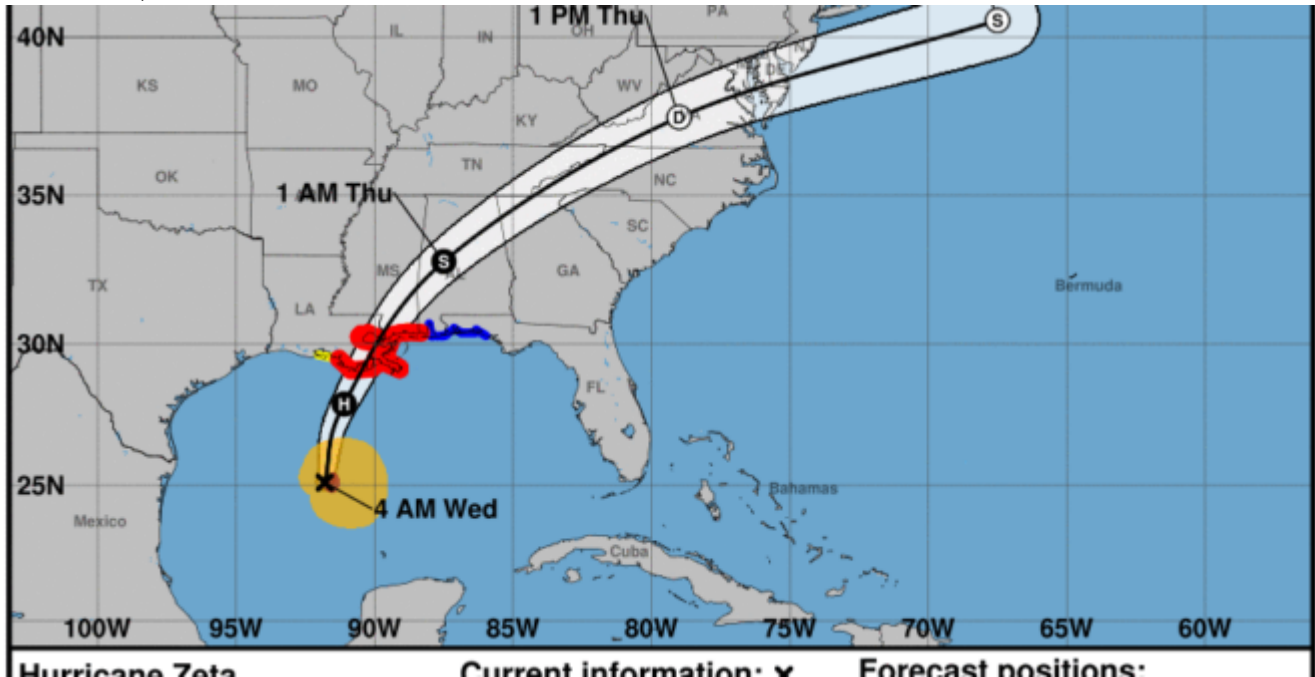


2020: A Record Breaking Hurricane Season

OPSGROUP Team

28 October, 2020



It has been a record breaking season for the Hurricanes. We are not talking the Carolina based NHL team. We are talking actual hurricanes.

2020 has now tied with 2005 as the most active hurricane season in history. No surprise there given what's gone on in 2020 so far.

Hurricane Zeta became the 11th hurricane of the year. It is also the earliest in a season that 27 storms have needed naming (2005's Zeta only formed at the end of November).

2005 is still (thankfully) beating 2020 in terms of major hurricanes.

What is the difference?

'Hurricane' comes from an old world which means 'god of the storm'. 'Typhoon' comes from the beast Typhon - a Greek monster who fathered the sphinx, Cerberus and the super lion Nemean that Hercules had to kill. The etymology of the word 'Cyclone' is less terrifying, but they all boil down to the same thing -

They are fancy terms for great, big, mess-making, flash-booming, horror storms. Whether it is a Hurricane, a Cyclone, or a Typhoon just comes down to where in the world it is wreaking havoc.

Hurricanes, Cyclones, Typhoons also get individual names if they get big enough. Some of these names get retired if they cause too much damage and destruction - like Katrina in 2005.

A full list of Hurricane names can be found [here](#).

So, what are they?

They are "large-scale, atmospheric wind-and-pressure systems characterised by a low pressure at the centre, and by a circulating wind motion". They spin counterclockwise in the Northern Hemisphere, and clockwise in the Southern Hemisphere.

Buys-Ballot famously stated if you stand with your back to the wind in the Northern Hemisphere then the low pressure will be to your left. I wouldn't recommend standing with your back to a Hurricane though.

These storms only get classified as a Storm if the tropical depression they form from gets mean enough – basically, winds exceeding 39 mph. If the storm's winds exceed 74 mph it gets reclassified as a Hurricane.

Hurricane's also get classified from 1-5 based on their capacity for damaging things.

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Why does aviation hate them?

Well, mainly because of the weather they bring. The crazy winds, serious rainfall and flooding, and power outages they cause.

How can we avoid them?

Meteorology departments track storms and try to forecast their movement. Some of the movement is based on air currents and sea currents (because hot water feeds them) amongst other things. From this they can create what are called Spaghetti models which help forecast where the storm will travel.

Agencies such as NOAA also (on purpose) fly airplanes into them. These Lockheed WP-3D Orion aircraft have 4 turboprops and are pimped out with probes for measuring every wind and pressure change to help scientists see what is going on inside.

Little salute to the pilots who do those flights!

These aircraft measure everything! They have radars which can scan the storm vertically and horizontally, and can even drop probes to test the water temperature.



