Micro-module A: Online Urban Data Gathering

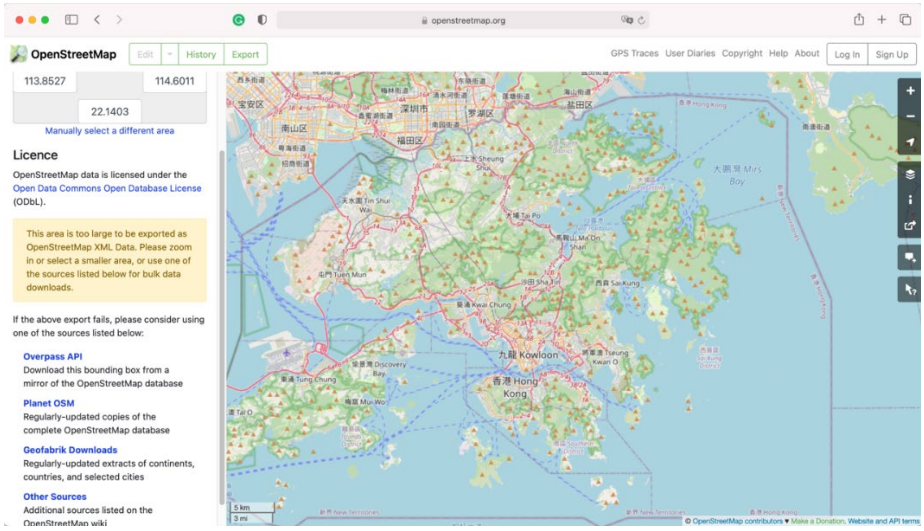
A3 Digital Map-based Platform-OpenStreetMap

This guide will introduce the methods of obtaining map information and buffer analysis on the mapping platform Open Street Map, a free and publicly available online geographic database. Open Street Map mainly includes four map elements: nodes, lines, polygons and labels. Therefore, in the first part of this guide, we will introduce the method to obtain vector map data from Open Street Map within Hong Kong. The second part will introduce the methods of filtering Mao data and buffer analysis. Finally, a quick way to get Open Street Map data will be introduced, by the plugin QuickOSM.

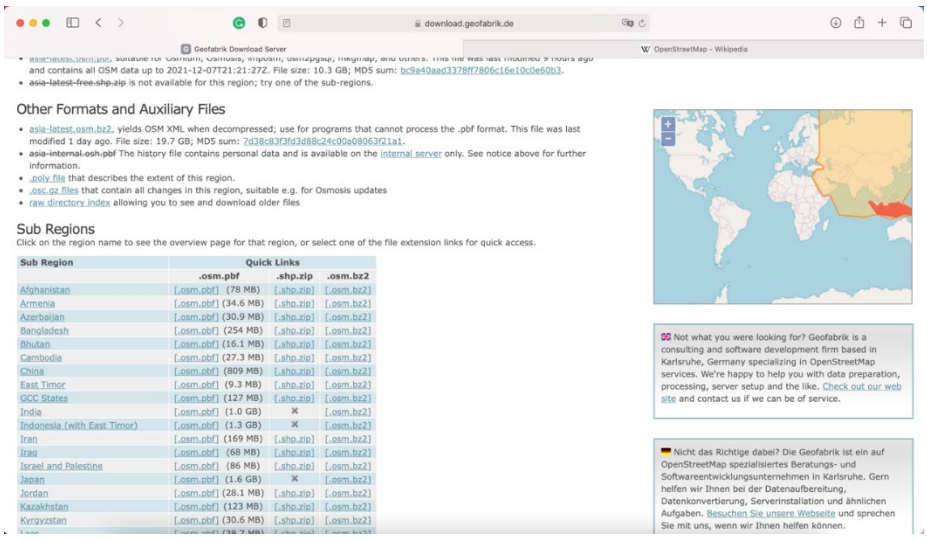
1 Get digital map of Hong Kong from Open Street Map

