

Data Visualization and Programming Project

Purpose: In the REU you will be gathering data, sharing findings, and working with your mentor to pursue science and engineering tasks. The purpose of this project is to have you meet with other folks in the program and work together on a dataset of your choice to explore, analyze, and visualize this dataset.

This project is open ended but the goals for you are three-fold:

- Practice working with your new team interactively online
- Meet other people in the REU program (be sure to introduce each other)
- Practice sharing updates about work that is in progress to your colleagues
- +1 bonus goal, have fun!

Tomorrow (Friday) afternoon after lunch each team will have ~8-10 minutes to present their team's progress. You can use Google Slides, Powerpoint, Videos, Graphics, Jupyter Notebooks, etc to present your work.

Logistics & Resources:

We will 1h30 this afternoon to get started. Coordinators will be in the room to talk to you to help you get started. At 4pm we'll break for a lecture on Scientific Communication.

Tomorrow you will have the whole morning (until 12.30pm) to work further on your project and slides.

We will also monitor the #bootcamp Slack channel, so feel free to post questions there as well. We **do not** expect you to work on this tonight after hours!

Picking Your Dataset(s): You can use any planetary/space/Earth dataset you wish for this project. We do have some recommendations for you to get started however on datasets that we know of that are accessible. To help guide your pick, try to come up with a question or interest area that you would like to explore. We recommend you pick a dataset you are unfamiliar with for this project. After you pick a dataset and question please raise your hand and chat to one of us.

We suggest presentations to include these slides to get you off the ground running:

- What question/area did we want to explore?
- What did we do to explore this? Where is our data from? Who made it?
- What visualizations did we make to explore/explain what we found?
- What are our next steps and what did we find challenging/rewarding in pursuing this project?

Currently Accessible Datasets:

- Space Weather: OMNI Dataset [see visualization lab and more details within]
- Solar Image Data: Solar Data Observatory image data [see visualization lab and more details within and <https://sdo.gsfc.nasa.gov/data/aiahmi/>]
- Ice Dynamics: github.com/clasp423/data_vis_statistics_geosciences/tree/master/Lab%205 and <https://nsidc.org/data>
- Juno Magnetic Field Data (Jupiter...the planet):

https://github.com/clasp423/data_vis_statistics_geosciences/blob/master/Lab%203/ for more information and <https://pds-ppi.igpp.ucla.edu/search/view/?f=yes&id=pds://PPI/JNO-J-3-FGM-CAL-V1.0>

- MAVEN (Mars) Data: <https://lasp.colorado.edu/maven/sdc/public/>
- Climate Data/Temperature Indicators:
https://github.com/clasp423/data_vis_statistics_geosciences/tree/master/Lab%201
- Parker Solar Probe Magnetic Field Data - contact Sam to get started accessing the data with heliopy
- CSV files from the microcontrollers from yesterday! (Contact Scott)

We are available for any questions regarding these datasets or your programming / visualization / presentation needs.

A final note: All the github links include material we are extremely familiar with, so be sure to explore other visualization and analysis than demonstrated, but feel free to use the data included in the CLaSP 423 labs as it's publicly available.