Chlorophyll-a in Temperate Zones of the Ocean

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Part 1 - Introduction

1. What are phytoplankton and why are they important?
2. What is chlorophyll and why is it used to measure phytoplankton abundance?
3. Answer the following questions using this [map of chlorophyll in the ocean](https://www.nnvl.noaa.gov/view/globaldata.html#ALGE).
   1. Which is more productive: Coastal areas or open oceans?
   2. What season is the northern hemisphere most productive?

# Part 2 – OOI Data Lab

Navigate to the [OOI Chlorophyll-a in Temperate Zones of the Ocean data lab](https://datalab.marine.rutgers.edu/explorations/productivity/activity4.php?level=application). Spend a few minutes orientating yourself with the graphs.

1. What three oceanic areas are shown on this graph?
2. Describe in more detail where these three data arrays are located (Hint: look at the Background Information section at the bottom of the page).
3. How was chlorophyll-a measured?
4. What unit is on the y-axis?
5. What unit is on the x-axis?
6. What is the range (approximate minimum and maximum) for each location?
   1. North Pacific:
   2. North Atlantic:
   3. South Atlantic:
7. What months do the minimum and maximums occur for each location?
   1. North Pacific:
   2. North Atlantic:
   3. South Atlantic:
8. Which location had the highest chlorophyll-a concentrations? Brainstorm some reasons why.

# Part 3 – Tying it Together

1. Use this [Global Solar Alas](https://globalsolaratlas.info/map) to assess solar radiation near the three sample locations. Which location has the highest solar radiation? Which is the lowest?

*Note that this map shows solar radiation on land, but you can use it as a general guideline since the oceanic data arrays are near the coast.*

1. Which this new information, do you think sunlight accounts for the pattern of chlorophyll-a seen in the data?
2. Why might the North Pacific coast be higher in nutrients than the North Atlantic or South Atlantic coasts?