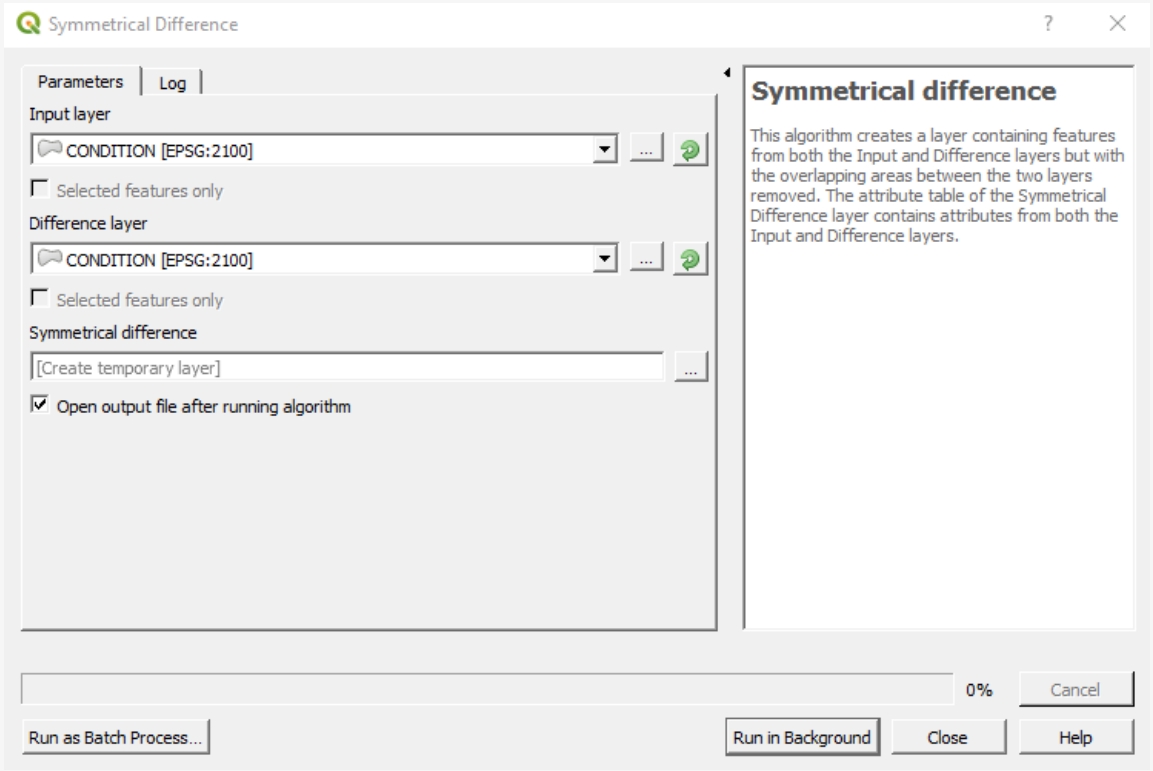
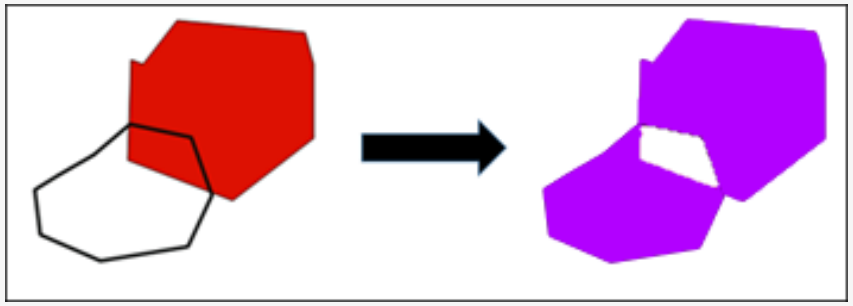
Intersection





Symmetrical Difference





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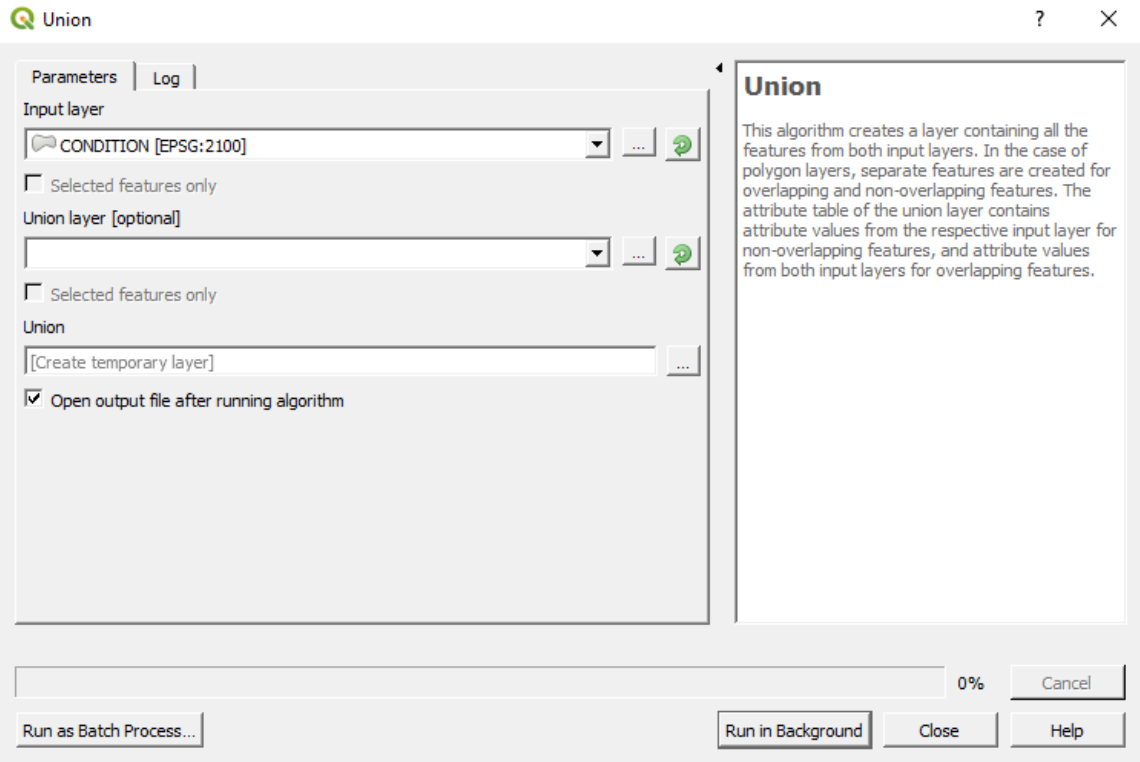
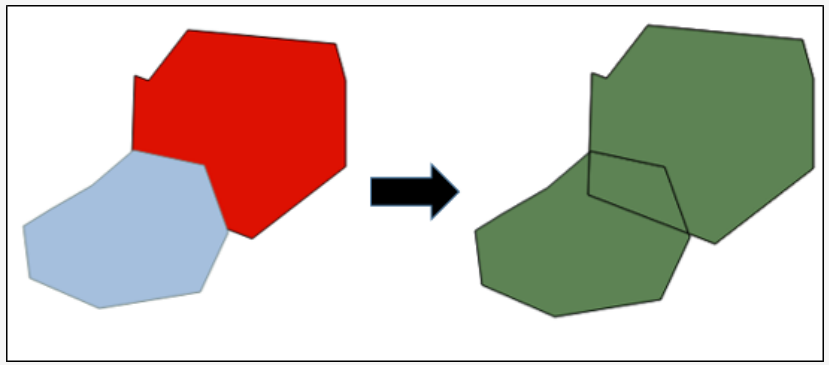
Union





