

Viewing Sea Ice with GINA

Levels V-VI



Grades 9-12

Overview:

Students will use the University of Alaska's Web-based Geographic Information Network of Alaska (GINA) to study sea ice in the Bering Sea and use the data to plan a hypothetical winter trip.

Objectives:

The student will:

- use the Internet to access GINA;
- navigate the GINA site;
- study satellite images of sea ice and wind conditions in the Bering Sea;
- use the data to plan for a winter trip of their own making; and
- make a log of their "trip" using latitude and longitude to mark their travels.

Materials:

- STUDENT WORKSHEET: "Viewing Sea Ice with GINA"
- Computer with Internet access

GLEs Addressed:

Science

- [9] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [10-11] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, analyzing data, developing models, inferring, and communicating.
- [11] SC3.2 The student demonstrates an understanding that all organisms are linked to each other and their physical environments through the transfer and transformation of matter and energy by analyzing the potential impacts of changes (e.g., climate change, habitat loss/gain, cataclysms, human activities) within an ecosystem.

Activity Procedure:

Explain that students will use GINA to study sea ice in the Bering Sea and plan an imaginary winter trip. They will need to chart their trip by recording which GINA image they select and use latitude and longitude locations to mark their route.

Distribute the STUDENT WORKSHEET: "Viewing Sea Ice with GINA" and ask students to go online to complete the worksheets.

Answers:

Answers will vary.



Name: _____

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Student Worksheet (page 1 of 2)

Directions: Use the GINA Web site to plan a winter trip on the sea ice from your village.

Follow the directions below to enter the GINA Web site and select a day for a winter trip:

Step 1: Navigate to the GINA Web site at: www.gina.alaska.edu.

Step 2: Double-click on **SwathViewer** on the upper right.

Step 3: Click on **magnifying glass** at the upper left and center it over Alaska.

Step 4: Click on Alaska to enlarge it so that the Bering Strait, including your village, fills the screen (the ruler at the top left should read 1 km).

Step 5: Under the **Linework** folder listed on the left side of the page, click on the **Misc** folder to open a second box below. Scroll down to select **US Cities**.

Step 6: Under the **Images** folder on the upper left, scroll down to select **Terra-1/MODIS**. A second box will open below. Select the folder for the current year.

Step 7: Click on several dates and times to select a good day for a winter trip.

1. Record the date and time (GMT) selected: _____

2. Explain why this date and time would be good for a winter trip:

3. Open **Lineworks** and click on **Ocean Wind** to open a second box below. Click on the year and then the day the trip is planned to see if there are any wind conditions recorded in the area. It may help to zoom out using the magnifying glass with the - sign above the map to see any wind direction arrows for the date selected. Use the legend at the lower right of the screen to determine wind speed. Record any wind conditions below:

Name: _____

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Student Worksheet (page 2 of 2)



- Use the blue back arrow to return to the day selected under Terra-1/MODIS. Plan a trip by recording the starting latitude and longitude, and the latitude and longitude of each point where you change direction. Plan the whole trip, ending up at the point where you started. Record the latitudes and longitudes below and describe the route and what might be happening at each location as if it were a travel journal.

Latitude and Longitude	What is happening now?
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

- Use the lines below to answer the following question based on personal experience:
Have any changes in Alaska's climate affected hunting in rural villages along the Bering Sea? If so, how? If not, why not?
