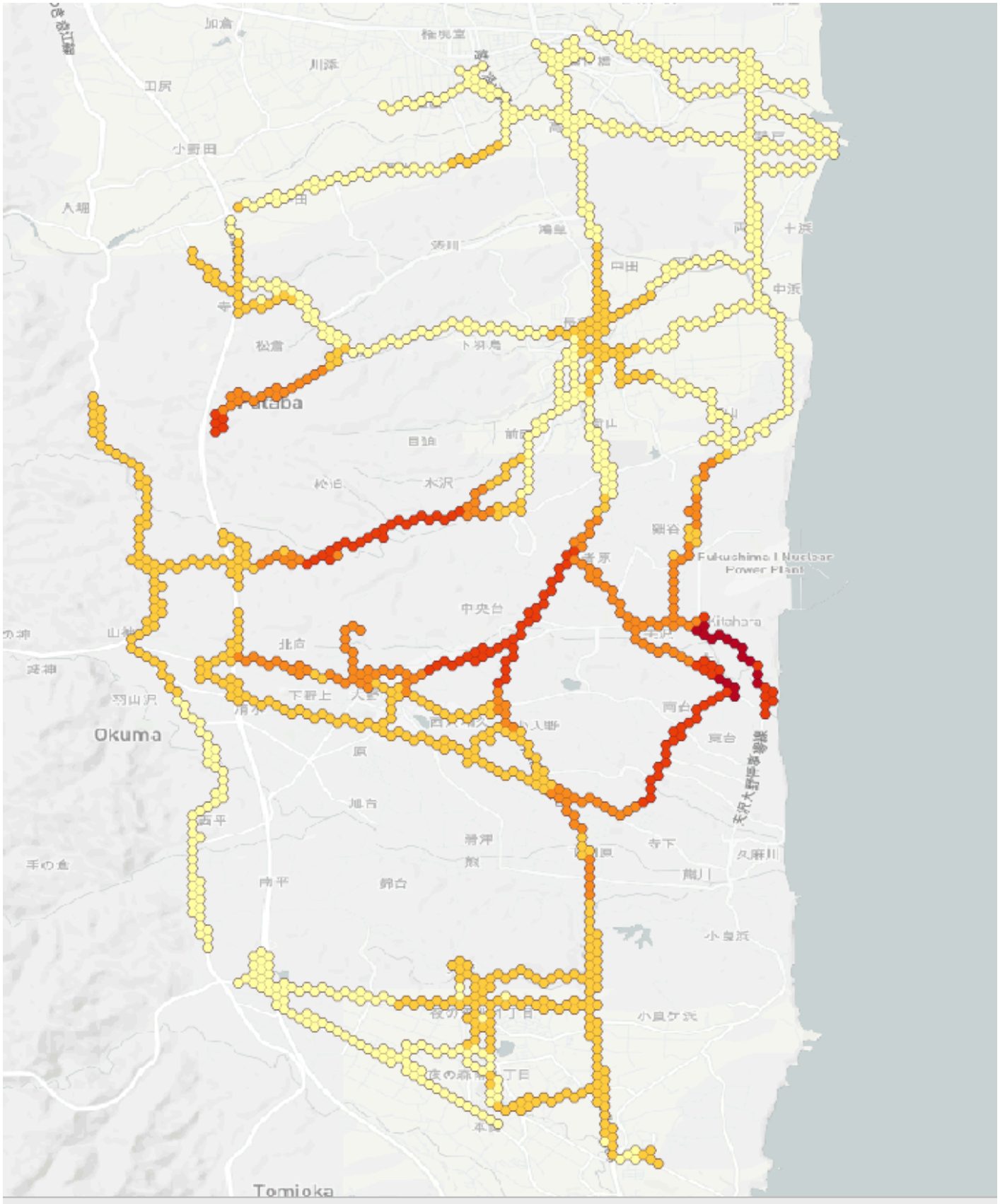
Targeted skills

By the end of this module, you will know how to:

- create a grid of specified resolution and extent
- perform a spatial query (select grid cells containing measurements only)
- aggregating punctial data into grid cells (max, min, mean, … value)
- create a choropleth map of aggregated measurement values


Okuma
Tomioka
Fukushima I Nuclear Power Plant

Data

Data to be used in this module can be found in the following folders:

`data/agg_data`

Exercise outline & memos

Our goal in that exercise is to aggregate measurements in a custom grid in order to overcome the issue of overplotting. In our case we will take the maximum value of measurements 'covered' by each specific grid cell.

