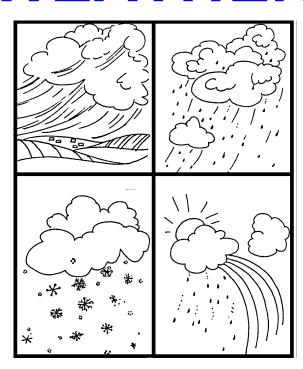


# **Water Cycle**

The Earth's Gift



# SECOND GRADE WEATHER



1 WEEK LESSON PLANS AND ACTIVITIES

#### WATER CYCLE OVERVIEW OF SECOND GRADE

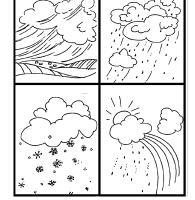
#### WATER

#### WEEK 1.

PRE: Exploring the properties of water.

LAB: Experimenting with different soap mixtures.

POST: Analyzing the water cycle.



#### **OCEANS**

#### WEEK 2.

PRE: Interpreting how water is recycled.

LAB: Distinguishing polluted, dirty, and clean water.

POST: Comparing solvents and solutes.

#### **ATMOSPHERE**

#### WEEK 3.

PRE: Distinguishing air.

LAB: Experimenting with air and water.

POST: Interpreting why water is important in the atmosphere.

#### **WEATHER**

#### WEEK 4.

PRE: Comparing climate and weather.

LAB: Exploring how topography influences climate. POST: Discovering the four elements of weather.

#### **PRE LAB**

#### **OBJECTIVES:**

Students use their experience to determine local climate.

- 1. Comparing climate and weather.
- 2. Explore the local climate.

#### **VOCABULARY:**

climate

temperature

rain

snow

frost

ice

fog

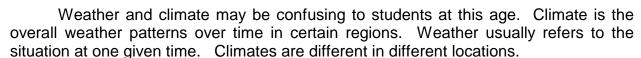
summer

winter

#### **MATERIALS:**

worksheet tornado maker Internet





Climate is determined by analyzing yearly charts of surface weather patterns, upper wind patterns, high and low temperatures, and precipitation. There are many areas where topography or the relief of the surrounding area influences what is called "microclimate." For instance being close to a mountain can make the climate more windy, than a community that lives away from the mountain. Distinguish for students that seasons are caused by the angle of the Sun's ray caused by the Earth's tilted axis. The season's influence the general climate, but mountains, land, and vegetation also exert an influence.

#### PROCEDURE:

The object of this activity is to have students think about the climate in their own local area.



- 1. To emphasize the difference between weather and climate, use the tornado maker. Ask students if a tornado is climate or weather. A tornado is a weather condition. In some climates, tornadoes may be more common.
- 2. Students will have to use their past knowledge of the area in order to do this worksheet. If you have any "new" students to this region, have them do the area that they lived in within the last year. Students should think about the weather in their backyards when they answer the questions.
- 3. Temperatures should be given as very hot, hot, warm, cool, cold, very cold. Let them fill in the worksheets on their own for a few minutes or send them home as a homework assignment. The second part of the worksheet asks students to think of a relative or friend who lives in another type of climate.
- 4. Go over the worksheet with the class. Students may have some stereotypical views of the climate caused by a confusion of seasons. For example, they may think that plants do not grow in the winter because so many books talk about winter as a time when plants are dormant because there is lots of snow. Not true! Arizona, California, Hawaii, and many other areas are warm enough to grow produce.
- 5. Climates can be mild, hot, cool, cold, warm, or any other descriptive term. Children with no other experiences than their own state in which they reside, may not realize that there are other climates. Make sure you point out the geographic region you are talking about by showing students a map of the United States.
- 6. If you have Internet access, you can have the students look at weather occurring in different regions of the country.

#### Recommended sites:

#### http://www.weatherimages.org

Site summarizes many other sites that are on line. Quick and easy to search your particular area.

#### http://nws.noaa.gov

National Weather Service maintains information on most major cities in each state. This site is a little slower than the one mentioned above, but it has more detailed and scientifically correct information.

THE CLIMATE WHERE I LIVE								
	by	by						
	SUMMER	FALL	WINTER	SPRING				
Temperature day								
night Does it rain? Does it snow? Is there frost?								
				<del></del>				
Is there ice on the puddles?								
Is there fog? Do plants grow?								

	SUMMER	FALL	WINTER	SPRING
Temperature				
day night				
Does it rain?				
Does it snow?				
Is there frost?	<del></del>	<del></del>		
Is there ice on the puddles? Is there fog? Do plants grow?				
				<del></del>

#### LAB

#### **OBJECTIVES:**

Students simulate how mountains influence weather patterns.

- Creating a "rain storm."
   Exploring how topography influences climate and weather.
- **VOCABULARY:**

climate mountains rainfall topography weather

#### **MATERIALS:**

metal pan sponge clay water small branches



#### **BACKGROUND:**

The topography of an area can influence the weather and climate. Topography is the relief of an area. If an area is close to a body of water it tends to make milder climates. Mountainous areas tend to have more extreme weather because it acts as a barrier to air movements and moisture. One side of mountain can be dry while the other side is full of vegetation.

