

69 Forecasting Weather

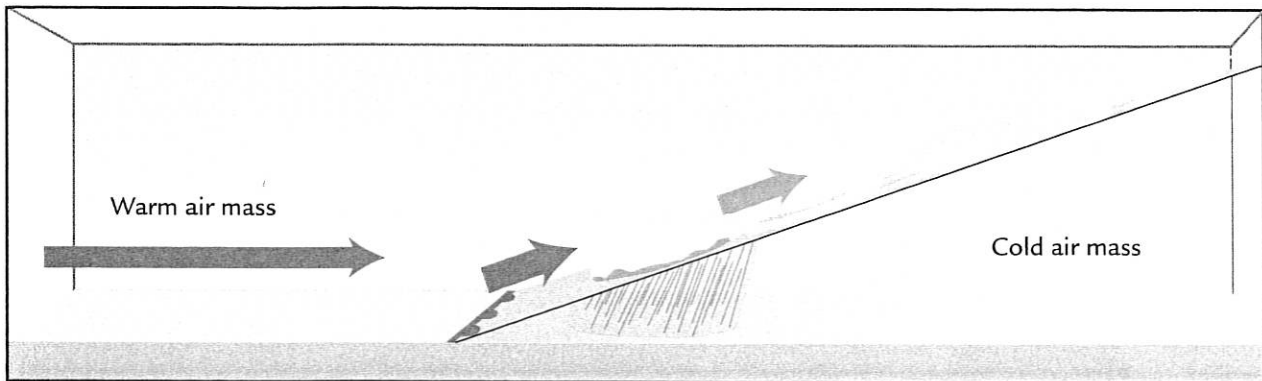


You have learned that meteorologists collect data about the earth's weather. They often use that data to construct weather maps. Meteorologists then use those maps to predict what the weather will be like in the next few hours, the next day, or for the next several days. This is known as a **weather forecast**.

When forecasting weather, meteorologists sometimes refer to **cold fronts**, which form when cold air moves in and replaces warm air. The cold air pushes the warm air up, forming high columns of clouds, as shown below. Cold fronts usually cause cooler temperatures. A **warm front** occurs when warm air moves in and replaces cooler air. Warm fronts bring in warmer temperatures. They also create cloudy conditions that usually last longer than the cloudy conditions produced by cold fronts.

Cold Front

Warm Front



CHALLENGE

What information is found on a weather map? How can a weather map be used to forecast weather?









MATERIALS

For each student

- 1 Student Sheet 69.1, "Summarizing Weather Reports"
- 1 Student Sheet 69.2, "Map of Iowa"

PROCEDURE

1. Work with your group to review the information in the table below, "Weather Map Symbols." Make sure that you are familiar with the different weather symbols and what they mean.

Weather Map Symbols		
Weather	Symbol	Associated Weather
Precipitation		Rain, snow, fog, or other forms of precipitation
Cold front		Cooler temperatures, possible precipitation
Warm front		Warmer temperatures, possible precipitation
Low pressure		Cloudy skies, possible precipitation
High pressure		Clear skies
Hurricane		Damaging winds, rain, possible flooding
Tornado watch		Area where tornadoes may occur, possible severe thunderstorms
Tropical storm		Very strong winds and heavy rains

2. Your teacher will assign your group one of the weather maps for August 24–31 shown on pages 92–93.
3. Work with your partner to summarize the weather on this map. Identify:
 - weather fronts
 - precipitation
 - areas of high and low pressure
 - any unusual weather events, such as a tornado watch or a hurricane

Be sure to discuss with your partner each type of weather and where in the country it is occurring. For example, if you were to begin to summarize the weather for August 24, you might say, "There is a cold front stretching from Arizona northeast up to Minnesota."

4. Work with your partner to write a weather report for your assigned day. You can do this by describing the weather that is associated with each weather symbol (see the table). As you summarize current weather conditions, make sure to describe:
 - weather fronts and possible changes in temperature
 - areas of precipitation
 - clear or cloudy skies due to changing pressure
 - any unusual weather events, such as a tornado watch or a hurricane

In your science notebook, write your weather report in complete sentences and in the present tense, as if you were reporting the weather on television or the radio. For example, if you were to begin to summarize the weather on August 24, you could write, "The cold front stretching from the southwest up to Minnesota is causing cooler temperatures and may result in some precipitation."

5. Share your weather report with the other half of your group. Discuss similarities and differences in your weather reports, and make any needed changes.
6. Prepare one weather report to present to the class.

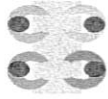
7. Read the statements on Student Sheet 69.1, "Summarizing Weather Reports." You will respond to these statements after listening to your classmates report on the weather for each of the eight days from August 24 to 31.
8. Have your group present its weather report and listen to other groups reports.
9. After listening to all eight weather reports, complete Student Sheet 69.1.
10. Based on the weather reports you heard, forecast the weather for Cleveland, Ohio for September 1. Describe likely fronts, temperature changes, pressure changes, precipitation, and severe weather that may arrive.

