



Climate is What You Expect, Weather is What You Get

Materials

- Student Field Journals
- Past weather data
- Graph paper
- Large pieces of butcher paper
- Pencils
- Rulers

Write the title of this lesson on the board and ask students to explain what they think it means. Tell them that it is a quote from one of the Moraine Park Museum exhibits on "The Making of a Landscape" in Rocky Mountain National Park. Make sure they understand the difference between climate and weather (see page 24).

Next, list the words "geology", "topography," and "geography" on the board and ask the students to define them. Explore with students how weather is related to climate, topography, geography, and geologic history.

Videotape a TV local weather report and watch it with your students. Discuss the various components of the report. There usually is general information about the national weather compared to more specific data about the local forecast. You may wish to discuss terminology such as high and low pressure, jet stream, and where the weather is coming from for your area. Ask what factors affect the weather. Why is it warmer or colder in some places than in others? Why are some places experiencing precipitation,

while others are not, etc.? Ask if students believe the weather forecasters are more often right or wrong.

What makes Colorado's weather especially hard to predict?

(Weather in Colorado is especially hard to predict because weather systems come into the state from the north, west, and Gulf of Mexico. These systems often collide, with unpredictable results. In addition, mountains often create their own weather because of their effects on air masses. Air must flow over or around mountains creating temperature fluctuations and rapid weather changes.)

Ask students if they believe weather patterns have changed in the last 100 years. Explain that they are going to research the weather patterns of your local area to discover if there have been changes in the last century. (It is suggested that you use a century, because this will enable students to see trends over a long period of time.) You may obtain data from the **Colorado Climate Center*** or make research for local data part of the project. You will want to obtain records on monthly total precipitation, monthly average temperatures, and monthly maximum and minimum temperatures for your area for the last 100 years.

Divide the class into small groups. Assign each group a particular time span of weather data. For example, group 1 might do the first ten years, group 2 the next ten, and so on. Each group will then make a chart showing the data for its time period. For each year, they should show monthly average temperatures, monthly maximum and minimum temperatures, and average monthly precipitation.

Next, make a big chart showing all 100 years using large sheets of paper taped

Weather is short-term visible effects of climate—the day-to-day temperature, precipitation, wind, humidity, and cloudiness.

Climate is long-term prevailing weather conditions, averages of a period of years.

Geology is the study of the history of the earth, including its rocks; how they formed; the fossil record; and past and present processes of mountain building, river dynamics, erosion, and plate tectonics.

Topography is the study of the landscape.

Geography is the study of the earth as a home (environment) for the human species and the way humans modify these environments.



to the wall. Have each group fill in its section of the large chart. When the graphs are completed, lead students to make observations and ask questions about them.

What can you say about average high and low temperatures for a particular month? Have they remained constant? Have they changed a little? Have they changed greatly?

What can you say about the average precipitation amounts for your time span?

Is there any period of time that seems very different from the other periods?

Can you see any patterns or cycles of change?

Are the averages of the maximum and minimum temperatures for the last decade consistent with earlier decades, or are there differences?

What things might have caused differences between particular decades?

How do you think these changes, patterns, and cycles have affected the people in your community?

How do you think changes in weather patterns affect the plants and animals of an area?

What if the maximum winter temperatures rose 10° F. for an extended period of years?

(While even a small change in average temperature creates the difference between an ice age and present climate, students will be better able to imagine the differ-

ences if you speak of a change of 10° F. You also might discuss the difference it would make if the average winter temperature rose 10° or if the maximum winter temperature rose by 10°.) How would that affect people, animals, plants, and ecosystems? If this happened globally, what would the effects be?

What would occur if the temperatures dropped 10° F.?

Working in their small groups, ask students to write a play about life in Colorado (or some other location, if they prefer) in a climate that is either 10° F. warmer or cooler than present. They might choose to portray farmers, ranchers, skiers, city dwellers, or other citizens. How would those changes affect the way people dress, recreate, and live their daily lives? What would the effects be on agriculture, recreational industries, and other industries? What would the effects be on the flora and fauna?

You might want to have students write and perform "before and after" skits, so that the differences are more apparent. Students also might write a TV show in which a reporter or talk show host interviews an "old-timer" who remembers what it was like before the change in climate occurred. He or she could describe how the changes have affected his/her life and the community.

Keep a chart of average daily high and low temperatures for one month. Compare these figures with the long-term averages. Are they consistent with, higher, or lower than other months on your chart?

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