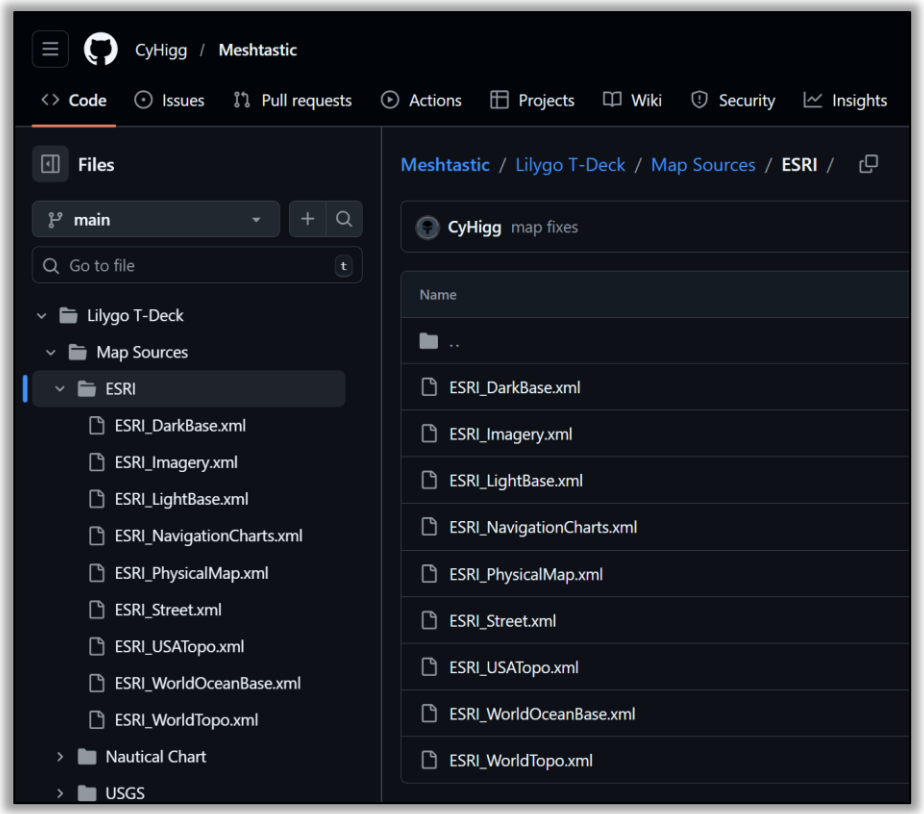
Creating Basemaps for the Lilygo T-Deck

Using **Mob**ile **A**tlas **C**reator (MOBAC)

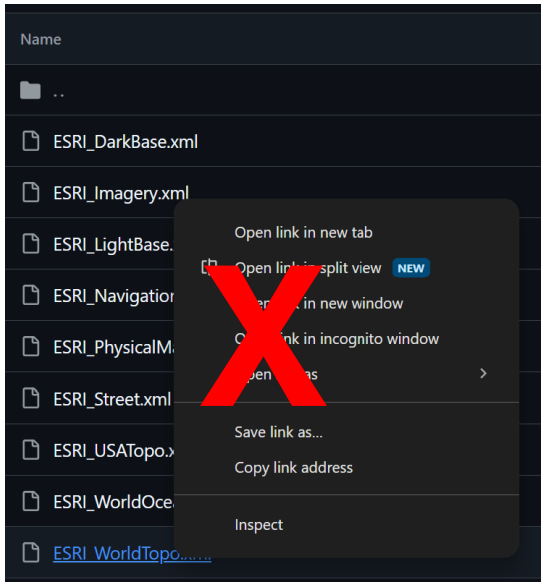
Requirements

- **Software:**
  - MOBAC - https://mobac.sourceforge.io/index.html
    - Download the MOBAC self contained application (you don't need to install it)
    - Extract the ZIP and navigate to the Mobile Atlas Creator parent directory
    - Run the executable and follow the instructions to install the JDK (see below)
  - Adoptium OpenJDK 17 - follow the set up guide here https://mobac.sourceforge.io/OpenJDK/
- **Hardware:**
  - Lilygo T-DECK
  - SD Card formatted to FAT32 (NOT exFAT or NTFS)
- **Map Source:**
  - You will need a map source which can be found on the GIT HUB

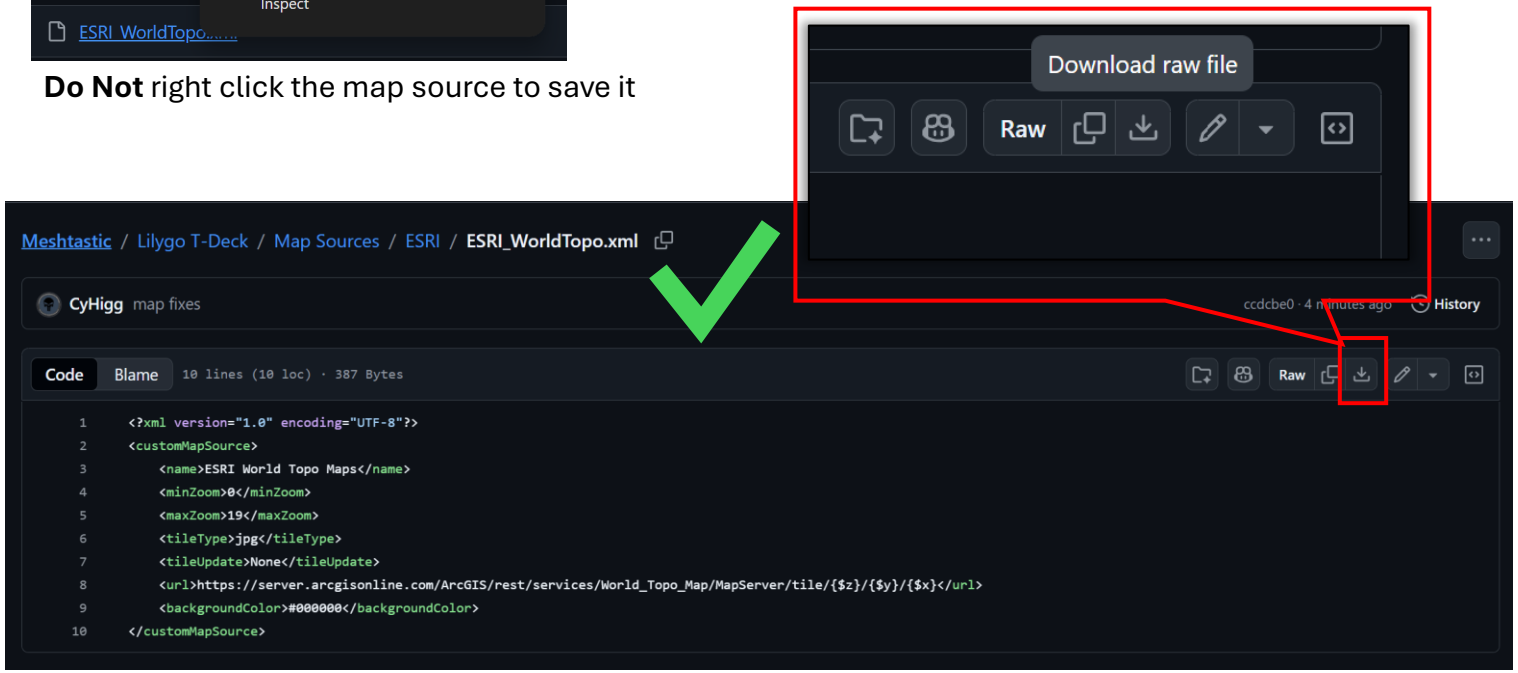
MOBAC Configurations – Download Map Sources from GITHUB