1.1 Download Data

- In the website of open street map-Export (www.openstreetmap.org)
- Chose Geofabrik download



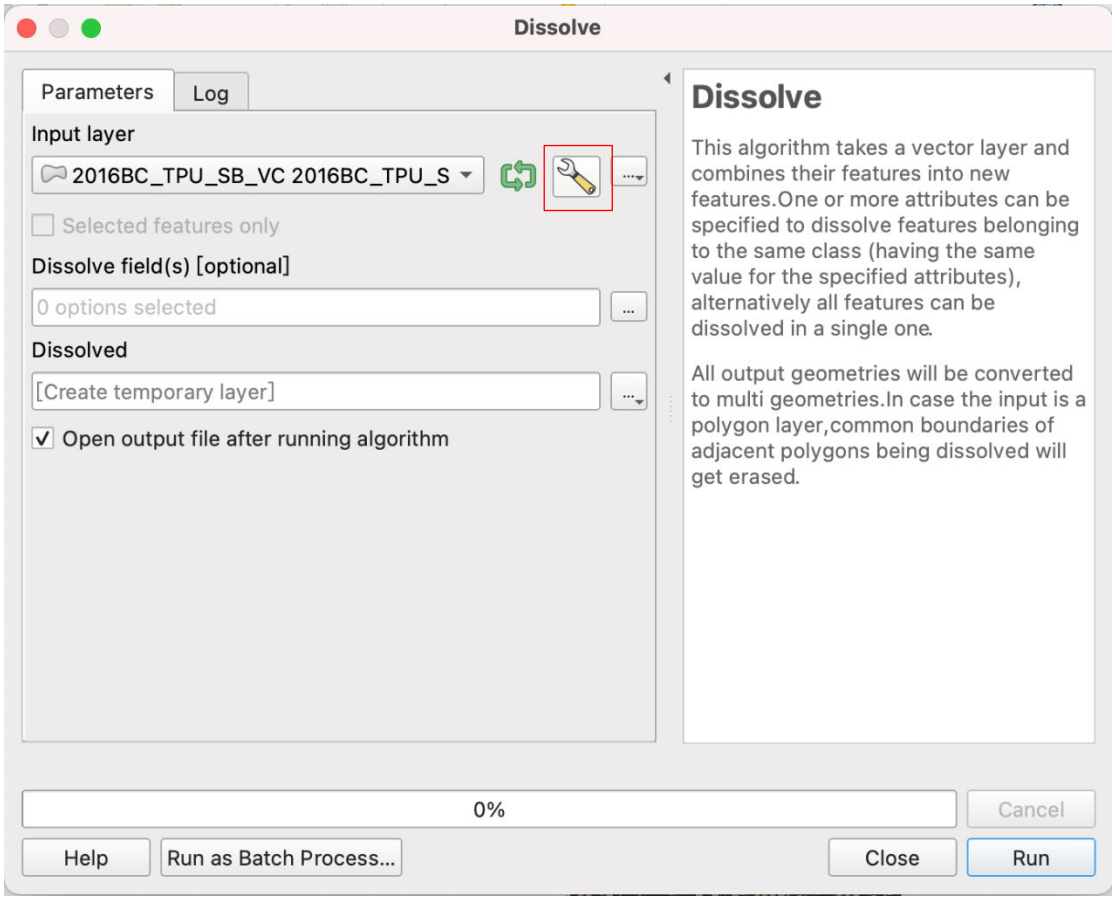
- Chose ‘Asia’ in the sheet under the ‘Sub Region’ column.



- Find China in the sheet and download the ‘.shp.zip’.

1.2 Get the boundary of Hong Kong

- Download Hong Kong Tertiary Planning Units & Street Blocks data from data.gov.hk (https://data.gov.hk/en-data/dataset/hk-pland-pland1-boundaries-of-tpu-sb-vc/resource/dd43a6c4-0cb1-457c-b168-5f14370d4d32)
- Select 'Vector-Geoprecessing Tools-Dissolve'.