Mountains can cause a physical barrier to rain clouds. In this lab, students will construct a "mountain" and rain clouds, to dramatize why one side of a mountain will have more water, hence, more vegetation than the other side.

#### PROCEDURE:

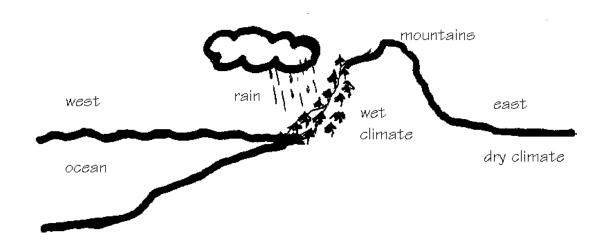
1. Give each group a metal pan or meat tray and clay. Instruct students to create a mountain scene. You may want to use small branches for trees. Aluminum foil can also be used to create an appearance of a lake.

- 2. Give each group a sponge. Make the sponge wet. Students should pretend that it is a cloud full of water ready to become rain or snow. Students love to watch the water run off the mountains. Let each child be a rain cloud.
- 3. Explain that a cloud is heavy when it is wet, too heavy to get over the mountain. the winds are pushing it up, and as it gets pushed up, it cools. It cannot get lighter and cannot go over the mountain. By this time there is very little water left for the other side of the mountain. If the mountain is high enough there will be a desert on the other side. There are many examples around the country of this phenomenon especial on the west coast where the mountains are high. The Coast Ranges acts as a barrier to the Central Valley, and the Sierra Nevada prevents water from getting into Nevada and Arizona, making them desert-like.
- 4. If you have relief maps of the your local area, you mind want to find any areas that might fit this model. Let the students experiment with the sponge and mountain.

PROBLEM: Do mountains affect weather patterns?

PREDICTION:

PROCEDURE: Make a model of a mountain using clay as instructed by your teacher.



- 1. Can the clouds pass the high mountains? Why?
- 2. Why is it dry on the east side of the mountain?
- 3. Where are most of the rivers located? East or West of the mountain?

\_\_\_\_\_

## CONCLUSION:

\_\_\_\_

#### **POST LAB**

Students look at weather maps.

#### **OBJECTIVES:**

- 1. Exploring forecasting weather.
- 2. Discovering the four elements of weather.

#### **VOCABULARY:**

air pressure forecasting moisture temperature weather lores

#### **MATERIALS:**

newspapers Internet Weather Placemat



#### **BACKGROUND:**

Weather forecasting is the application of principles of math, physics, and statistics to try to "predict" the weather. Forecasts ranging from a few hours to about two days are referred to as short range forecasts. Long term forecasts are years in advance.

In the early days people did not rely on the newspapers or the weatherman because there were none. Many people used their observational skills to look for clues to predict the weather. Early mariners were especially aware of the changing weather. They noticed that forecasting weather is related to the phases of the moon, reactions of organisms including people, optical phenomena such as rainbows and halos, and certain weather sequences.

Common phrases like, "April Showers, Bring May Flowers," reveal that people where aware about the seasonality of changing weather. Older people always talk about their bones hurting means that there will be rain or a change in weather. The change in the direction of the wind may signal rain coming in some areas. Weather is very much part of our everyday lives.

#### PROCEDURE:

1. Discuss with students about weather lores. See if your students with the help

of their parents can develop any more weather lores. The one's below were sailor's way of trying to forecast the weather.

- a. If there is a halo around the moon, it will rain. (This is true, because moisture in the air is seen as a halo from the moonlight.)
- b. Thunder in spring, cold will bring. (A pending cold front is approaching when this occurs.)
  - c. Red sky in morning, sailor's warning.

Red sky at night, sailors' delight. (Red skies in the morning mean storms are coming, and red skies at night means calm seas. This is usually true along coastal areas.)

d. Mackerel scales and mare's tails

Make loft ships carry low sails. (Since high clouds of a warm front are often the first visible sign of a storm, the proverb calls for ships to lower their sails.)

e. Rain long foretold, long last.

Short notice, soon past. (Signs of rain prior to a storm can predict how long the storm will last.)

- 2. There are basically four elements of weather that can help describe weather. Hand out the weather placemats and have students find the elements of wind, temperature, air pressure and moisture. See if students can determine what measures each of the elements from the placemat. An anemometer measures wind speed; a thermometer measures temperature; a barometer measures air pressure; and rain gauge measures moisture.
- 3. Have students bring in the weather maps from newspapers at home. Ask them to locate the "forecast" in this section. You may want to do this over a week or so, and see if the forecast is correct or not. Stress with your students that forecasting weather is very difficult.
- 4. If you may also want to revisit the Internet sites described earlier. There are sections in both sites mentioned that do short and long term forecasting.