Satellites monitor storms as well, but mainly just send down horrifying photos of how massive they are.

All this information gets fed to sites, some of which we monitor...

What do we tell you?

We check a site called Cyclocane which tells us about active tropical storms, and their forecast paths. We try to give an alert about severe weather forecasts, and alerts on airports that are cancelling operations due to weather.

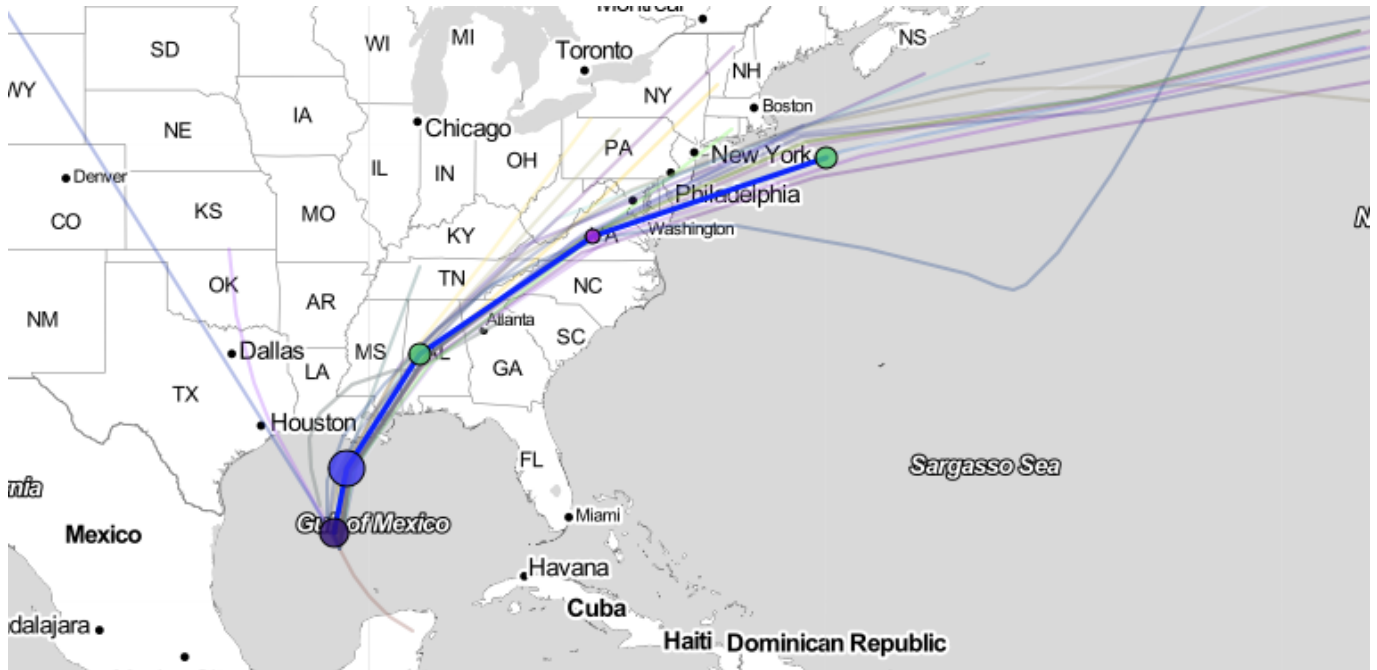
We also check other weather forecast sites, and NOAA for warnings on serious weather which might affect operations.

Zeta...

Zeta is a serious storm. Still currently over the water, it is strengthening and is expected to bring storm surges and extreme winds of over 100 mph

There are storm surge, tidal and hurricane warnings in place for Florida and Louisiana.

It is expected to turn North on October 28 or 29, and is expected to make land fall close to New Orleans late in the evening of October 28



ZETA Land Hazards

NWS Local Hurricane Statements

New Orleans LA AL282020 ****ZETA EXPECTED TO BRING HURRICANE CONDITIONS AND STORM SURGE TO A PORTION OF THE NORTHERN GULF COAST TODAY****
 Birmingham AL AL282020 ****Tropical Storm Watch Expanded Across Southeast Central Alabama****
 Tallahassee FL AL282020 ****AIR FORCE HURRICANE HUNTER AIRCRAFT REPORTS THAT ZETA IS STRENGTHENING****
 Lake Charles LA AL282020 ****AIR FORCE HURRICANE HUNTER AIRCRAFT REPORTS THAT ZETA IS STRENGTHENING****
 Jackson MS AL282020 ****HURRICANE ZETA CONTINUES NORTHWARD, FORECAST TO MAKE LANDFALL LATER TODAY****
 Mobile AL AL282020 ****ZETA EXPECTED TO BRING TROPICAL STORM CONDITIONS AND STORM SURGE TO THE AREA LATE THIS AFTERNOON AND OVERNIGHT****
 Peachtree City GA AL282020 ****Remnants of Hurricane Zeta is expected to impact portions of north and west Georgia late today into Thursday****

A different map: Winter Storm

Mark Zee

28 October, 2020



Apart from the routine Flight Operations that we support at the **Flight Service Bureau**, we spend a fair bit of time building new things. Much of time, those things involve maps, and so we keep our eyes out for new ideas ... and we especially liked this graphic presentation of US Winter Storm Jonas at the end of January 2016.

We took the original and slowed it down a little, but what you'll see here is forecast data from NOAA's High Resolution Rapid Refresh Model to animate the storm's arrival in the Mid-Atlantic. The map shows water equivalent accumulated snow depth, or WEASD, which we can think of as the volume of water contained in the snow on the ground.

