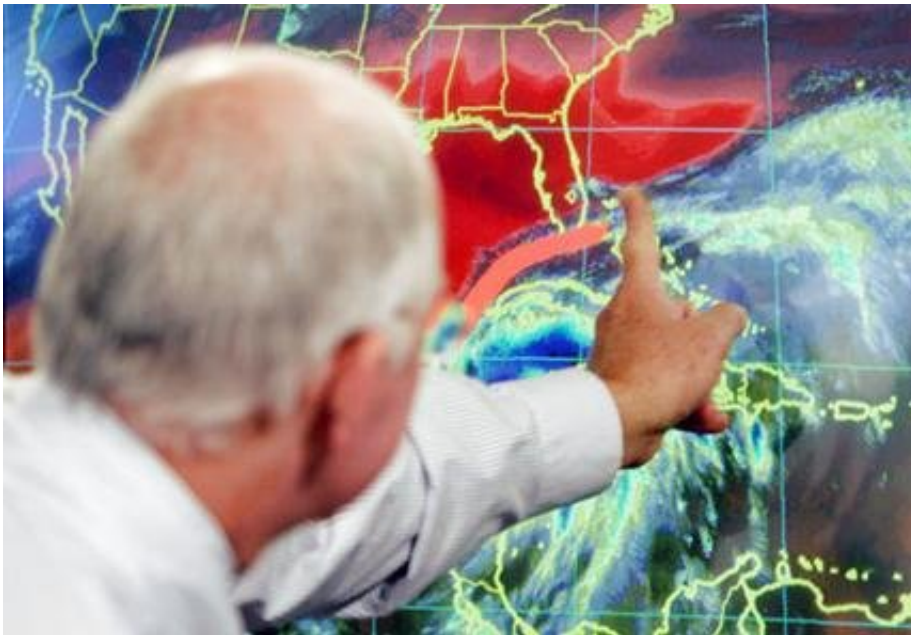


# Science Says: Era of monster hurricanes roiling the Atlantic

October 6 2017, by Seth Borenstein

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In this Oct. 19, 2005 file photo, Max Mayfield, the former director of the hurricane center (now retired), draws a line showing one of the possible trajectories of Hurricane Wilma in Miami. It's not just this year. The monster hurricanes Harvey, Irma, Maria, Jose and now Lee that have raged across the Atlantic are contributing to what appears to be the most active period for major storms on record. AP Photo/Alan Diaz

It's not just this year. The monster hurricanes Harvey, Irma, Maria, Jose and Lee that have raged across the Atlantic are contributing to what appears to be the most active period for major storms on record.

And the busiest part of [hurricane season](#) isn't even over.

An analysis of 167 years of federal storm data by The Associated Press found that no 30-year period in history has seen this many major hurricanes, this many days of those whoppers spinning in the Atlantic, or this much overall energy generated by those powerful storms.

Scientists caution it is too soon to draw conclusions from the data, and they don't say the intense activity confirms a trend. Storms in the distant past may have gone unnoticed, which could make earlier generations appear quieter than they were. Some scientists say past hurricane data is so weak that it's impossible to connect the recent activity to global warming.

But more intense storms are what scientists expect to see as the planet's climate changes because warmer ocean water is fuel for hurricanes. And they say it is important to better understand this current intense period to save lives and prevent worse future destruction.

Georgia Tech climate scientist Kim Cobb said it would be "foolish" for policymakers to ignore the data. "We may not have as much data as we would like, but we have enough to aggressively invest in a variety of defenses for coastal communities," she said in an email. "We face a triple threat of rising seas, stronger winds, and literally off-the-charts rainfall totals."

The Atlantic hurricane season was more intense than normal in 2003, 2004, 2005, 2008, 2010, 2012 and 2016. The 2005 season, which included Katrina, Rita and Wilma, was so active forecasters ran out of names for storms.

Then came this year. Fueled by warmer than normal ocean temperatures and ideal wind conditions, September 2017 had more days with major

hurricanes spinning and more overall hurricane energy expelled than any month on record, according to Colorado State University hurricane researcher Phil Klotzbach. Harvey spawned record rainfall. Irma had record high winds in the open Atlantic. And Maria hit the U.S. stronger than the earlier two.

The Associated Press looked at all major hurricanes - not just the small fraction that hit the U.S. - and grouped them into 30-year periods to mirror the 30-year cycles climate scientists use to understand how the climate is changing. The analysis found that in the period from 1988 to 2017:

- There have been 90 major hurricanes, an average of three a year. That's 48 percent more than during the previous 30 years. This hurricane season is at five and still counting.
- During the past 30 years major hurricanes have churned for an average of 7.2 days. That's 65 percent more than the average during the previous 30 years. There have been 18.8 major hurricane days so far this year.
- Scientists use a measure called Accumulated Cyclone Energy, or ACE, that factors in wind speed and [storm](#) duration to gauge hurricane power. The annual average ACE of the past 30 years is 41 percent more than in the previous 30 years. An average year ACE is just shy of 100 and this year's ACE, with two months still to go, is 204.2.
- Of the last 30 years, nine hurricane seasons were considered "hyperactive" according to the definition used by the National Oceanic and Atmospheric Administration and seven were above normal. Only seven years were below normal.

Was it just as busy for major storms in the 1930s or 1890s? The numbers say no, but scientists won't draw conclusions because they fear

a large undercount of storms before the 1960s.

"There's no question that the storms are stronger than they were 30 years ago," said NOAA climate and hurricane scientist James Kossin. "The questions are if you go back a little further if that's what you'll find. We do know for sure that things have increased a hell of a lot since 1970."

So what's going on?

Scientists talk about two important factors for long-term hurricane activity: man-made climate change and a natural pattern of changes in the Atlantic.

The world's oceans go through long cycles as water circulates like a giant conveyor belt. They last 20 to 30 years, carrying water with different levels of salt and temperature. That cycle seems coincide with hurricane activity, Klotzbach said.

Klotzbach predicts that a period of high salinity and warmer water in the North Atlantic that has been present since 1995 will soon fade - and take with it this ultra-busy period for storms. Other scientists dispute this.

More frequent and more intense storms fit what scientists expect to see accompany global warming, MIT [hurricane](#) and climate professor Kerry Emanuel said. Physics, computer simulations and numerous scientific studies show that as the world warms the strongest storms should get wetter and more intense, and probably more frequent. Yet, the overall number of all named storms is likely to drop because there will likely be fewer weaker ones, scientists say.

Still, scientists say it would take more years - and maybe decades - of good data to know for sure if there's a direct connection to climate change.

National Hurricane Center science officer Chris Landsea said the problems with missing past storms are so severe "making any conclusions for the entire (Atlantic) basin would not be justified" and several other [scientists](#) agreed with him.

Climate scientist Stefan Rahmstorf of the Potsdam Institute in Germany said the data showing increased intensity is clear enough for him: "The only caveat being that the increase might be exaggerated somewhat because of undercounting early storms."

What's happening with hurricanes - the frequency, the duration, and the energy - is probably a combination of factors caused by both nature and man, Klotzbach said: "a mish-mosh of everything."

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