

Expert Group Text

"Hurricane"

Hurricanes are tropical cyclones that occur in the Atlantic and eastern Pacific oceans. The same storms are called typhoons in the western Pacific. Hurricanes and typhoons are Earth's most violent storms.

Life Cycle of a Hurricane

Hurricanes form in areas of unsettled air. Such areas are common over tropical seas. Fortunately, only a few develop into hurricanes. They do so when their winds begin spinning around a central pocket of low pressure. This becomes the hurricane's "eye." The winds spin rapidly. They can reach speeds of 100 miles (160 kilometers) per hour or more. This makes the hurricane very destructive. The winds blow strongest near Earth's surface. They are slower near the top of the hurricane. Meanwhile, the storm moves forward at only 10 to 15 miles (16 to 24 kilometers) per hour.

Hurricanes draw energy from warm seas. Warm vapor rises into the storm. It condenses into clouds. This releases energy. The energy feeds the storm while it is over warm water. Hurricanes weaken when they move over cold water or onto land. This causes the storm's eye to collapse.

Once the winds drop below 74 miles (119 kilometers) per hour, the storm is no longer a hurricane. It is a tropical storm. When its winds drop below 39 miles (63 kilometers) per hour, it is no longer a tropical storm. It becomes a "tropical depression."

Hurricane Structure

When viewed from above, a hurricane looks like a doughnut. The storm's eye forms the doughnut hole. In the eye, winds blow up to 25 miles (40 kilometers) per hour. A light rain may fall.

A bright ring of clouds surrounds the eye. This is called the "eye wall." The most violent winds blow in this area. Beyond this ring, clouds swirl in separate bands. They bring heavy rain and thunderstorms.

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Hurricane Facts and Figures

Hurricane Seasons

Hurricanes form over oceans when water temperatures exceed 78°F (26°C). So hurricane "seasons" are determined by rising water temperatures. In general, hurricane activity peaks in late summer and early fall.

Vital Statistics

Hurricanes last from one day to over a month. Atlantic hurricanes typically reach a diameter of 300 to 500 miles (about 500 to 800 kilometers). The largest was Hurricane Sandy in 2012. It was 1,100 miles (1,770 kilometers) wide. A hurricane eye usually measures about 20 miles (32 kilometers) in diameter. The largest eye ever measured was 40 by 80 miles (64 by 128 kilometers). This was Hurricane Diane in 1955.

Typically, hurricanes advance around 15 miles (24 kilometers) per hour. But they can slow to a near standstill. The fastest exceed 40 miles (64 kilometers) per hour.

An average of eight hurricanes form off eastern North America each year. Record-setting years include 1995, with 19 hurricanes, and 2004, with 15.

Wind Speed

The highest recorded wind speeds were about 200 miles (320 kilometers) per hour. Higher velocities have probably occurred in a few "super storms." Wind speed depends on air pressure. Winds are fastest when air pressure is low. Air pressure is determined by barometers. It is measured in millibars. At sea level, air pressure is 1013 millibars. A hurricane will form only when air pressure at the center is 998 millibars or below. The lowest pressure ever recorded was in 1979: the eye of Typhoon Tip was 870 millibars.

Hurricane Dangers

Hurricanes can produce widespread destruction. Above 100 miles (160 kilometers) per hour, winds can uproot trees. They hurl debris through the air at deadly speeds. Roofs peel from sturdy buildings. Weaker structures are flattened. To escape danger, residents must seek shelter in strong buildings with boarded windows. Hurricanes have taken lives. Hurricane Mitch killed about 10,000 people in Central America in 1998.

Flooding poses an even greater threat. Hurricanes can push sea surges into coastal areas. Some hurricane surges reach 30 feet (9.1 meters) high. This can swamp offshore islands. The waters may flow several miles inland. In 2005, floodwaters from Hurricane Katrina surged over broken levees in New Orleans. This caused a staggering amount of damage and loss of life. Hurricane Sandy struck the eastern coast of the United States during high tide in 2012. The high tide helped create a record surge that caused widespread flooding in coastal areas.

Torrential rainfall worsens the flooding. These rains can exceed 20 inches (51 centimeters) in 24 hours. Flood danger often forces communities to evacuate.

There is another hurricane hazard: tornadoes. Tornadoes frequently develop during hurricanes. They usually form on the right side of the hurricane (with its front being the forward-moving edge) and about 50 to 150 miles (80 to 240 kilometers) from its center. The strong winds near the eye do not allow tornadoes to form. The record-setting hurricane in this category was Ivan in 2004. It spawned 120 tornadoes.