Hint: Look at the pattern of weather over the eight days. Use your knowledge of how weather moves across the United States to predict what type of weather is likely to occur in Cleveland.

Locator Map for Cleveland, Ohio



ANALYSIS

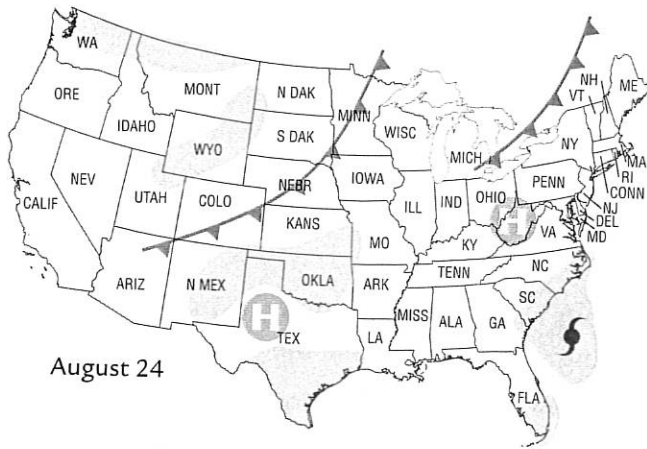


1.
 - a. Based on the patterns you observed in the weather maps, in what direction does weather generally travel across the United States?
 - b. Think back to your work in the last activity. In what direction does the prevailing wind move across the United States?
 - c. How does the movement of the atmosphere globally affect weather locally?
2. Below is weather data collected for Iowa on September 15. Your teacher will give you Student Sheet 69.2, "Map of Iowa." Use the information provided and your knowledge of weather maps to place the appropriate weather symbols on Student Sheet 69.2. Be sure to construct a key for your map.
 - Warm front extending from Lincoln, Nebraska northeast to Mason City, Iowa
 - Rain all along the warm front
 - Low-pressure system in and around Des Moines, Iowa
3. **Reflection:** People often complain about the unreliability of weather forecasts. Why do you think meteorologists are sometimes wrong about what the weather will be like?

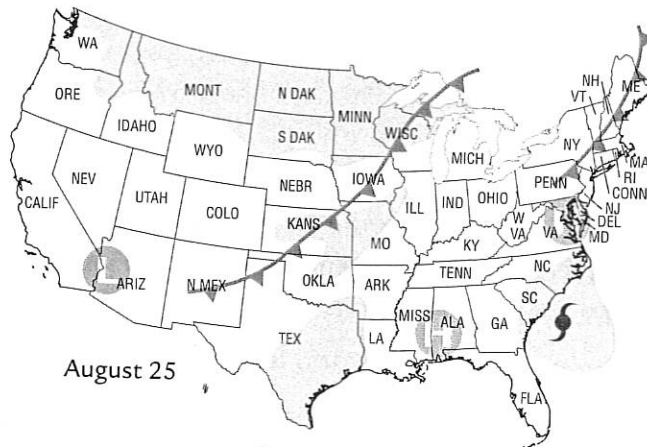


Activity 69 • Forecasting Weather

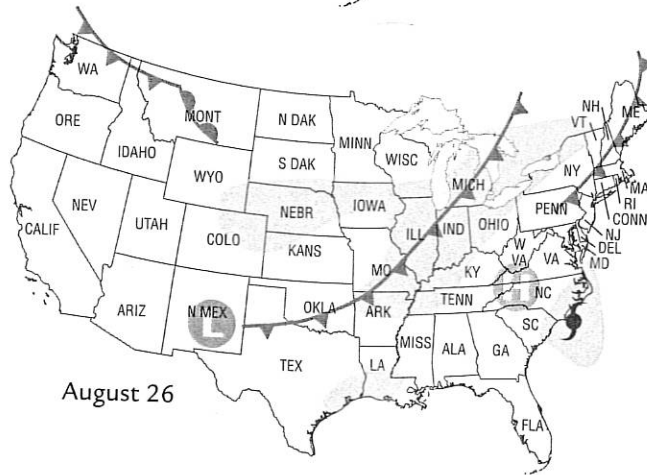
Weather Maps: August 24 through August 31



