

This hurricane season could be among the worst in decades, NOAA warns

The NOAA outlook predicts 17 to 25 tropical storms, eight to 13 hurricanes and four to seven “major” hurricanes, and is the most aggressive May prediction the agency has made.



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The National Oceanic and Atmospheric Administration warned Thursday that the United States could face one of its worst hurricane seasons in two decades as the agency issued its most aggressive outlook ever.

Government meteorologists predicted 17 to 25 tropical storms and said eight to 13 of them are likely to become hurricanes, including four to seven “major” hurricanes. The forecast underscores how record-hot ocean temperatures have increased the risk of destructive weather.

“This season is looking to be an extraordinary one,” NOAA Administrator Rick Spinrad said.

Tropical activity could outpace even a record flurry of storms in 2005, perhaps starting earlier and persisting even longer. That May, warm waters across the tropical Atlantic Ocean prompted warnings of an active hurricane season, but the season exceeded all expectations with a record-smashing 28 storms and seven major hurricanes, including Hurricane Katrina.

Now, tropical Atlantic waters are “dramatically” hotter than they were 19 years ago, NOAA’s lead hurricane season forecaster Matthew Rosencrans said — already as warm as they would be in a typical August. And cyclones are intensifying about three times faster than they did decades ago as they approach the coast, according to new research.

The trends are largely the consequence of an atmospheric blanket of human-emitted greenhouse gases warming the planet. Evidence of the increasing hurricane risk has mounted with each monster storm that analyses show were juiced by global warming.

The 5 hurricane categories, explained

Here's an animated look at each category on the Saffir-Simpson Hurricane Wind Scale.

(Aaron Steckelberg/The Washington Post)

Adding to storm risks this year is a natural planetary shift known to make conditions more ripe for tropical Atlantic activity, from a fading El Niño climate pattern to La Niña by the heart of hurricane season. A similar shift occurred over the record-setting 2005 hurricane season.

The NOAA forecast aligns with several others from meteorologists who see alarming signs in the tropical Atlantic.

A forecast issued by Colorado State University last month warned of as many as two dozen tropical storms and as many as five major hurricanes, many of which meteorologists said could be long-lived. Britain's Met Office on Wednesday predicted 22 tropical storms, with potential for as many as a record-tying 28.

Most ominous of all is the forecast from scientists at the University of Pennsylvania, who are calling for a record 33 named storms.

Prime storm conditions are expected by fall

Tropical systems earn a name from rotating annual lists — this year's goes from Alberto to William — once they develop rapid rotation around a low-pressure center, with sustained winds of at least 39 mph. They become hurricanes once those winds reach at least 74 mph, and are considered major storms when the winds exceed 110 mph.

Hurricane season begins June 1, and by the typical heart of the season in August and September, conditions are forecast to be prime for such systems to intensify.

Given how warm the Atlantic is this spring — with global ocean surface waters having run a fever of record-setting average heat for more than a year — simple physics suggests it will remain warmer than normal for many months to come. It takes water much longer than land to warm and cool.

Across the tropical Atlantic zone in which storms develop, average surface temperatures are running 1 to 2 degrees Celsius (1.8 to 3.6 degrees Fahrenheit) above normal, Rosencrans said. Warmer water means more energy for tropical storms to feed off and unleash.

And the expectation of a budding La Niña pattern by late summer or early fall means atmospheric patterns will probably be conducive for storms to organize into tightly spinning systems with defined eyes and violent surrounding winds in what are known as eyewalls.

When La Niña is in place, marked by cooler-than-normal waters across the central and eastern Pacific Ocean, atmospheric circulation patterns tend to reduce what is known as wind shear. When wind shear is low, it means there is relatively little difference in wind speeds and directions at varying altitudes, which helps tropical storms spin up and organize.

“All the ingredients are definitely in place to have an active season,” National Weather Service Director Ken Graham said.

Global warming is encouraging stronger storms

The conditions are expected to magnify the background effect that rising global temperatures are having on tropical cyclones in the Atlantic.

A growing body of research on storms has shown that they are becoming increasingly intense by many measures, a trend punctuated by a period in which seven major hurricanes hit the United States within six years.

Warming is allowing major storms to form significantly earlier during hurricane season, and also encouraging more to undergo rapid intensification more frequently in parts of the Atlantic basin such as the western Caribbean Sea.

A study found that a growing number of tropical cyclones around the world have undergone what researchers called “extreme” rapid intensification, with their maximum sustained winds increasing by 57 mph or more within a 24-hour period.

Some storms in recent years have so stretched the bounds of the five-step Saffir-Simpson scale of hurricane intensity that two prominent meteorologists recently suggested a Category 6 label could be worth considering.

Now, there is evidence that storms are intensifying faster as they near U.S. shores, as well as coastal East Asia, according to a study published this month.

The researchers found that coastal storms' wind speeds intensified by an average of about 0.4 mph every six hours as they approached the coast from 1979 to 2000. But from 2000 to 2020, that happened more than three times quicker, at a rate of 1.3 mph every six hours.

Along the U.S. coastline, researchers believe that is because of decreasing wind shear and because of increasing relative humidity as land warms faster than oceans.

Karthik Balaguru, a climate and data scientist at the Pacific Northwest National Laboratory and the study's lead author, said the trends could translate to heightened coastal dangers this year given how favorable the environment is likely to be for tropical storm development.

"The ones that form could get strong if these conditions persist," he said.

Even in a quiet season, the most powerful storms can intensify so quickly that communities might have only two days' warning before a major hurricane hits, Graham said. NOAA and Federal Emergency Management Agency officials urged residents to begin preparing for storms now — considering evacuation routes, medical needs and even pet safety — or else risk being caught off guard or perhaps stuck in heavy traffic on evacuation routes.

"You can't wait until the storm surfaces because then you may not have the time," Graham said. "You've got to be ready."