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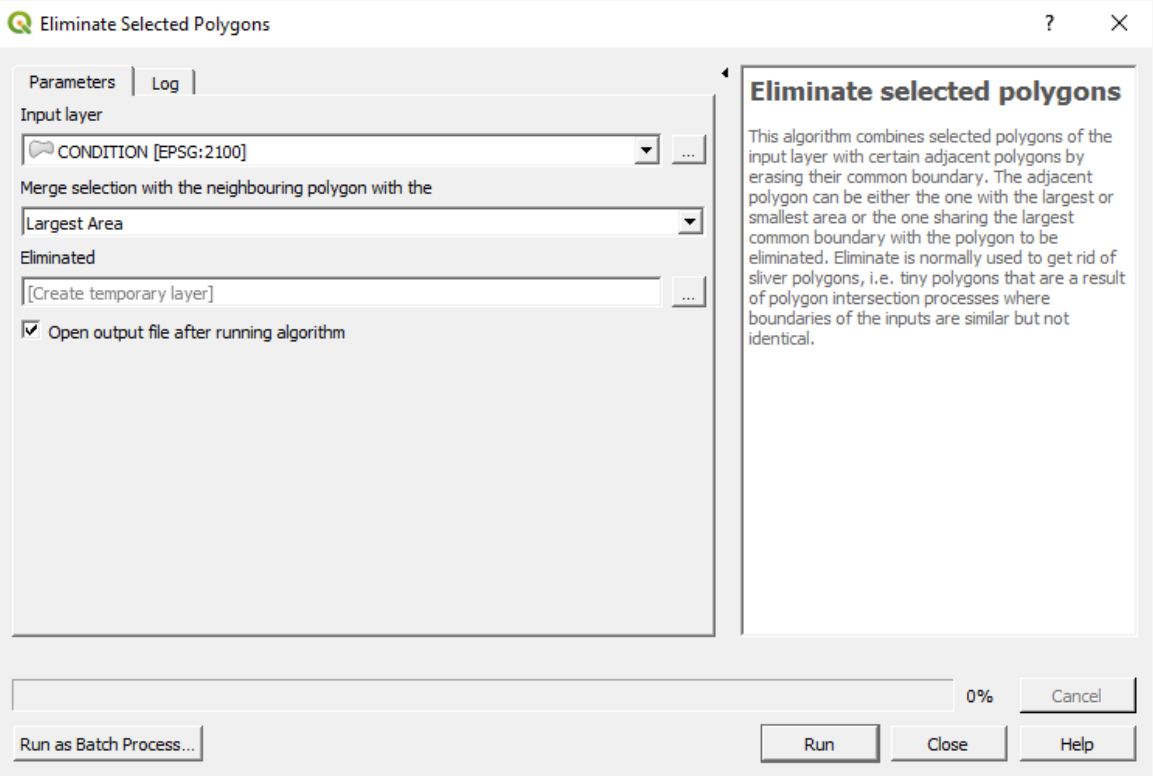
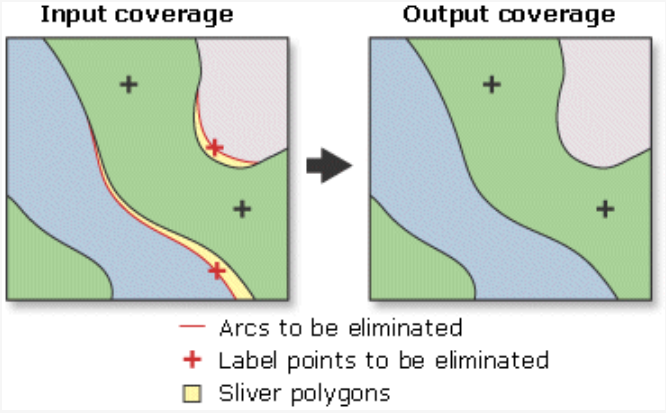
Eliminate Selected Polygons





(=sliver removal)

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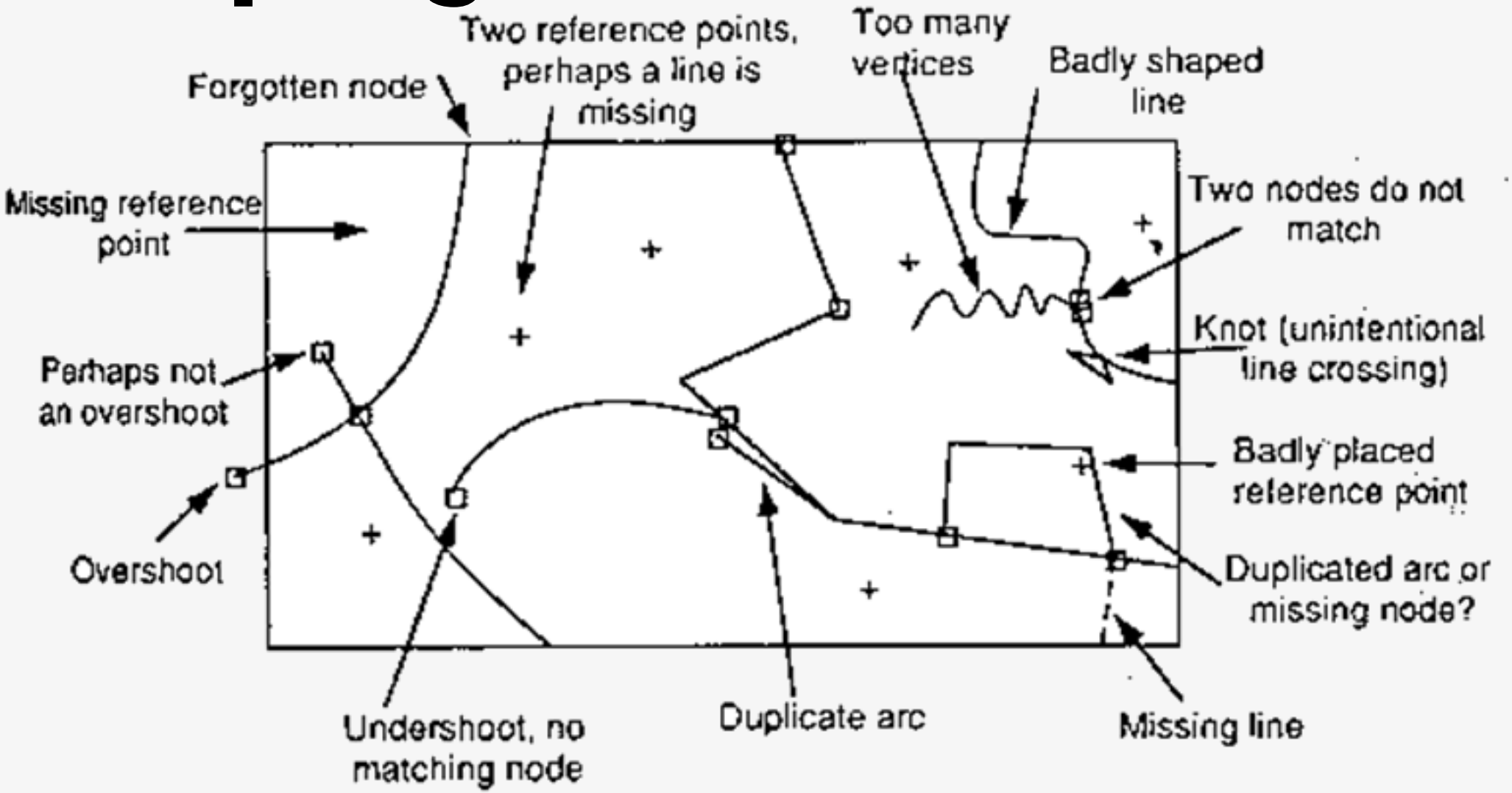
Topological errors