Navigate to the Map Source directory in GITHUB



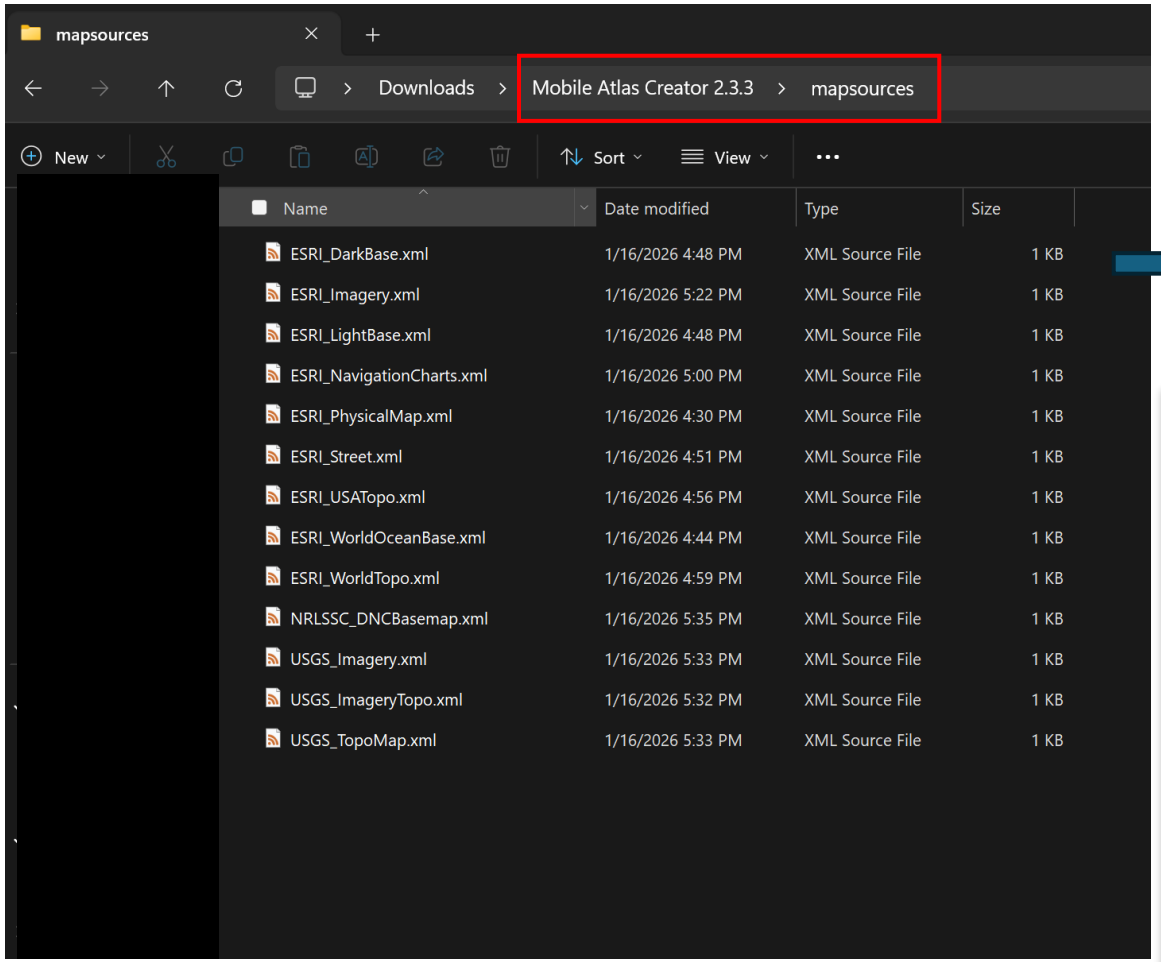
Do Not right click the map source to save it

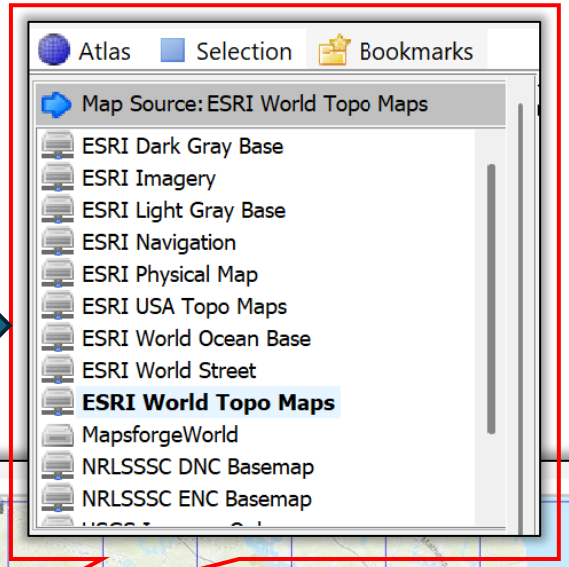


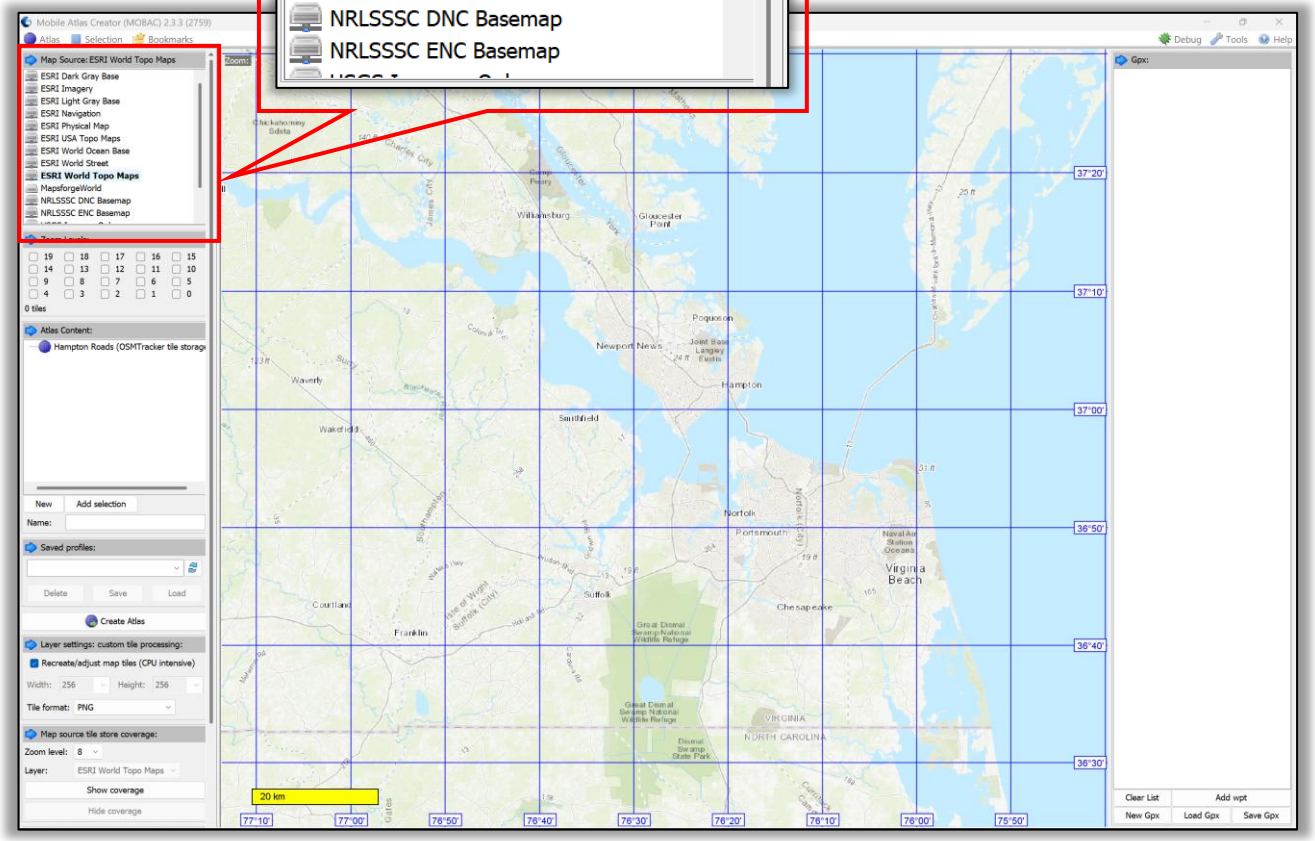
Click on the desired XML file then download the Raw

