**Procedure**

In groups of two, explore data collected in the Irminger Sea (North Atlantic Ocean) as part of the Ocean Observatories Initiative (OOI). Go to <https://datalab.marine.rutgers.edu/explorations/2019/seasonal.php?level=exploration>

**Learning Objectives**

By the end of this exercise, you should be able to

* Read time series plots and explain relationships between different variables
* Describe the seasonal cycle of stratification in the Irminger Sea

**Orientation/Observation**

First, orient yourself to the data. The Background information at the bottom of the page is also helpful.

1. What oceanic or atmospheric variables can you investigate in these graphs? What are their units?
2. The x-axis represents the time periods in which the data was collected. When was the data first collected and when was the data last collected? Give these answers in month and year.
3. How was the temperature data collected? What do the different colors represent?
4. At which depth is there a larger seasonal range in temperatures (i.e. difference between winter and summer temp), 0 m or 1000 m?
5. What is the overall range of wind speeds at this site? In what season is windspeed typically highest? In what season is it typically low?
6. What is the overall range of solar irradiance at this site? In what season is irradiance typically high? In what season is it typically low?

**Interpretation**

1. What does it mean, in terms of ocean stratification, when the temperature values at all depths on a given day are approximately the same (i.e. all the colored lines are squished together)? In what season does this happen?
2. What does it mean, in terms of ocean stratification, when the temperature values are quite different on a given day (i.e. the colored lines are spaced far apart)? In what season does this happen?
3. What relationship do you observe between wind speed and water column stratification? Consider seasonality. Is the relationship direct or is there a lag time?
4. What relationship do you observe between solar irradiance and water column stratification? Consider seasonality. Is the relationship direct or is there a lag time?

From your observations and interpretations above, summarize the seasonal cycle in stratification in the Irminger Sea and what drives that cycle. A sketch or a conceptual diagram might help explain your points.

What questions do you still have about this data or about stratification dynamics in the Irminger Sea?