1. Open shapefile & background map

Open:

`data/agg_data/safecast.shp`

and add a background map:

```
[In QGIS top menu]
Web  OpenLayers plugin  OpenStreetMap  OSM Humanitarian Data Model
```

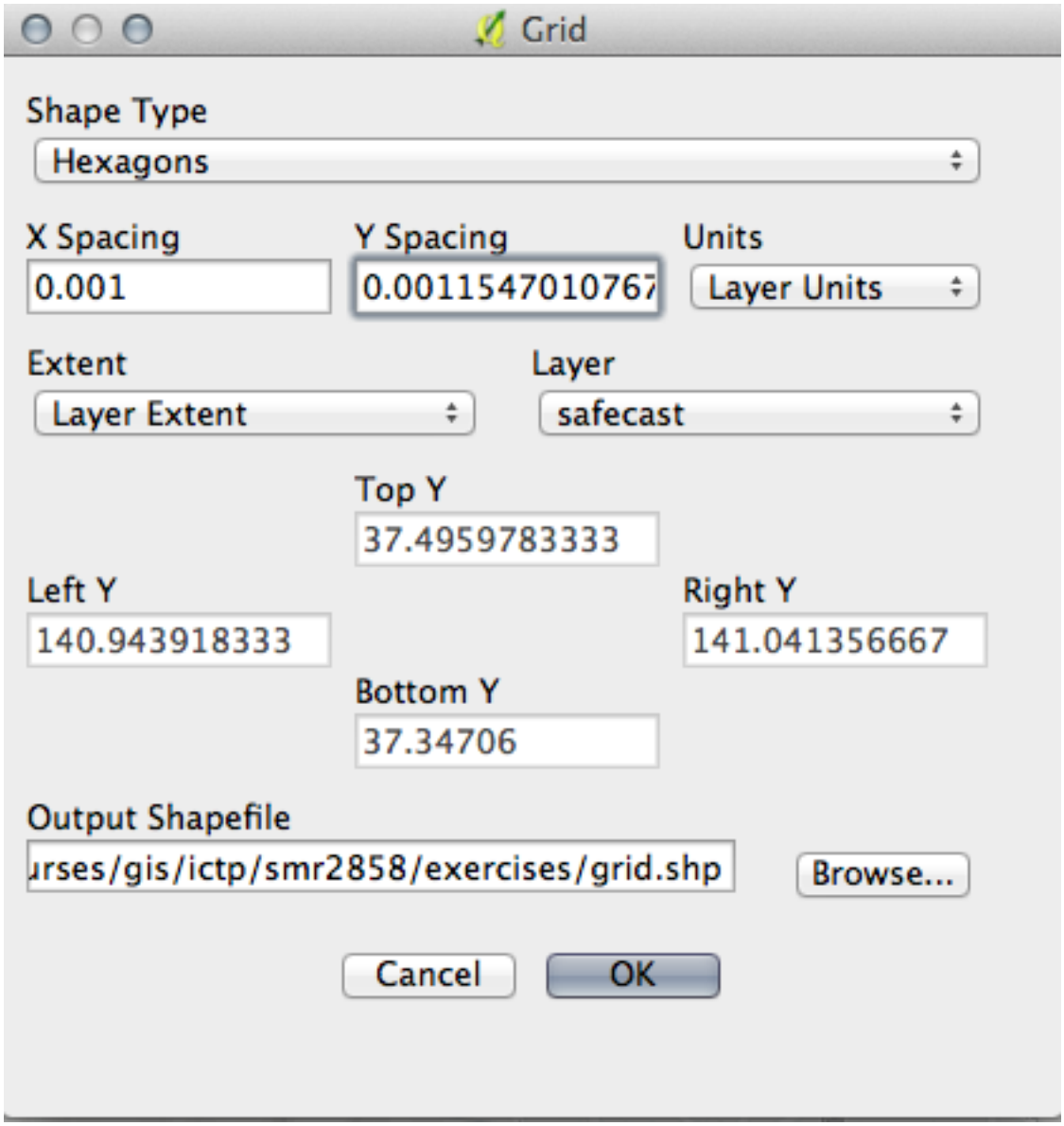
2. Create a grid

Creating a grid (rectangle or hexagons) of specified resolution and extent can be done using basic QGIS install but in our case in order to simplify the process we will use MMQGIS plugin.

