

Topic Page: [Hurricanes](#)

Definition: **hurricane** from *Philip's Encyclopedia*

Wind of force 12 or greater on the Beaufort Wind Scale; intense tropical cyclone with winds ranging from 120 to 320km/h (75 to 200mph), known also as a typhoon in the Pacific. Originating over oceans around the Equator, hurricanes have a calm central hole, or eye, surrounded by inward spiralling winds and cumulonimbus clouds.



Image from: [Cut-out view of the central features of a... in Guide to Global Hazards](#)

Summary Article: **hurricane**

From *The Columbia Encyclopedia*

tropical cyclone in which winds attain speeds greater than 74 mi (119 km) per hr. Wind speeds gust over 200 mi (320 km) per hr in some hurricanes. The term is often restricted to those storms occurring over the N Atlantic Ocean; the identical phenomenon occurring over the W Pacific Ocean is called a typhoon; around Australia and over the Indian Ocean, a tropical cyclone. Hurricanes have a life span of 1 to 30 days. They weaken and are transformed into extratropical cyclones after prolonged contact with the colder ocean waters of the middle latitudes, and they rapidly decay after moving over land areas.

Formation of Hurricanes

A cyclone that eventually reaches hurricane intensity first passes through two intermediate stages known as tropical depression and tropical storm. Hurricanes start over the oceans as a collection of storms in the tropics. The deepening low-pressure center takes in moist air and thermal energy from the ocean surface, convection lifts the air, and high pressure higher in the atmosphere pushes it outward. Rotation of the wind currents tends to spin the clouds into a tight curl; as the winds reach gale force, the depression becomes a tropical storm. The mature hurricane is nearly circularly symmetrical, and its influence often extends over an area 500 mi (805 km) in diameter.

As a result of the extremely low central pressure (often around 28.35 in./960 millibars but sometimes considerably lower, with a record 25.69 in./870 millibars registered in a 1979 NW Pacific typhoon) surface air spirals inward cyclonically (counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere), converging on a circle of about 20 mi (30 km) diameter that surrounds the hurricane's "eye." The circumference of this circle defines the so-called eye wall, where the inward-spiraling, moisture-laden air is forced aloft, causing condensation and the concomitant release of latent heat; after reaching altitudes of tens of thousands of feet above the surface, this air is finally expelled toward the storm's periphery and eventually creates the spiral bands of clouds easily identifiable in satellite photographs.

The upward velocity of the air and subsequent condensation make the eye wall the region of heaviest precipitation and highest clouds. Because the outward increase in pressure is greatest there, the eye wall is also the region of maximum wind speed. By contrast, the hurricane eye is almost calm, experiences little or no precipitation, and is often exposed to a clear sky. Temperatures in the eye are 10 degrees Fahrenheit to 15 degrees Fahrenheit (5 degrees Celsius–8 degrees Celsius) warmer than those of the surrounding air as a result of sinking currents at the hurricane's core.

Movement and Occurrence of Hurricanes

Hurricanes and typhoons usually move westward at about 10 mph (16 kph) during their early stages and then curve poleward as they approach the western boundaries of the oceans at 20° to 30° lat., although more complex tracks are common. In the Northern Hemisphere, incipient hurricanes usually form over the tropical Atlantic Ocean and mature as they drift westward; hurricanes also form off the west coast of Mexico and move northeastward from that area. Between June and November, an average of six tropical storms per year mature into hurricanes along the east coast of North America, often over the Caribbean Sea or the Gulf of Mexico. Two of these storms will typically become major hurricanes (categories 3 to 5 on the Saffir-Simpson scale). One to three hurricanes typically approach the U.S. coast annually, some changing their direction from west to northeast as they develop; as many as six hurricanes have struck the United States in one year. Hurricanes and typhoons of the N Pacific usually develop sometime between May and December; typhoons and tropical cyclones of the Southern Hemisphere favor the period from December through April; Bay of Bengal and Arabian Sea tropical cyclones occur either between April and June or September and December, the times of the onset and retreat of the monsoon winds.

Damage Caused by Hurricanes

High winds are a primary cause of hurricane-inflicted loss of life and property damage. Another cause is the flooding resulting from the coastal storm surge of the ocean and the torrential rains, both of which accompany the storm. The Saffir-Simpson scale is the standard scale for rating the severity of a hurricane as measured by the damage it causes. It classifies hurricanes on a hierarchy from category 1 (minimal), through category 2 (moderate), category 3 (extensive), and category 4 (extreme), to category 5 (catastrophic). A supertyphoon is equivalent to a category 4 or 5 hurricane.

Only three category-5 storms have hit the United States since record-keeping began—the 1935 Labor Day hurricane, which devastated the Florida Keys, killing 600; Hurricane Camille in 1969, which ravaged the Mississippi coast, killing 256; and Andrew in 1992, which leveled much of Homestead, Fla. Hurricanes Irma and Maria in 2017 were category-5 storms at peak intensity over the NE Caribbean, Katrina in 2005 was a category-5 storm at peak over the central Caribbean, Mitch in 1998 was a category-5 storm at its peak over the W Caribbean, and Gilbert in 1988 was a category-5 storm at its peak. Gilbert was the strongest Atlantic tropical cyclone of record until Wilma in 2005, which was at its peak while category-5 storm over the W Caribbean. The 1970 Bay of Bengal tropical cyclone killed some 300,000 persons, mainly by drowning, and devastated Chittagong (now in Bangladesh); some 130,000 died when a cyclone struck Myanmar along the Andaman Sea in 2008. The deadliest U.S. hurricane was the 1900 Galveston storm, which killed 8,000–12,000 people and destroyed the city. Hurricane Katrina (2005), one of the worst natural disasters in U.S. history, was economically the most destructive U.S. storm, devastating the SW Mississippi and SE Louisiana coasts, flooding New Orleans, killing some 1,200 people, and leaving hundreds of thousands homeless. Sandy (2012), though technically an extratropical cyclone and no longer a hurricane when it made landfall, was the second most destructive storm economically, affecting New Jersey, New York, and 15 other states. Hugo (1989) in South Carolina and Opal (1995), Charley, Ivan, and two others (2004), and Irma (2017) in Florida, Rita (2005), Ike (2008), and Harvey (2017) in Louisiana and Texas, and Maria (2017) in Puerto Rico also caused billions of dollars worth of damage. Weak and weakened hurricanes can still cause major flooding and damage, even when downgraded to a tropical storm, as did Agnes (1972), Allison (2001), and Harvey (2017); Harvey dropped more than 60 in. (150 cm) of rain in some locations in Texas.

To decrease such damage several unsuccessful programs have studied ways to “defuse” hurricanes in their developing stages; more recent hurricane damage-mitigation steps have included better warning systems involving real-time satellite imagery. A hurricane watch is issued when there is a threat of hurricane conditions within 24–36 hours. A hurricane warning is issued when hurricane conditions (winds greater than 74 mph/119 kph or dangerously high water and rough seas) are expected in 24 hours or less.

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