

Frankfurt am Main Workshop: January 16-18 2020

Friday, 17 January (16:30-17:30 Session): **Getting Data into QGIS**

Facilitated by: Jeffrey Klenotic ©

**** Sample Data Available For Download Via UNH Box Link at:**

<https://unh.box.com/s/q71z7r45hp4pdjl21jkrvpfvsysc9xxfz>

I. Open QGIS 3.10.1 - A Coruña

A. Select “New Empty Project” or open existing project if you prefer

B. Review “Project Properties” Menu

1. Note Default CRS is WGS 84, EPSG 4326. “Apply” this. Note that the PROJECT has a CRS, but a LAYER may have a different CRS depending on its source. Will show you how to change a layer’s CRS later on.

2. “General” Tab: Project Home (Browse to where you will store this project file; Frankfurt Workshop > Project Files

3. “General” Tab: Project Title (Workshop_Demo)

C. Add Basemap using “Web” Menu > > Quick Map Services > OSM Standard and Google (and any others you wish)

Can also add using the QGIS “Browser > XYZ Tiles Tool

1. Add Pre-Loaded “Open Street Map” Layer to Project

2. Google Hybrid: Add Layer to Project; Right click “XYZ TILES” > New Connection; Name = Google Hybrid; URL =
<https://mt1.google.com/vt/lyrs=y&x={x}&y={y}&z={z}>

3. Roads: <https://mt1.google.com/vt/lyrs=m&x={x}&y={y}&z={z}>

4. Tiles stored on other servers; distributive mapping network

II. Adding and Exploring Data Layers in QGIS

A. Adding existing shapefiles to QGIS

1. Click “Add Vector Layer” icon (or use menu)

2. In “Source: Vector Dataset” field,” browse to YOUR OWN SHP FILES and/or browse to “Frankfurt_Sample_Data” Folder > “St_Louis_Polys_SHP,” choose “StLouis_Demo_Polys_SHP.shp” file; click OPEN + ADD; new layer appears in Layers Window
3. Right Click on Layer, choose “zoom to layer” to view; Right click “properties” to view fields and field TYPES (note String, Integer, Double – QGIS needs numerical data for many tools – will show later how to change “field type” if necessary)
4. Click “Layer Styling” Icon > Graduated Symbols > Choose Value (review different types of data in there – I’ll do AFR_AM_PCT) > Choose a Color Ramp > Mode = Natural Breaks; Classes = 5; Can choose level of Transparency in “Layer Rendering” dropdown menu; View TOC Legend for Breaks
5. Click “Add Vector Layer” icon (or use menu)
6. Browse to another one of YOUR SHAPEFILES and/or browse to Frankfurt_Sample_Data Folder> St_Louis_AA_Theatres_SHP and choose “AA_Theatres.shp” file; click OPEN, ADD
7. Zoom to Layer and explore different relations between AA cinema distribution and social contexts in St. Louis

B. Add an external WMS layer (Web Map Service)

1. Mapwarper.net > Log in or create new account if you want, or just search for a map of Interest without logging in.

For Me: Search “Streetcars” > Click Map Name and copy/paste URL (<https://mapwarper.net/maps/wms/21230>) (will need to ADD WMS to url!)

2. QGIS Browser window > WMS/WMTS > Right click “New Connection” > Name = Mapwarper; URL = Paste in URL with WMS added to it; Click “add layer to project”
3. Change Layer Order to Put St. Louis Polys on TOP of WMS; Change Poly’s Transparency to 50%

C. Adding a CSV file that includes Lon (X) and Lat (Y) coordinates

1. Click “Add Delimited Text Layer” comma icon (or use menu)
2. In File Name, browse to YOUR OWN CSV (if need be, SAVE EXCEL FILE AS CSV) or Browse to “Sample_CSV_Files_With_XY” and choose “Mobile_Activity_3months_scrambled” or “Earthquakes_7day_2012”
3. In File Format, choose “custom delimiters” and check “comma”; leave default Record and Field Options; In “Geometry Definition” the X and Y fields should populate automatically to x = “lon” and y = “lat” in table (if not, choose them from drop down); Will see sample data view pop up in window. Click “ADD”
4. Click “zoom to layer” to see new data (mobile activity); Can symbolize by one of the Integer fields

D. Geocoding a CSV table that has addresses but no x, y coordinates

1. This task requires us to add the “MMQGIS” Plugin: Plugins > Manage and Install > MMQGIS > Click “Install Plugin” (MMQGIS will appear now in menu bar)
2. Click on “MMQGIS” in Menu > Geocode > Geocode CSV with Web Service
3. Input CSV: Browse to YOUR OWN CSV FILE WITH ADDRESS (e.g. street, city, state) or browse to Frankfurt Sample Data and choose “Linns_1902_03_Season_CSV” > Open
 - a. Address = none; City = City; State = SP; Country = Country; Web Service = Open Street Map/Nominatim; Duplicate Handling = Drop down to “Multiple Features for Multiple Results” (captures return engagements);
 - b. Output File Name = Browse to where you want to store “temp1” file. Change name to “Linns0203Season” > Save

- c. Not Found Output List = Browse to storage location, change file name to “notfound” > Save
- d. Duplicate Handling = “Use Only First Result” or “Multiple Features for Multiple Results” if you want various map points to be recorded for same street (if address is vague). Click “apply”
- e. “Linns0203Season” appears in Layer Window
- f. Right click on Layer > “Open Attribute Table” – See x, y have been added in last column (single column).

E. Using Refactor Data Processing Tool to change Field type from string to Date to Enable Animation

1. Processing Menu > Toolbox > Vector Table > Refactor Fields
2. Add “Linns_1902_03_Season” to “Input Layer” of Refactor tool; change “Show_Dates” from string to DATE. Refactor can also reorder the fields and change field names. Will create a NEW output SHP (original will be kept as is).
3. Click “RUN” and new “Refactored” layer appears. Close window. View Properties > Fields > Confirm change
4. IMPORTANT – Refactored is a TEMP Layer (note “oval” icon on right); Need to save it as SHP to animate and preserve it.
5. Right click > Export > Save Features As > Shapefile > File Name = Browse to folder where file will be store = Demo_Files, MMQGIS Exports, ReName = “Linns0203RefactoredDatesSHP”
6. Style Icon – Change Linns Point symbol to BLACK + Size 3
7. Open Plug Ins menu and search for “Time Management” Plugin; Install. Shows up under “Plugins” menu
8. Toggle Visibility > Settings > Add Layer
“Linns0203RefactoredDatesSHP”; Start Time = ShowDates > End Time = Same as Start > Choose “Accumulate Features” and click Okay

9. Click “Time Display Options” button = change %Y-%M-%D to %YYYY-%MM-%DD (delete H-M-S from expression if necessary); click Okay, click OK again

10. Turn Settings “ON”; Frame size = 1; Toggle Menu = Days

II. Getting Data From QGIS to ERMA Mapping Movies

A. First Half of Morning – PowerPoint Presentation

1. Review ERMA General Layout, Data, Tools

B. <https://mappingmovies.unh.edu/maps>

III. ERMA: Uploading and Symbolizing Data

A. Second half of Morning – Login to ERMA

B. Quick Review of Existing TOC Data Layers