https://github.com/CyHigg/Meshtastic/tree/main/Lilygo%20T-Deck/Map%20Sources

MOBAC Configurations – Stage the Map Source XMLs





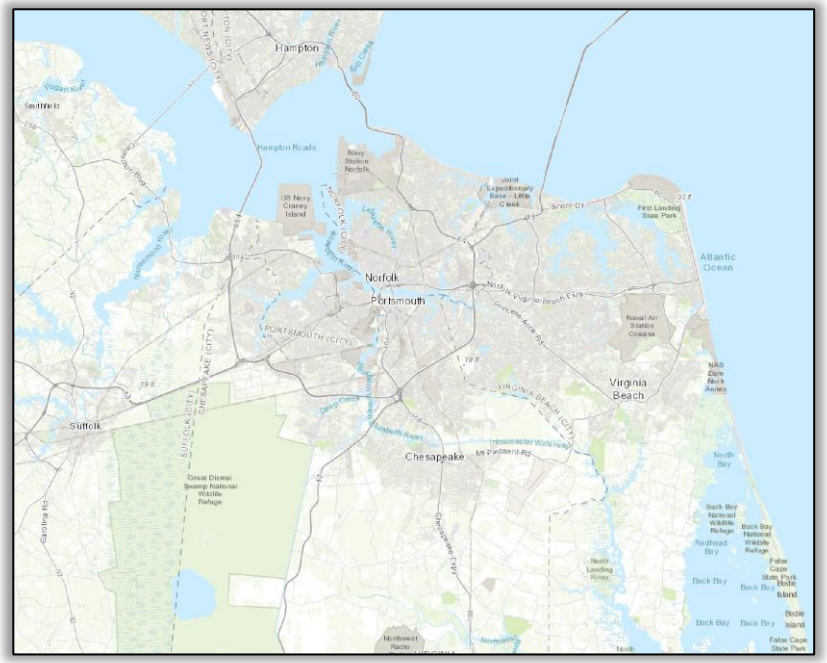


Move the downloaded *XML map sources* to the mapsource directory found inside the Mobile Atlas Creator Parent Directory

Correctly crafted XML files will appear in the Map Source section in MOBAC

MOBAC Configurations – Select Map Source

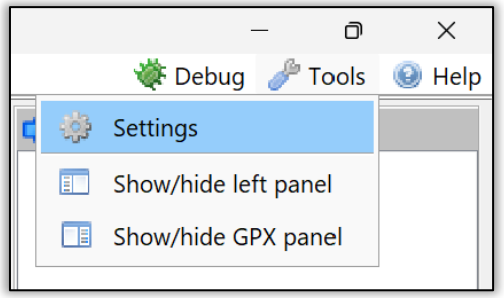
ESRI Light Gray Base



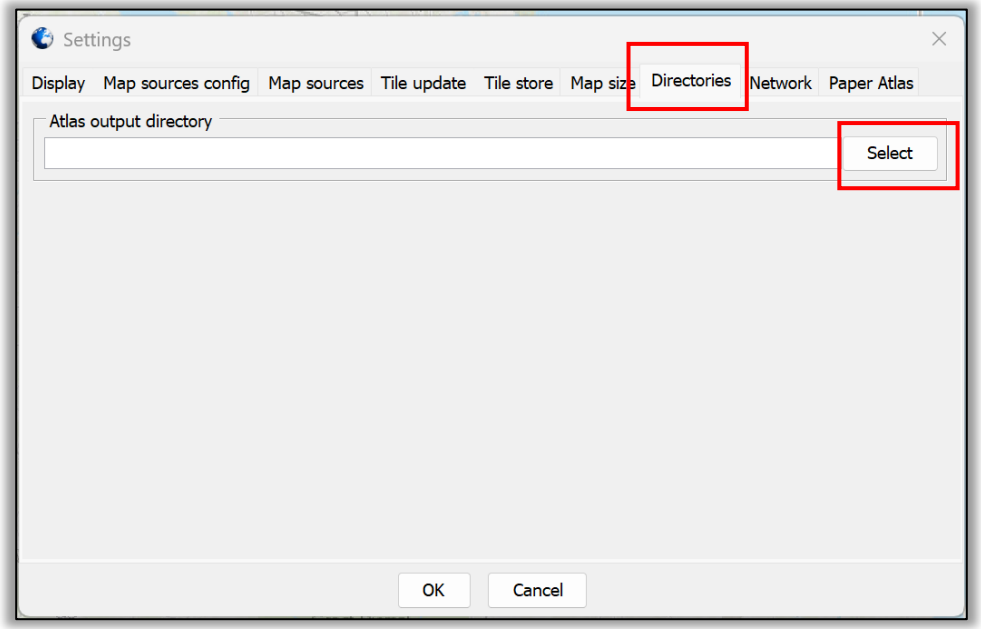
ESRI World Topo

ESRI World Ocean Base

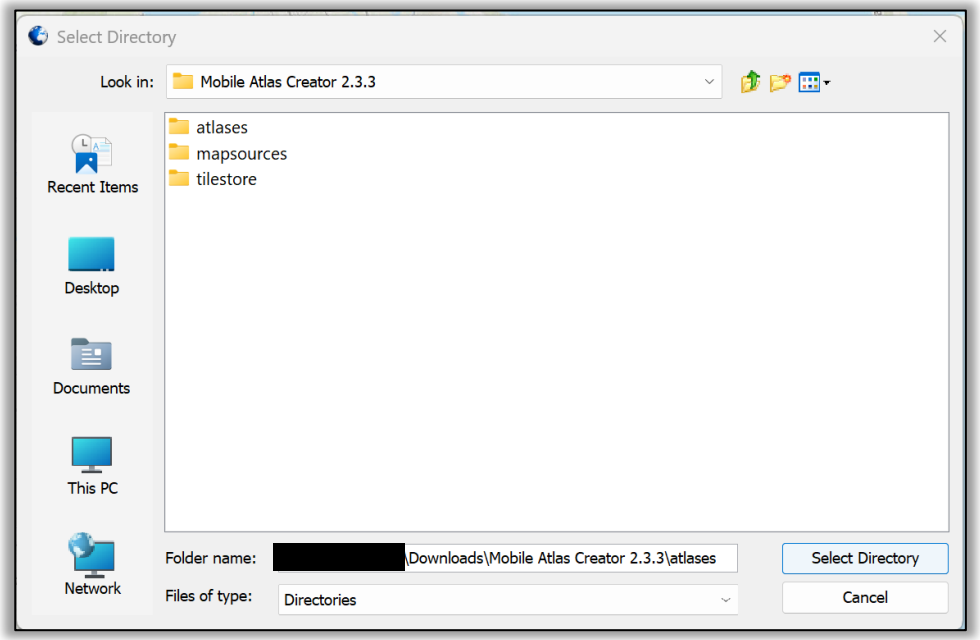
MOBAC Configurations – Define Atlas Folder



