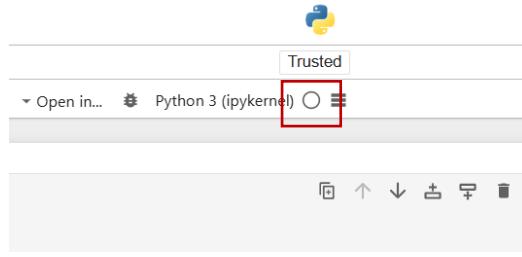


To Have The Map Function Properly:

- Run the first two chunks of code:
 - It Takes Time! Please wait for a few minutes. You can check the round dot to see if it changes from a filled grey one (still running) to an unfilled one (finished); or you can check the numbers on the left side of the code. If the number appears (not []), the run is finished.



The screenshot shows a Jupyter Notebook interface. On the left, there's a toolbar with a Python icon, a 'Trusted' button, and an 'Open in...' dropdown. Below the toolbar is a list of cells, with the second cell highlighted by a red box. To the right of the cells is a code editor window containing several lines of pip installation commands. A red box also highlights the cell number [186] at the top of the code editor.

```
[186]: # try run this
# commenting ou
!pip install nu
!pip install pa
!pip install ge
!pip install br
!pip install fo
!pip install iq
```

- If you failed when running through the second code, try restart the kernel and run it again, or you may rerun the first code, then try the second one again.
- Change the file path:



The screenshot shows a Jupyter Notebook cell with a light gray background. The cell contains Python code for setting up Folium and reading a shapefile. A red box highlights the line of code that reads the shapefile: `DA = gpd.read_file(DA)`. Above this line, the text "Set up + Load Data" is visible.

```
import ipywidgets as widgets
from ipywidgets import GridBox, Layout
from folium.features import GeoJsonTooltip
from folium.features import CustomIcon
from folium.plugins import MeasureControl
from IPython.display import display, clear_output, HTML
from branca.colormap import LinearColormap
```

Set up + Load Data

```
[32]: # Path to shapefile + open
DA = r"C:\Users\zj1026.stu\OneDrive - UBC\FCOR599\Term1Presentation\Output_Data\GVan_DA_Final.shp"
gpdDA = gpd.read_file(DA)
# speed up calculation (from chatGPT):
```

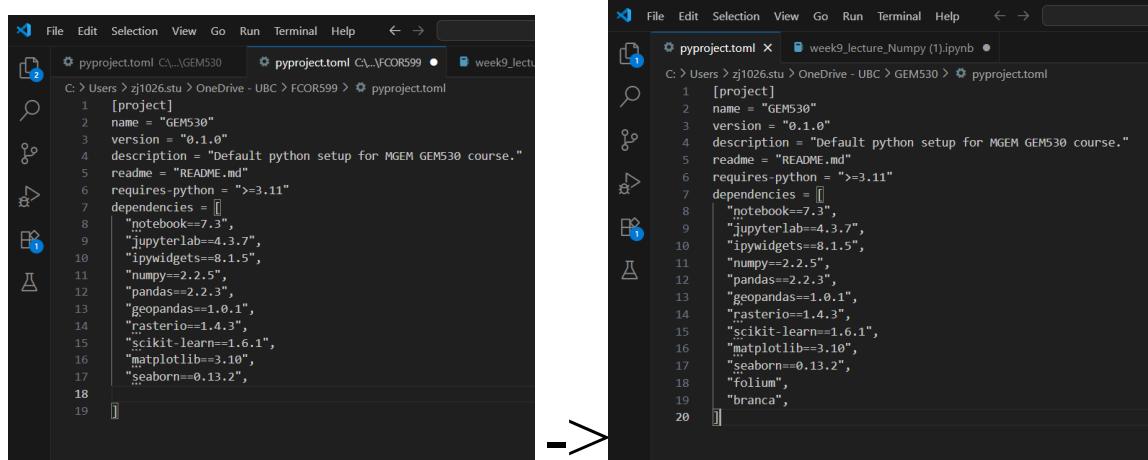
- Then we can run to the bottom!!!
- Notes:
 - If your map keeps flashing, refreshing your page will fix that!
 - The map takes time to react to your weight/preference choice. To speed up, you may consider using the uv environment. However, there are a few steps to do before starting jupyter in uv.

To load our interactive map in uv environment:

1. Change the pyproject.toml file which you already have in 530 like this.

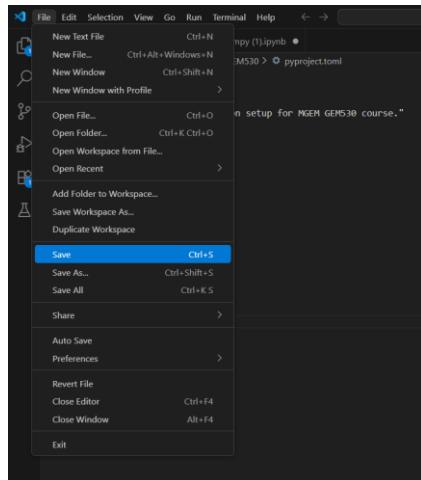
(add two lines: “folium”,

“branca”,



```
C:\> Users > zj1026.stu > OneDrive - UBC > FCOR599 > pyproject.toml
1 [project]
2 name = "GEM530"
3 version = "0.1.0"
4 description = "Default python setup for MGEM GEM530 course."
5 readme = "README.md"
6 requires-python = ">=3.11"
7 dependencies = []
8   "notebook==7.3",
9   "jupyterlab==4.3.7",
10  "ipywidgets==8.1.5",
11  "numpy==1.22.5",
12  "pandas==2.2.3",
13  "geopandas==1.0.1",
14  "rasterio==1.4.3",
15  "scikit-learn==1.6.1",
16  "matplotlib==3.10",
17  "seaborn==0.13.2",
18
19
20
C:\> Users > zj1026.stu > OneDrive - UBC > GEM530 > pyproject.toml
1 [project]
2 name = "GEM530"
3 version = "0.1.0"
4 description = "Default python setup for MGEM GEM530 course."
5 readme = "README.md"
6 requires-python = ">=3.11"
7 dependencies = []
8   "notebook==7.3",
9   "jupyterlab==4.3.7",
10  "ipywidgets==8.1.5",
11  "numpy==1.22.5",
12  "pandas==2.2.3",
13  "geopandas==1.0.1",
14  "rasterio==1.4.3",
15  "scikit-learn==1.6.1",
16  "matplotlib==3.10",
17  "seaborn==0.13.2",
18  "folium",
19  "branca",
20
```