- Click 'Advanced Option'.
- Chose 'Skip (Ignore) Features with Invalid Geometries' in 'Invalid feature filtering'.
- Click 'Run'.

1.3 Cut the shapefile data with the Hong Kong boundary.

- Select 'Vector- Geoprocessing tolls- clip'.
- Performed the previous step to each layer.

Through the step before we can get the map data for Hong Kong, including road, building, interesting points esc. And we have already prepared the data site in this tutorial (File name: Hong Kong shp).

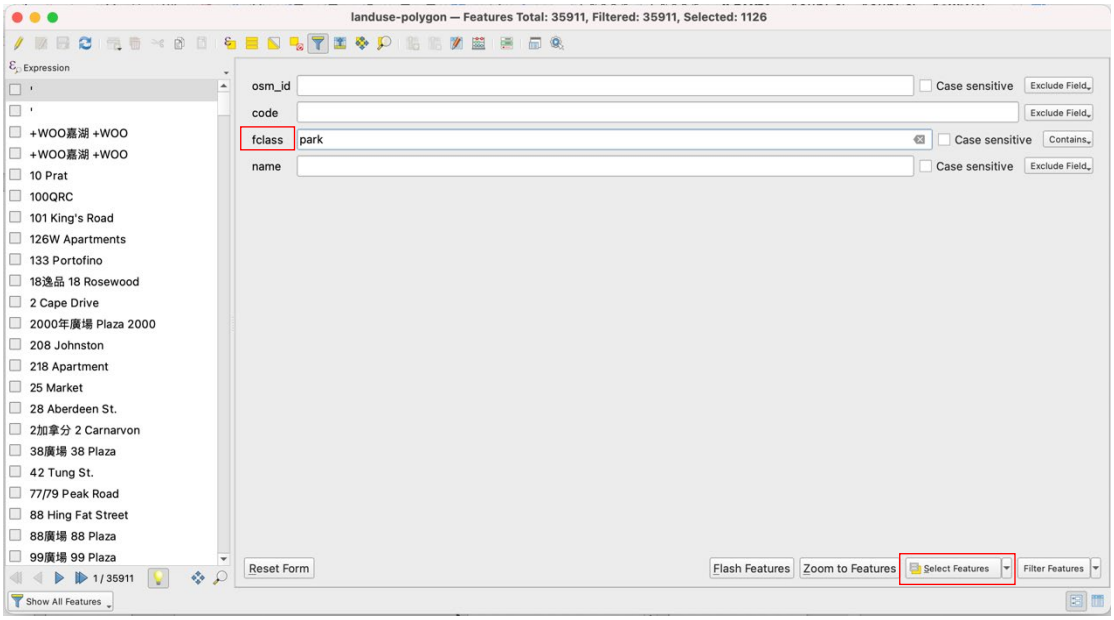
2 Buffer Analysis

Buffer can be used to analysis the radiation range of any points, lines and polygons in QGIS. For example, this tutorial will find out how many traffic points like bus stop were covered by the 500m radiation area of the park in Hong Kong, so we can analysis the accessibility of the park.

2.1 Filter Data

- Right click the number of layer and open the 'Attribute Table'.

- You can see the attributes of the data in the layer, and click ‘Selected/filter features using form’ button.



- Input the ‘fclass’ that you want to analysis and click ‘Select Feature’.
- Copy and paste the features of ‘park’ to the new layer.

