

**INTEGRATING TECHNOLOGY****● Doppler Weather Radar**

When you watch a weather report or listen to a forecast on the radio, you may hear the term *Doppler weather radar*. While weather radar has been used for many years, Doppler weather radar is a recent development.

**How Radar Works**

The word *radar* comes from the phrase **radio detecting and ranging**. Radar is based on radio waves emitted from a large antenna. As a wave moves away from the antenna, objects in the wave path deflect and scatter the wave. Part of the scattered wave is reflected to a receiving antenna. There, the signal is amplified and converted into an image that shows the location of the object in the path.

**Doppler Radar Uses Changes in Frequency**

Doppler radar works in much the same way, but the Doppler effect provides additional information. The Doppler effect is an apparent change in the frequency of a wave when the source of the wave is moving in relation to the observer. To observe the Doppler effect, listen to the horn on a moving car. The car horn always emits the same sound. However, the sound seems to change frequency (become higher and lower) as the car comes nearer and then moves away.

Using this principle, Doppler weather radar is able to use the change in frequency of its radio waves to measure the velocity of winds in a storm pattern. With added information about the velocity and direction of winds, weather forecasters are able to recognize the dangerous rotation patterns that often indicate hurricanes, tornadoes, and other hazardous weather phenomena.

**Your Turn to Think**

1. How does radar work?
2. What is the Doppler effect?
3. Why is Doppler radar better for weather forecasting than normal radar?