

**#3646**

# RAIN AND FLOODS

Grade Levels: 5-12

30 minutes

AMBROSE VIDEO PUBLISHING 1996

## DESCRIPTION

Rain is nature's most delicate yet lethal force; too much produces flooding which accounts for 40% of all weather-related deaths. Survivors of floods share their experiences as film footage reinforces their stories. Shows how to measure the size of raindrops, discusses weather fronts, and warns about flash floods. Uses graphics and time-lapse photography to emphasize the power of too much rain.

## ACADEMIC STANDARDS

### Subject Area: Science

- ◆ Standard: Understands basic features of the earth
  - Benchmark: Knows that clouds and fog are made of tiny droplets of water (See Instructional Goals #4, #5)
  - Benchmark: Knows the processes involved in the water cycle (e.g., evaporation, condensation, precipitation, surface runoff, percolation) and their effects on climatic patterns (See Instructional Goal #4)
  - Benchmark: Knows ways in which clouds affect weather and climate (e.g., precipitation, reflection of light from the sun, retention of heat energy emitted from the earth's surface) (See Instructional Goal #3)
  - Benchmark: Knows that water can change from one state to another (solid, liquid, gas) through various processes (e.g., freezing, condensation, precipitation, evaporation) (See Instructional Goal #4)

### Subject Area: Geography

- ◆ Standard: Understands how physical systems affect human systems
  - Benchmark: Knows natural hazards that occur in the physical environment (e.g., floods, wind storms, tornadoes, earthquakes) (See Instructional Goals #1, #2)

## INSTRUCTIONAL GOALS

1. To depict the destruction flooding can cause.
2. To describe a flash flood.
3. To show some of the causes of flooding.
4. To explain the water cycle.
5. To illustrate how rain is produced.

## VOCABULARY

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1. flash flood
2. evaporate
3. water vapor
4. condense
5. virga
6. flood plains
7. monsoon
8. stratus
9. cumulus
10. thunderhead



## BEFORE SHOWING

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1. Create a list of weather-related natural disasters. Discuss which type of disaster is the most deadly.
2. Share personal experiences related to flooding.

## DURING SHOWING

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1. View the video more than once, with one showing uninterrupted.
2. Pause during the sections of the video showing the cold and warm fronts interacting. Identify which cloud layers are warm air and which are cold air.
3. Pause after the last part of the water cycle explanation. Clarify that rainwater goes through the soil and then comes back out in streams. (The visual is misleading.)

## AFTER SHOWING

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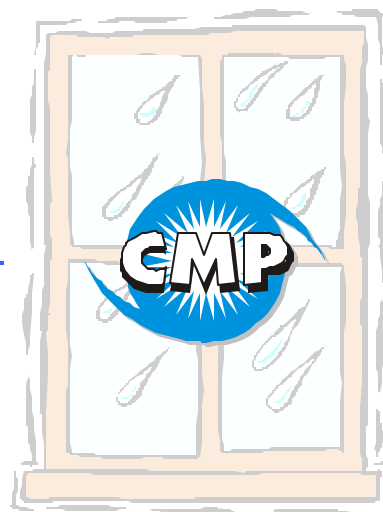
### Discussion Items and Questions

1. Discuss the meaning of the phrase "act of God."
2. Discuss why 60% of the flood-related deaths in the United States occur in vehicles.
3. Review the water cycle. Identify the importance of salt crystals and other microscopic particles.
4. How does Mount Waialeale on Kauai Island create its own rain?
5. Explain how warm fronts and cold fronts produce different kinds of rainfall.
6. Why have people historically built near rivers? How is location of communities different in rich versus poor countries today?
7. Explain the causes of the monsoon seasons in Asia.
8. Discuss how rain can be "nature's most delicate and lethal force"?

### Applications and Activities

1. Research rainfall statistics. Locate which area of the world receives the most rainfall, the least rainfall, the most days of rain, and the least days of rain per year. Display the information in a graph.
2. Study the various types of clouds and the weather associated with each one.

3. Visit a weather station or have a meteorologist visit the classroom. Practice reading weather maps in the newspaper and on TV. Create a weather map. Role-play giving weather forecasts.
4. Research the factors that create the right conditions for a river flood and a flash flood. Find information about other kinds of floods. Compare the factors for different types of floods.
5. Make a chart to show the flood statistics given in the video. Research statistics from other major floods to add to the chart. Analyze the data.
6. Repeat the experiment shown in the video to measure raindrops.
  - a. Sift 1/2 pound of flour into a tray.
  - b. Set the tray in the rain for a few seconds.
  - c. Bake the tray in a 350-degree oven for 20 minutes.
  - d. Sift the flour again to locate the raindrop formations.
  - e. Measure the raindrops.
7. Make a diagram or mural showing the water cycle. Label all of the steps in the cycle. Role-play the water cycle as water molecules.
8. Make a rain gauge. Mark inches and parts of inches on a piece of masking tape and put it on the outside of a jar. Put a funnel in the mouth of the jar. Place the jar in an open space to collect rain.
9. Track rainfall information for different areas on a daily basis. Show the data in a rainfall graph. Compare rainfall amounts for different areas. Average the rainfall amounts and compare again.
10. Map out the major streams and rivers that make up the watershed (drainage basin) for a specific area.
11. Investigate how a river's flood stage is determined. Find out how 100-year flood information is calculated.
12. Make a diagram to show a unique rainfall area, such as Mount Waialeale in Kauai, Hawaii, the Grand Canyon, or monsoons in central Asia.
13. Research flood prevention and recovery programs. Write a report describing the best programs.



## RELATED RESOURCES

### Captioned Media Program

- Clouds (Revised) #3021V
- Introduction to the Water Cycle #2401
- The Johnstown Flood #7647
- Rain #3504
- Rainshower (Revised) #2216
- Understanding Weather: Storms #2692
- Weather: The Chaos Which Surrounds Us #3532

## World Wide Web



The following Web sites complement the contents of this guide; they were selected by professionals who have experience in teaching deaf and hard of hearing students. Every effort was made to select accurate, educationally relevant, and "kid-safe" sites. However, teachers should preview them before use. The U.S. Department of Education, the National Association of the Deaf, and the Captioned Media Program do not endorse the sites and are not responsible for their content.

- **THE FLOODPLAIN MANAGEMENT WEB SITE**

[www.floodplain.org/p-basics.htm](http://www.floodplain.org/p-basics.htm)

Provides basic information about floods, how homeowners can protect themselves against imminent or future floods, and things to do after a flood.

- **INFOCUS FLOODS**

[www.pbs.org/newshour/infocus/floods.html](http://www.pbs.org/newshour/infocus/floods.html)

This online NewsHour Web site for kids from PBS includes scientific information about floods, personal stories, and information about some specific floods.

- **NWS OFFICE OF HYDROLOGY**

[www.nws.noaa.gov/oh/index.html](http://www.nws.noaa.gov/oh/index.html)

This government Web site is loaded with information and data related to floods and river levels. It also has links to flood-related documents, scientific publications, and research papers.

- **WATER RESOURCES FOR THE UNITED STATES**

<http://water.usgs.gov/>

The U.S. Geologic Survey Web site has links to a wide variety of information related to water data, publications, technical information, and water programs.

- **WATER SCIENCE FOR SCHOOLS**

<http://ga.water.usgs.gov/edu/>

This student Web site from the U.S. Geological Survey covers basic water information, offers pictures, and provides an activity center. Links to school water projects and information are provided.