SCIENCE BY THE SEA®

INSPIRING A SENSE OF WONDER IN THE WORLD AROUND US

Finding Microbe Needles in a Haystack of Oceans

QUESTION: How do scientists locate specific types of ocean microbes when the ocean is so big?

HYPOTHESIS: _____

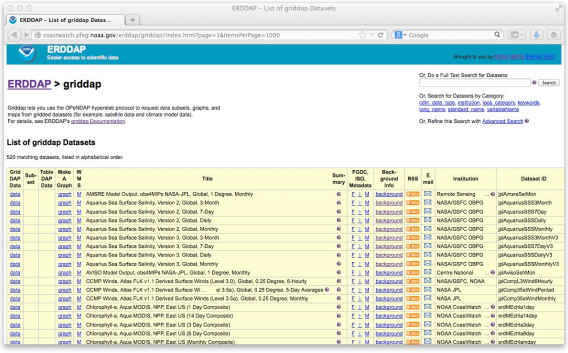
_____

_____

TEST YOUR HYPOTHESIS:

Download a NOAA Coast Watch Sea Surface Temperature (SST) Map for the area of interest. (See *Coastwatch SST Map Directions Handout*.)

1. Go to the Coastwatch webpage to locate the map area you want to use in this activity: coastwatch.pfeg.noaa.gov/erddap/griddap/index.html?page=1&itemsPerPage=1000 (Screenshot)

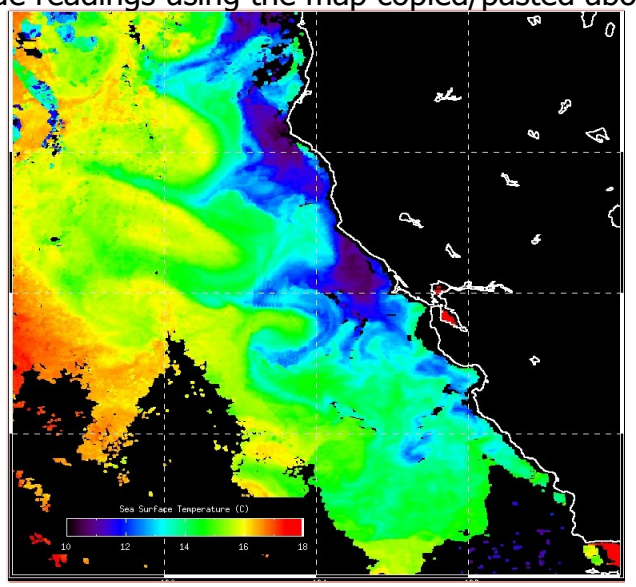


2. Scroll through the list to locate the region and data set you will use to generate your map. **Locate and Select**: *SST, POES AVHRR, LAC, West US, Day and Night (1 Day Composite)* ***GRAPH*** to review the scale and data being projected in the image. Copy and paste the image below:

Helpful Hints:

- Synecococcus: Low nutrient environments
- Prochlorococcus: Low nutrient environments
- Diatoms: High nutrients, including iron (released through volcanic activity, erosion from land, and upwelling - especially along wide continental shelfs

ANALYZE YOUR RESULTS: Use your knowledge of SST and Satellite Mapping to help you identify the best locations to find various microbial organisms on the map below. (Correlate the latitude and longitude readings using the map copied/pasted above.)



Use "Helpful Hint" Cards with the SST Map(s) to determine the most likely areas where each species of phytoplankton would be found. Place markers for each species on the map and note the latitude and longitude coordinates where the ship should transit for investigation. Record your data in the table:

Microbial Organism	Latitude	Longitude
Synecococcus		
Prochlorococcus		
Diatoms		

DRAW CONCLUSIONS: (Readdress the lab question and your hypothesis, then describe your findings. Key terms/concepts: remote sensing, satellites, Sea Surface Temperature (SST), microbial organisms, biogeochemical cycles)