My NASA Data - Interactive Models

Sea Ice and the Earth System StoryMap

Grade Band

- 6-8
- 9-12

Time

- 50 minutes

Directions

1. Using an internet accessible device, students open the link to the Sea Ice and the Earth System StoryMap Lesson to begin their exploration of this phenomenon.
2. Distribute the Sea Ice and the Earth System StoryMap Student Sheet. Have students navigate on their own through the Engage, Explore, Explain, Elaborate, and Evaluate tabs of the StoryMap to answer the questions and complete the activities on their student sheet.

Teacher Note

Sea ice is frozen seawater that floats on the ocean surface in both the Arctic and the Antarctic. This floating ice has a profound influence on the polar environment, influencing ocean circulation, weather, and regional climate. Sea ice is constantly changing with periods of growth and melting throughout the year. The amount of sea ice in the Arctic increases during the winter months, usually starting in September, and decreases during the summer months, usually starting in March.

To learn more, visit:

- The Snow and Ice Extent Phenomena page for background information

Teachers who are interested in receiving the answer key, please complete the Teacher Key Request and Verification Form. 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

- ESS2A: Earth Materials and Systems
- ESS3C: Human Impacts on Earth Systems

Crosscutting Concepts

- Systems and System Models
- Stability and Change

Science and Engineering Practices

- Developing and Using Models
- Analyzing and Interpreting Data

Learning Objectives

- Students will analyze maps and time series data to understand changes.
- Students will construct data-based explanations and conclusions.
- Students will compare multiple variables of the Earth System as they analyze global changes in the cryosphere.
- Students will consider the impact of environmental changes on wildlife.

Essential Questions

1. How do seasons influence changes in sea ice extent?
2. How does sea ice melt influence the Arctic ecosystem?
3. What effect does changing air temperatures have on observed trends in sea ice extent?
4. How does sea ice melt change ocean circulation patterns?
5. What is albedo and how does it affect the cryosphere?

Document Resources

- Student Sheets

Google Docs Interactive Files

Student Sheet (All E's)

Google Slide interactive Files

Sea Ice and the Earth System Concept Map