



NAME: _____

SOS Explorer – Inquiry and Literacy Practice:

Watch the dataset: *Biosphere: Marine Chlorophyll Concentration and Land Vegetation* on SOS Explorer, rotate the sphere around and zoom in as necessary, then, fill out the first column below. Next, read the description on page 2 and fill out the second column. Using your “Still want to know” entries, plan a research investigation of a question you still have about the information in the dataset.

Before reading the description...

After reading the description...

What I already KNOW	What I STILL WANT to KNOW
What I WANT to KNOW	Words I don't understand (to look up or ask the teacher)

I plan to investigate the following question:

How I plan to investigate this question:



Biosphere: Marine Chlorophyll Concentration and Land Vegetation

The term biosphere refers to the regions of the surface, atmosphere, and hydrosphere of the earth occupied by living organisms. This dataset shows quantity of marine and land-based plant-life as it changes throughout the seasons of the year.

"The purpose of the Sea-viewing Wide Field-of-view Sensor (SeaWiFS) Project is to provide quantitative data on global, ocean bio-optical, properties to the Earth science community. Subtle changes in ocean color signify various types and quantities of marine phytoplankton (microscopic marine plants), the knowledge of which has both scientific and practical applications." - SeaWiFS website. The SeaWiFS Project collects, processes, and distributes data received from an ocean color sensor orbiting the Earth on a satellite. The orbiting sensor can view every square kilometer of cloud-free ocean every 48 hours, providing global information on the oceans. The satellite observations can be used to derive the concentration of microscopic marine plants, phytoplankton, based on the color of the ocean.

The oceans are shaded based on the chlorophyll (green pigment in plants) concentration. Greener water signifies an abundance of phytoplankton, while bluer water indicates less. Red patches in the ocean often occur at the mouth of a major river and indicate an abundance of life caused by run-off containing higher concentrations of fertilizers and other nutrients that find their way into the water source. The lands are shaded to depict the vegetation. Green areas have abundant vegetation, yellow areas have little vegetation, and brown areas have no vegetation. Black patches in the data indicate places where data is not able to be taken. Near the poles this happens because of lack of sunlight during the winter season, whereas near the continents, like off the coast of Africa, it indicates lack of data due to particles in the atmosphere that are blocking sunlight like smoke or dust.

Knowing where plant-life in both the ocean and on land is abundant is important to scientists because plants remove carbon from the atmosphere. The ability to continuously monitor biological activity with SeaWiFS helps scientists to understand the role of the ocean in the global carbon cycle, as well as other interactions between the ocean and the atmosphere.

Notable Features:

- Green areas on land indicate abundant vegetation, like the Amazon Rain Forest, whereas brown or yellow areas lack vegetation, like the Sahara Desert.
- Green areas in the ocean indicate an abundance of chlorophyll while blue/purple water indicates a lack of chlorophyll.
- Red patch in the ocean often occurs at the mouth of a major river and can be an over-abundance of chlorophyll as a result of fertilizer run-off.
- Black patches indicate a lack of data often due to a blocking of or lack of sunlight.