

## 19. Forecasting

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

- \* **Define a WEATHER FORECAST**
- \* **MAKE A FORECAST using a weather map**
- \* **Identify three prediction guidelines (Grades 4-8)**

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

We have learned how the atmosphere quickly changes, and we have observed some of the elements that change constantly. We have plotted weather data across the nation, peered at clouds from a satellite above and examined a storm with radar. It is now easier to understand the challenge of monitoring the weather and the even bigger challenge of predicting it.

**A WEATHER FORECAST is a prediction of weather conditions.** Forecasts help to save lives, property and crops. The National Weather Service must regularly collect weather information from the land, sea, space and radar networks in order to make a 48-hour forecast for every U.S. location.

Computers play a major role in weather forecasting. Computers help to quickly collect weather data, calculating how the weather pattern might change and providing maps that show the type of weather a meteorologist might expect. The computer maps are helpful, but they are still imperfect. A meteorologist must study the maps and apply knowledge and experience about weather in his or her specific location before an accurate forecast can be made.

Short-term forecasts for the next day are usually quite accurate, but forecast accuracy significantly decreases beyond the next few days. Although the accuracy rate of long-range forecasts is slowly improving, they are still not as reliable as the 24-hour weather forecast.

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

Although you may not have high-speed computers, massive satellites and expensive radar, grades 4-8 students can use a few rules to make a short-term forecast.

As in the “real world” of professional forecasting, these are only guidelines. No rule guarantees 100% accuracy! Here are three guidelines for students:

**PRESSURE TREND:** The pressure reading itself is not as helpful as its TREND (or change). A rising barometric trend indicates high pressure and a greater chance for fair, dry weather. A falling trend indicates low pressure with a chance for clouds and precipitation. Record pressure readings often to detect trends.

**WIND DIRECTION:** We know that the wind direction has an effect on temperature, and we have studied how wind blows around highs and lows. Recalling that wind around a low pressure system blows counterclockwise, you would observe a warm southerly wind ahead of a low and colder northerly wind behind it. (See figure in lesson 15.) Lows on a weather map give you clues about what type of weather AND temperature trend to expect in your area.

**CLOUD COVER:** Growing cumulus clouds can indicate conditions for thunderstorms, and high ice-crystal cirrus clouds can mean an approaching storm. (Refer to the cloud chart included this kit.) The location and coverage of clouds on a satellite image can be extremely helpful in predicting sunny or cloudy skies.

# Forecasting

## GRADES 1-3

### INTRODUCTORY: *FORECAST PART I*

Distribute each student's weather map worksheet #2 and satellite image worksheet #3. Based on the fact that most of the weather in the U.S. moves from west to east, what is the student's forecast for the **EASTERN HALF** of the nation? (Worksheet #2 indicates warm air over the southeast, with clouds and rain or snow falling over the Midwest. Worksheet #3 confirms a large storm with an area of white cloud cover. The forecast for the eastern U.S. is increasing clouds with a chance for precipitation!)

### ADVANCED: *FORECAST PART II*

Cut out and duplicate today's newspaper weather map (without the forecast information) and distribute to students. Identify areas of fair weather and stormy weather, cold temperatures and warm temperatures. The newspaper map may also be drawn by the students on the computer program. Locate your city or town on the map and make a forecast for tomorrow. After the forecasts are made, compare the students' predictions with the official forecast. Are they different? Wait until tomorrow to check which forecast is more accurate!

## GRADES 4-8

### INTRODUCTORY: *FORECAST PART I*

Distribute each student's weather map worksheet #2 and satellite worksheet #3. Keeping in mind that most U.S. weather moves from west to east, study the temperature and sky data on weather map #2, noting locations of high or low pressure centers, warm air, cold air, wind directions and the clouds on satellite image #3. What is the student's forecast for:

**Tennessee?** Cloudy with a warm southerly wind tonight, chance for precipitation.

**Virginia?** Fair tonight with a warm southerly wind tonight. Cloudy with possible precipitation tomorrow.

**Utah?** Mostly clear with a cold northerly wind tonight and tomorrow.

### ADVANCED: *FORECAST PART II*

Without revealing the official forecast, duplicate and distribute today's newspaper weather map. Ask students to use the map to make a local forecast. Make a chart comparing their forecast with the official forecast. Check the charts tomorrow to see which forecast was more accurate! Students may draw the newspaper map on the computer.

## PREPARING FOR A CLASSROOM WEATHER "BROADCAST"

Inform students that they will present the weather similar to the way it is done on TV! To prepare for the "broadcast," students should pay close attention to today's TV **Weatherschool** broadcast. What information is given to begin the weather broadcast? To end it? How many weather maps, satellite images and radar pictures are shown? Are there specific regions of the country discussed? Why? Ask students to come to class tomorrow with observations and ideas on what they would include in their weather "broadcasts!"

### **WEATHERSCHOOL QUESTION:**

**Obtain the question and correct answer from your local Weatherschool TV channel!**