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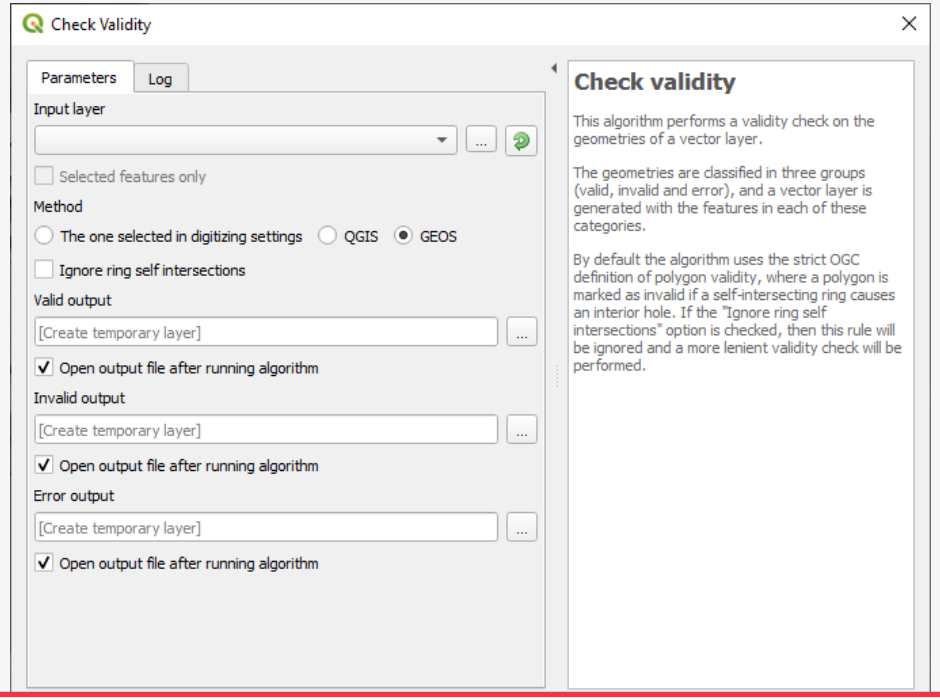
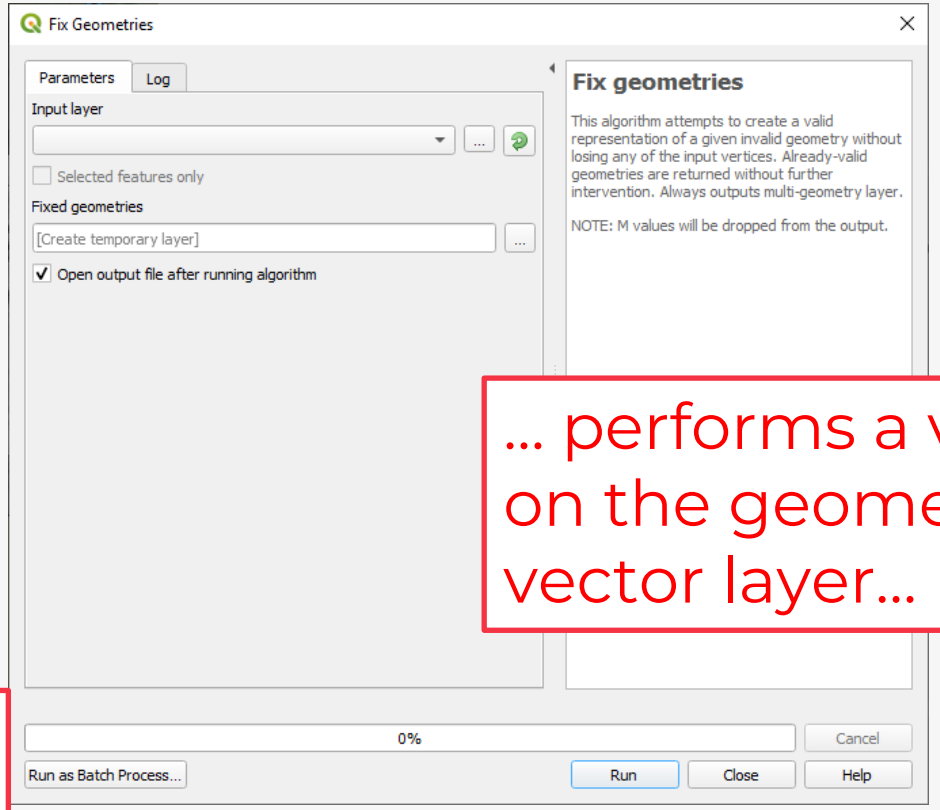
Topological errors

Sometimes required when spatial data has topological errors (apparent after error message…)



… attempts to create a valid representation of a given invalid geometry without losing any of the input vertices…



… performs a validity check on the geometries of a vector layer…

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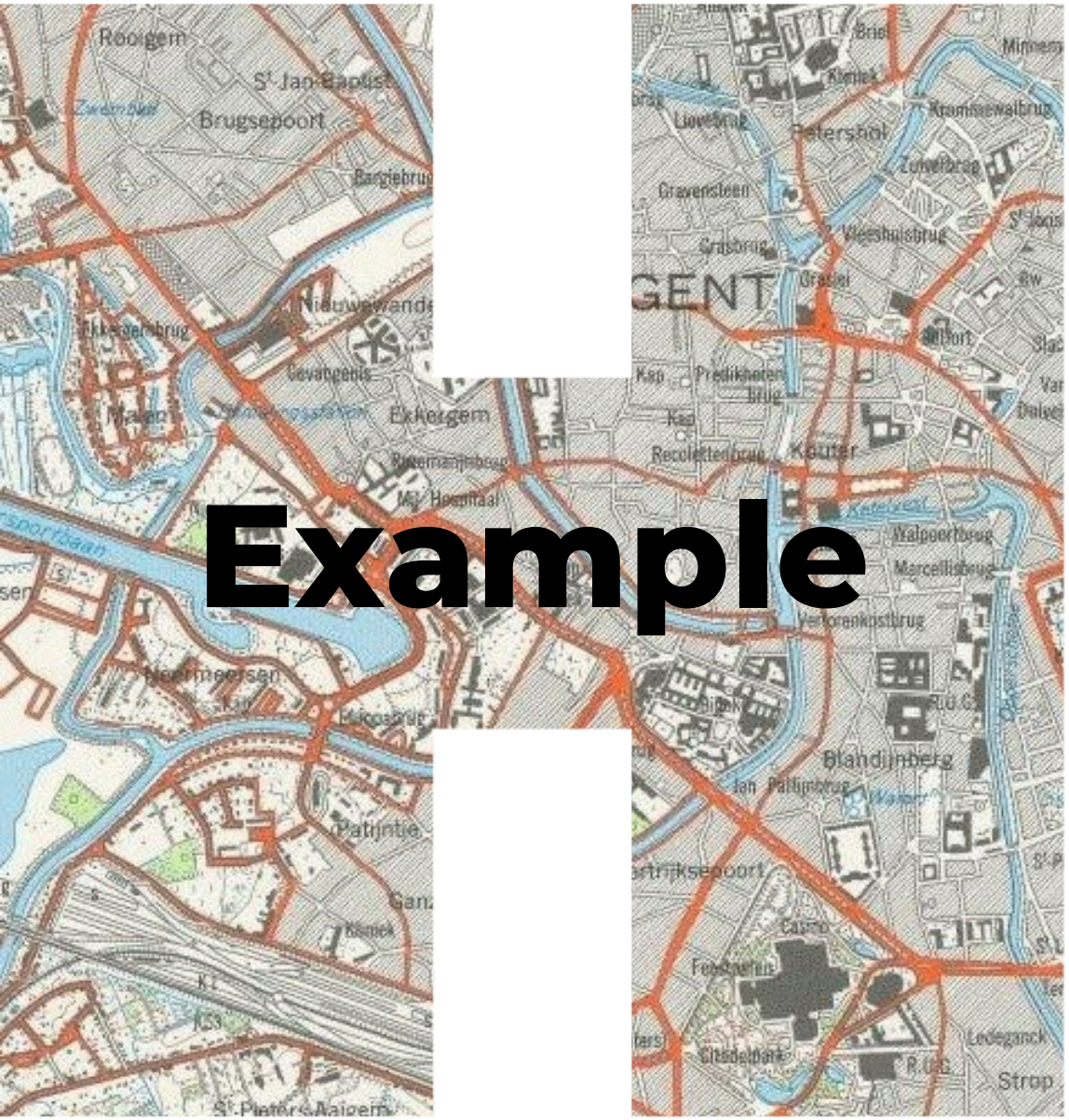

Geoprocessing

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Context

Objective:

Make extraction from ‘AncientPlaceNames_Pleiades’ within Iran that are at least 1 km near a major river or at least 5 km from the sea

Data:

- Sites: AncientPlaceNames_Pleiades
- Countries: ne_10m_admin_0_countries
- Rivers: ne_10m_rivers_lake_centerlines