Open *MOBAC* then **Click** *Settings*



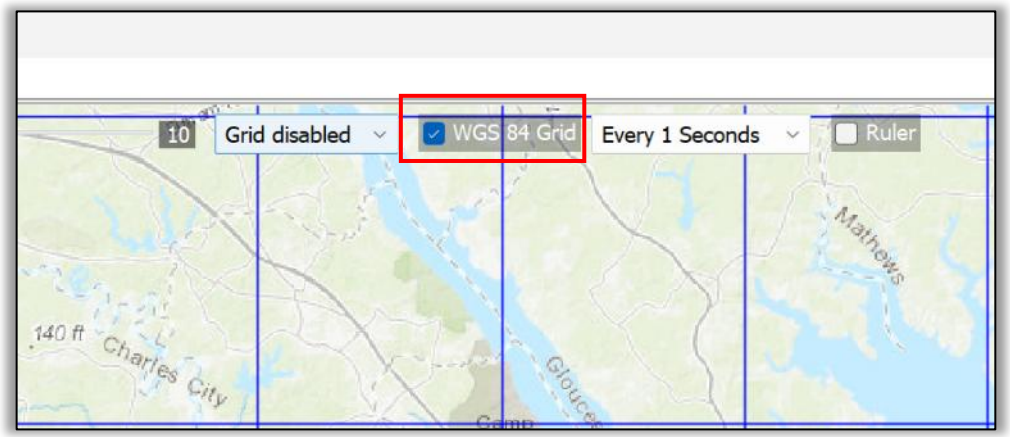
Click *the Directories* Tab then **Click** *Select*



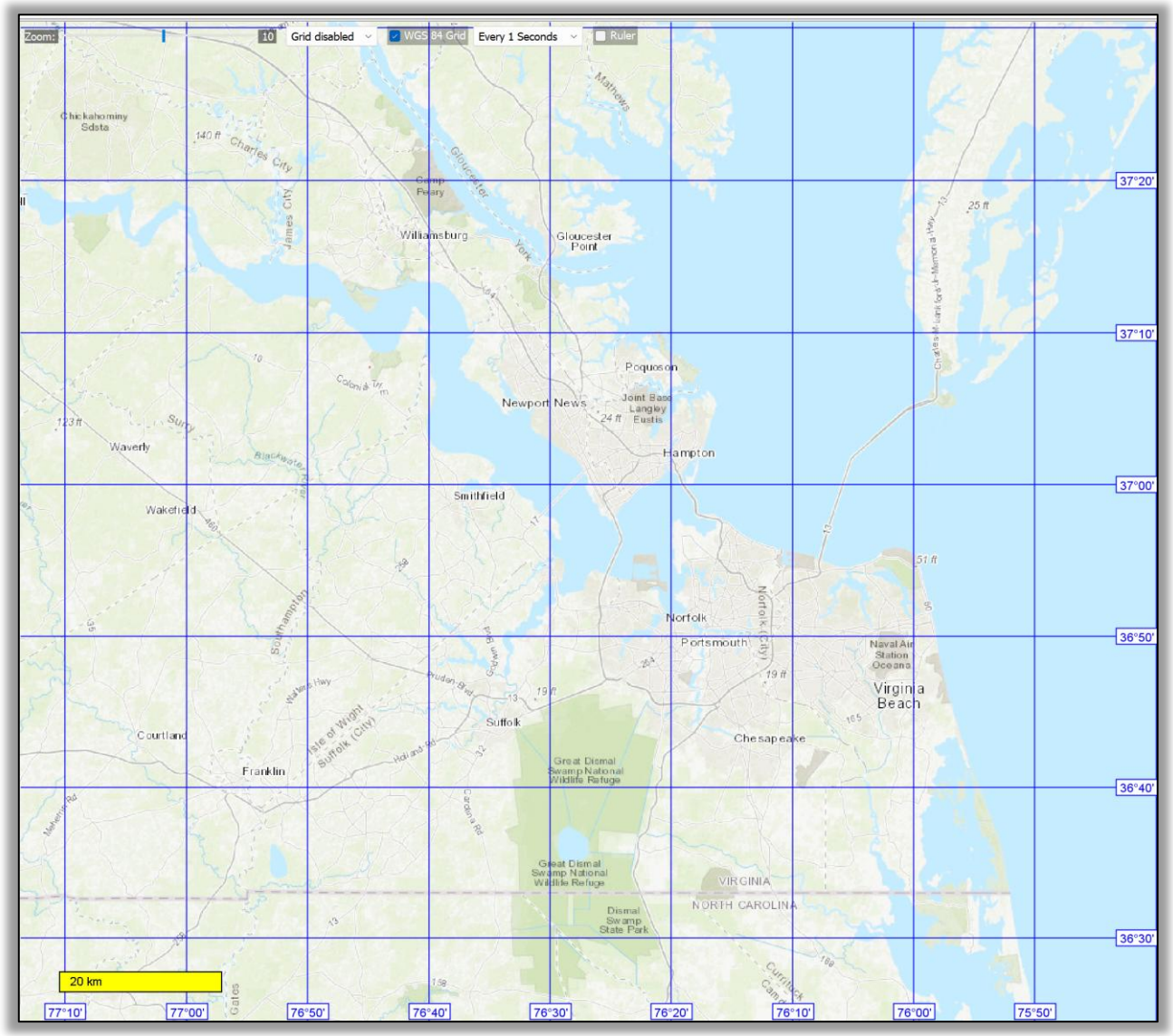
Create a *Directory* then **Click** *Select Directory.*
Click *OK to close the settings Window.*

In this example an Atlas Directory was created inside the Mobac Atlas Creator Parent Directory but you can create your directory anywhere you want.

MOBAC Configurations – Turn on the WGS 84 Grid

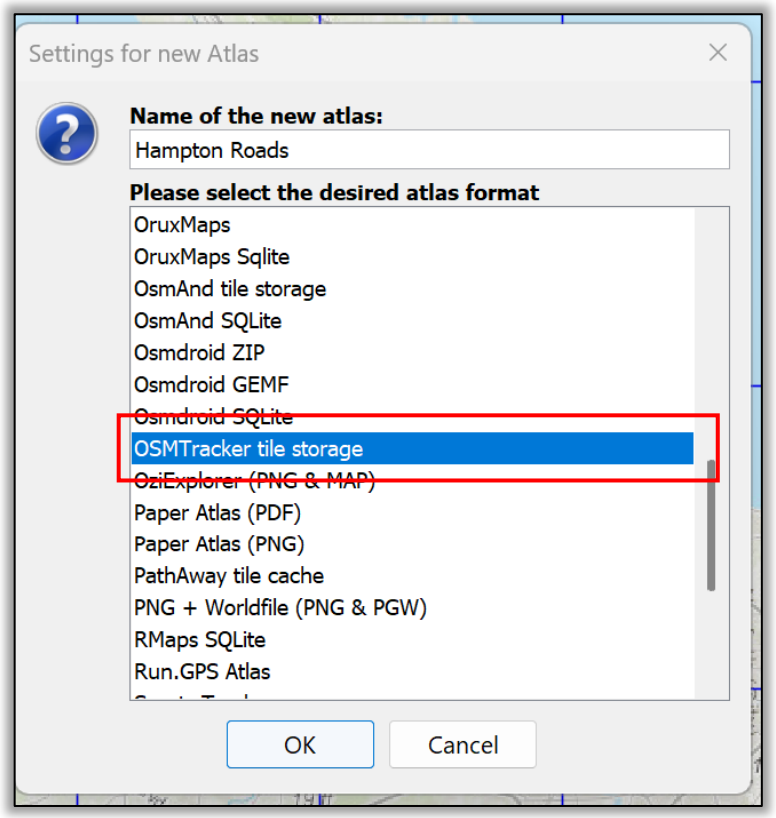


Check the *WGS84 Grid* Check Box



This enables a reference grid that I use to keep my tile counts under 2500 per map selection (explained later)

MOBAC Configurations – Settings for a New Atlas



Enter a *Name* for the new Atlas.

Select the *OSMTracker tile storage* Atlas option.
I use this and I will update the SOP with other formats later

Atlas Suggestions

You can create multiple Atlas files and load them into your T-DECK.

