README File for Python Project: Radiocarbon Intercomparison.

This txt file will outline all of the confusing python files found in this folder.

The main file used for this project is:

**heidelberg\_intercomparison.py**

* This file does all the data analysis and creates the plots that are currently going to go into the paper.

**output\_10000.txt**

**output\_10000\_2.txt**

* Both of the files above contain output from running the "heidelberg\_intercomparison.py" code, this is data that will be used in the publication because the n was changed to n = 10,000, while it was kept at n = 10 for testing.

What are the other files?

BaringHeadData.py – this file is just an initial comparison of my curve fitting program versus the CCGCRV curve fitting program. This was an extremely early file, just when I was getting the curve fitting working. This file is essentially obsolete, but I will not delete it yet. It runs fine.

BarrowCO2Data.py – this file uses some data that I pulled from NOAA website to recreate the curve fit example from the CCGCRV site. If you run the code, you will see that it directly fits CO2 over time, like the website linked at the top. It also compares my code to the Miller CCGCRV code. Runs fine.

BHD\_v\_CGO\_siteintercomparison.py – this file compares data from Baring Head and Cape Grim, both from GNS measurements. It seems there is no statistically significant difference between the sites.

Code runs fine.

FlaskvNaOH\_2 – this file tests the difference between flask data and NaOH data between 2012 and 2018. As the last commented line in the file reports, there is no observed difference between the two datasets at 95% confidence. The data also does not appear to be impacted by the predominant wind direction during sampling, or the time that the sample was waiting in the flask before extraction. This latter point is also re-tested in the file Heidelberg\_intercomparison.py.

Heidelberg\_intercomparison\_extra\_plots.py - this file was created before the Heidelberg\_intercomparison.py file was significantly altered, therefore many of the variable names are old / won’t work. Don’t run this file. I should delete it, but will wait until we finalize the plots that will go into the paper.

Heidelberg\_intercomparison\_OLD.py – this is an earlier version of the analysis in which I broke up the time into 7 or 8 chunks. This was before we made modifications / different directions driven by what Jocelyn and I discussed in our meetings.

My\_functions.py – this file is a database of all the various functions I wrote. At one point, I would reference the “my\_functions.py” and import then into the “Heidelberg\_intercomparison.py”. Then I decided it would be worse for future users to need two separate files in order to run the Heidelberg analysis.

Pokemon.py – this file has some examples of how to do data science using Pandas that I got from Youtube.

Python\_tips.py – similar to above, this just contains some python hacks that I needed a place to store.

Rrl\_vs\_llnl\_intercomparison.py – this file computes the final calculated offset between SIO/LLNL and the GNS Rafter Radiocarbon Lab. This was a convoluded and confusing process but we figured it out in the end, as further described in my accompany PowerPoint presentation “Radiocarbon Intercomparison Figure Summary”.