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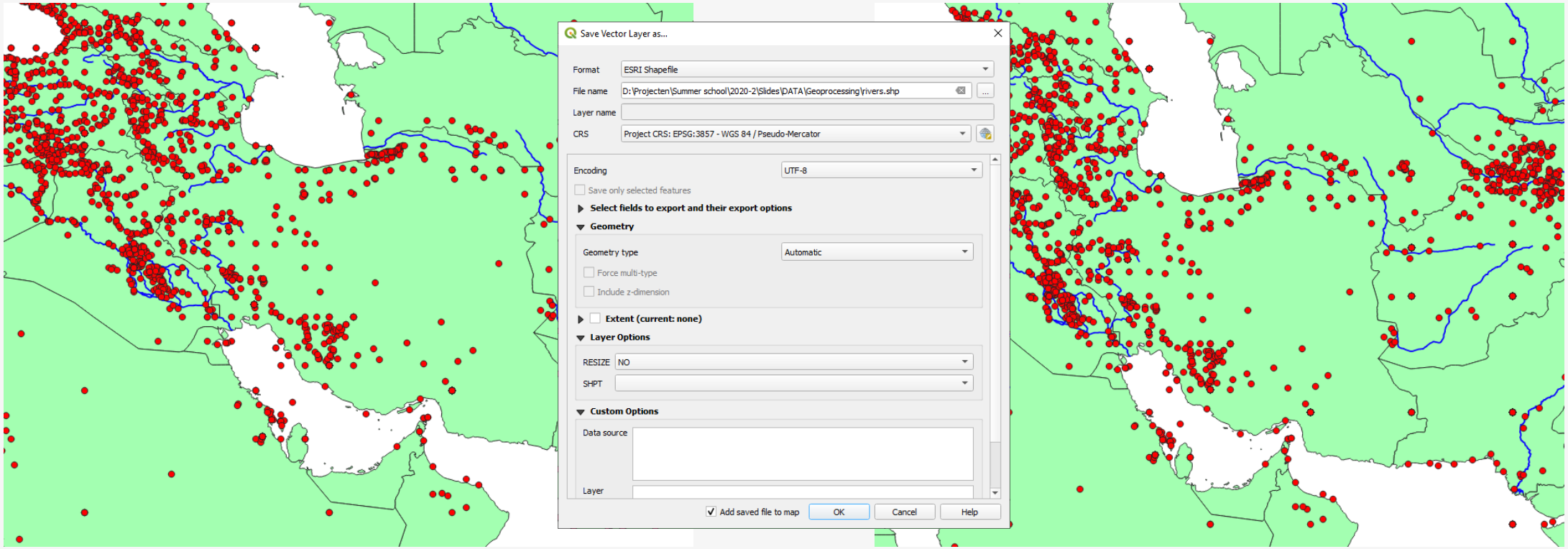
Steps

Make extraction from ‘AncientPlaceNames_Pleiades’ within Iran that are at least 1 km near a major river or at least 5 km from the sea:

1. Transform data to Pseudo Mercator (EPSG:3587)
2. Select Iran and neighboring countries
3. Dissolve administrative boundaries
4. Buffer (-5km) with administrative boundaries
5. Symmetrical difference between dissolve and buffer
6. Select rivers and buffer (1km)
7. Union river buffers and coastal buffers
8. Clip union with Iran
9. Select sites that intersect with resulting polygon

Example

1. Transform data to Pseudo Mercator



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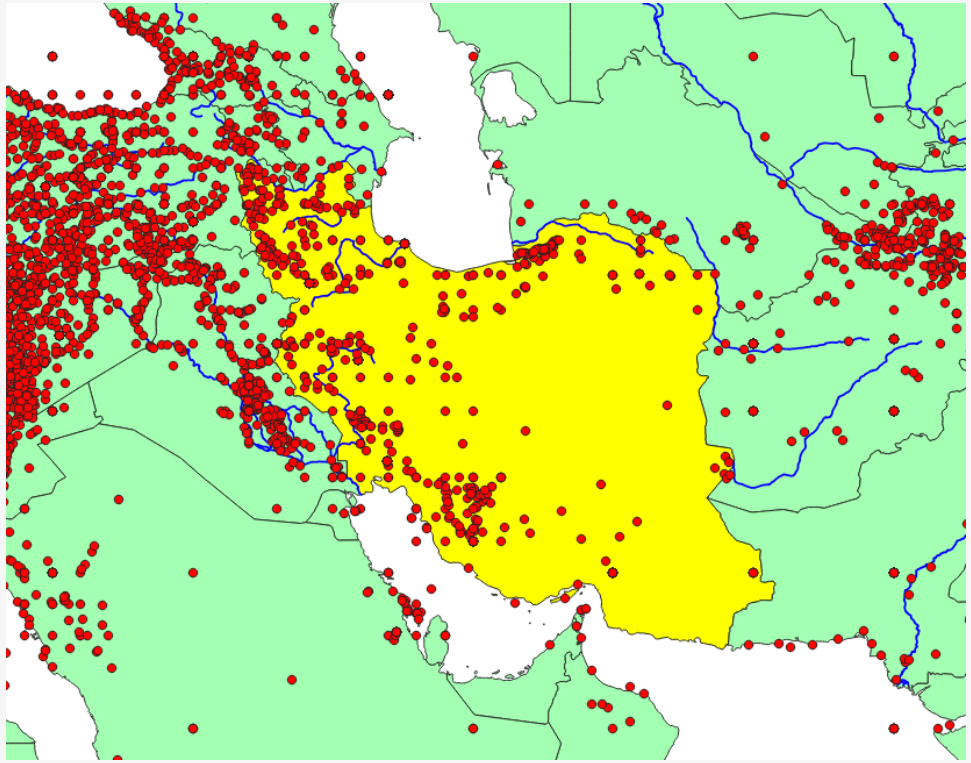
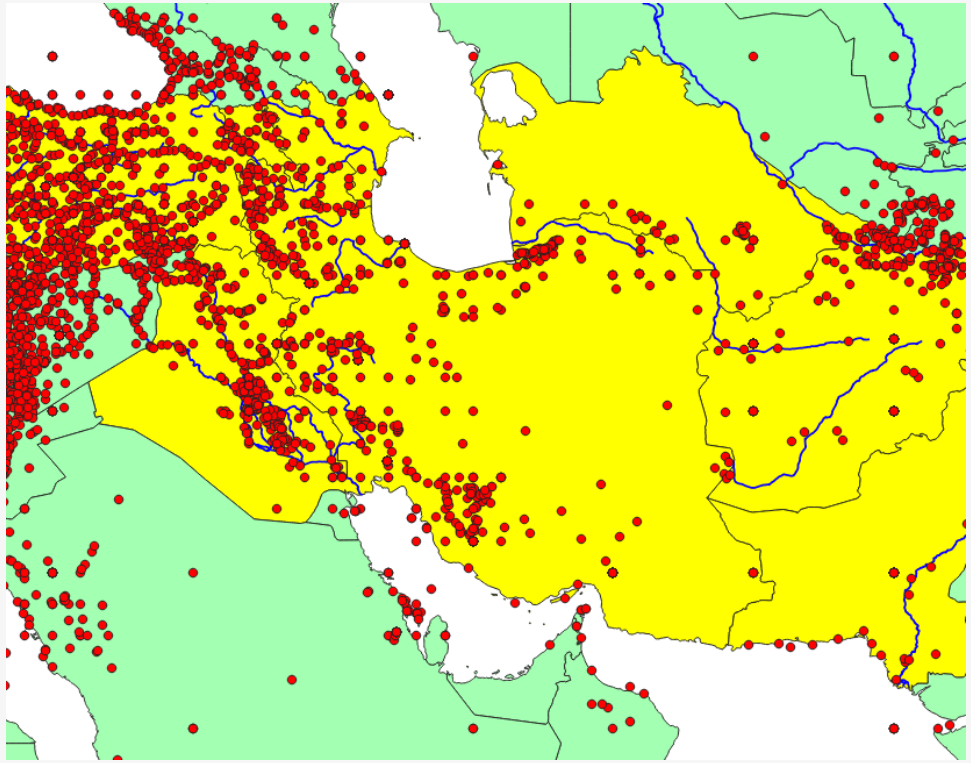
Example

