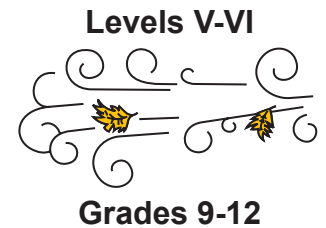


Impacts of Arctic Climate Change



Overview:

Students explore Unit 8 “Climate Change” of the *Global Climate* Interactive DVD and the introduction to the *Impacts of a Warming Arctic*.

Objectives:

The student will:

- identify impacts of arctic climate change; and
- discuss the negative and positive impacts of a warming arctic.

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.
- [10-11] SD3.1 The student demonstrates an understanding of cycles influenced by energy from the sun and by Earth's position and motion in our solar system by describing causes, effects, preventions, and mitigations of human impact on climate.

Materials:

- ACIA. (2004). *Impacts of a Warming Arctic*. Canada: Cambridge University Press.
- *Global Climate* Interactive DVD
- OVERHEAD: “Cartoon”
- STUDENT WORKSHEET: “Impacts of Arctic Climate Change”
- STUDENT WORKSHEET: “Climate Change Cartoon”

Vocabulary:

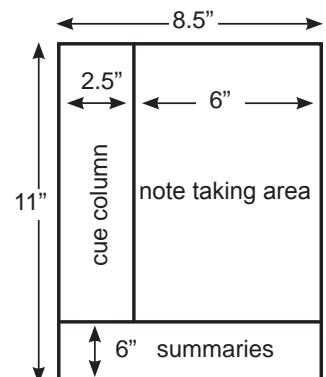
climate - the average weather conditions of a particular place or region over a period of years

arctic - of, relating to, or suitable for use at the north pole or the region around it (arctic waters, arctic animals, arctic clothing)

impact - to have a strong effect on (Volcanic ash impacted weather conditions worldwide.)

Activity Procedure:

1. If students are strong readers, ask them to read pages 2-20 in *Impacts of a Warming Arctic*. To help students organize their notes, ask them to draw lines dividing their paper into three sections as shown in the diagram. Instruct students to write their notes in the box on the right, then pull out main ideas, key points, and statistics and write them on the left. In the bottom section, students should summarize their main ideas into one or two paragraphs.
2. As a class, or in small groups, explore unit 8 of the *Global Climate* Interactive DVD.



3. Distribute the STUDENT WORKSHEET: "Impacts of Arctic Climate Change." After students have completed the worksheet, discuss student answers to the last three questions.

Critical Thinking Question: Debate Method. Stage a classroom debate on the last question (#6) on the student worksheet: Are there any benefits to a warming Arctic? Divide the class into two teams. Provide each team with approximately 5 minutes to discuss the argument they would like to present to prove their side of the issue. Give each student a chance to speak, taking turns from side to side.

4. Display OVERHEAD: "Cartoon" and discuss how the cartoons depicted represent effects of global climate change on Earth and society. Distribute STUDENT WORKSHEET: "Climate Change Cartoon" and instruct students to complete the worksheet by picking a climate change impact and then illustrating and coloring a cartoon on their chosen impact.

Teacher's Note: Additional cartoons can be found on the Internet at: <http://edugreen.teri.res.in/play/cartoon/cartoon.htm>.

Answers:

STUDENT WORKSHEET: "Impacts of Arctic Climate Change"

1. B, 12°F
2. C, 10-15%
3. C, 23 feet
4. As sea levels rise, more flooding and erosion will occur along the coast, forcing people to relocate further inland or to higher ground.
5. Melting permafrost will cause damage to buildings, trees, and roads, resulting in damage to human infrastructure and the health of forests.
6. Answers will vary.

STUDENT WORKSHEET: "Climate Change Cartoon"

Answers will vary. The cartoon should illustrate a climate change impact and be explained.

Name: _____

Impacts of Arctic Climate Change Student Worksheet

Levels V-VI



Directions: Use Unit 8 "Climate Change," of the *Global Climate* Interactive DVD to answer the following questions.

1. What is the projected rise in temperature by 2100?
A. 10°F B. 12°F C. 12°C D. 2°C

2. How much thinner is sea ice now than it was 30 years ago?
A. 0-5% B. 5-10% C. 10-15% D. 15-20%

3. If the Greenland Ice Sheet melts completely, how much will sea levels rise?
A. 13 feet B. 17 feet C. 23 feet D. 27 feet

4. How will rising sea levels affect coastal communities?

5. How will permafrost melting cause problems to the environment and Arctic society?

6. Are there any benefits to a warming Arctic? Explain.

Name: _____

Climate Change Cartoon

Student Worksheet

Levels V-VI



Directions: Pick a climate change impact and draw a cartoon to illustrate the impact in the space below. At the bottom of the page, explain the cartoon.
