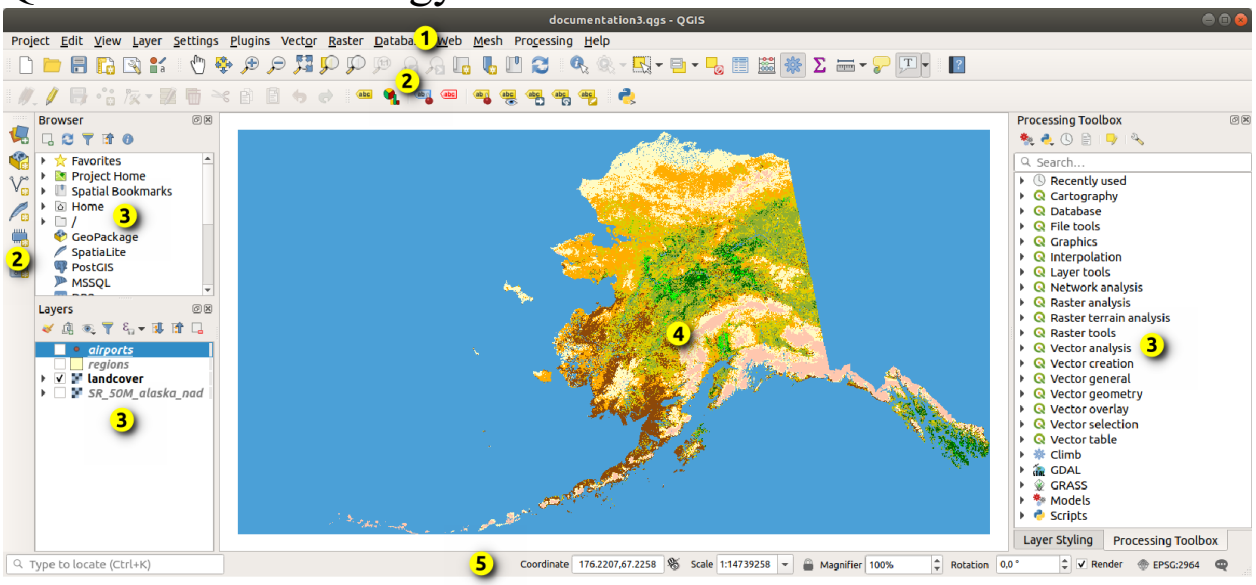
Field Validation Data Tutorial

QGIS GUI terminology:

