

Hurricane Harvey

At the end of August, 2017, the southern parts of Texas and Louisiana were struck by the biggest rainstorm in recorded history to ever hit the continental United States. This massive rainfall was part of a powerful storm known as Hurricane Harvey that initially began life as a relatively innocuous tropical storm just 400 km (249 miles) east of the island of Barbados on the eastern border of the Caribbean Sea. The storm, however, rapidly transformed itself into a powerful level 4 hurricane after entering the Gulf of Mexico.

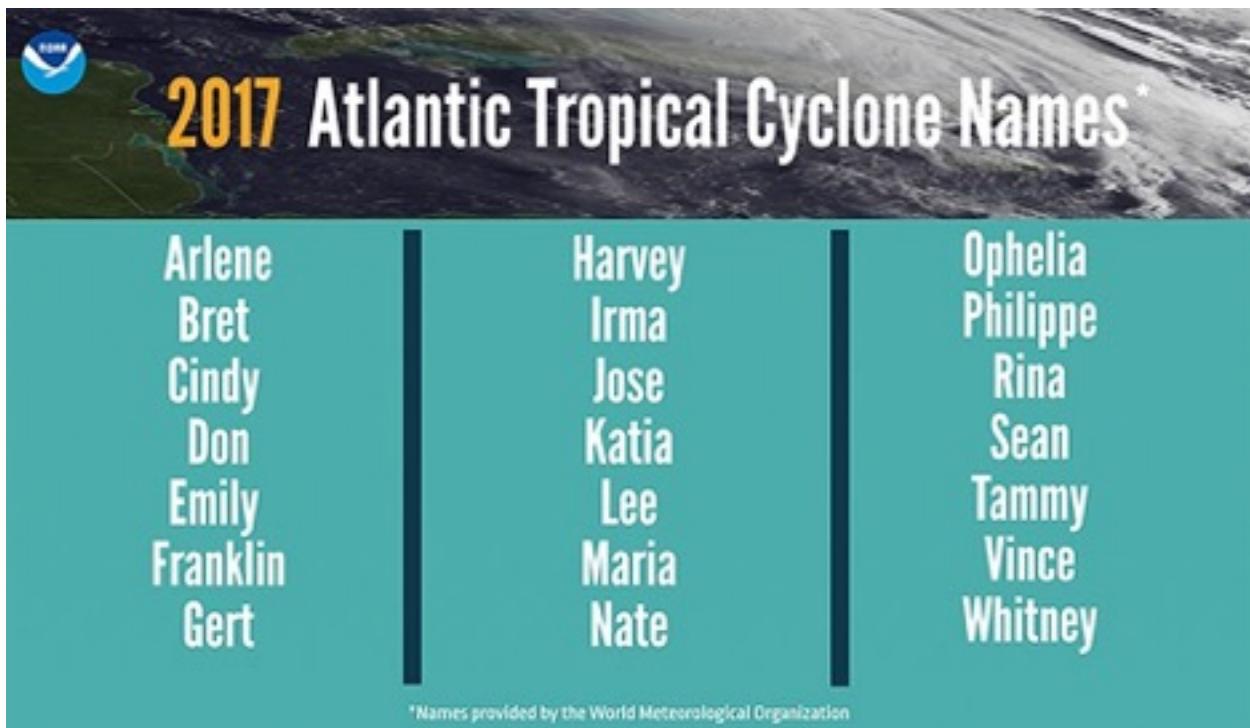


Hurricane Harvey off the coast of Texas as photographed from the International Space Station on Aug. 25, 2017.

Hurricane Harvey resulted in the displacement of hundreds of thousands of people, widespread flooding, the deaths of dozens of individuals, and property damages estimated in the tens of billions (!) of dollars.

Did You Know? What's in a Name?