2. Select Iran and neighboring countries





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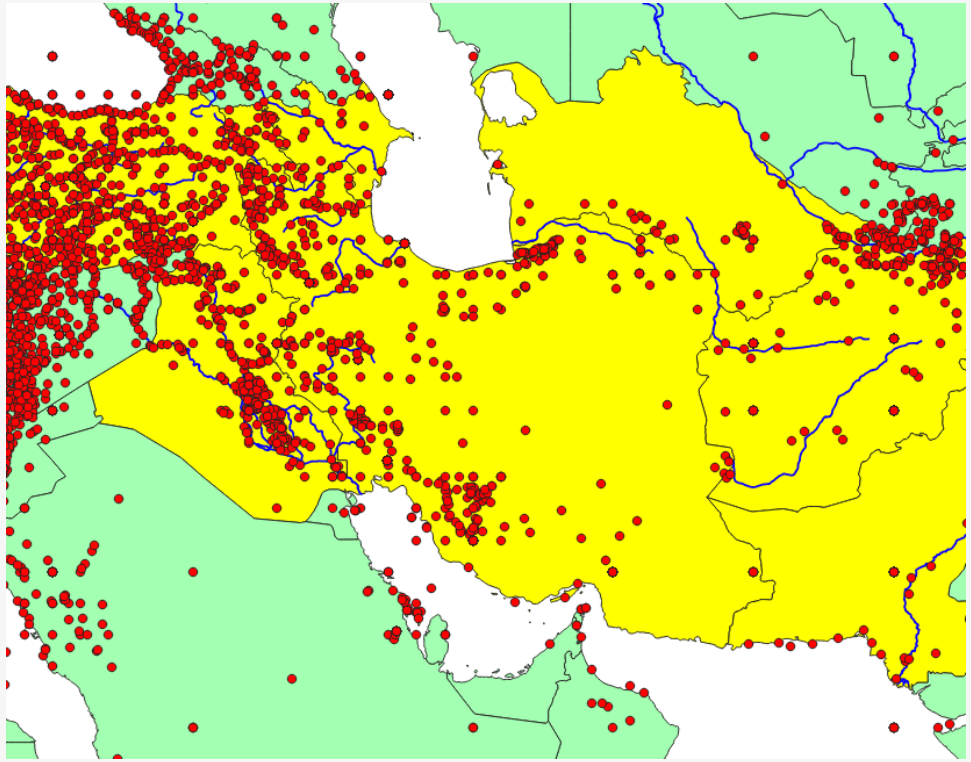
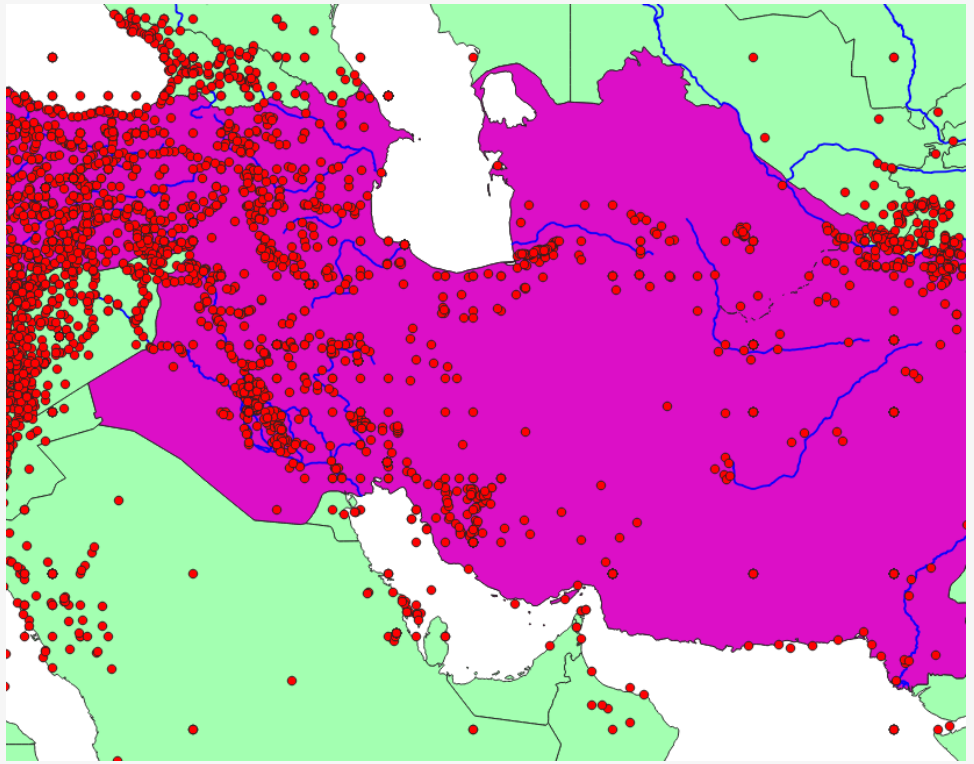
Example

3. Dissolve administrative boundaries





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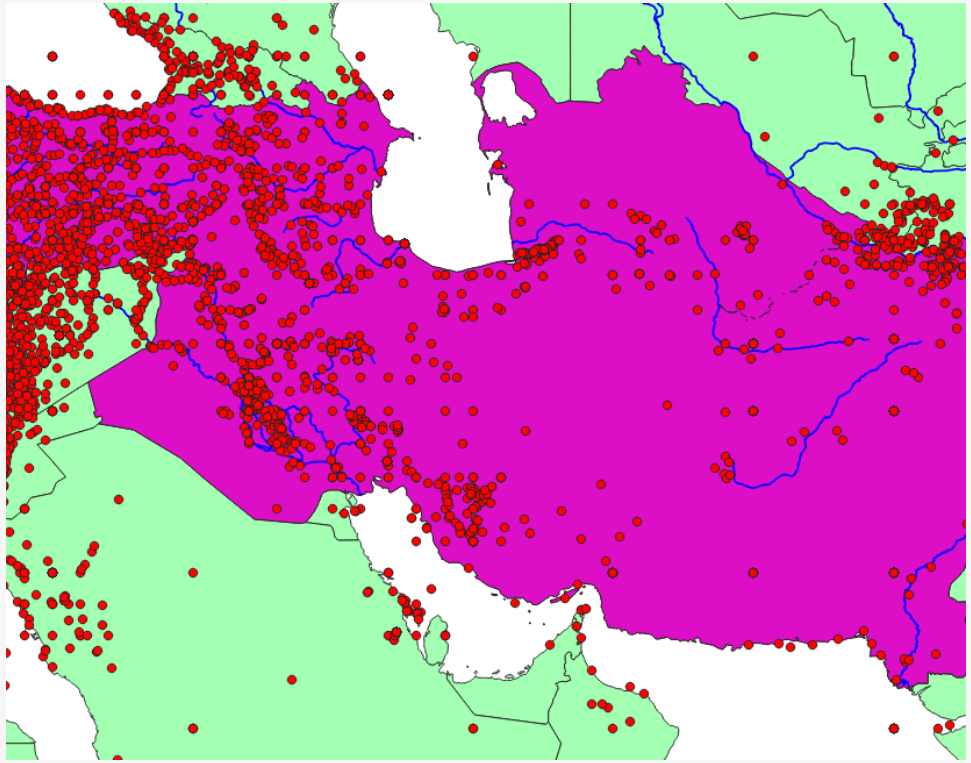
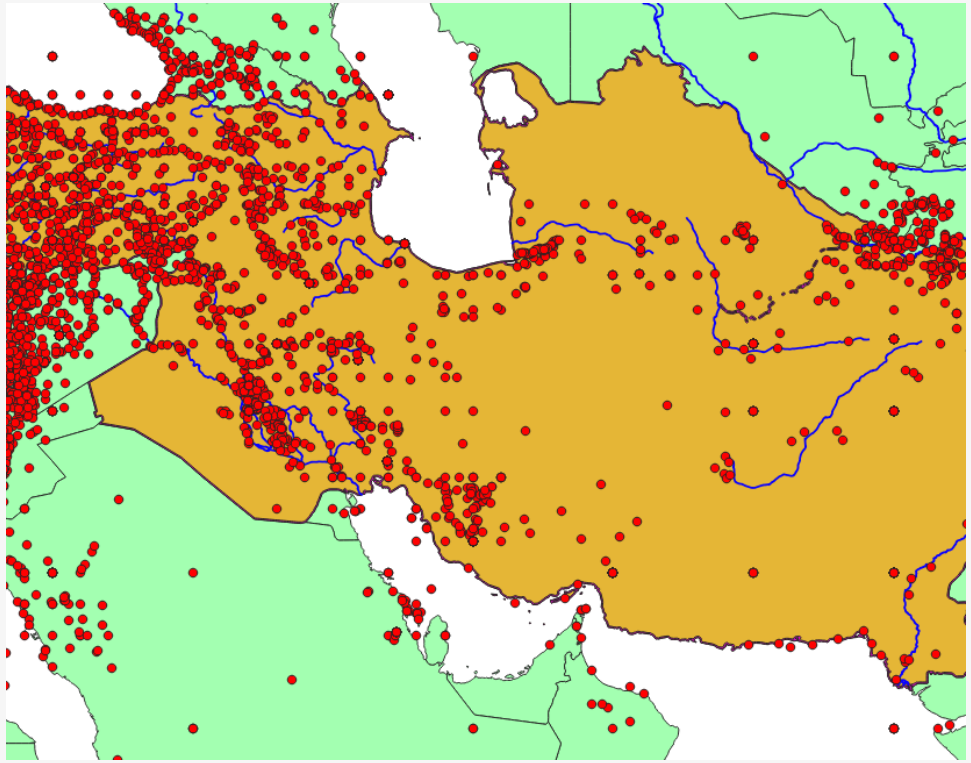
Example