This enables a reference grid that I use to keep my tile counts under 2500 per map selection (explained later)

Understating Map Zoom Levels

Atlas Suggestions

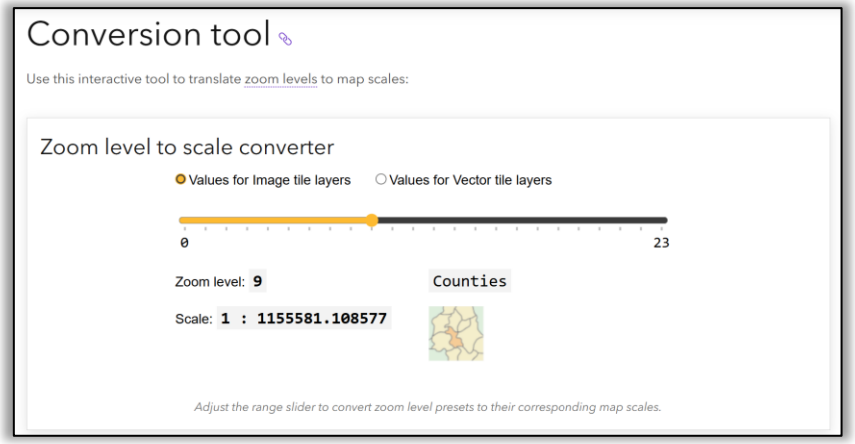
Low Resolution: For large areas to view distant nodes:
9 – 11

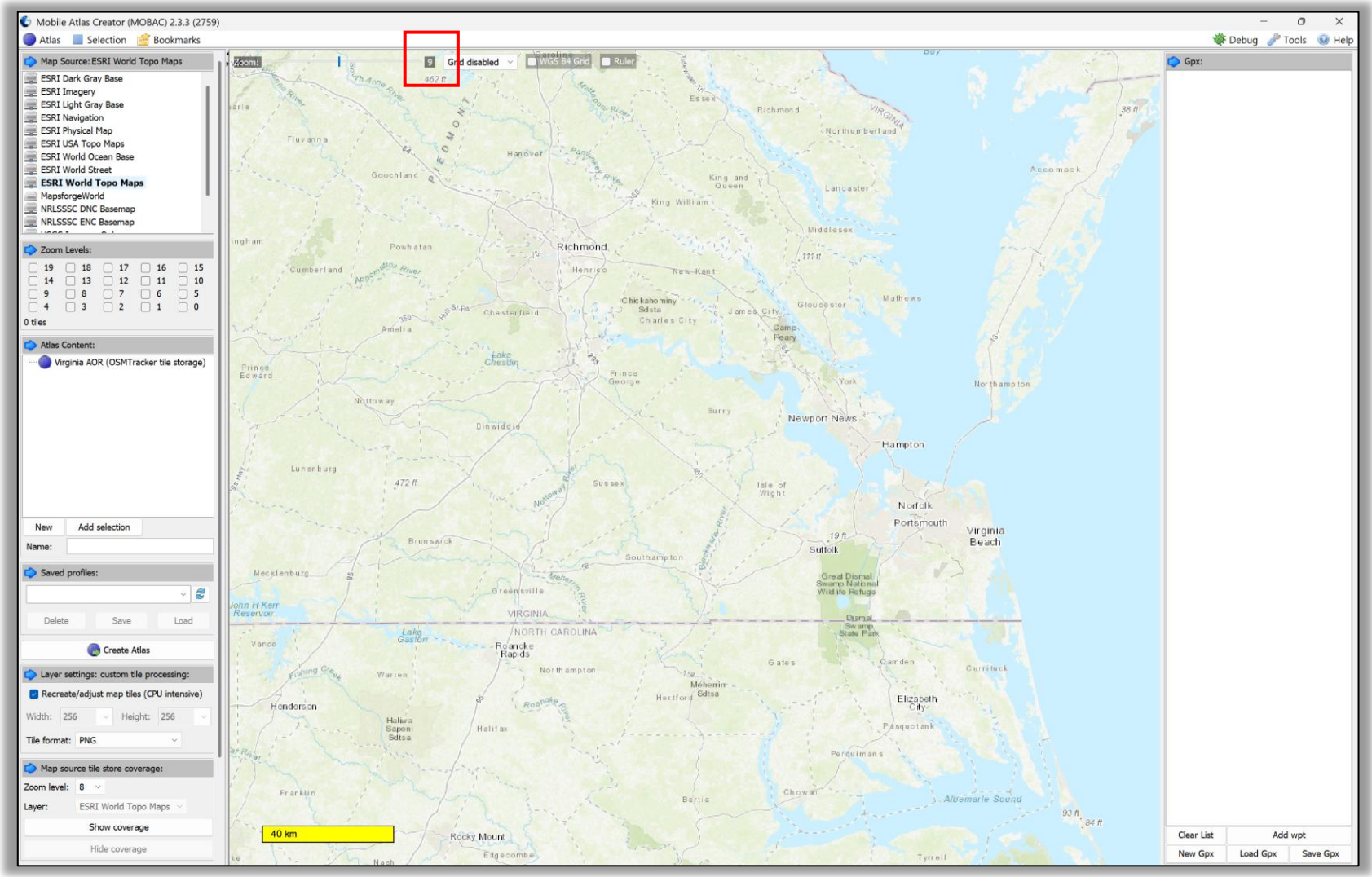
Medium Resolution: For county/city
12 – 14

*High Resolution**: For neighborhood level view
15+

I suggest you create a few at multiple zoom levels to optimize the rendering of the maps.

WARNING
For every Zoom level you increase the tile count for the map section increases by a factor of 4!





MOBAC currently set to a map zoom level of 9

Source: https://developers.arcgis.com/documentation/mapping-and-location-services/reference/zoom-levels-and-scale/

Create A Low-Resolution Map: Define Area

1. **Create** a *new Atlas* and **select** *OSMTracker tile storage*
2. **Select** your *Map Source*
3. **Select** your *Zoom Level(s)*
4. ***Draw*** *a box around your area of interest I keep my AOIs to less than 2500. This is a number I use for other map applications like ATAK.*
5. *Make sure PNG is selected as the Tile format and the resolution is 256x256*

REMEMBER

Low Resolution: For large areas to view distant nodes:

9 – 11

Medium Resolution: For county/city

12 – 14

High Resolution:* For neighborhood level view

15+

I suggest you create a few at multiple zoom levels to optimize the rendering of the maps.

