My NASA Data - Interactive Models Global Phytoplankton Distribution

Grade Band

- 3-5
- 6-8
- 9-12

Time

• 30 minutes

Directions

- 1. Using an internet accessible device, students open the link to the <u>Global Phytoplankton</u> <u>Distribution Interactive Model</u> to begin their exploration of this phenomenon.
- 2. Distribute the <u>Global Phytoplankton Distribution Interactive Model Student Sheet</u> (optional). Have students navigate on their own through the interactive model to answer the questions and complete the activities on their student sheet.

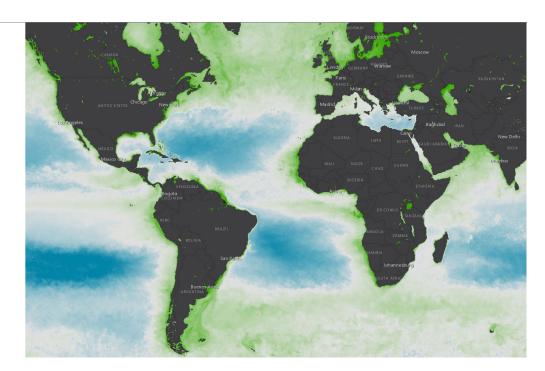
Chlorophyll Concentration

Chlorophyll Concentration (milligrams per cubic meter)
0.01 0.15 20

The map to the right displays average chlorophyll concentration data for the year 2018. Chlorophyll concentration represents the milligrams of chlorophyll per cubic meter of seawater.

On the map, green areas represent higher chlorophyll concentration. This indicates locations were phytoplankton are present. Blue areas represent areas with low chlorophyll concentration, or areas where very little phytoplankton are present.

- Click the buttons below to view areas of high and low chlorophyll concentration
- Analyze the areas of high and low chlorophyll
 concentration





Teacher Note

At the bottom of the ocean's food chain, phytoplankton account for roughly half of the net photosynthesis on Earth. Their photosynthesis consumes carbon dioxide and plays a key role in transferring carbon from the atmosphere to the ocean. Unlike the plant ecosystems on land, the amount of phytoplankton in the ocean is always followed closely by the abundance of organisms that eat phytoplankton, creating a perpetual dance between predators and prey.

To learn more, visit:

• The Phytoplankton Distribution Phenomena page for background information

Teachers who are interested in receiving the answer key, please complete the <u>Teacher Key Request</u> and <u>Verification Form</u>. We verify that requestors are teachers prior to sending access to the answer keys as we've had many students try to pass as teachers to gain access.

NGSS Three Dimensional Learning

NGSS Disciplinary Core Ideas

- LS2B: Cycles of Matter and Energy Transfer in Ecosystems
- ESS2A: Earth Materials and Systems

Crosscutting Concepts

Patterns

• Systems and System Models

Science and Engineering Practices

- Developing and Using Models
- Analyzing and Interpreting Data
- Constructing Explanations and Designing Solutions

Learning Objectives

- Students will analyze and describe the distribution of phytoplankton over time and space.
- Students will identify patterns in chlorophyll concentration data to formulate their explanations of phytoplankton distribution.

Essential Questions

- How does the concentration of phytoplankton change between coastal waters and open ocean?
- What patterns do you observe in phytoplankton concentration across the low, middle, and high latitudes?

Google Docs Interactive Files

Student Sheet