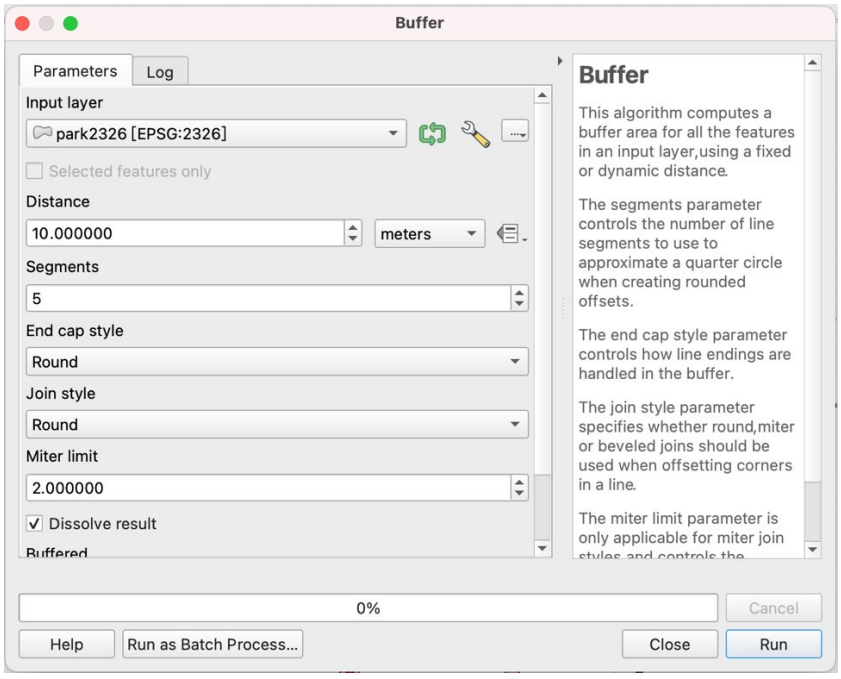
2.2 Set projected coordinate system

Before doing the buffer analysis, you need to make sure the coordinate reference system of the layer is projected coordinate system, and in Hong Kong we need set it to ‘EPSG 2326-Hong Kong 1980 Grid System’.

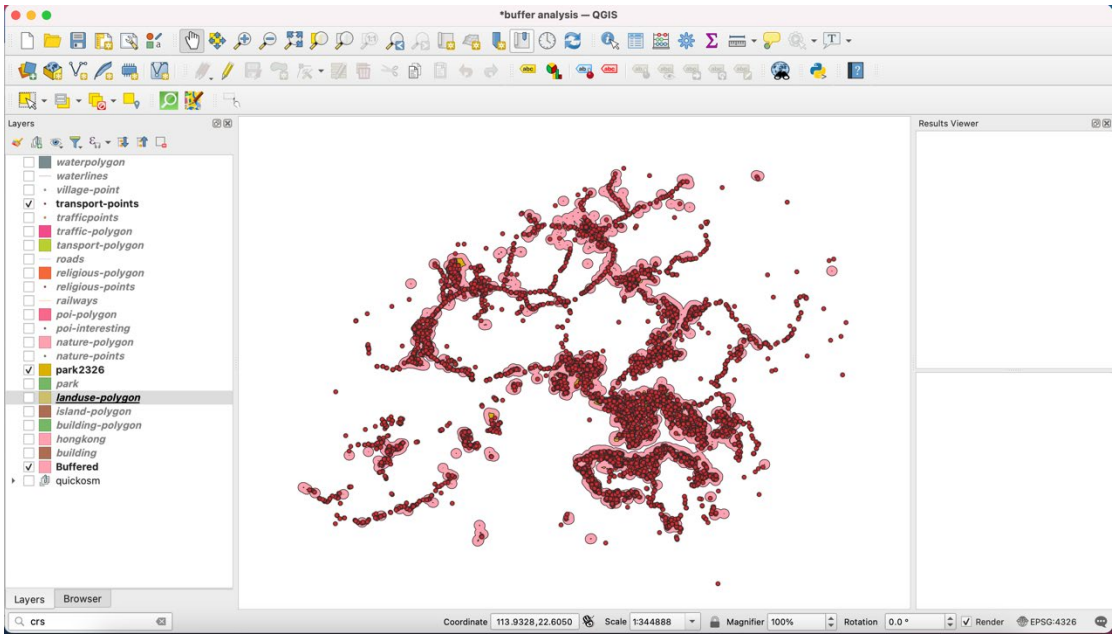
- Right click the name of the layer and ‘Export- Save features as’.
- Chose ‘Hong Kong 1980’when save.

