Problems Week 1

Due Monday, October 4, 2021

1. **Statistics of sea surface temperature.** Download the 2021 sea surface temperature data for the Scripps Pier from the SCCOOS web site:
   http://sccoos.org/thredds/catalog/autoss/catalog.html.

   a. Read the temperature data, and produce a line plot of the 2021 temperatures with appropriately labeled axes. What do you observe in this plot?

   b. Compute the mean and standard deviation for the sea surface temperature data. What do these statistics tell you about the temperature in 2021?

   c. Compute an empirical probability density function for sea surface temperature. Does it look like any of the distributions that we discussed in class?

2. **Extending the record.** Now extend your record for the temperature from 2005-2021 and repeat the calculations from the first exercise. (This is a good time to practice using a loop to go through each of the data files.) What do you observe in these results? In what ways are the 2021 results different from the 2005-2021 results? Is 2021 unusual? Is the sharp temperature change in August 2016 unusual?

- *Commit to learning something new.* Everyone starts this class with different expertise, and the class is a great opportunity for you to practice something you haven't learned before. If you've never programmed, then this is your opportunity to learn. If you're an expert in Matlab, this is an opportunity to learn python, and if you're a python expert, this could be a chance to test out Matlab. Or work on version control with github, or develop shell scripting tools, or work on making publication-quality plots instead of hacked together quick plots, or master latex to write up your problem sets. Find an on-line tutorial to get yourself started, or talk to your classmates. (I won't hold you to this, but please set a personal goal.)

Some general requests. Collaboration is fine, provided that what you submit in the end represents your own work. Everyone is here to learn. Following scientific publishing procedure, please identify your collaborators. Please attach your code to your problem set—that way if anything goes awry, I can more easily give you guidance.