
SYNOPSIS:

Antarctica is one of Earth's most interesting places. It is the driest, iciest, highest, windiest, and coldest continent. It is far removed from population centers and remains pure and unspoiled. Because of this, it is a perfect natural laboratory for scientific research. Protected under the terms of the Antarctic Treaty, this last frontier belongs to the world.

In this program, students will find out why this frozen land is so interesting to scientists and what they do to uncover its secrets. We look at Antarctica's geologic history, climate, and wildlife. We also discover what it takes for researchers to survive in this wilderness of ice and snow.

CURRICULUM UNITS:

Biology
Cartography
Ecology
Environmental Science
Geology
Meteorology

CAREER OPPORTUNITIES:

Biologist
Botanist
Cartographer
Engineer
Environmentalist
Explorer
Geologist
Marine Biologist
Meteorologist
Mountaineer
Seismologist

PROGRAM OVERVIEW:

The South Pole is located in the center of a continent known as Antarctica. This is the coldest place on Earth. With an average elevation of 7,500 feet, it is the highest. And, with wind speeds that reach hurricane force, it is also the windiest place on earth. It is also the driest place on our planet.

There is evidence that some 180 million years ago, the island of Gondwana existed. Around 65 million years ago, it began to break apart giving the countries of Australia and New Zealand, along with the continent of Antarctica.

Exploring Antarctica is not easy and requires survival training. All supplies must be brought in by ship. Specially engineered buildings can be jacked up to avoid being buried under drifting snow. Clothing is designed to prevent freezing and all trash is taken away from the continent.

ISSUES AND CRITICAL THINKING:

1. After viewing this program:
 - What's the difference between the Arctic and the Antarctic?
 - What evidence is there for existence of Gondwana?
 - What is krill and why is it so important?
 - What special provisions do scientists need to explore that Antarctic?
2. Discuss the Antarctic Treaty. Do students think access to Antarctica should be limited to scientists?
3. Plan an Antarctic expedition with the class. Discuss the scientific purpose, what kinds of experiments will be done? What kinds of tools and supplies will be needed? How will the team get to Antarctica? How long will the expedition last? What time of year should it start?
4. Construct a food web with the life forms found in the Antarctic region.
5. Have students research the effects of ultraviolet radiation on plants and on humans.

GLOSSARY:

ANTIFREEZE- substance that lowers the freezing point of water.

AXIS- an imaginary line through a body.

CARTOGRAPHER- Mapmaker.

COMPOSITION- the elements or compounds of which a substance is made to form a whole.

CONTOURS- shape, form, outline.

ELEVATION- the vertical distance from sea level to a point on the earth's surface.

ERUPTION- the violent ejection of solid, liquid, or gaseous, materials onto the earth's surface from a volcanic vent.

FOSSIL- a plant or animal that has been preserved in earth's crust or rocks.

GREENHOUSE GASES- gases that prevent heat from radiating off the earth and into space.

MAGMA- molten rock material under the earth's surface.

MAGNETIC FIELD- a region of space wherein magnetic forces may be detected.

OBSOLETE- no longer in use.

ORBIT- path followed by celestial objects moving under gravity.

ORIGIN- the beginning or starting point.

PREDATOR- an animal that kills other animals for food.

SEISMIC- caused by an earthquake or earth vibration.

SPECIMEN- a sample that is taken for testing or study.

SYNTHETIC- any item that is man-made, not of natural origin.

WINDCHILL- the combined effects of cold air and wind on exposed surfaces of the body.

The Wonders of Earth Science



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ENVIRONMENT: CONTINENT OF ICE AND SNOW



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