Install MMQGIS plugin

```
[In QGIS top menu]
MMQGIS  Create  Create Grid Layer
```

Fill MMQGIS grid dialog as below:



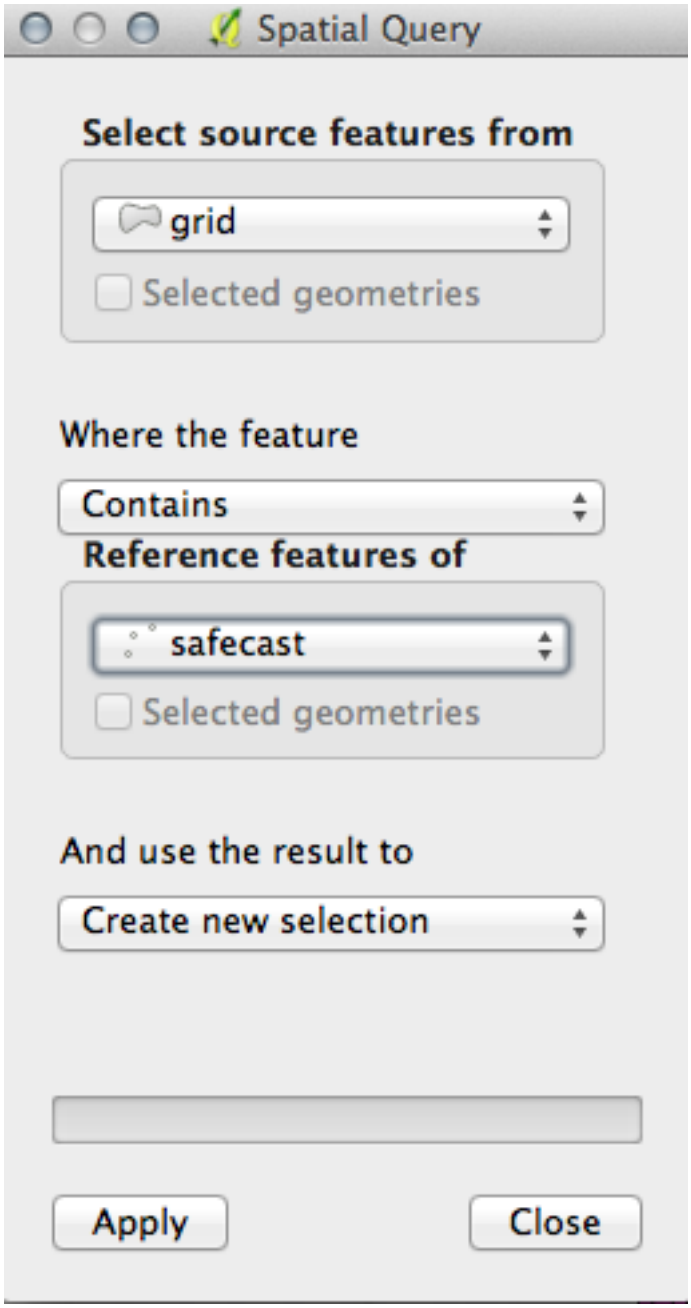
`Save create grid as exercises/grid.shp`

2. Spatial query

We will perform a simple spatial query allowing to select grid cells containing measurements only. To do so, you will need to install 'Spatial Query' plugin.

