**Computing for Research**

**Daily Agenda**

1. Colab, data and basic plotting
   1. Layout for the course
      1. Syllabus, arch of course
   2. Mechanics of the course
      1. Colab notebooks, Zoom, Zoom Chat, Google Doc for code
   3. Layout of a Colab Notebook
   4. Mounting to the Drive
   5. Code cells
   6. Markdown cells
      1. Creating an outline
   7. Matplotlib, plotting basics
      1. Single plot (x and y)
      2. Scatter plot (x and y)
      3. Histograms
      4. Subplots and axis objects
   8. Pandas intro (with matplotlib libraries)
      1. Building a dataframe
      2. Selecting columns
      3. Loading a dataframe from a csv
      4. Loading from a website?
      5. %load\_ext google.colab.data\_table
2. Pandas
   1. Seaborn for pandas
   2. Melting to long form
   3. Groupby
   4. Mapping functions
3. Advanced Numpy
   1. Indexing: slicing, specifying elements, boolean indexing
   2. Masked arrays
   3. Linear algebra
4. DASK + Xarray
   1. Switching between data arrays and dataframes
5. RCC Pt. I
6. Git and version control
7. Data Viz and geographic coordinates
   1. Seaborn
   2. Plotly express
   3. Xarray
   4. Geoviews
8. RCC Pt. II: Submitting jobs on Midway
9. Regressions + Python and R working together
   1. SciKit learn
   2. Linear regression
   3. Polynomial regression
   4. “Choosing the best regression model”
   5. Combining R and Python in your practices