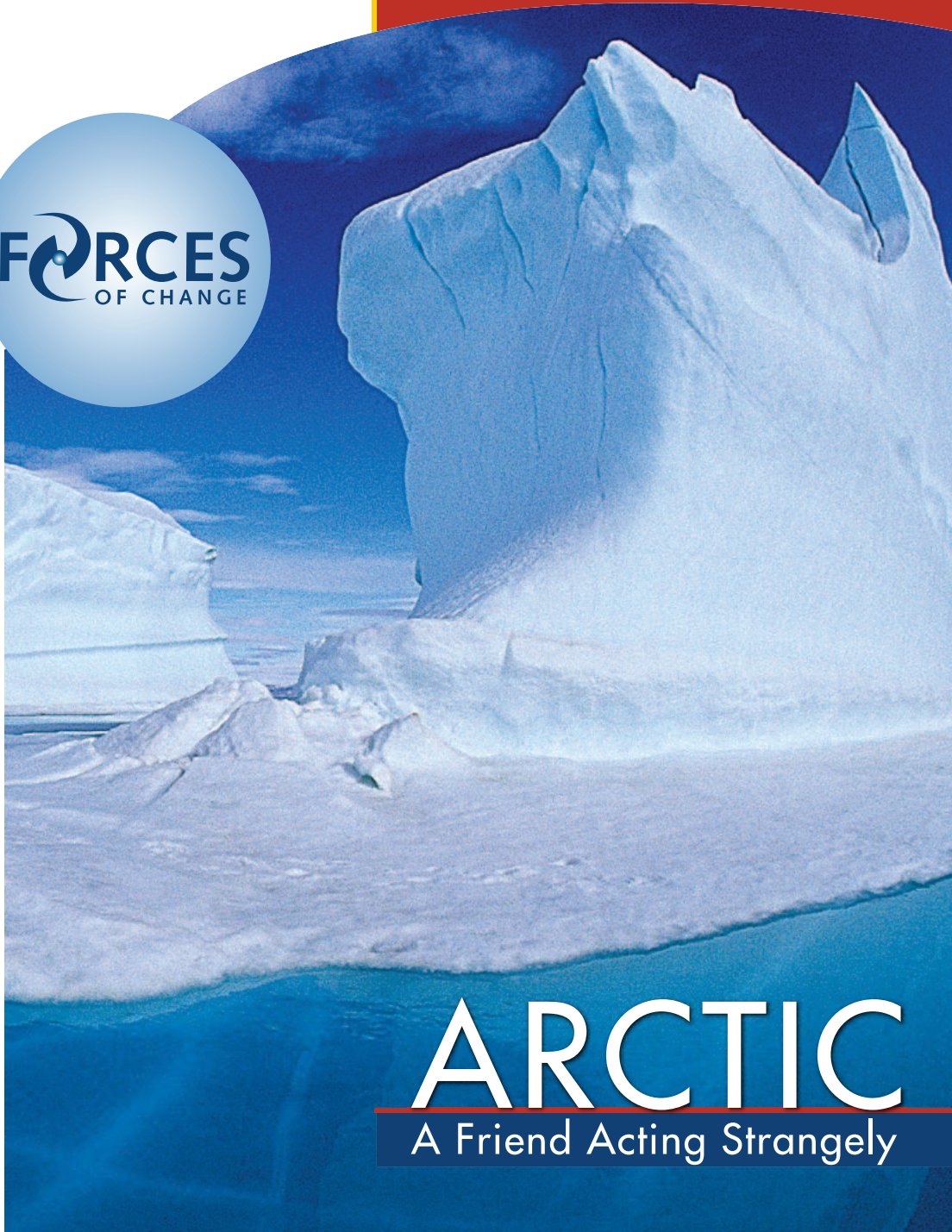


Activity 6

Ride the Arctic Climate Rollercoaster



ARCTIC

A Friend Acting Strangely

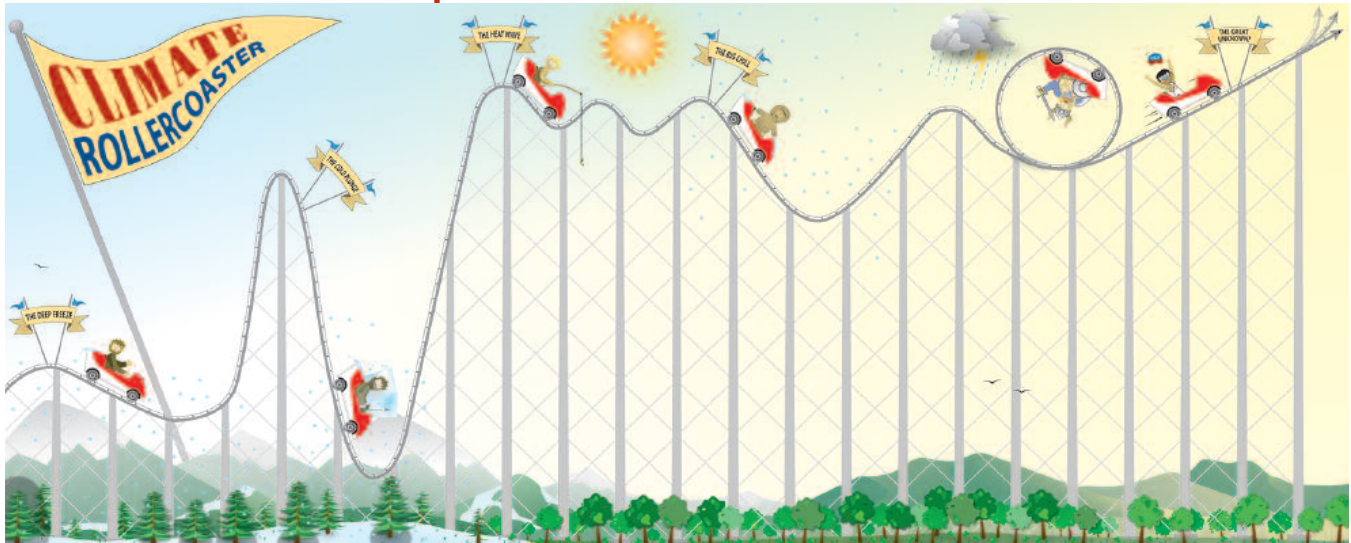


Smithsonian
National Museum of Natural History

ACTIVITY 6

RIDE THE ARCTIC CLIMATE ROLLERCOASTER

CLIMATE CHANGE IN THE ARCTIC SINCE THE ICE AGE



Graphic by The M Factory © Smithsonian Institution

OVERVIEW

Students use a computer interactive to explore what clues scientists have used to determine changes in the Arctic's climate and cultures since the end of the last Ice Age.

SUGGESTED GRADE LEVEL

6 – 8

ALIGNMENT WITH NATIONAL STANDARDS

National Science Education Standards

- Abilities necessary to do scientific inquiry
- Regulation and behavior
- Populations and ecosystems
- Structure of the earth system
- Earth's history
- Understandings about science and technology
- Populations, resources and environments
- Nature of science

ESTIMATED TIME

- Two 45-50 minute class periods

MATERIALS

- Transparency of *fig.6.1*
- Activity Sheet I
- Climate Roller Coaster Interactive (online at http://forces.si.edu/arctic/02_05_00.html) or available on CD-ROM. To request it on CD-ROM, email starrss@si.edu.

ACTIVITY 6

OBJECTIVES

Students will be able to:

- 1 > Identify three types of evidence scientists have used to document changes in the Arctic's climate.
- 2 > Assemble and analyze data from a research source.

BACKGROUND

The computer interactive, "The Arctic Climate Roller Coaster," explores changes in Arctic climate and cultures. People have lived in the Arctic for at least 30,000 years. During that time the Arctic's climate has shifted back and forth between colder and warmer periods. Some shifts were small and gradual. Others were sudden and dramatic. The four periods featured in the interactive have taken place since the end of the last Ice Age. They are as follows:

Cold Snap ... 12,800 to 11,500 years ago: The climate suddenly switches and Britain becomes like Alaska about 12,800 years ago. In just a few decades, Earth returned to nearly ice age conditions. About 1,300 years later, this cold period ended just as abruptly as it began.

Heat Wave ... 9,000 to 4,000 years ago: The climate warmed. Large ice sheets that had covered Scandinavia and North America melted away. New animals and plants populated ice-freed regions. And people followed them. In North America, Indian cultures moved north, and Eskimo cultures migrated from Asia.

