

QGIS: XYZ Tiles & GPX File Heatmap

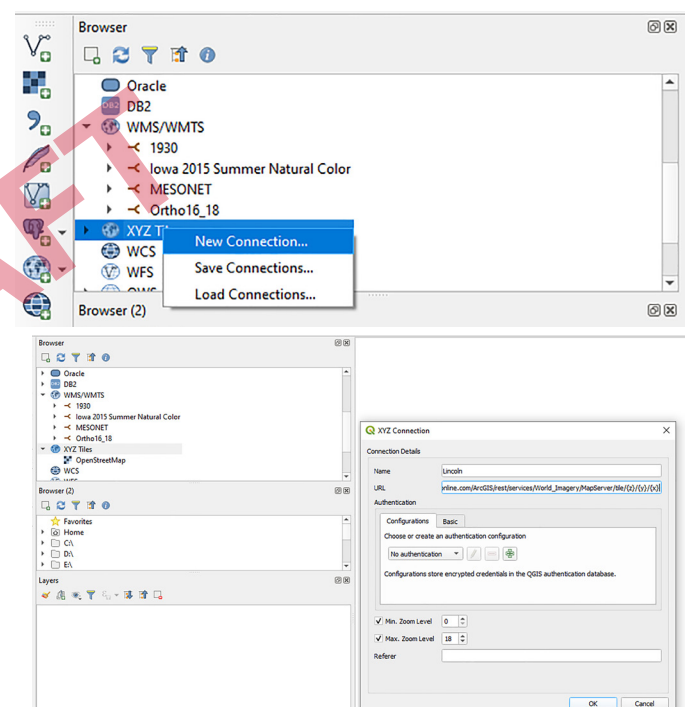
QGIS 3.4.1

Welcome to the Essential QGIS Tasksheet Series. This series supplements the Iowa State University Geospatial Technology Training Program short course series. The tasksheets are designed to provide quick, easy instructions for performing mapping tasks.

GPX files are created by GPS device using special apps such as Strava, MapMyRun, plus many other options. These personal data collectors can be used to make some very interesting maps and charts. Similar to Strava's heat map, here you will be creating a heat map based from a single runners data. Before that this tasksheet will briefly show how to make a new XYZ Tiles connection for generating raster images. You can also use these steps to work with your own GPS/GPX data.

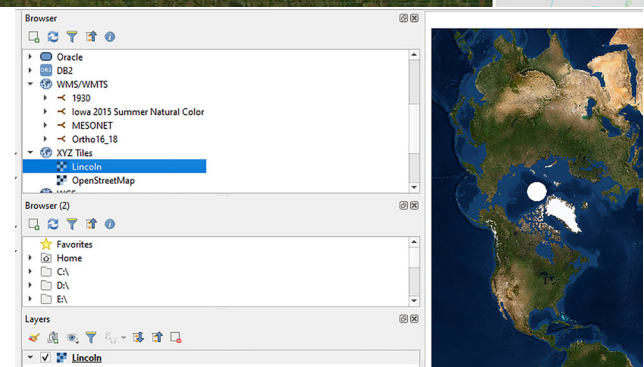
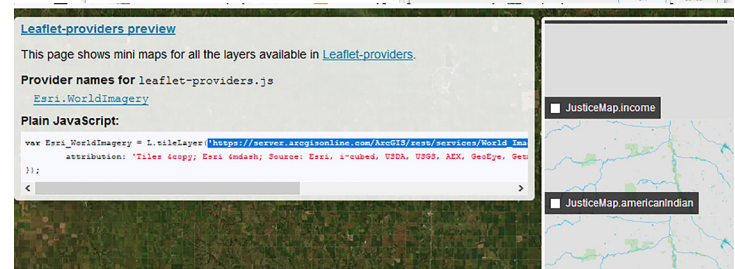
1. Creating New XYZ Tile Connection

- The GPX file data for the this Tasksheet can be downloaded at...
- In QGIS add a basemap using XYZ Tiles. You will need the **QuickMapServices** plug-in refer to Tasksheet 17j for and in-depth reminder. Main menu -> Plugins -> Manage and Install Plugins...
- In the QGIS Browser panel on the right scroll to find **XYZ Tiles** then **right-click** and select **New Connection...**
- XYZ connection window opens, give a **Name** such as **Lincoln**, next **copy** and **paste** the following URL in the **URL** option: https://server.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer/tile/{z}/{y}/{x} This URL was obtained from <https://leaflet-extras.github.io/leaflet-providers/preview/> where you can select different map styles.
- After clicking OK, the raster layer Lincoln will be added to the XYZ Tiles. **Add** the **Lincoln** layer to the **Layers** pane, and a world map will load.