WARNING

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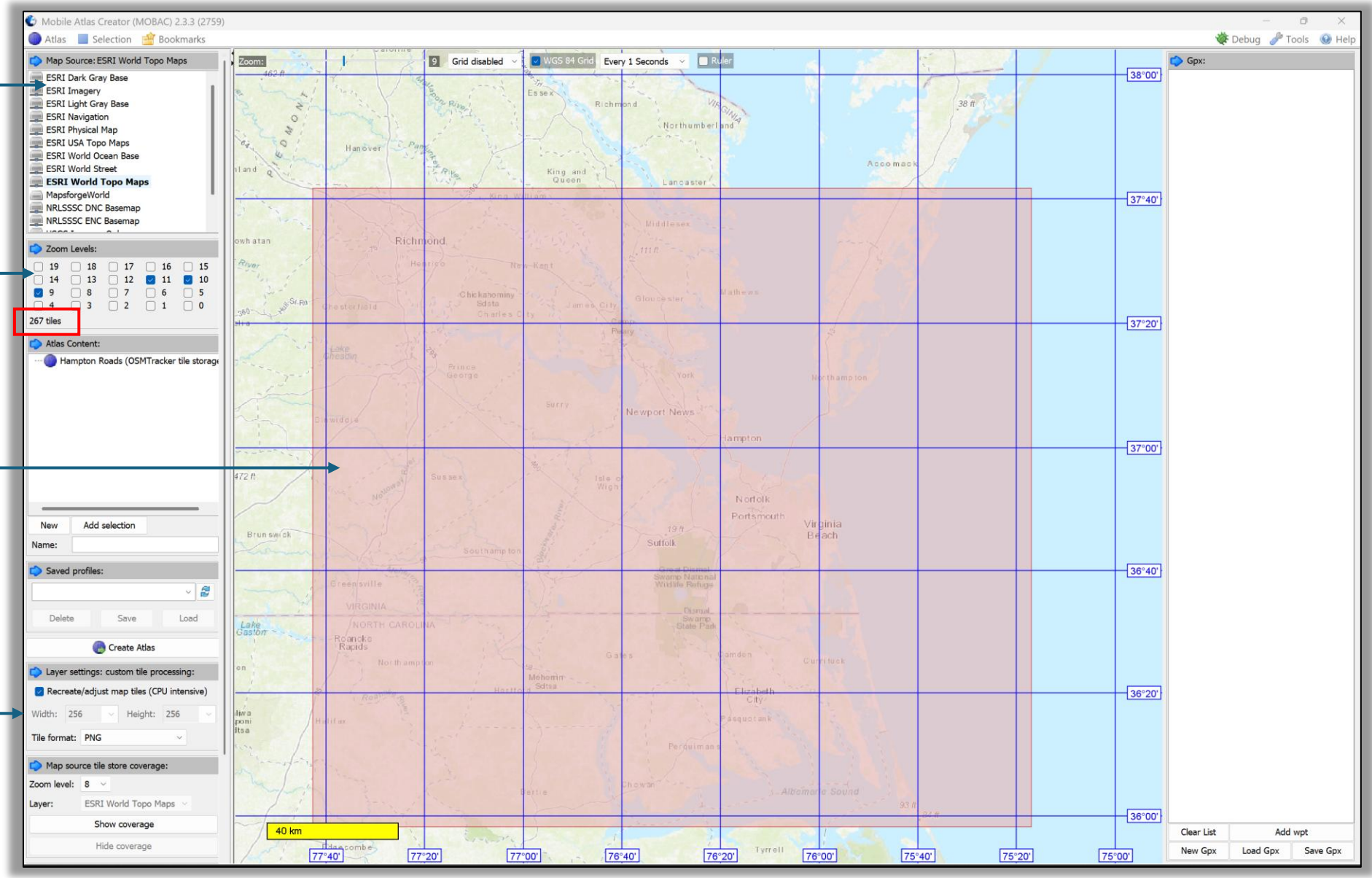


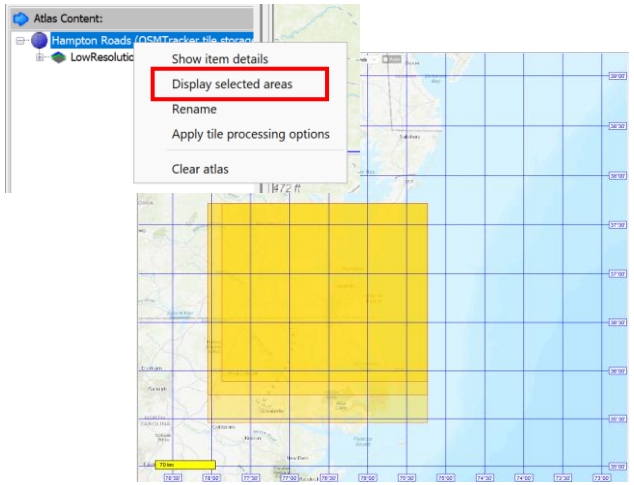
Create A Low-Resolution Map: Add Selection

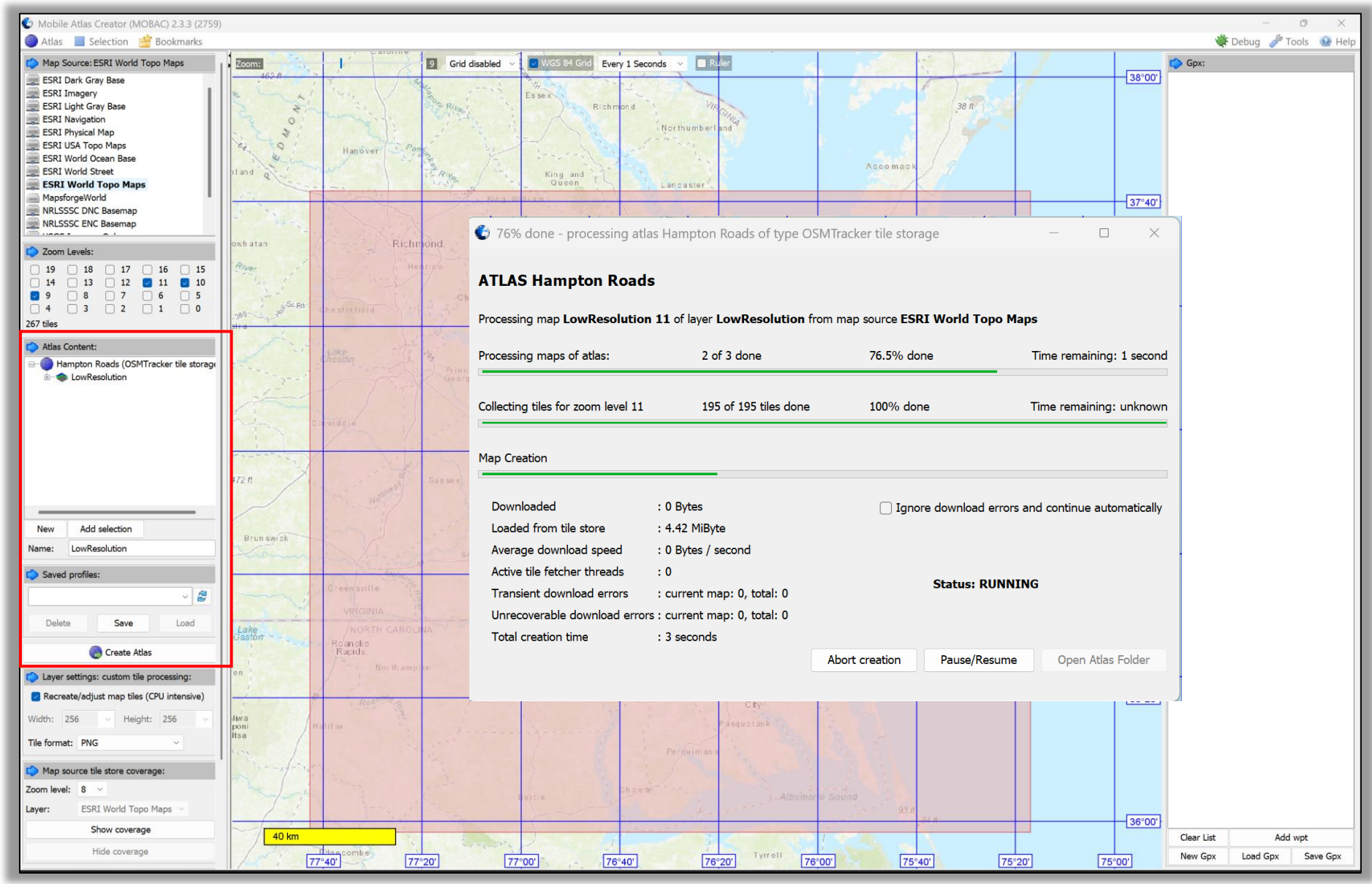
1. **Give** the map selection a *name*
2. **Click** *Add Selection* to set your map selection.
3. **Click** Create Atlas

Depending on how large of an area you selected and the quality of your internet connection this could take some time