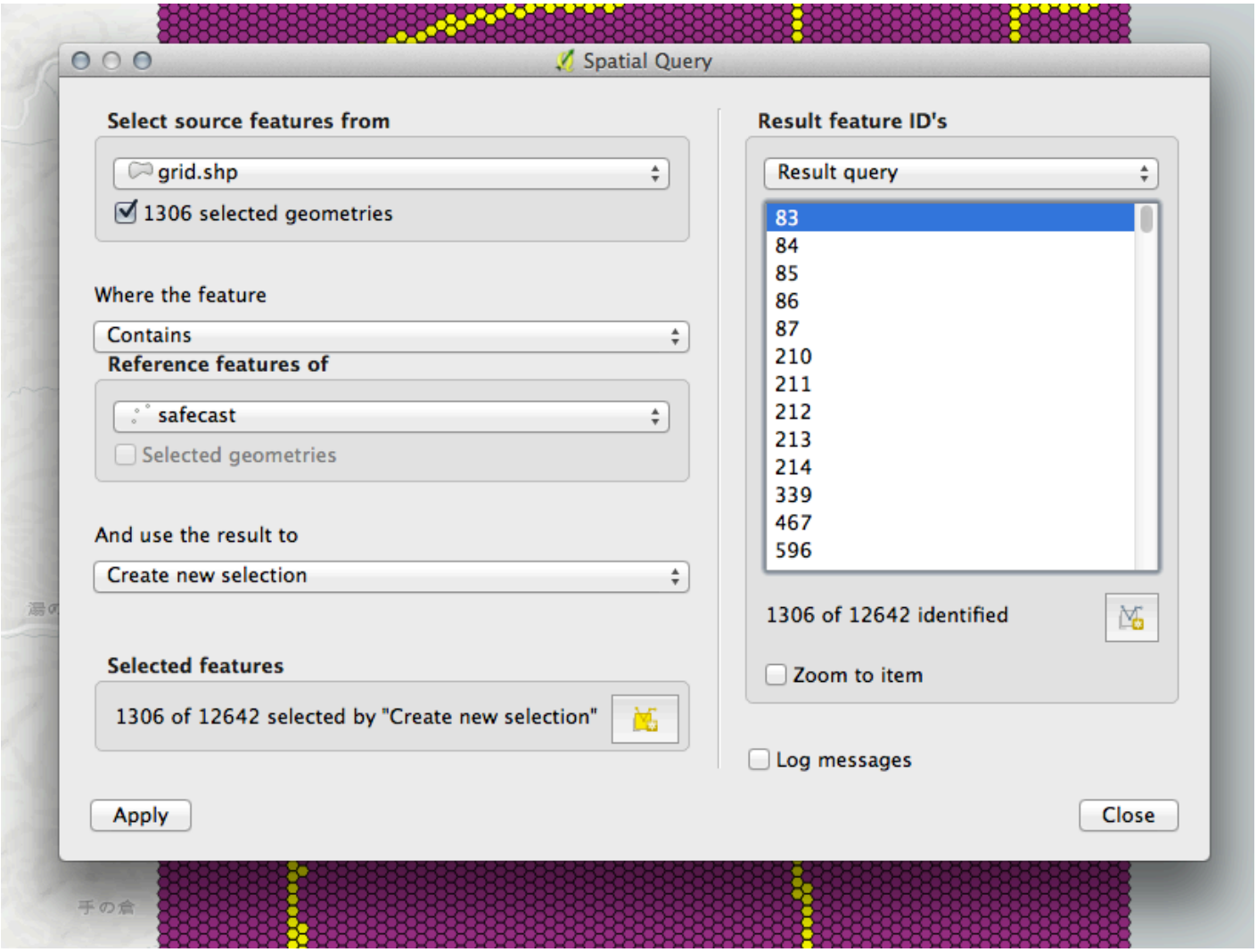
Install Spatial Query plugin

```
[In QGIS top menu]
Vector   Spatial Query   Spatial Query
```



`Click Apply`

You should get another dialog listing all features (hexagons) selected. Notice as well that selected hexagons get highlighted in "yellow".