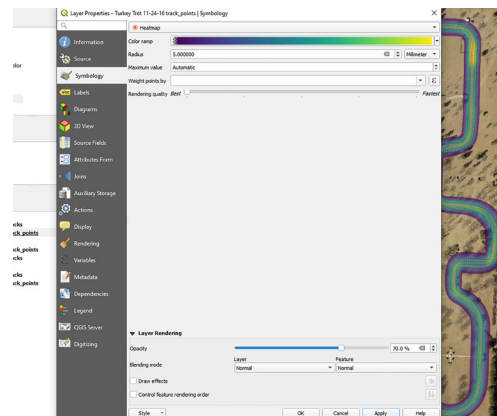
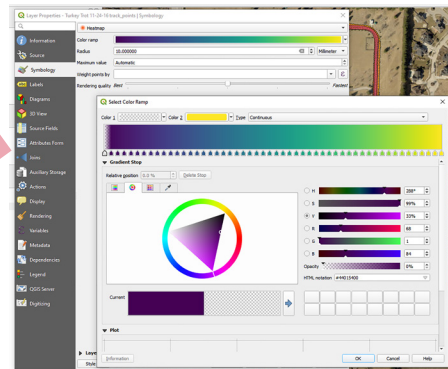
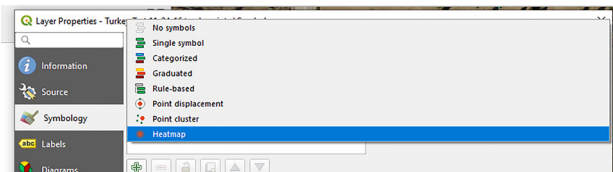
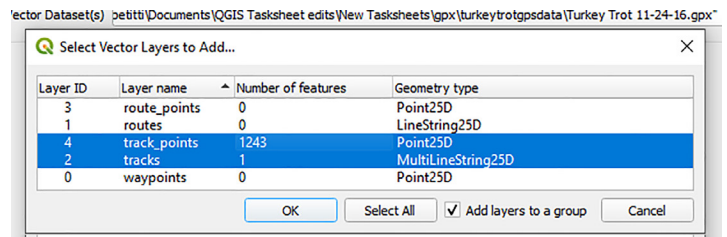
2. Adding GPX Files

- Add** the **GPX files**. Either using Add Vector Layer or drag and drop from your files. Add all three Turkey Trot GPX files at the same time.
- Once added A window will pop-up **Select Layers to Add**. Look at the third column, Number of Features, only two layers have features. **Highlight** both **track_points** and **tracks** at the same time and click **OK**, this will have to be done for each year.
- In the Layers pane **right-click** one of the **Turkey Trot** years and select the first option **Zoom To Group**, now you will see the course. You can zoom into the map and see each individual GPS point.



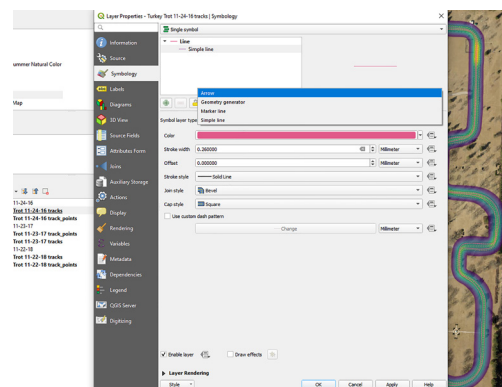
3. Creating Heatmap With GPX Files

- Open the **layers properties** for one of the Turkey Trot runs by **double-clicking** the **track_points**.
- In the **Symbology** tab at the very top open the drop-down menu set to Single Symbol and change to **Heatmap**.
- Below set the **Color Ramp** to something better such as Red, Viridis (color blind friendly), or make a custom color ramp.
- After choosing your color ramp, expand the drop-down menu again and go to **Edit Color Ramp...**
- Select Color Ramp window opens. On the long bar displaying the color ramp steps, **click the first step** a black boarder will appear around the selected step.
- With the first step selected set the **opacity** to **0%**. Now any value of zero will not be symbolized. Click **OK** to close the window.
- Back in the Select Color Ramp, the last option **Rendering Quality** set closest to **Best**.
- At the bottom expand **Layer Rendering**, and set that opacity to around **70%** click **Apply** then **OK** to close that window.



4. Creating Arrow Shaped Symbology

- Open the **Symbology** for the **tracks** line of the **same Turkey Trot year**.
- Within Symbology **click on Simple line**. The window will change, and from the first drop down menu **Symbol layer type** change to **Arrow**.
- This option will show what direction the runner was traveling. For the option below set the **Offset** to **3 mm**, and make the **arrow color** stand out against your heatmap. Then click **Apply** and **OK** to close the window.



Contact:

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