

SECTION

3

Enrichment

Doppler Radar

The principle behind Doppler radar, originally discovered by scientist Christian Doppler in 1892, uses a sound wave principle to forecast weather. To forecast weather a Doppler radar emits a radio wave from an antenna. The radio wave is reflected back to the antenna after it encounters rain, snow, or hail. From 1957 until 1988, Dopplers were able to determine only the velocity of a storm cloud, but not what the precipitation was. Now computers are enabling the Doppler to do much more to predict bad weather, and with that, to save more lives.

How Dopplers are Used

Using Doppler radar, a meteorologist can determine the size, speed, and direction of a storm. A picture is created by electronically converting the reflected radio waves to show the amount and location of the precipitation. Precipitation and wind moving away from the radar is reflected at a lower frequency.

Weather moving toward the radar is reflected at a higher frequency. From this, the speed and direction of a storm can be determined. Dopplers can now track storms as well as determine the most intense area within the storm. They are also being used to study tornadoes. Locating two mobile Dopplers at right angles to a tornado enables a three-dimensional picture of the tornado's wind patterns to be made.

Multi-colored Images

When you watch a weather report on television, Doppler radar displays are multi-colored. Each color represents a different level of reflectivity of the waves. The rainfall from drizzle to turbulent storms is shown in different colors on a television weather report. This enables the viewer to easily understand what kind of weather to expect.

1. How does the Doppler measure the size and location of a storm?

2. How does a Doppler determine which way a storm is traveling?

3. Why would a multi-colored view of weather be more effective at predicting storms than a single-colored view?

4. Can you think of another type of storm that could be analyzed using the mobile Doppler radar system?
