

Key Concept Summaries

Predicting the Weather

How Do You Predict the Weather?

The first step in forecasting is to collect data. This can be done either through direct observations, such as recognizing that cumulonimbus clouds may produce a thunderstorm, or through the use of instruments such as a barometer. **Meteorologists** are scientist who study and try to predict the weather. **Meteorologists use maps, charts, computers, and other technology to analyze weather data and to prepare weather forecasts.**

Weather reporters get their information from the National Weather Service, which uses weather balloons, satellites, radar, and surface instruments to gather data. Weather balloons carry instruments

into the troposphere and lower stratosphere to measure temperature, air pressure, and humidity. Satellites in the exosphere, the uppermost layer of the atmosphere, collect data on temperature, humidity, solar radiation, and wind speed and direction. They also include cameras that can make images of clouds, storms, and snow cover. Automated weather stations in 1,700 surface locations gather data on temperature, air pressure, relative humidity, rainfall, and wind speed and direction. Computers help process all of this weather data quickly to help forecasters make predictions. Currently, forecasts are fairly accurate up to five days in the future.

What Can You Learn From Weather Maps?

The National Weather Service maintains weather maps that are snapshots of conditions at a particular time over a large area. Some show curved lines that connect places where certain conditions are the same. **Isobars** (-bar as in *barometer*) are lines joining

places on the map that have the same air pressure. **Isotherms** are lines joining places that have the same temperature. **Standard symbols on weather maps show fronts, areas of high and low pressure, types of precipitation, and temperatures.**

On a separate sheet of paper, describe the kinds of weather data meteorologists receive from weather balloons, satellites, and automated weather stations.

