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**SYNOPSIS:**

Imagine the Ice Age – a cold and desolate time when one third of the earth was buried by massive sheets of ice and shaped much of the land we live on today. Remains of those ice sheets are known today as glaciers. Dynamic and powerful, they continue to change our globe today.

In this program, see how glaciers grow, move, and shape our lands. Accompany scientists as they study clues frozen in a modern day glacier, clues that could help them predict when and how glaciers may change the face of the world again.

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**CURRICULUM UNITS:**

Climatology  
Earth Science  
General Science  
Geography  
Geology

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**CAREER OPPORTUNITIES:**

Cartographer  
Climatologist  
Ecologist  
Environmental Scientist  
Geographer  
Geologist  
Geophysicist  
Glaciologist  
Meteorologist  
Park Service  
Surveyor

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**PROGRAM OVERVIEW:**

Using clues left during the last ice age, this program examines Glaciers, massive walls of ice that flow like rivers. Graphics show how the frozen conditions that led to the formation of glaciers was a result of the earth's position to the sun about 150,000 years ago.

Since cold conditions continued through summers, not all of the winter's snow melts and after thousands of years two enormous glaciers covered North America. These glaciers eventually formed into one massive piece of ice that stretched from the Atlantic to the Pacific. Today's "ice rivers" are remnants of this massive glacier.

The next ice age will not occur for thousands of years, but will surely come. Ice Age conditions are cyclical. Today's glaciers are clues to the past and reminders that the earth is continually changing.

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**ISSUES AND CRITICAL THINKING:**

1. After showing the program, ask students to respond to the following questions:

- Why do changes in the earth's orbit effect temperatures?
- What are some clues that glaciers once covered North America?
- How does a glacier flow?
- How can scientists tell where a glacier started?
- Will there be another ice age in the future?

2. Have students research how far the glaciers reached during the last ice age. Then, providing students with a map of North America and colored markers, ask them to draw the glacial boundaries at the peak of the last ice age. Was your area covered with glacial ice? Which areas are not covered? (Hint: Some east-west rivers, particularly in the eastern part of North America, mark the boundaries of the last glaciers.)

3. Have students research the origins of the Great Lakes and the Finger Lakes.

4. Draw the shape of the earth's orbit around the sun, which created icy conditions on earth.

5. Have students research where glaciers exist today. Are the glaciers advancing or retreating? What is the relationship between icebergs and glaciers?

6. Provide students with a world map, and ask them why there is no evidence of glacial activity in the southern hemisphere.

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**GLOSSARY:**

**AXIS-** An imaginary line running through the center of the earth between the north and south poles.

**CREVASSE-** A deep crack or cleft in a glacier.

**FIRN-** Darkened, horizontal bands of compressed snow and dust within a glacier that separate the older snow of a previous year from the newer, fresher snowfall of the next.

**GLACIER-** An enormous mass of ice, formed by compacting snow, that moves, sliding slowly under its own weight like a frozen river.

**GLACIOLOGIST-** A scientist who specializes in the study of glaciers.

**HEMISPHERE-** Half of the earth is divided by the equator (northern and southern hemisphere) or the meridian (eastern and western).

**ICE AGE-** A very long period of time during which astronomical and climatical conditions lead to the formation of glaciers.

**JUNEAU ICEFIELD-** An area high in the mountains near Juneau, Alaska where snow and ice accumulate and compact to form several glaciers, including the Mendenhall Glacier.

**MENDENHALL GLACIER-** Alaskan glacier that originated at the Juneau Icefield and has flowed to within a few miles of the Alaskan capitol.

**ORBIT-** The path an object takes as it revolves around another object.

**PROPERTIES-** Characteristics.

**TERMINAL MORaine-** mounded deposits, left at the tip of a glacier when it retreats, which are made of the gravel, rock, clay, and other debris that a glacier has carried and pushed ahead of its advance.

## The Wonders of Earth Science



K4514DVD

# EARTH SCIENCE: GLACIERS CLUES TO OUR PAST



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