Rhode Island Sea Grant

FACT SHEET

Hurricanes

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What Are Hurricanes?
Hurricanes are tropical cyclones with winds of 74 miles per hour (mph) or greater but rarely exceeding 150 mph. Usually accompanied by rain, thunder, and lightning, hurricanes are especially prevalent from August through October in the tropical North Atlantic and tropical western Pacific. They occasionally move into temperate latitudes. There are two types of tropical cyclones. The first is the milder tropical storm, which has winds between 40 and 74 mph. The second type has winds greater than 74 mph and is called a hurricane.

Eye of the Hurricane
The eye of a hurricane is located inside the circular region of maximum winds, and is in many ways the most spectacular part of the storm. Strong winds may extend as much as 200 miles from the eye of the hurricane, and tornados often spin off from these storms. As the eye of a hurricane approaches, winds diminish with amazing rapidity, from extreme violence to 15 mph or less. Rain ceases, and the middle cloud deck vanishes; low clouds often remain, but with breaks through which the sun may shine. As the eye moves past—usually in about an hour—the sequence of events is reversed, and increasing winds blow from the opposite direction.

Occurrence and Movement
Hurricanes in the North Atlantic Ocean usually develop from June through October, when the sea surface is warmest and the air humidity highest. The average number of tropical cyclones in the North Atlantic is about eight per year, five of which are usually intense enough to be classified as hurricanes.

Flooding
As strong as the winds may be, the greatest damage (and nine out of 10 hurricane fatalities) comes from flooding. Torrential rains accompany hurricanes, often with as much as 30 inches of rain falling in a 24-hour period. If the forward progress of the storm is slow, these torrential rains may produce severe flooding in inland areas. In addition, a tidal storm surge—a rise in tide resulting from water that is pushed ahead of the storm—can cause major flood damage. In fact, if the storm hits at high tide, water levels may rise as much as 15 to 20 feet above normal. These wind and storm surges are highest in the right front quadrant of an approaching hurricane.

Hurricane Scale
Although all hurricanes are dangerous, some are more so than others. A hurricane's destructive power is a combination of storm surge, wind, rain, and other factors. The potential disaster of a hurricane is categorized on a scale of one to five, with Category 1 being least severe and Category 5 being most severe. The criteria for each category are as follows:

CATEGORY 1
Winds are 74 to 95 mph; storm surge is 4 to 5 feet above normal. The hurricane has a barometric pressure of 28.95 inches with no real damage to building structures.
Winds are 96 to 110 mph; storm surge is 6 to 8 feet above normal. The pressure is between 28.50 and 28.94 inches. There may be moderate damage to roofing material, doors, and windows.

**CATEGORY 3**

Winds are 111 to 130 mph; storm surge is 9 to 12 feet above normal. The pressure is between 27.91 and 28.49 inches. Damage can be extensive with some structural damage to small buildings. Terrain continuously lower than 5 feet above sea level may be flooded inland as far as 6 miles.

**CATEGORY 4**

Winds are 131 to 155 mph; storm surge is 13 to 18 feet above normal. The pressure is between 27.17 and 27.90 inches. Some extreme damage will take place. Major erosion of beach areas and major damage to lower floors of structures near the shore will occur. Massive evacuation of residential areas inland as far as 6 miles may be required.

**CATEGORY 5**

Winds are greater than 155 mph; storm surge is greater than 18 feet above normal. The pressure is less than 27.17 inches. The damage can be devastating. Some buildings may be blown over or away. Major damage to lower floors of all structures located less than 15 feet above sea level and within 500 yards of the shoreline is likely. Massive evacuation may be required of residential areas on low ground within 5 to 10 miles of the shoreline.

**Hurricane Action Checklist**

Here is an important list of things to consider that could save your life before, during, and after a hurricane.

**Should You Stay or Leave?**

With the threat of a hurricane, a decision needs to be made whether to evacuate or ride out the storm in safety at home.

If local authorities recommend evacuation, leave! Their advice is based on knowledge of the strength of the storm and its potential for death and destruction.

**General Tips:**

- If you live on the coastline or offshore islands, plan to leave.
- If you live in a mobile home, plan to leave.
- If you live near a river or in a flood plain, plan to leave.
- If you live on high ground, away from coastal beaches, consider staying.

**Plans Should Be Made at the Beginning of the Hurricane Season (June):**

- Learn the storm surge history and elevation of your area.
- Learn safe inland routes.
- Learn location of official shelters.
- Determine where to move your boat in an emergency.
- Trim back dead wood from trees.
- Check for loose rain gutters.
- If shutters do not protect windows, store enough boards to cover glass.

**When a Hurricane Watch Is Issued for Your Area:**

- Check often for official bulletins on radio, TV, or NOAA Weather Radio.
- Fuel car.
- Check mobile home tie-downs.
- Moor small craft or move to safe shelter.
- Stock up on canned provisions.
- Check supplies of special medicines and drugs.
- Check radio and flashlight batteries.
- Secure lawn furniture and other loose outdoor materials.
- Tape, board, or shutter windows to prevent shattering.
- Wedge sliding glass doors to prevent them from lifting off the tracks.

**When a Hurricane Warning Is Issued for Your Area:**

- Stay tuned to radio, TV, or NOAA Weather Radio for official bulletins.
- Stay home if your structure is sturdy and on high ground.
- Board up garage and porch doors.
- Move valuables to upper floors.
- Bring in pets.
- Fill containers (bathtub) with several days’ supply of drinking water.
- Turn up refrigerator to maximum cold and do not open unless necessary.
- Use phone only for emergencies.
- Stay indoors on the downwind side of the house away from windows.
- Beware that as the eye of the hurricane passes, increasing winds will follow in reverse.
- Leave mobile homes.
- Leave areas that might be affected by storm tide or stream flooding.
- Leave early—in daylight if possible.
- Shut off water and electricity at main stations.
- Take small valuables and papers, but travel light.
- Leave food and water for pets (shelters will not take them).
- Drive carefully to nearest designated shelter using recommended evacuation routes.

**For Further Reading:**


"How to Deal With the Aftermath of a Hurricane," Rhode Island Sea Grant, April 1992.

Source: NOAA National Weather Service.

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*Sea Grant is a nationwide program that promotes the development and wise use of marine resources for the public benefit.*