2. Save the result:



3. Open the command prompt, then follow the three steps here:

```

C:\Users\zj1026.stu\OneDrive - UBC\FC0R599> cd C:\Users\zj1026.stu\OneDrive - UBC\GEM530
C:\Users\zj1026.stu\OneDrive - UBC\GEM530>uv sync ①
Resolved 130 packages in 1ms
warning: Failed to uninstall package at .venv\Lib\site-packages\colorspacious-1.1.2.dist-info due to missing 'RECORD' file. Installation may result in an incomplete environment.
Uninstalled 1 package in 1ms
- colorspacious==1.1.2

C:\Users\zj1026.stu\OneDrive - UBC\GEM530>uv run jupyter notebook ③
[I: 2025-11-27 10:43:39.220 ServerApp] jupyter_lsp | extension was successfully linked.
[I: 2025-11-27 10:43:39.225 ServerApp] jupyter_server_terminals | extension was successfully linked.
[I: 2025-11-27 10:43:39.230 ServerApp] jupyterlab | extension was successfully linked.
[I: 2025-11-27 10:43:39.235 ServerApp] notebook | extension was successfully linked.
[I: 2025-11-27 10:43:39.560 ServerApp] notebook_shim | extension was successfully linked.
[I: 2025-11-27 10:43:39.600 ServerApp] notebook_shim | extension was successfully loaded.
[I: 2025-11-27 10:43:39.602 ServerApp] jupyter_lsp | extension was successfully loaded.
[I: 2025-11-27 10:43:39.603 ServerApp] jupyter_server_terminals | extension was successfully loaded.
[I: 2025-11-27 10:43:39.606 LabApp] JupyterLab extension loaded from C:\Users\zj1026.stu\OneDrive - UBC\GEM530\.venv\Lib\site-packages\jupyterlab
[I: 2025-11-27 10:43:39.607 LabApp] JupyterLab application directory is C:\Users\zj1026.stu\OneDrive - UBC\GEM530\.venv\share\jupyter\lab
[I: 2025-11-27 10:43:39.607 LabApp] Extension Manager is 'pypi'.
[I: 2025-11-27 10:43:39.988 ServerApp] jupyterlab | extension was successfully loaded.
[I: 2025-11-27 10:43:39.991 ServerApp] notebook | extension was successfully loaded.
[I: 2025-11-27 10:43:39.991 ServerApp] The port 8888 is already in use, trying another port.
[I: 2025-11-27 10:43:39.991 ServerApp] Serving notebooks from local directory: C:\Users\zj1026.stu\OneDrive - UBC\GEM530
[I: 2025-11-27 10:43:39.997 ServerApp] Jupyter Server 2.17.0 is running at:
[I: 2025-11-27 10:43:39.997 ServerApp] http://localhost:8889/tree?token=77bc0564074e7d51e763e3cde883b6123f5cbb1cfef5ad6c
[I: 2025-11-27 10:43:39.997 ServerApp] http://127.0.0.1:8889/tree?token=77bc0564074e7d51e763e3cde883b6123f5cbb1cfef5a

```

- 1) Change the folder path to GEM530, you can try other folder path as well, but you may probably ran into some hardlink problem, which I don't know why...
 - 2) uv sync helps you load those packages from your uploaded pyproject.toml
 - 3) uv run jupyter notebook lets you open your Jupyter notebook.
4. **You can SKIP the first code!** Since you have already loaded them in your environment.

Then everything else should be the same as above.

```

[186]: # try run this if the following import doesn't work / otherwise ask ChatGPT
# commenting out the package you already have saves some time maybe.....
!pip install numpy
!pip install pandas
!pip install geopandas
!pip install branca
!pip install folium
!pip install ipywidgets

#Folium failed to user installation because normal site-packages is not writeable
Requirement already satisfied: branca in c:\users\zj1026.stu\appdata\roaming\python\python311\site-packages (0.8.2)
Requirement already satisfied: jinja2>=3 in c:\users\zj1026.stu\appdata\roaming\python\python311\site-packages (from branca) (3.1.6)
Requirement already satisfied: MarkupSafe>=2.0 in c:\program files\arcgis\pro\bin\python\envs\arcgispro-py3\lib\site-packages (from jinja2>=3->branca) (3.0.2)

import folium
import geopandas as gpd
import pandas as pd
import numpy as np
import ipywidgets as widgets
from ipywidgets import GridBox, Layout
from folium.features import GeoJsonTooltip
from folium.features import CustomIcon
from folium.plugins import MeasureControl
from IPython.display import display, clear_output, HTML
from branca.colormap import LinearColormap

Set up + Load Data

[32]: # Path to shapefile + open
DA = r'C:\Users\zj1026.stu\OneDrive - UBC\FC0R599\Term1Presentation\Output_Data\GVan_DA_Final.shp'
gpdDA = gpd.read_file(DA)
# speed up calculation (from chatGPT):

```