

## **5. Weather Observing**

**OBJECTIVES:** After completing this lesson, a student should be able to:

- \* Explain why **OBSERVING** is important to forecasting
- \* Design an **OBSERVATION SHEET**
- \* Investigate observation **ELEMENTS** (Grades 4-8)
- \* Complete **WORKSHEET #1** and begin **COMPUTER PROGRAM**

### **TEACHER BACKGROUND: (Grades 1-8)**

Without the collection of precise information at all levels of the atmosphere around the globe, accurate local weather forecasts could not be made.

Here are some guidelines to begin your weather observing. First, establish a regular observation schedule so weather trends and changes can be identified. Second, use weather instruments. (You learned how to build a rain gauge in lesson 4, and directions for more instruments are presented in unit 2.) Finally, record data on an observation sheet similar to the one found at the end of this lesson. It is suggested that basic observations begin now with the addition of new components in lessons that follow. Try taking regular observations for several weeks.

All grade levels begin with the following elements of a surface weather observation:

#### **DATE AND TIME**

**CLOUDS:** Observe the amount of sky cover (clear, partly cloudy, or cloudy) Grades 4-8 can include specific cloud types.

**PRESENT WEATHER:** Include rain, snow, fog, etc. presently observed.

**TEMPERATURE:** Take Fahrenheit or Celsius readings **IN THE SHADE**. Official thermometers are placed in a white shelter which is a good solar reflector. The shelter has openings for air but not for sunlight. Without a shelter, the north side of a building is a good thermometer location.

**PRECIPITATION:** The amount of precip-itation is measured by a rain or snow gauge located in an open area. Measure snow depth by taking three “drift-free” measurements, adding them, then dividing by three for an average depth. Large drifts do not accurately represent the amount of fallen snow.

#### **Additional notes for grades 4-8:**

**VISIBILITY:** Estimate the distance you can see toward the horizon. Select distance objects on a clear day (buildings, trees, etc.) and use them as a daily visibility guide.

**RELATIVE HUMIDITY:** Determine the percentage of moisture in the air using a *wet and dry bulb thermometer* and a chart (located in appendix). Indoor humidity is not the same as outdoor humidity.

**WIND:** A wind vane points to the direction from which the wind is coming, and rotating cups of an instrument called an *anemometer* spin to calculate wind speed. Estimates can be made using the *Beaufort scale*. (See appendix.) Observations are taken in open areas.

**AIR PRESSURE:** A barometer measures air pressure. Air pressure is virtually the same indoors and outdoors. Trends of changes in pressure are important to forecasting.

# Observing Activity

## GRADES 1-3

### INTRODUCTORY: *FEEL WEATHER*

Explaining how forecasters rely on instruments to measure the conditions, take your students outside to TELL you the conditions. Ask students to describe today's sky, clouds, wind and temper-ature and how they affect their feelings, mood and even what they wore today. Encourage plenty of adjectives.

### ADVANCED: *OBSERVING CHANGE*

Ask students to observe and describe as many current weather conditions as possible, writing the current time and descriptions on the board. Include cloud shapes, colors and locations. Repeat the procedure with several observations throughout the same day. Compare observations. Why is it important to take regular observations? (changes occur)

## GRADES 4-8

### INTRODUCTORY: *TEAM SAMPLES*

Divide the class into two groups, one to observe only a few weather conditions a few times in one day and the other group to observe many conditions several times in the same day. Which group provided a better sampling of information? Why is it important to observe weather often? (changes occur)

### ADVANCED: *RADIO WEATHER*

Receive official weather information! See your local electronic store for a *weather radio* which receives free broadcasts from one of the more than 370 National Weather Service locations. Hourly data can be monitored and compared with student observations. (Note: Be careful not to let the the broadcasts replace the students' observation activities.)

## MAKE YOUR OWN OBSERVATION CHART (Time: 10-15 minutes) GRADES 1-8

**Materials:** Blank paper, pen, ruler

**Preparation:** Determine information to be logged, based on grade level. (See previous page. Future lessons will include temperature, humidity, wind direction and speed, and air pressure.)

**Procedure:** Each student should place their name and school name at the top, with the observation categories below it. For example:

DATE	TIME	CLOUDS	WEATHER	VISIBILITY	TEMPERATURE	HUMIDITY	WIND DIRECTION/SPEED	PRESSURE	PRECIP
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Design an observation sheet that provides plenty of room for the data collected. For instance, you may need a couple of lines to describe cloud types. After you list the categories, draw vertical lines for each column.

**Evaluation:** Complete worksheet #1.

**Computer:** Familiarize students with the observation program on the disk, emphasizing how to read the rain gauge.

### **WEATHERSCHOOL QUESTION:**

*When is the lowest temperature usually observed? A. midnight B. 3 am C. sunrise  
Obtain the answer tonight on your Weatherschool television channel!*