Major storms that originate in the North Atlantic Ocean are named from an alphabetical list composed by the National Hurricane Center in Miami. The 2017 list starts with the name Arlene and ends with the name Whitney. The storm that eventually became Hurricane Harvey was the eighth major storm of the 2017 Atlantic hurricane season. The eighth name on the 2017 National Hurricane Center list is Harvey, hence the name Hurricane Harvey



The graphic features a background image of a satellite view of the Atlantic Ocean with several tropical cyclones visible as white and yellow swirls. In the top left corner, there is a small circular logo for the National Hurricane Center (NHC) featuring a stylized eye and the letters "NHC". The title "2017 Atlantic Tropical Cyclone Names*" is prominently displayed in large, bold, white font across the center of the graphic. Below the title, the names are listed in three columns on a teal background. The first column contains: Arlene, Bret, Cindy, Don, Emily, Franklin, and Gert. The second column contains: Harvey, Irma, Jose, Katia, Lee, Maria, and Nate. The third column contains: Ophelia, Philippe, Rina, Sean, Tammy, Vince, and Whitney. At the bottom of the graphic, a small note in white text reads: *Names provided by the World Meteorological Organization.

Arlene	Harvey	Ophelia
Bret	Irma	Philippe
Cindy	Jose	Rina
Don	Katia	Sean
Emily	Lee	Tammy
Franklin	Maria	Vince
Gert	Nate	Whitney

*Names provided by the World Meteorological Organization

The list of names for the 2017 Atlantic storm season. Harvey is the 8th name on the list.

The Evolution of Hurricane Harvey

A hurricane typically develops over the warm oceans of the tropics. It initially starts out as a group of thunderstorms. At this stage it is known as a topical depression since the wind speed does not exceed 61 km/h (i.e. 38 mph). If the storm continues to gain in intensity and achieves a wind speed between 61-118 km/h (i.e. 38-73 mph), it becomes known as a tropical storm. The storm finally achieves hurricane status when it achieves sustained wind speeds in excess of 119 km/h (i.e. 74 mph).

SAFFIR-SIMPSON HURRICANE WIND SCALE		
Category	Sustained Winds	Damage Potential
1	74-95 mph	Minimal
2	96-110 mph	Moderate
3	111-129 mph	Extensive
4	130-156 mph	Extreme
5	>156 mph	Catastrophic

The relative intensity of a hurricane is categorized by a chart known as the Saffir-Simpson Scale.

The Evolution of Harvey			
Date	Storm Category	Wind Speed	
		km/h	mph
Aug. 17	tropical depression	56	35
Aug. 19	tropical storm	64	40
Aug. 23	tropical depression	56	35
Aug. 24	hurricane – category 1	137	85
Aug. 25	hurricane – category 4	209	130
Aug. 25 – landfall	hurricane – category 4	212	132
Aug. 26	hurricane – category 1	144	90
Aug. 27	tropical storm	64	40
Aug. 28	tropical storm	72	45
Aug. 29	tropical storm	80	50
Aug. 30	tropical storm	72	45
Aug. 31	tropical depression	48	30

Did You Know? Hurricane Carla

Hurricane Harvey was the strongest storm to hit Texas since the advent of Hurricane Carla in 1961. Carla was a category 4 hurricane when it made landfall on the Texas coast on Sept. 11, 1961. Carla was responsible for the deaths of 46 people; it also spawned 18 tornadoes.



Hurricane Carla was the strongest storm to hit Texas in the 20th century; this view shows high water at Galveston.

Rainfall and Flooding

Harvey displaced an estimated 750,000 people from their homes. Harvey caused an estimated \$150 billion to \$180 billion in damages to homes, buildings, and infrastructure. Harvey's damage total is expected to exceed the \$120 billion in damages from Hurricane Katrina.

Although high winds from Harvey certainly caused significant damage, the greatest damage, however, resulted from the severe flooding caused by the massive amounts of rain that fell over the course of Harvey's lifetime. Hurricane Harvey actually ended up being the most extreme rain event in U.S. history. An estimated 125 trillion litres (33 trillion gallons) of water collectively fell on Texas, Louisiana, Tennessee and Kentucky. By way of comparison, the entire volume of Chesapeake Bay is only 68 trillion litres (18 trillion gallons).



The catastrophic nature of the flooding is visible in this image of Port Arthur, Texas taken on August 31, 2017

Did You Know? The Deadliest Hurricane

The deadliest hurricane in U.S. history also occurred in Texas. The Great Galveston Hurricane of 1900 was a category 4 hurricane that made landfall on Sept. 8, 1900 in Galveston, Texas. It had winds up to 233 km/h (145 mph) along with a storm surge of 4.6m (15 ft). An estimated 8,000 people died as a result of the hurricane, primarily due to the storm surge.



A photo showing the extensive damage caused by the Galveston Hurricane.