

GEOG473/673 – Advanced R Final Project

Due: 5/13/2020 at midnight

We've spent the better part of 7 weeks learning how to utilize advanced R for geospatial data management and mapping. The final project involves you coding in R to demonstrate proficiency with the language. You will have 4 in class time periods to accomplish this task. I will be present to help for all 4 classes.

Specifics

- This represents 20% of your final grade.

Goal: Demonstrate proficiency in R.

Option 1: Choose your own.

So far, either myself or the R packages we've been using have supplied the datasets. It's now time for you to select your own dataset. Some of you are graduate students or aspiring upperclassmen who have plenty of your own data to dive into for an advisor, lab, or project. Some of you have final projects in other classes where R could be used to enhance your workflow you otherwise might've done in Excel or ArcGIS. Here's your chance to knock 2 things off your to-do list with 1 go.

For example:

With a dataset(s) of your choosing, I would want you to show:

- 1) Load the dataset(s) in R
- 2) Quality Control / Quality Assure the data
- 3) Detail your script to explain what's happening and why
- 4) Plot the dataset using ggplot2

These are the 4 main areas we covered with R. I'm not going to be picky about how you go about the above required tasks because this could vary tremendously from goal to goal or dataset to dataset. *As long as you demonstrate proficiency in R, I don't care what you do.*

Submit resulting images and R Script to Canvas before 5/13/2020 at midnight.

Option 2: Compare Temperature Global Temperature Change

Now, I realize that not everyone will have a dataset that they want to play with above. Further, I realize that some of you may prefer specific tasks to complete this project. Here is your option for a final project.

Dataset link from Dr. Pinki Mondal - ftp://ftp.cdc.noaa.gov/Datasets/cpc_global_temp/

- 1) Navigate to Link.
- 2) Download Maximum Temperature Data from 1979 to 2018.
- 3) Average Maximum Temperature data for year 2018 globally. Plot. Add Coastlines.
- 4) Plot difference between 2018 average maximum temperature and 1979 average maximum temperature.
- 5) Select location (anywhere on the globe). Plot a spatial image of 2018 average maximum temperature data for the region your selected location is in. (for example, if you choose Newark, DE, plot the average maximum temperature for 2018 over the Mid-Atlantic).
- 6) For your location, create a density plot using ggplot2 for a year (or years) of data, showing the frequency of particular temperature values.
- 7) From 1979-2018 at that location, create time series of the data. Plot time series. Add regression line to show trend –
(<https://docs.scipy.org/doc/scipy/reference/generated/scipy.stats.linregress.html>)

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