4 Buffer (-5km) with administrative boundaries





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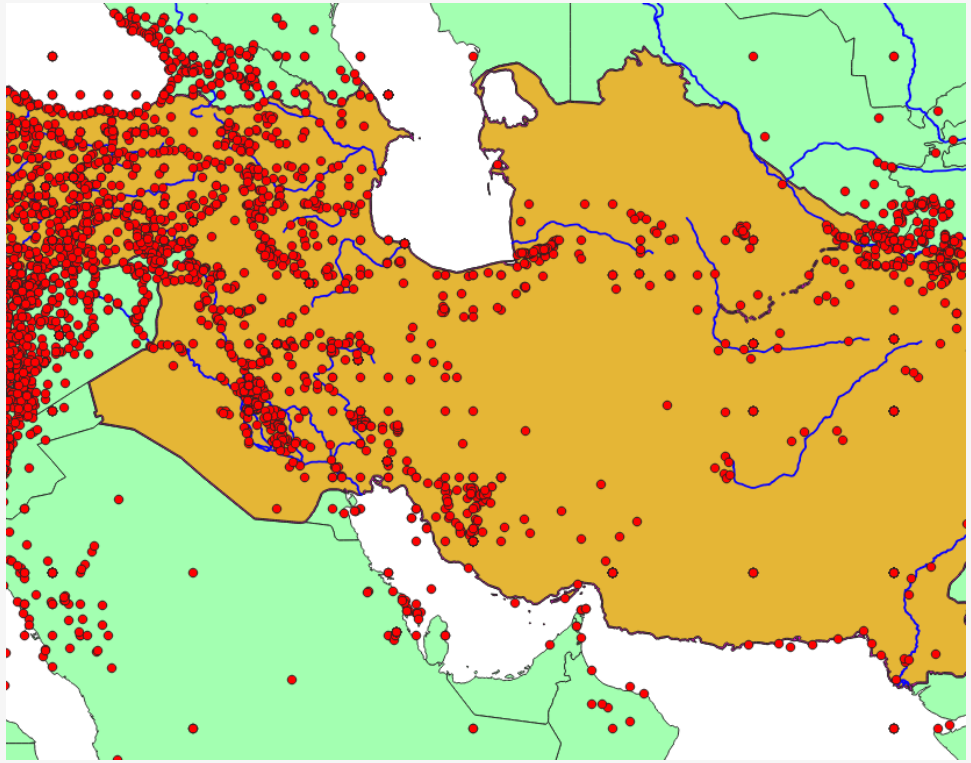
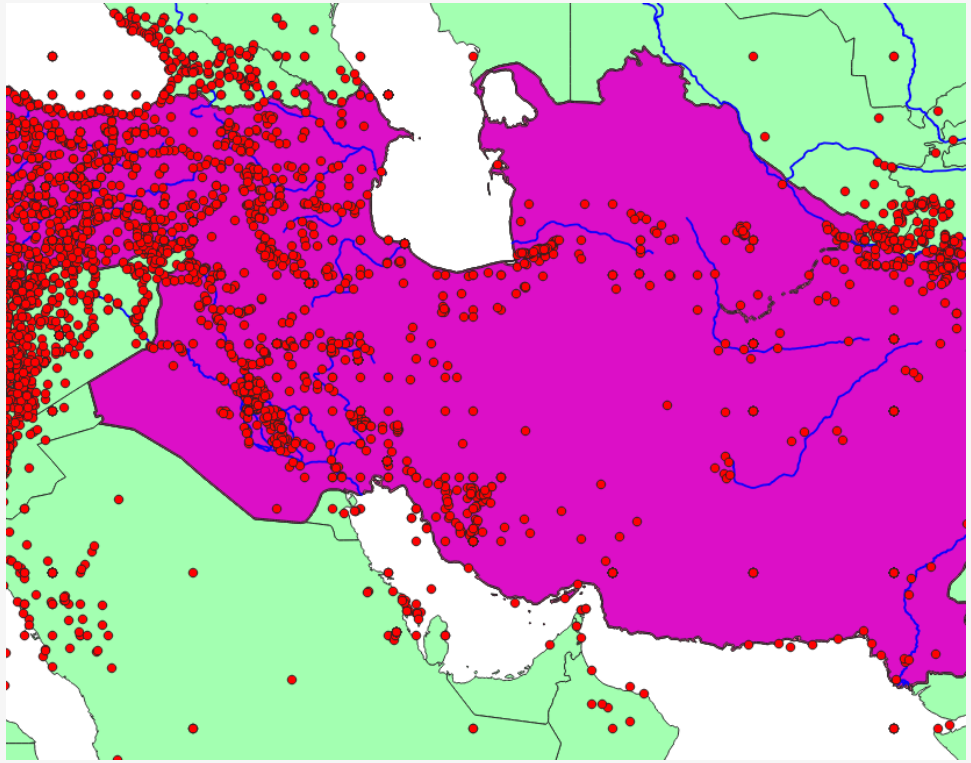
Example