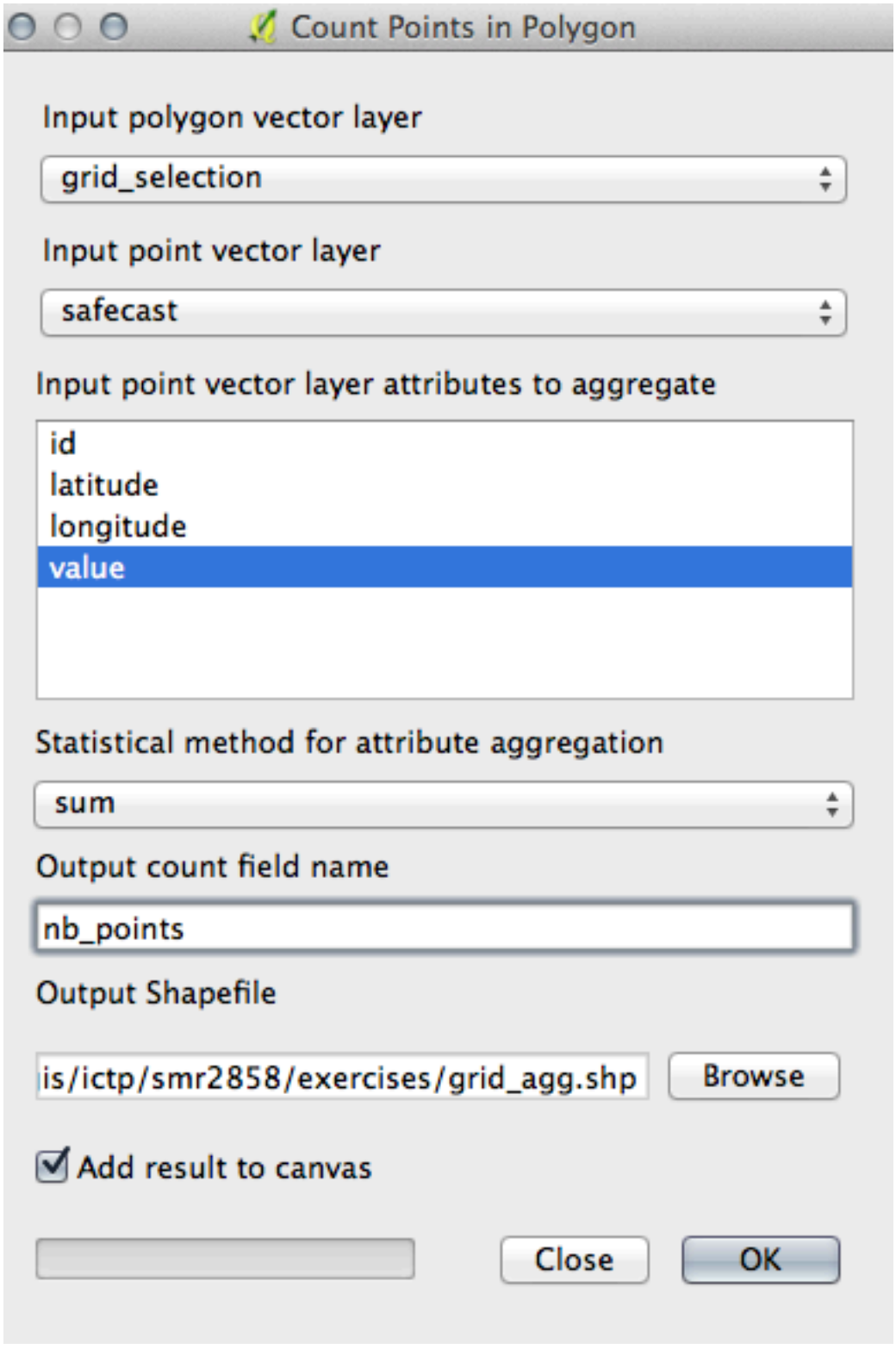
You need to save the selection as a new layer now:

```
1. Click right on 'grid' layer
2. Save As 'exercises/grid_selection.shp'
3. IMPORTANT: check 'Save only selected features' checkbox
```

3. Aggregate measurements in grid

Next step is to aggregate measurements (puncual data).

```
[In QGIS top menu]
Vector   Analysis tools   Points in Polygon ...
```



Now, if you open the attribute table of the newly created grid (the aggregated one) you should have two new attribtues: nb_points and value_sum (which contains the value of highest measurements 'contained' by the hexagon).

3. Thematic mapping

You are now in a position to perform a thematic analysis in the same spirit as in Thematic mapping of punctual data.

This is left as exercise ...