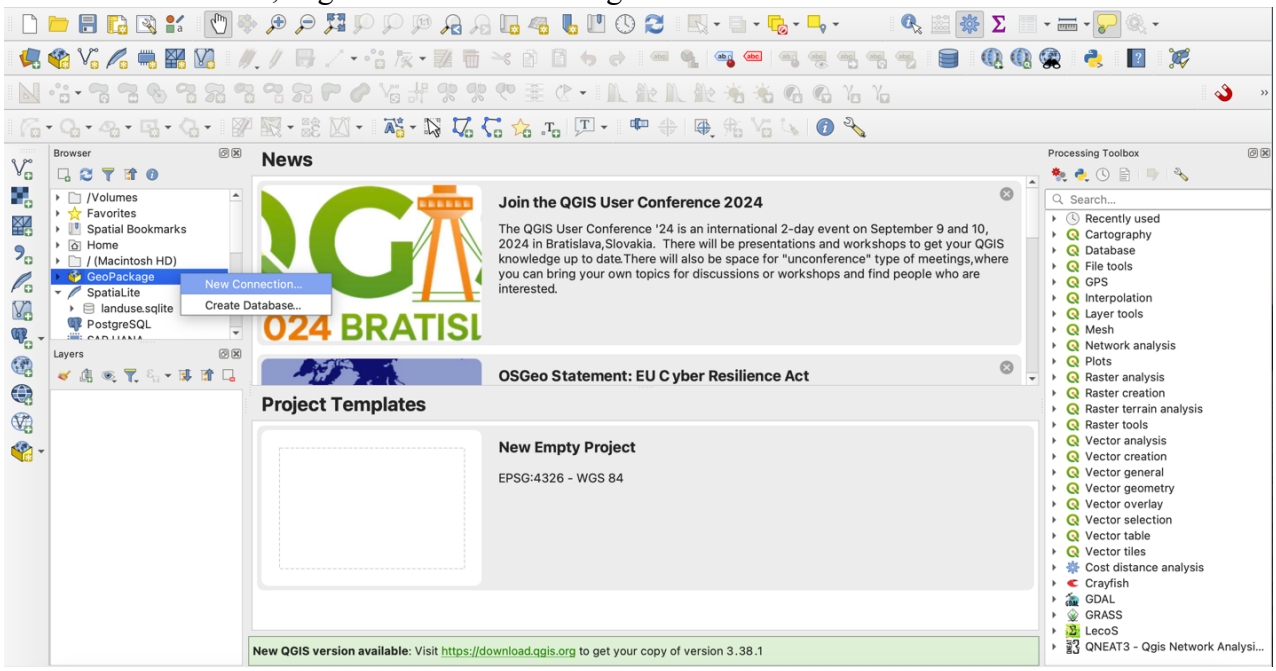


Source: QGIS.org

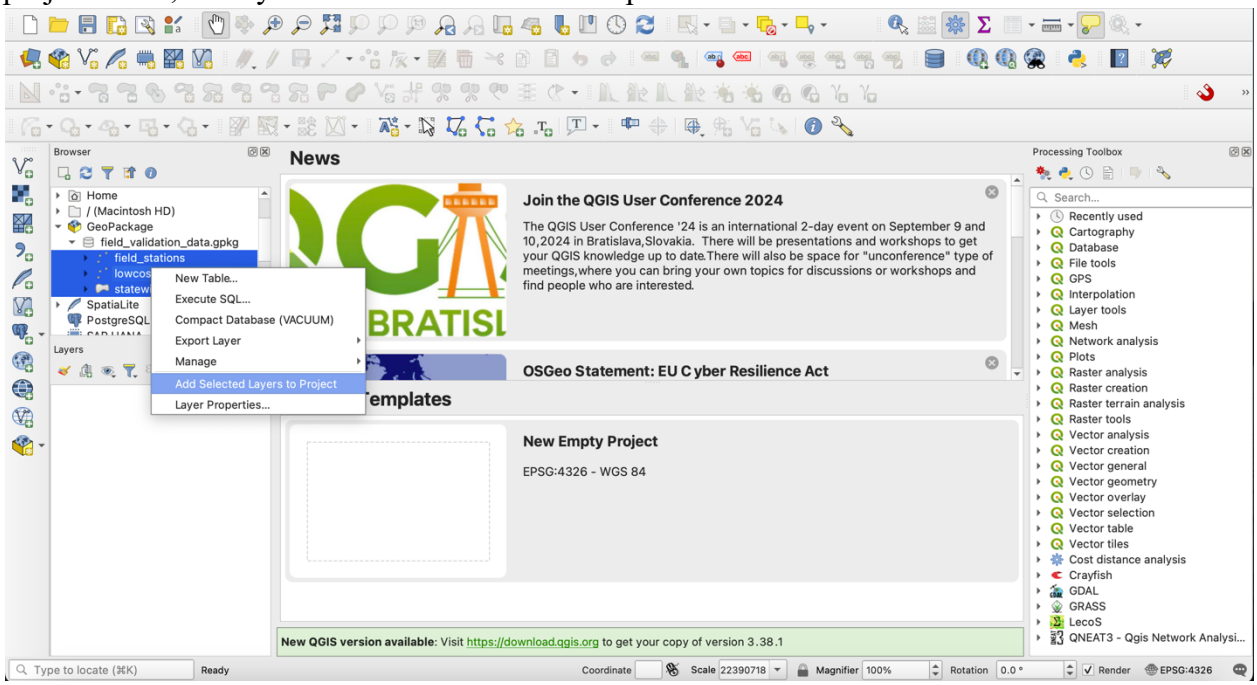
1. Menu
2. Toolbar (Can change visible toolbars in Menu-View-Toolbars)
3. Panels (Browser, Layers, Geoprocessing)
4. Map Canvas
5. Status Bar