5. Symmetrical difference between dissolve and buffer





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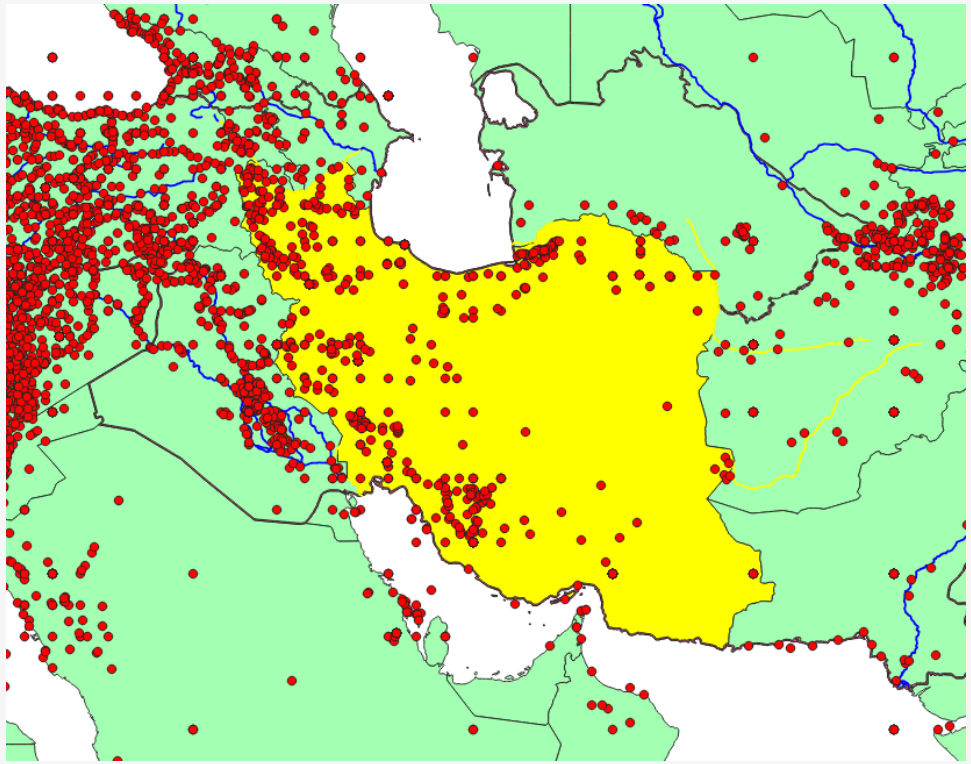
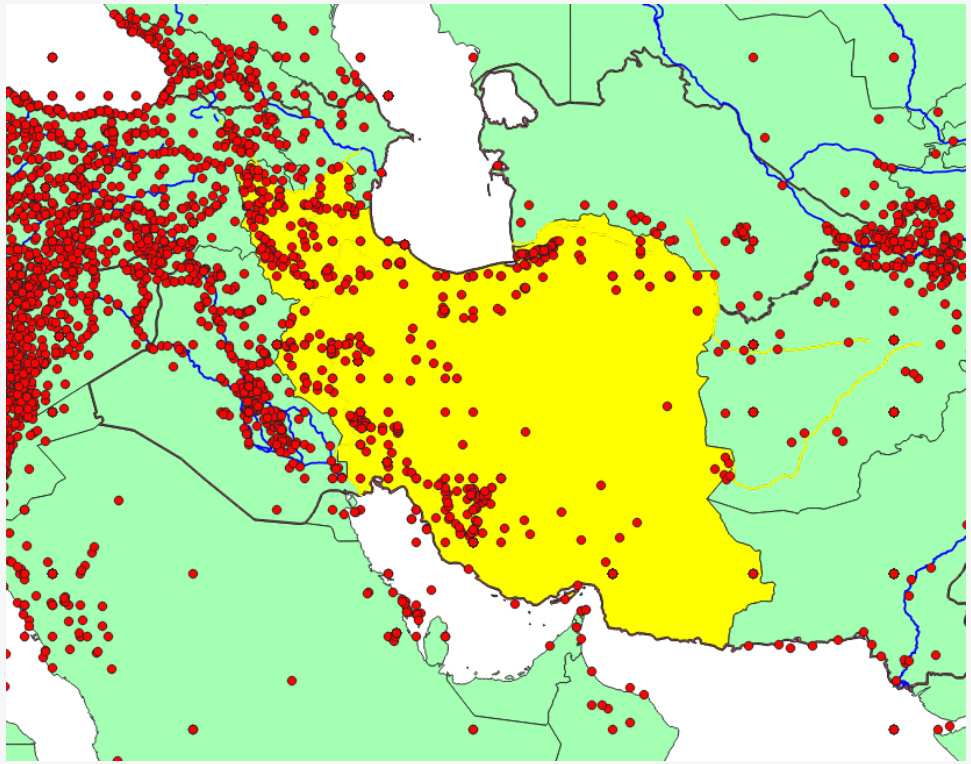
Example

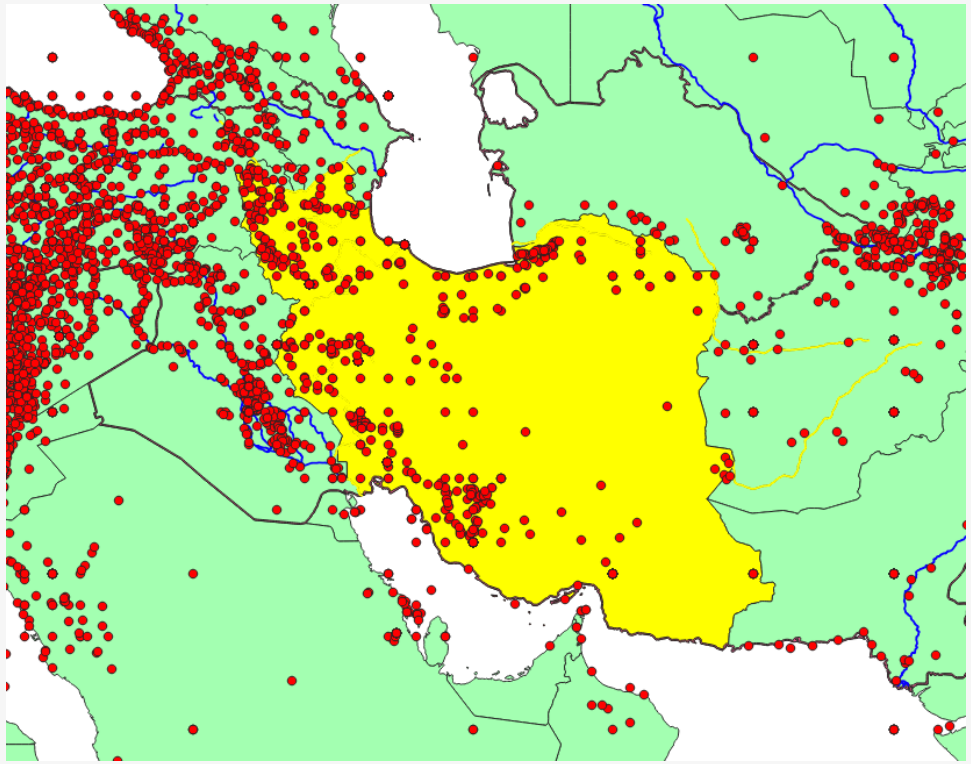
6. Select rivers and buffer (1km)

