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**SYNOPSIS:**

Our planet's diverse yet consistent climate creates the conditions for life to flourish. Our food supply, some of our resources, and how we live our lives are all weather related. And, the more we study our weather, the more we realize what an extraordinary phenomenon it is.

This program explores the different elements of nature that interact to form our weather. It demonstrates why the oceans are responsible for normal weather patterns, huge storms, and abnormal events such as El Niño. It also explains how technology is increasing forecast accuracy, and some of the ways scientists may be able to modify our weather in the future.

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**CURRICULUM UNITS:**

Earth Science  
General Science  
Meteorology  
Oceanography

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**CAREER OPPORTUNITIES:**

Astronaut  
Biologist  
Computer Engineer  
Meteorologist  
Oceanographer  
Researcher  
Scientist

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**PROGRAM OVERVIEW:**

Many different facets of nature combine to form weather, including the wind and the ocean that establish global weather patterns. The weather we experience begins with the sun; heat from the sun warms various regions of the earth and the oceans. At night, they cool. Some areas cool quicker or more slowly than others creating atmospheric pressure which leads to high and low pressure systems. These systems, and the instabilities within, create weather.

Every five to seven years a warm water current called El Niño forms and replaces the normally cool water temperature. This change often creates stronger and more violent storms than normal.

In addition, ocean currents also create hurricanes. Hurricanes contain winds greater than 119 kilometers per hour. While hurricanes form in the ocean, tornadoes form on land and create winds of over 400 kilometers per hour.

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**ISSUES AND CRITICAL THINKING:**

1. After viewing this program:  
Describe the chain of events that causes weather.  
What makes prevailing winds unique?  
Give examples of how ocean currents cause weather.  
Why are satellites useful for forecasting the weather?  
What is the main cause of El Niño?
2. With the use of a world map, ask students which coasts are likely to have warm or cold-water currents.
3. Separate students into groups. Have each group create a weather forecast production complete with visual aides. Students can reference books such as *Weather Forecasting and Weather Words and What They Mean*, by Gail Gibbons.
4. Have students research the type of equipment they would need to forecast the weather from earth and the type of equipments they would need to forecast the weather from space.
5. Ask students to think of different ways technology might be able to modify weather.

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**GLOSSARY:**

**ATMOSPHERIC PRESSURE-** the pressure of the atmosphere surrounding the earth.

**EASTERLIES-** prevailing winds originating from the east.

**EL NIÑO-** an unusually warm, water current found in the Pacific that causes abnormal weather.

**GULF STREAM-** warm water current that flows off the eastern coast of the United States.

**HIGH PRESSURE-** a high measure of pressure recorded on a barometer, usually associated with stable weather conditions.

**HURRICANE-** a storm with winds greater than 119 kilometers per hour.

**LOW PRESSURE-** a low measure of pressure as recorded on a barometer, usually associated with unstable weather conditions.

**METEOROLOGIST-** a person who studies the atmosphere and weather.

**PREVAILING WINDS-** winds that blow consistently from the same direction.

**TOPOGRAPHY-** a region's physical features and structural relationships.

**TORNADO-** a funnel shaped cloud that moves over a narrow path of land.

**WEATHER-** the condition of the atmosphere with respect to cold, heat, wetness, dryness, clear, and cloudiness.

**WESTERLIES-** a prevailing wind originating from the west.

**WIND-** the movement of air from high-pressure to low pressure.

## The Wonders of Earth Science



K4520DVD

# How WEATHER HAPPENS



### TMW MEDIA GROUP

2321 Abbot Kinney Blvd., Venice, CA 90291

(310) 577-8581 Fax (310) 574-0886

Email: [sale@tmwmedia.com](mailto:sale@tmwmedia.com)

Web: [www.tmwmedia.com](http://www.tmwmedia.com)

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