To open data and visualize in the map canvas

1. Open QGIS
2. In the Browser Panel, Right click on GeoPackage and Add a Connection



3. In the file browser window that opens, navigate to where the field_validation_data.gpkg file is stored and select it.
4. Select the layers in the geopackage, right click the layers, and add the selected layers to project. Now, the layers will be visible in the map canvas

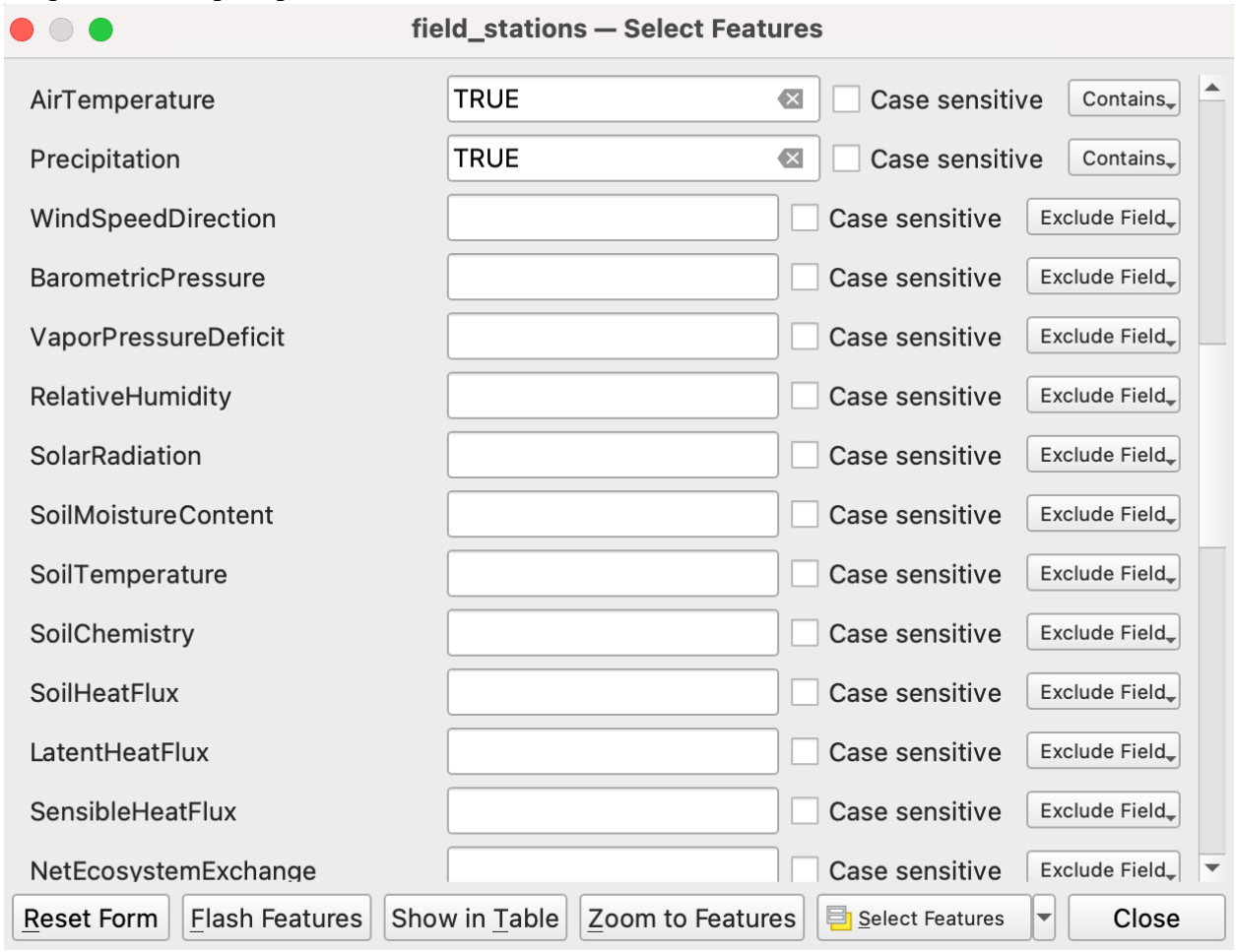


5. **OPTIONAL:** To add a basemap to the map canvas (to better visualize locations of the stations), in the browser panel right click on XYZ Tiles and click new connection. We recommend the Open Street Map basemap, which can be added by pasting the URL

