May 2023

Here are a few hints to get started on your mooring based final project.

**Ice Tethered Profiler: Noah (Barton), Jesse, Sophie**

Data file: [itp121\_data.mat](https://canvas.ucsd.edu/courses/46436/files/9407415?wrap=1)

Data information: <https://www2.whoi.edu/site/itp/data/active-systems/itp121/>

Fill in the metadata for the ice tethered profiler to the best of your knowledge using online resources above:

**Experiment:** TP121 was deployed on a 2.3 m ice floe in the Beaufort Sea on September 20, 2020 at 77° 22.3 N, 137° 16.4 W as part of the [Beaufort Gyre Observing System (BGOS)](http://www.whoi.edu/beaufortgyre)during the JOIS 2020 cruise on the CCGS Louis S. St. Laurent.

**Principal Investigator:**

**Institution:** WHOI

**Instruments:** Ice tethered profiler (details unknown), US Army Cold Regions Research and Engineering Laboratory (CRREL) Seasonal Ice Mass Balance Buoy 3 (details unknown)

**Drifters initial date:** 20 SEP 2020

**Drifters final date:**  currently operating

**Depth Range:** 0-750 meters

**Units:** TIME = Matlab serial time

PROFILE\_NUM = Profile ID

LAT = latitude (degrees N)

LON = longitude (degrees W)

TEMPERATURE = In situ temperature (degrees C)

SALINITY = Practical salinity (PSU)

PRES = pressure (dbar)

May 2023

1. Load the ice tethered profiler data provided which contains the positions (i.e., longitudes and latitudes) and water properties measurements of each profile
2. Using Matlab’s geoplot and geoscatter functions, plot in different colors the locations of the profiles on the map. To the best of your ability identify each profile location with a legend (using time to color the points) and mark the beginning and end of the trajectory.
3. Calculate the absolute salinity in (g/kg) and conservative temperature (°C) for each profile and save it in a new .mat file (you will use it for the rest of the project).
4. Plot the absolute salinity of each profile as function of depth (or time if you want to explore!).
5. Plot the conservative temperature of each profile as function of depth (or time if you want to explore!).
6. Choose two profiles that are separated in time and/or space (maybe one in summer and one in winter). Plot the two absolute salinity and two conservative temperature profiles together. Based on the plots, describe the salinity and temperature differences. To the best of you knowledge, explain the reason of the main differences.