

Hurricane hazards come in many forms, including storm surge when ocean waters flood the shore, heavy rainfall that may cause flooding near and even hundreds of miles from the coast, devastating high winds that blow down trees, roofs and whole buildings, tornadoes that whip away everything in their path, and deadly rip currents that pull swimmers out to sea, even those on beaches hundreds of miles away from a hurricane zone. The National Weather Service is responsible for protecting life and property by issuing timely [watches and warnings](#), but it is essential that you be ready before a storm approaches.

Hurricane Season Dates

Hurricane season in the [Atlantic](#) begins June 1st and ends November 30th. The [Eastern Pacific](#) hurricane season begins May 15th and also ends November 30th.

Know the Risks

A better understanding of [tropical cyclones](#) and hurricane hazards will help to make a more informed decision on your risk and what actions to take.

The major hazards associated with hurricanes are:

- [storm surge and storm tide](#)
- [heavy rainfall and inland flooding](#)
- [high winds](#)
- [rip currents](#)
- [tornadoes](#)

Storm Surge & Storm Tide

Before and after Hurricane Ike on the Bolivar Peninsula, TX - September 2008/USGS

Storm surge and large waves produced by hurricanes pose the greatest threat to life and property along the coast.

Storm Surge is an abnormal rise of water generated by a storm's winds. Storm surge can reach heights well over 20 feet and can span hundreds of miles of coastline.

Storm Tide is the water level rise during a storm due to the combination of storm surge and the astronomical tide.

The destructive power of storm surge and large battering waves can result in loss of life, buildings destroyed, beach and dune erosion and road and bridge damage along the coast. Storm surge can travel

several miles inland. In estuaries and bayous, salt water intrusion endangers public health and the environment.

Heavy Rainfall and Inland Flooding

Tropical cyclones often produce widespread, torrential rains in excess of 6 inches, which may result in deadly and destructive floods. In fact, flooding is the major threat from tropical cyclones for people living inland. Flash flooding, defined as a rapid rise in water levels, can occur quickly due to intense rainfall. Longer term flooding on rivers and streams can persist for several days after the storm. When approaching water on a roadway, always remember “Turn Around, Don't Drown”.

Rainfall amounts are not directly related to the strength of tropical cyclones but rather to the speed and size of the storm, as well as the geography of the area. Slower moving and larger storms produce more rainfall. In addition, mountainous terrain enhances rainfall from a tropical cyclone.

High Winds

Tropical storm-force winds are strong enough to be dangerous to those caught in them. For this reason, emergency managers plan on having their evacuations complete and their personnel sheltered *before* the onset of tropical storm-force winds, not hurricane-force winds.

Hurricane-force winds, 74 mph or more, can destroy buildings and mobile homes. Debris, such as signs, roofing material, siding and small items left outside become flying missiles during hurricanes. Winds can stay above hurricane strength well inland. In 2004, Hurricane Charley made landfall at Punta Gorda on the southwest Florida coast and produced major damage well inland across central Florida with gusts of more than 100 mph.

Atlantic and Eastern Pacific hurricanes are classified into five categories according to the [Saffir-Simpson Hurricane Wind Scale](#), which estimates potential property damage according to the hurricane's *sustained* wind speed.

Rip Currents

The strong winds of a tropical cyclone can cause dangerous waves that pose a significant hazard to mariners and coastal residents and visitors. When the waves break along the coast, they can produce deadly rip currents - even at large distances from the storm.

Rip currents are channeled currents of water flowing away from shore, usually extending past the line of breaking waves that can pull even the strongest swimmers away from shore.

In 2008, despite the fact that Hurricane Bertha was more than a 1,000 miles offshore, the storm resulted in rip currents that killed three people along the New Jersey coast and required 1,500 lifeguard rescues in Ocean City, Maryland, over a 1 week period.

In 2009, all six deaths in the United States directly attributable to tropical cyclones occurred as the result of drowning from large waves or strong rip currents.

Tornadoes

Hurricane Frances tornado damage, Sumter County, SC - September 2004/Marvin Mauman, FEMA
Hurricanes and tropical storms can also produce tornadoes. These tornadoes most often occur in thunderstorms embedded in rain bands well away from the center of the hurricane; however, they can also occur near the eyewall. Usually, tornadoes produced by tropical cyclones are relatively weak and short-lived, but they still pose a significant threat.

Warnings and Alerts

Understanding the difference between National Weather Service **watches** and **warnings** is critical to being prepared for any dangerous weather hazard, including hurricanes.

A **watch** lets you know that weather conditions are favorable for a hazard to occur. It literally means "be on guard!" During a weather watch, gather awareness of the specific threat and prepare for action - monitor the weather to find out if severe weather conditions have deteriorated and discuss your protective action plans with your family.

A **warning** requires immediate action. This means a weather hazard is imminent - it is either occurring (a tornado has been spotted, for example) - or it is about to occur at any moment. During a weather warning, it is important to take action: grab the emergency kit you have prepared in advance and head to safety immediately. Both watches and warnings are important, but warnings are more urgent.

Hurricane / Tropical Storm Alerts

- **Tropical Storm Watch:** An announcement that tropical-storm conditions are *possible* within the specified area.
- **Hurricane Watch:** An announcement that hurricane conditions are *possible* within the specified area.

Because outside preparedness activities become difficult once winds reach tropical storm force, **watches are issued 48 hours in advance of the anticipated onset of tropical-storm-force winds.**

Action: During a watch, prepare your home and review your plan for evacuation in case a Hurricane or Tropical Storm Warning is issued. Listen closely to instructions from local officials.

- **Tropical Storm Warning:** An announcement that tropical-storm conditions are *expected* within the specified area.
- **Hurricane Warning:** An announcement that hurricane conditions are *expected* within the specified area.

Because outside preparedness activities become difficult once winds reach tropical storm force, **warnings are issued 36 hours in advance of the anticipated onset of tropical-storm-force winds.**

Action: During a warning, complete storm preparations and immediately leave the threatened area if directed by local officials.

- **Extreme Wind Warning** - Extreme sustained winds of a major hurricane (115 mph or greater), usually associated with the eyewall, are ***expected to begin within an hour.***

Action: Take immediate shelter in the interior portion of a well-built structure.

How to Stay Informed

Use the National Hurricane Center, Public Advisories, Forecast/Advisories, Probabilities and Local Weather Forecasters to make an informed decision on your risk and what actions to take. Listen to recommendations of local officials on TV, radio and other media and to NOAA Weather Radio All Hazards for the latest tropical cyclone information.

NOAA Weather Radio All Hazards

The National Weather Service (NWS) continuously broadcasts warning, watches, forecasts and non-weather related hazard information on NOAA Weather Radio All Hazards (NWR). The average range of the 1000+ NWR transmitters is 40 miles, depending on topography. For the best performing NWR receivers, NWS suggests you look at devices certified to Public Alert™ standards.

Web tracking from National Hurricane Center found at: <http://www.nhc.noaa.gov/>