Colder Can Be Better ... 2,500 to 1,500 years ago: The Arctic took a significant step colder—conditions that were disastrous for some Arctic groups but not all. Paleo-Eskimos, known as the Dorset, actually prospered and expanded. Why the difference? The Dorset culture originated from the earlier Pre-Dorset, a culture that was already well adapted to rugged Arctic conditions.

East Meets West ... 1,200 to 800 years ago: What is known as the Medieval Warm Period spurred two great migrations. The Vikings, or Norse, expanded from Scandinavia west across the Atlantic Ocean. And the Thule, ancestors of modern Eskimos, worked their way east across the Canadian Arctic. Both cultures eventually settled in Greenland. But when the cold returned, they encountered very different fates.

ACTIVITY 6

PROCEDURE

- 1 > Assign small groups of students one of the four climate periods featured in the Climate Roller Coaster interactive.
 - a. Cold Snap
 - b. Heat Wave
 - c. Colder Can Be Better
 - d. East Meets West
- 2 > Show students a transparency of *fig.6.1*. The graph shows climate changes during the past 20,000 years. Note that the climate has warmed and cooled several times. Also note that some of these changes have been quite sudden.
- 3 > Tell students that each group is a team of scientists. Their task is to find evidence of changes in the climate and how people responded to those changes. Each team is responsible for coming back with three pieces of evidence to share with the other teams. Evidence might be geological, e.g. plant or animal fossils, an ice core, sediment layers, or archeological, e.g. remains of houses, spear points, pieces of fiber, artwork.
- 4 > Students record their findings on **Activity Sheet I**.

ASSESSMENT

Ask students to prepare short presentations to share their findings with their classmates, explaining what they found and what it means.

RESOURCES

<http://www.ncdc.noaa.gov/paleo/icecore/greenland/gisp/gisp.html>
<http://www.mnh.si.edu/vikings/>

EXTENSION

Students create a time capsule to be opened a thousand years from now. What would they put into it as clues about the climate where they live? Items might include bones from animals, flowers, photos of where they live, items of clothing, etc.

ACTIVITY 6 > ARCTIC CLIMATE ROLLER COASTER > ACTIVITY SHEET I

Student Name _____

What climate period did your team cover? _____

Was it a cold or warm period? _____

	What did you find?	Where did you find it?	What did it tell you?
Evidence #1			
Evidence #2			
Evidence #3			

ACTIVITY 6 > **TEACHER REFERENCES**

Teacher Reference #1: Fig. 6.1 (GISP curve)