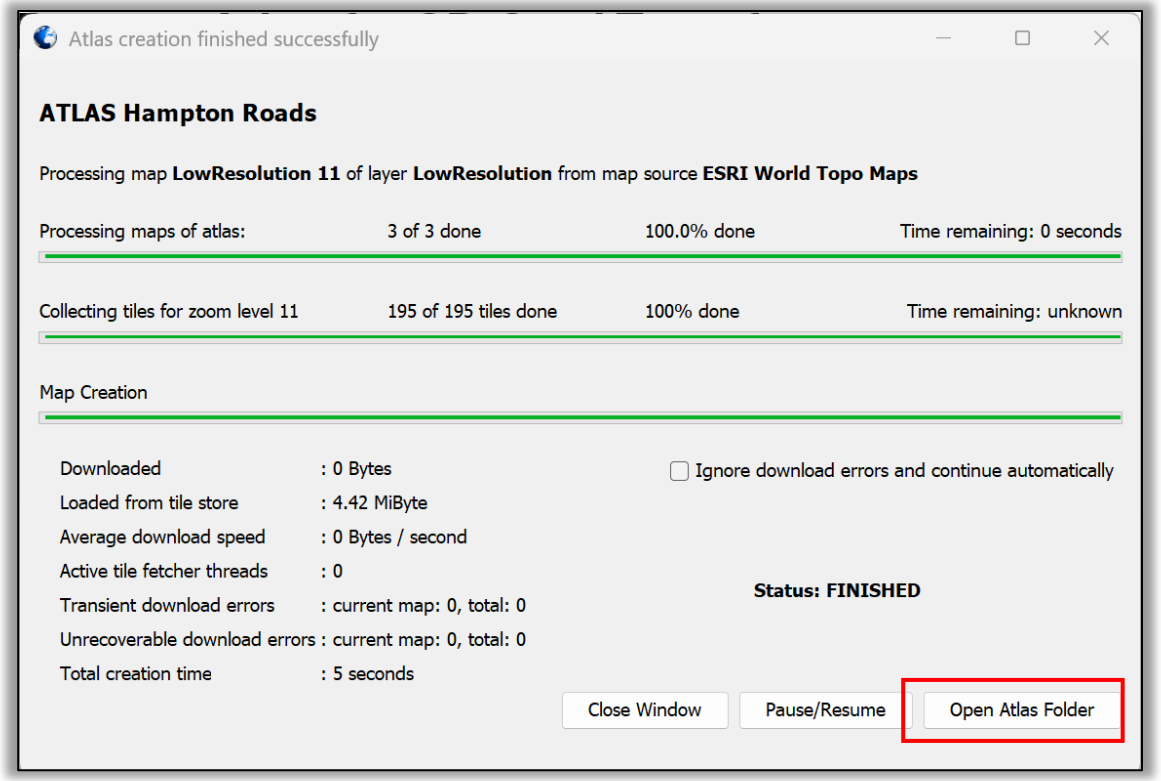
Remember this device has limited compute so the more tiles or the more higher resolution atlases you download it may affect the speed of the map rendering

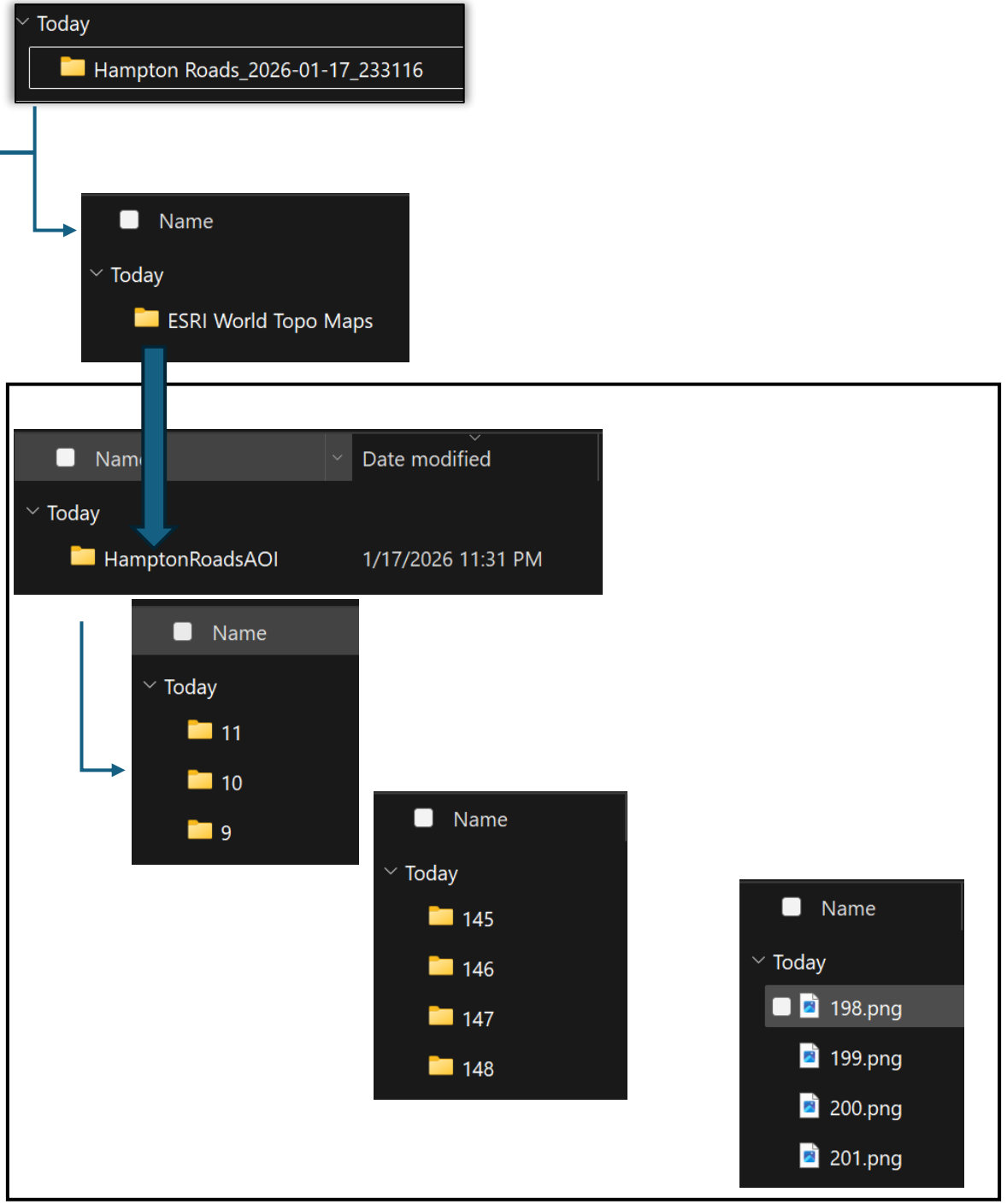
To check your coverage area you can right click your atlas and select Display Selected Area





Prepare Atlas for SD Card Transfer





1. **Click** *Open Atlas Folder*

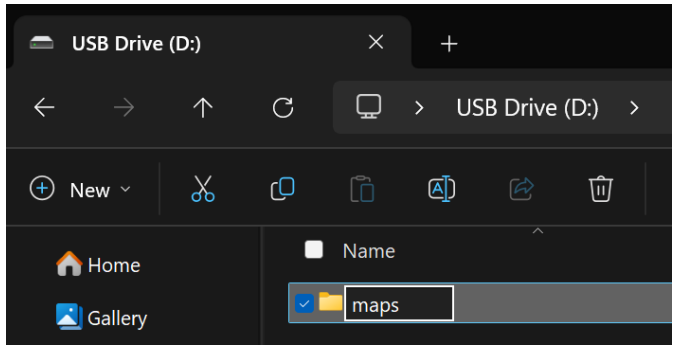
2. **Double Click** the *folder depicting your Atlas Name* you set previously

3. **Rename** the Map source folder name to a human readable name that will help you differentiate the maps you load to your device. This is the name that will be visible when you toggle through your maps on the T-Deck.