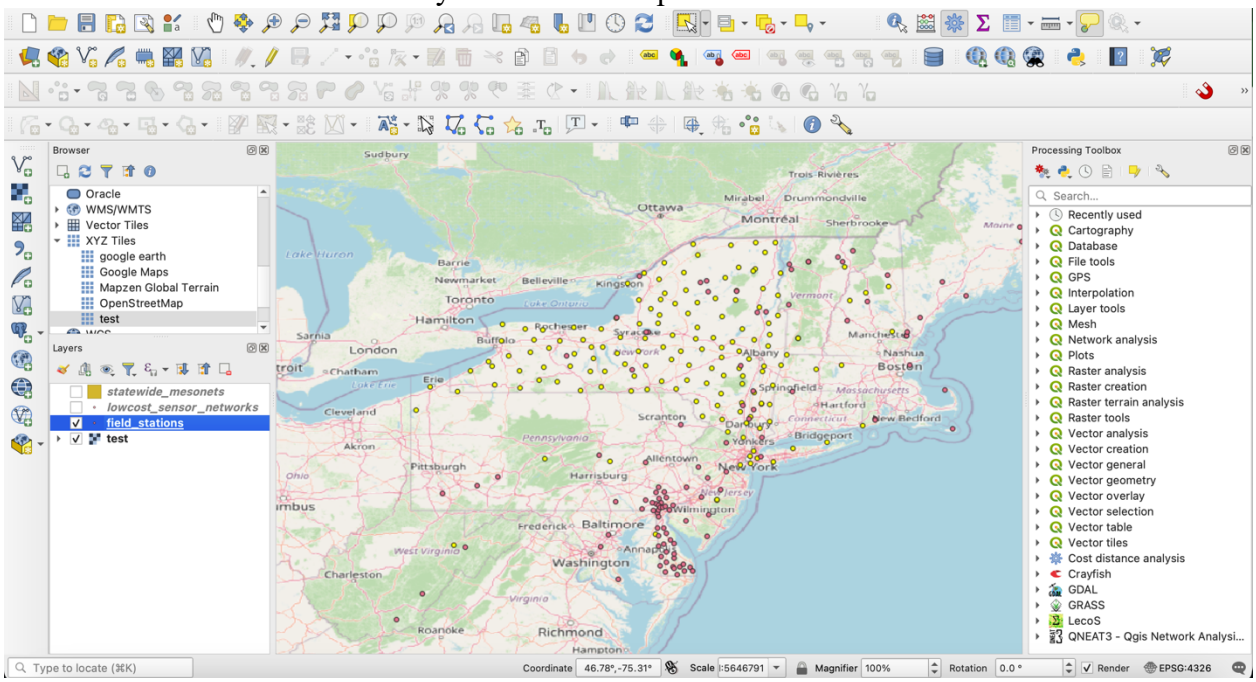
https://tile.openstreetmap.org/{z}/{x}/{y}.png in the designated field. Name the basemap whatever you wish, then click OK. Right click on your new XYZ tile layer and add it to the canvas. In the layers panel, you may need to drag the layer to place it below the other layers.

To Select Data Based on Features in Map Canvas.

1. Ensure that the desired layer is selected in the layer panel.
2. Click the Select features by value tool. (Ensure the selection toolbar is visible in the View menu) 
3. Input the desired features you want selected. In this example, we input true for the AirTemperature and Precipitation field to filter for field_stations that collect air temperature and precipitation data.



4. All the selected features will turn yellow on the map canvas.



To Select Data with the Database Query Tool (SQL)