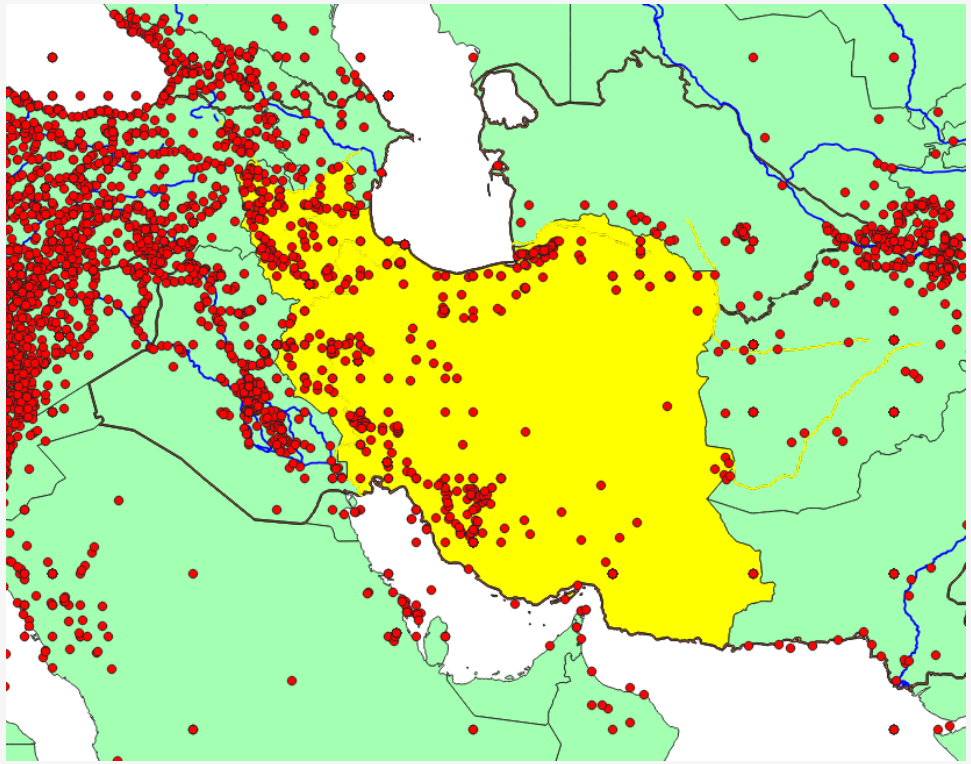




Example

7. Union river buffers and coastal buffers





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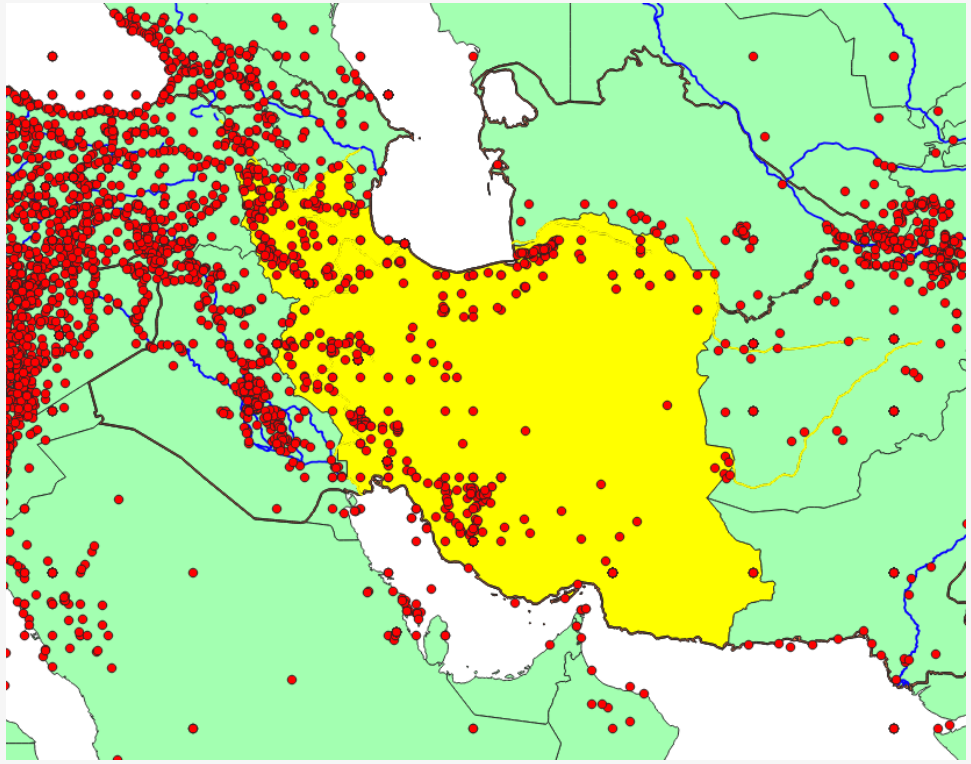
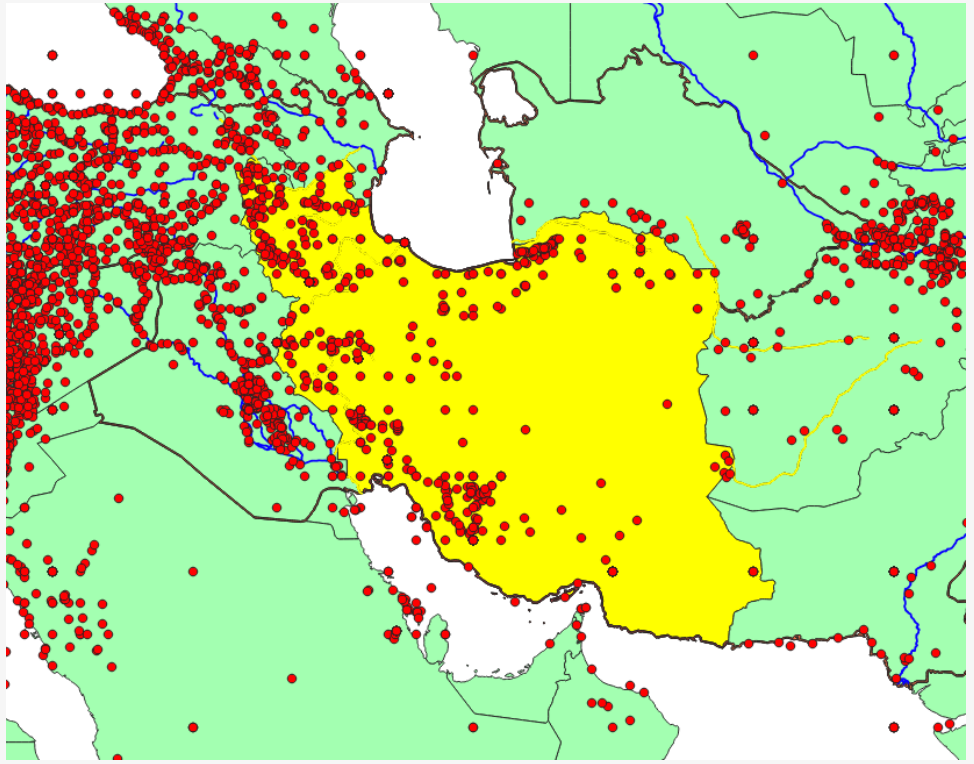
8. Clip union with Iran





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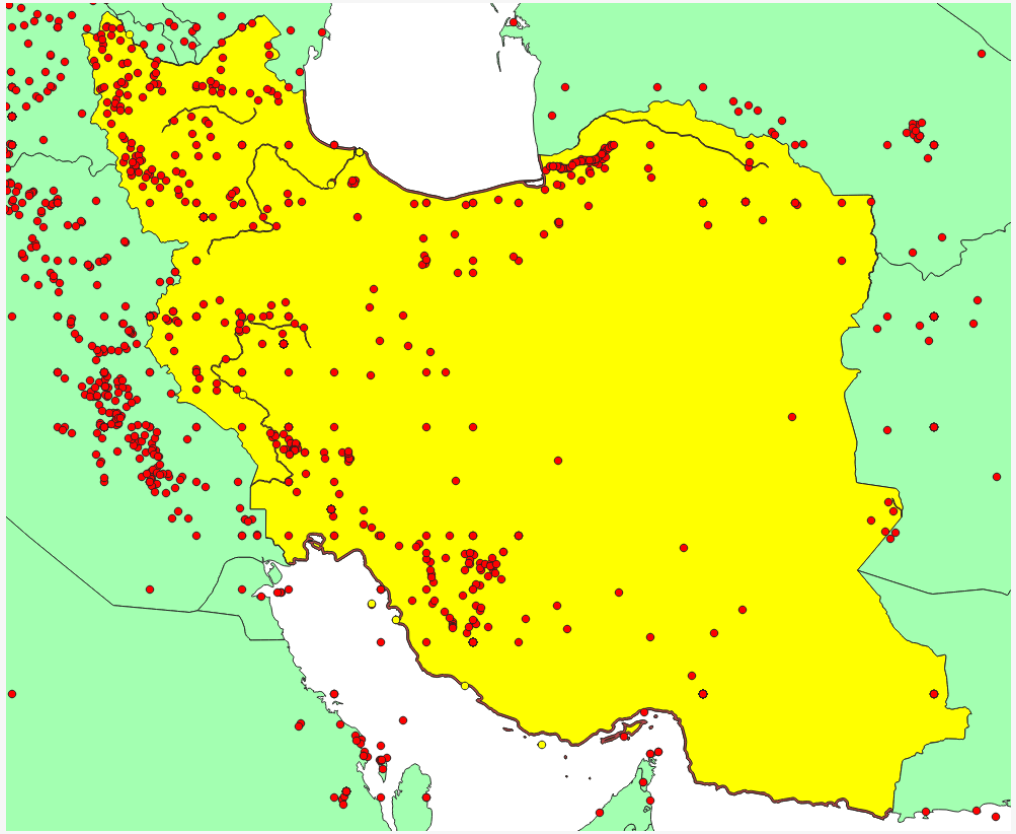
Example

9. Select sites that intersect with resulting polygon



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Example

Result

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Resume

Make extraction from ‘AncientPlaceNames_Pleiades’ within Iran that are at least 1 km near a major river or at least 5 km from the sea:

1. Transform data to Pseudo Mercator (EPSG:3857)
2. Select Iran and neighboring countries
3. Dissolve administrative boundaries
4. Buffer (-5km) with administrative boundaries
5. Symmetrical difference between dissolve and buffer
6. Select rivers and buffer
7. Union river buffers and coastal buffers
8. Clip union with Iran
9. Select sites that intersect with resulting polygon

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Geoprocessing

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