2.3 Buffer analysis

- Select ‘Vector- Geoprocessing Tools- Buffer’.



- Set ‘Input layer’ as the layer you want to analysis.
- Change the ‘Distance’, ‘Units’ and ‘Dissolve result’ according to your need.
- Click ‘Run’.



Then you will get the buffer of 500m from parks in Hong Kong, and there are some overlap of the buffer area and the transport points. You can also change the properties of the buffer.
If you only want to show the overlap features, you can clip the transport points with the buffer area.
For the buffer analysis you can also cut the edge of data with the boundary that you set. For example analysis the accessibility of the bus stop along a street.

3 Get OSM file from open street map (Plugin-QuickOSM)

3.1 Install QuickOSM

- Select ‘Plugin-Manage and Install Plugin’
- Search ‘QuickOSM’ and install.

After you have successfully install the QuickOSM, it will show in the menu under ‘ Vector’.

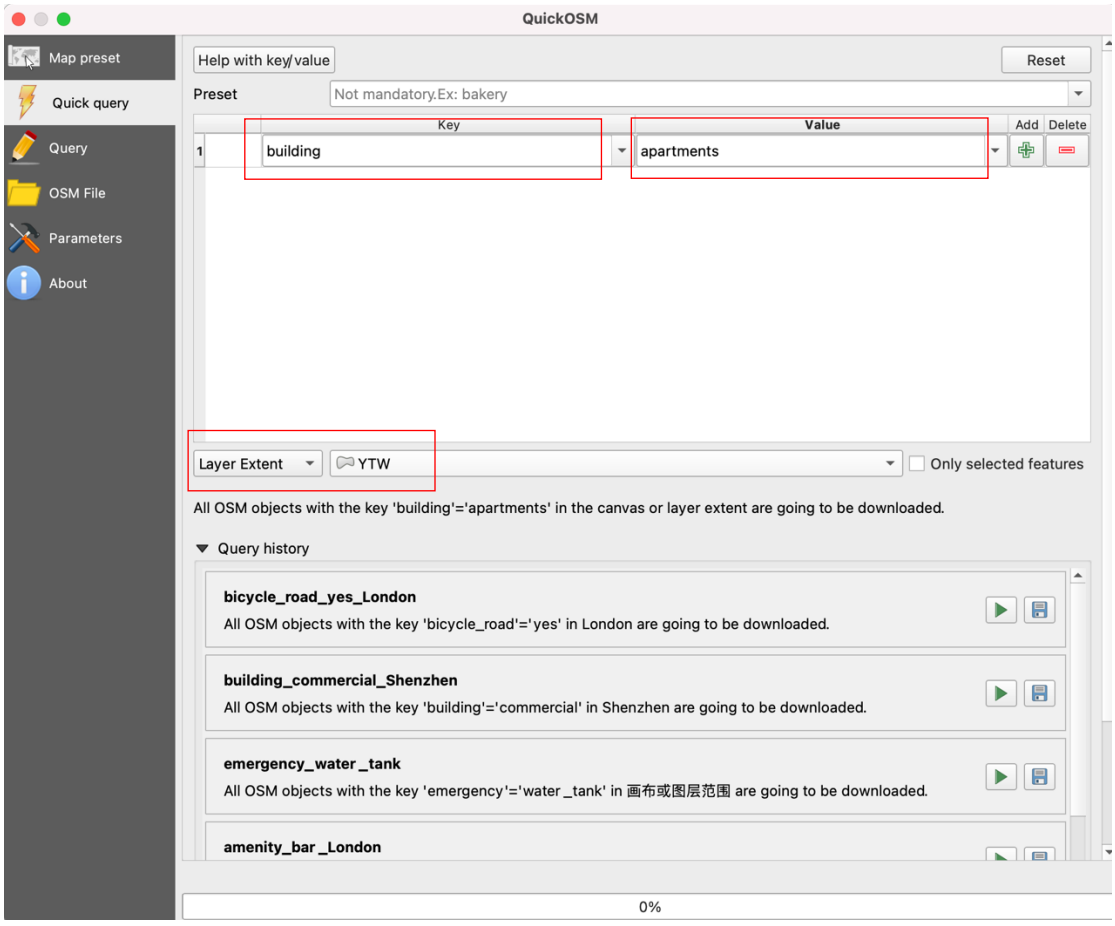
3.2 Get map features from QuickOSM

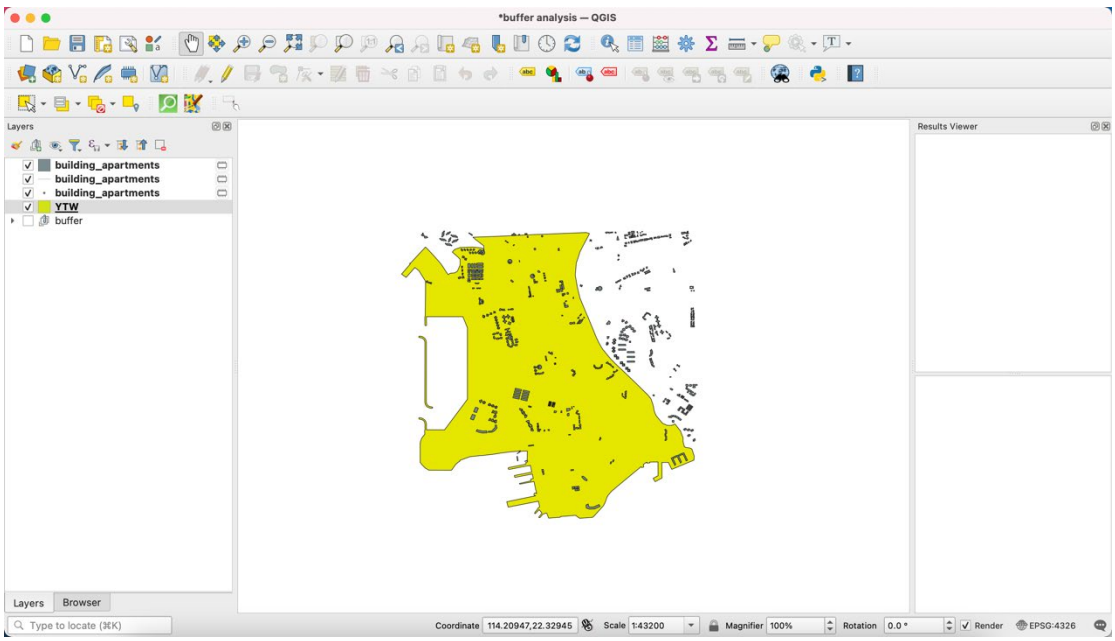
From Quick OSM you can set the boundary first and download selected features in the boundary first. In this tutorial we take Yau Tsim Mong District as an example.

- Import the boundary of Yau Tsim Mong District.
- Select ‘Vector- QuickOSM’.
- Input ‘Keywords’ and ‘Values’. Here we chose building-aparment

For the keywords and values, you can search from the link below. It almost contains all the map features. (https://wiki.openstreetmap.org/wiki/Map_features)

- Input your search scope. Chose ‘Layer Extent’ and select the Yau Tsim Mong District boundary layer.
- Click ‘Run query’.





Then you will get the apartment inside Yau Tsim Mong District, you can also search other map features that you want to analysis and add to QGIS.

For the search scope you can also chose ‘In’ and input a city such as Hong Kong, this function can be used in the comparison of different city’s urban form. For example you can search buildings in Hong Kong, Paris and London and export the images to see the difference of density and typology esc..