

Definition of a Hurricane

A hurricane is a tropical storm with winds that have reached a constant speed of 74 miles per hour or more. The eye of a storm is usually 20-30 miles wide and may extend over 400 miles. The dangers of a storm include torrential rains, high winds and storm surges. A hurricane can last for 2 weeks or more over open water and can run a path across the entire length of the Eastern Seaboard.

Emergency Information

1. The 74 to 160 mile per hour winds of a hurricane can extend inland for hundreds of miles. Hurricanes can spawn tornadoes, which add to the destructiveness of the storm. Floods and flash floods generated by torrential rains also cause damage and loss of life. Following a hurricane, inland streams and rivers can flood and trigger landslides.
2. When a hurricane watch is issued, the best response is to protect your property by boarding up windows, bringing in outside items, and being prepared to evacuate the areas as soon as officials so advise.
3. Even more dangerous than the high winds of a hurricane is the storm surge-- a dome of ocean water that can be 20 feet at its peak and 50 to 100 miles wide. The surge can devastate coastal communities as it sweeps ashore. Nine out of 10 hurricane fatalities are attributable to the storm surge.
4. The Primary Hazards of a Hurricane are Storm Surge, High Winds, Debris, Tornadoes and Rain/Flooding.

Conditions Which Must Be Present

- Low-pressure system
- Warm temperatures over the Ocean
- Moist environment (precipitation)
- Tropical wind patterns over the equator

Statistics of Storms

- On average, 100 tropical disturbances develop each year between May and November over the Atlantic Ocean. Half of these begin over Africa near the Cape Verde Islands.
- About 25 of these disturbances develop into tropical depressions.
- Out of these 25 tropical depressions, 10 become tropical storms.
- Out of these remaining 10 storms, only 6 become hurricanes.
- Of these 6 hurricanes, 2 are likely to strike the coast of the United States.

Season

- The Atlantic Hurricane Season begins June 1 and ends November 30 of each year.
- An "early" hurricane occurs in first three months of season, i.e. June - August while a "late" hurricane occurs in the last three months of the season, i.e. September - November.
- Historically, the most active time for hurricane development is mid-August through mid-October.
- The winter hurricane threat is virtually non-existent. Since 1886, only 3 hurricanes have been officially recorded during the month of December and only 1 during the month of January.

Strength and Intensity

The strongest hurricane recorded was the Florida Keys Storm of 1935. 500 people killed from the Category 5 storm. The largest storms recorded were the Category 5 Labor Day Storm of 1935, which killed 400 in Florida and Hurricane Camille that hit Louisiana and Mississippi in 1969. Camille caused a 25-foot storm surge, killed 256 and caused flooding all the way to New England. In general, hurricanes lose about 1/2 of their intensity in the 12 hours after landfall. Hugo, which hit North and South Carolina in 1989 had a 20 foot storm surge and caused damages in the amount of \$7 million. Storm surge, the raising of the ocean water along with the storm tide, is the leading killing element during hurricanes.

Deaths

The deadliest hurricane in U.S. history was at Galveston Island, Texas storm of 1900, estimated to be a Category 4 storm. This storm claimed more than 6,000 deaths and is noted as the worst natural disaster in our country's history. The storm surge was 16 feet. Eighteen of the 54 direct deaths attributed to Hurricane Andrew occurred during the recovery phase. Of those identified, eight were stress-induced heart attacks, three were either people falling in damaged buildings or hit by debris while cleaning up,

and two were children who died in fires in damaged homes. Nationwide, hurricanes annually account for an average of 17 deaths while flooding deaths average 147 per year.

Costs

The costliest hurricane recorded was Hurricane Andrew, August 1992. It was also the third strongest storm to hit the United States. It hit both the States of Florida and Louisiana. Estimates of damage are above \$25 billion. In less than a 4-week period in 1992, two major hurricanes hit the United States leaving an unprecedented array of devastation. First Hurricane Andrew pounded Florida and Louisiana to become the most expensive natural disaster in U.S. history with damage estimates in the range of \$15 billion to \$30 billion. Then 3 weeks later, Hurricane Iniki affected three Hawaiian Islands resulting in over \$1 billion in damage, particularly in Kauai. In 1996, the cost associated with damages in the United States was over \$3.5 billion. This season included Hurricane Bertha and Fran, which both hit the State of North Carolina. In 1992, Hurricane Andrew hit South Dade County, where the population is approximately 350,000. If it had hit 20 miles north, it would have hit Miami and affected over 1.6 million people.

Characteristics

Hurricane winds in the Northern Hemisphere circulate in a counterclockwise motion around the hurricane's center or "eye," while hurricane winds in the Southern Hemisphere circulate clockwise. Natural phenomena, which affect a storm, include temperature of the water, the gulfstream, and steering wind currents. The naming of storm has a unique history. Early on, storms were named for the location they hit or a particular day they made landfall, i.e. the Labor Day Hurricane. In 1950, the first Hurricane name was Easy that hit the coast of Florida. In 1953, the Department of Defense started the named of hurricanes by a numeric naming, i.e. Able, Baker, Charlie, etc. After three years, this was abandoned and alphabetical naming of storms using female names was implemented. Hurricanes form in the Atlantic Ocean, Gulf of Mexico, Indian Ocean, Caribbean Sea and Pacific Ocean. The National Weather Service's Tropical Prediction Center (National Hurricane Center) tracks storms during the hurricane season. Historically, they have tracked up to 76 systems during a season. Most hurricanes travel from Cape Verde, Africa but only 1 of 10 systems becomes a named tropical storm.

Tracking the Storm

The NWS uses the following devices to track storms:

1. Photography every 30 minutes from weather satellites 22,000 miles above the equator;
2. Aircraft reconnaissance which give detailed cross sectional data from inside the hurricane; and
3. land-based radar which can give information on the storm from 100-200 miles off the coast.

Aircraft reconnaissances for hurricanes are usually handled by the 53rd Weather Reconnaissance Squadron which is known commonly as the "Hurricane Hunters."

Risks

Florida is the most hurricane prone state in the United States with the southeast being the most at risk. This state being a peninsula has the potential of having hurricanes strike from the Atlantic or the Gulf. Though busy years spark our attention, 1983 had only 4 named storms yet Hurricane Alicia hit Galveston, Texas while in 1992, there were only 6 named storms but Hurricane Andrew hit Florida and Louisiana. The average number of storms is probably overstated since it does not take in effect the intensity of the storms which exist and make landfall.

Evacuation

From Texas to Maine, over 44 million people reside in coastal counties and barrier islands. Weekends and holidays can increase this number from 10-100% with tourists. To evacuate people roads must be in-place to handle mass evacuations. The more people who live in coastal areas, without new roads, the more difficult it is to evacuate. It takes longer to evacuate today than it did 10 years ago. It takes over 30 hours to safely evacuate the coastal cities of Galveston, Texas; New Orleans, Louisiana; Key West, Florida and Ocean City, Maryland.