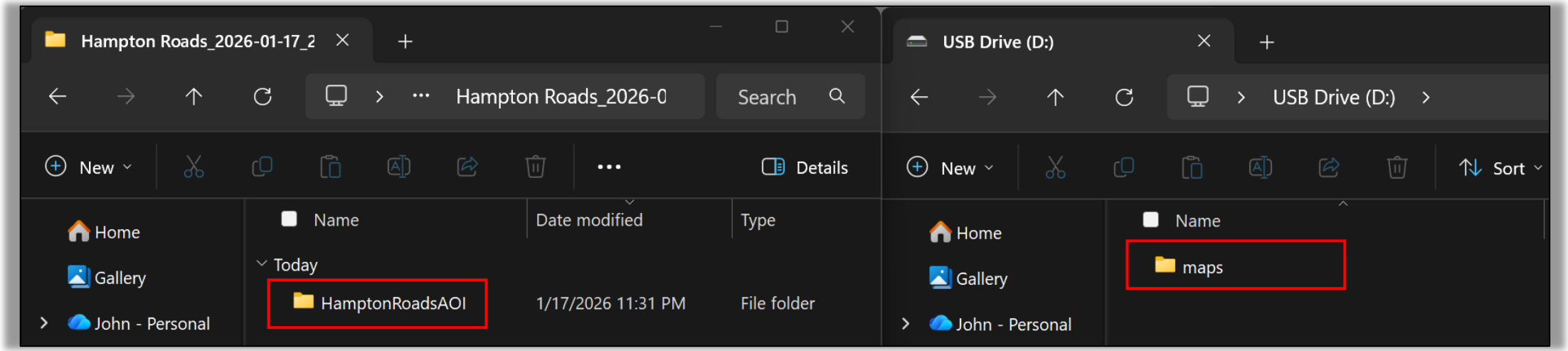
The remaining nested folders (explained later) house the structure the TDECK uses to toggle through the maps as you zoom in and out.

MAKE SURE THE FILE EXTENSION IS a PNG!

Transfer Map to the SD Card

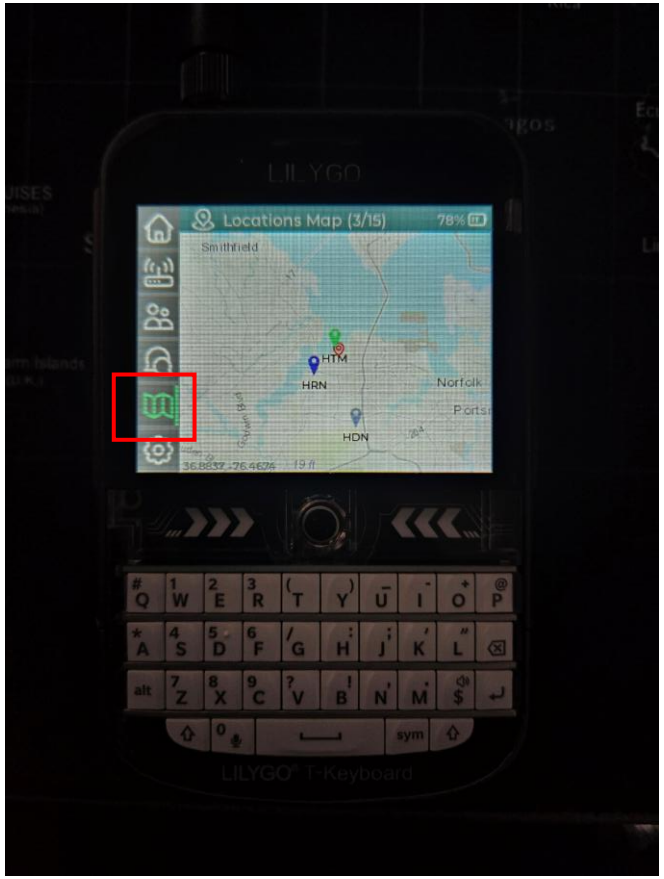


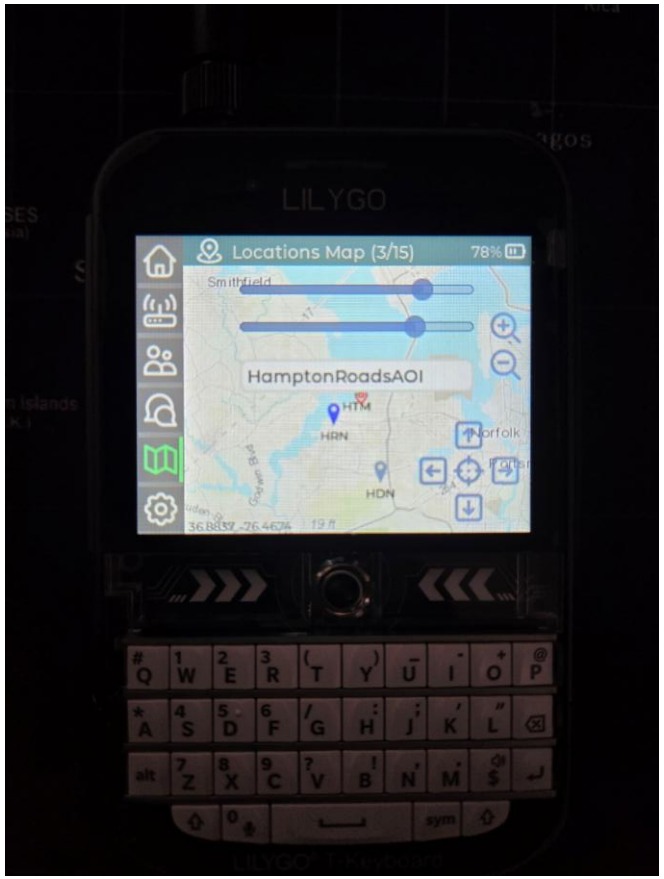
Create a *folder on the SD card called maps*



Transfer the *folder* you renamed previously to the *maps* folder on the SD Card

Mount the SD Card to the T-Deck





1. Safely **Unmount** *the SD Card on our PC/MAC*
2. With the T-DECK powered off **slot the SD card** into the *T-DECK*
3. After **slotting** in the *SD card* into the T-DECK **power** *the device on*
4. Next **Tap** the *map icon* on your T-DECK and zoom in/out of the map until our map displays
5. *Long press the map icon to display and toggle to the other atlases saved to the SD Card*

Map Source URLs

- **ESRI**
  - Physical Map - https://services.arcgisonline.com/ArcGIS/rest/services/World_Physical_Map/MapServer
  - Light Grey Base - https://services.arcgisonline.com/ArcGIS/rest/services/Canvas/World_Light_Gray_Base/MapServer
  - Dark Grey Base - https://services.arcgisonline.com/ArcGIS/rest/services/Canvas/World_Dark_Gray_Base/MapServer
  - World Ocean Base - https://services.arcgisonline.com/ArcGIS/rest/services/Ocean/World_Ocean_Base/MapServer
  - World Street Map - https://services.arcgisonline.com/ArcGIS/rest/services/World_Street_Map/MapServer
  - USA Topo - https://server.arcgisonline.com/ArcGIS/rest/services/USA_Topo_Maps/MapServer/
  - World Topo - https://server.arcgisonline.com/ArcGIS/rest/services/World_Topo_Map/MapServer
  - Imagery - https://services.arcgisonline.com/ArcGIS/rest/services/World_Imagery/MapServer
- **USGS**
  - Topo - https://basemap.nationalmap.gov/arcgis/rest/services/USGSTopo/MapServer
  - Imagery - https://basemap.nationalmap.gov/arcgis/rest/services/USGSImageryOnly/MapServer
  - Imagery/Topo - https://basemap.nationalmap.gov/arcgis/rest/services/USGSImageryTopo/MapServer
- **Naval Research Lab**
  - DNC - https://geoint.nrlssc.navy.mil/dnc/wms/DNC-WORLD/basemap/DNC-BASEMAP?