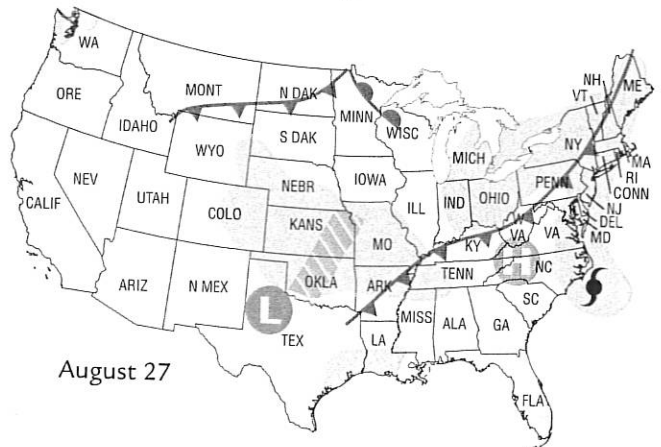
August 24



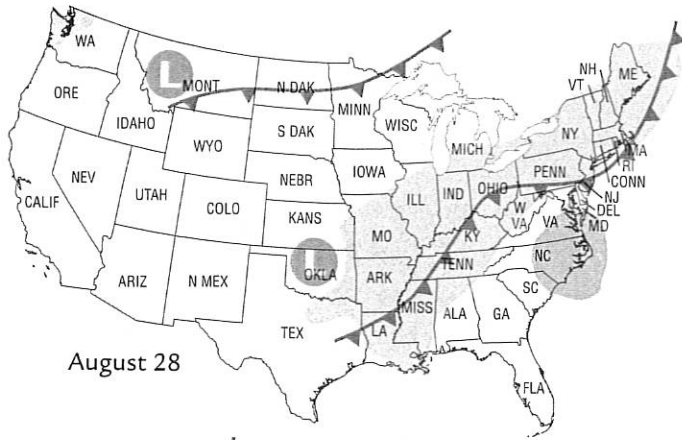
August 25



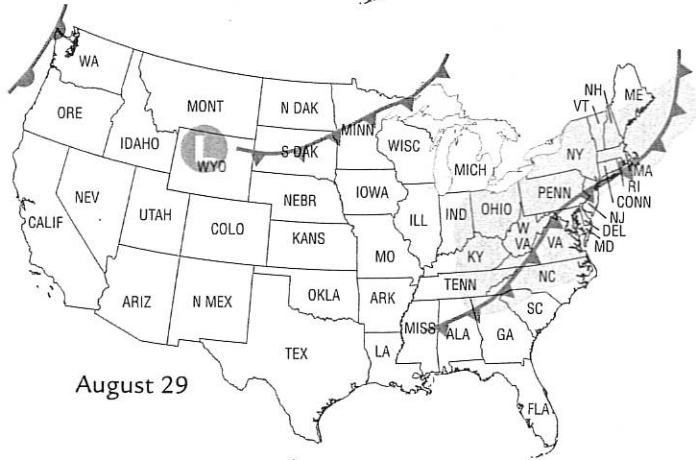
August 26



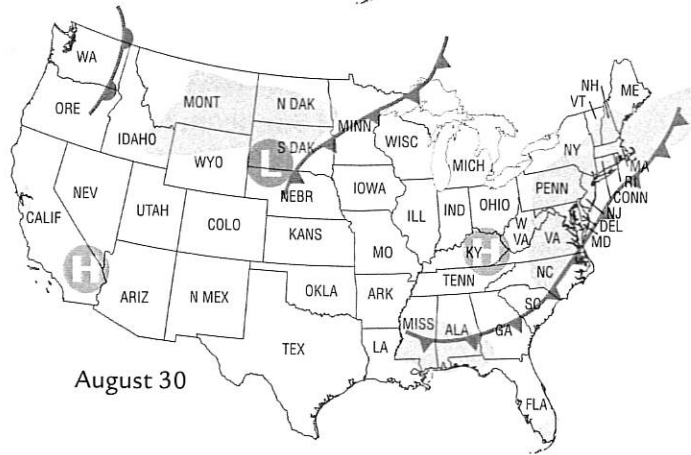
August 27



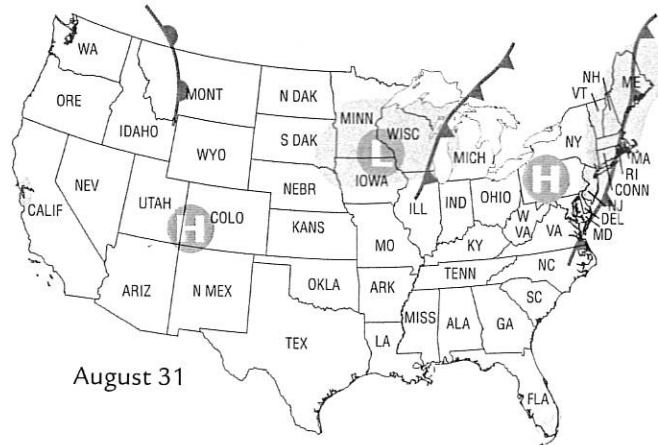
August 28



August 29



August 30



August 31