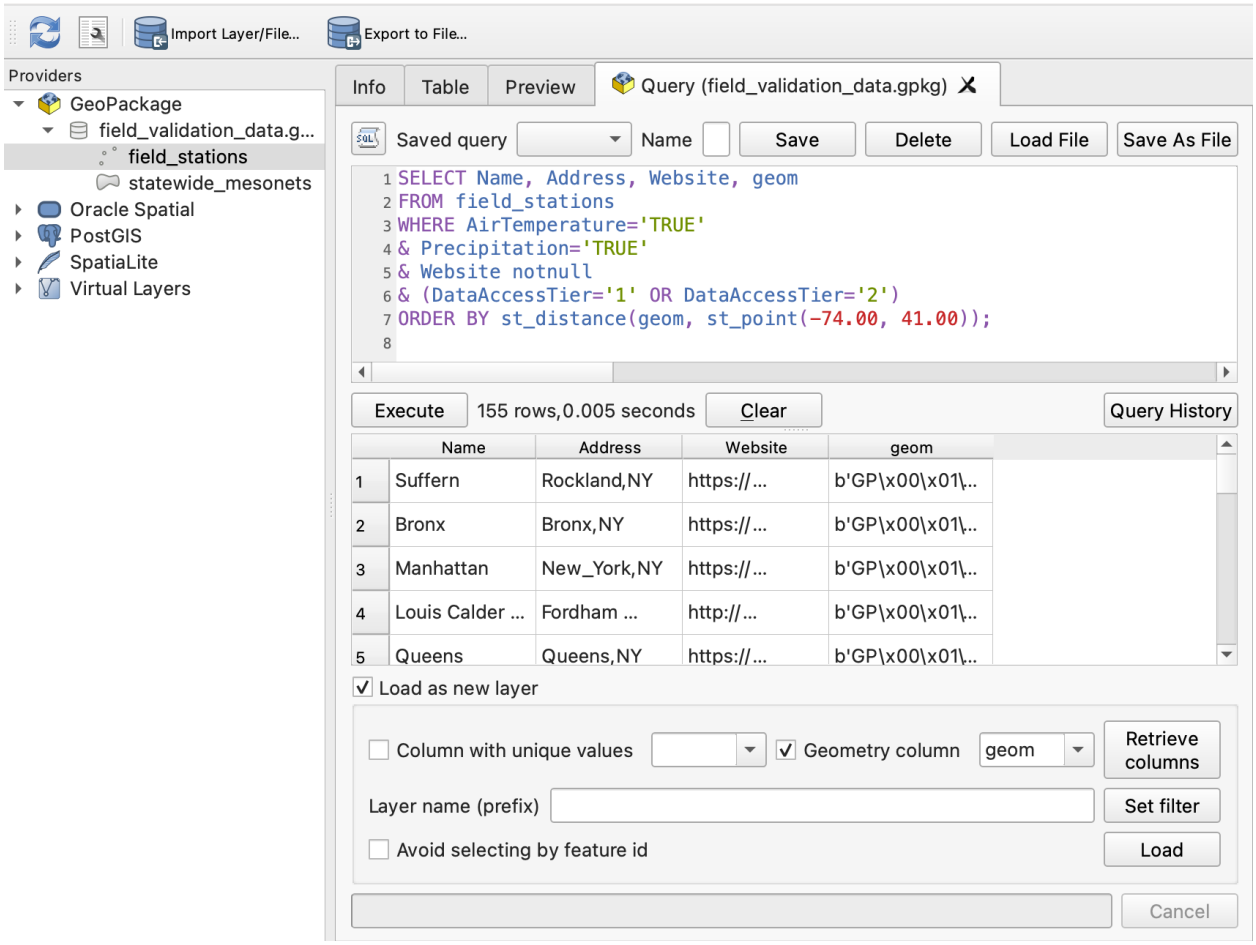
1. In the database menu, select DB Manager,
2. Expand the Geopackage Provider and select the database and expand it.
3. Click the SQL Window tool to open up a querying window. 
4. Write any SQL query to any table in the geopackage.

SAMPLE QUERY:

```
SELECT Name, Address, Website
FROM field_stations
WHERE AirTemperature='TRUE'
& Precipitation='TRUE'
& Website notnull
& (DataAccessTier='1' OR DataAccessTier='2')
ORDER BY st_distance(geom, st_point(-74.00, 41.00));
```

This query gives the name, address, and website of field stations that collect real time air temperature and precipitation data, with results ranked by the proximity to 41° N, 74° W.

5. To add this layer to the QGIS map canvas, add ‘geom’ as column to select in the query, check the ‘Load as new layer box’, execute the query, and press load



6. This layer can be saved by right clicking the layer in the layers panel, and saving it in a desired spatial format (GeoJSON recommended).