

Climate change made this monster

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More than a million people are fleeing the Carolina coast ahead of Hurricane Florence's impending landfall. When they return, the region they call home will likely be forever changed.



Hurricane Florence is an almost impossibly rare threat. A storm this powerful is exceedingly rare this far north on the East Coast. Never before has a hurricane threatened the East Coast with nearly four feet of rainfall. In just two cases since our records began in 1851 — Hazel in 1954 and Hugo in 1989 — has a Carolina hurricane provoked an 18-foot rise in the ocean tide.

In my two decades as a meteorologist, I can't recall a single storm that threatened new all-time records in all three of these, simultaneously, anywhere in the world. Despite what some of my more hesitant colleagues might say, you can connect individual weather events to climate change in this day and age. Quite simply, Hurricane Florence is a storm made worse by climate change.

A warmer atmosphere can hold more water vapor — producing heavier downpours and providing more energy to hurricanes, boosting their destructive potential. We already have evidence of these trends from around the world. This is no longer just a theory.

The Carolinas are likely to join Texas, Florida, Puerto Rico, California and countless other places worldwide that have experienced such deadly weather over the past 12 months. On Tuesday, the U.S. Geological Survey issued a statement predicting that Florence could erode away protective dunes from threequarters of North Carolina's beaches. Like the otherworldly wildfire smoke that dimmed the British Columbia sun last month or the clear-day floods that routinely hit the Marshall Islands, this week's potentially coastline-erasing landfall is a glimpse into a haunting world that has arrived too soon.

Since modern tracking began, no hurricane with its origins in the hundreds-of-miles-wide patch of the central Atlantic where Florence traveled has ever made landfall on the East Coast, or even come close. Thanks to unusually warm ocean waters, Florence has intensified at one of the fastest rates in recorded history for a hurricane so far north. Thanks in part to unusually warm ocean waters between New England and Greenland, the atmosphere has formed a near-record-strength blocking pattern — not unlike the one that steered Sandy into New York Harbor in 2012 — that is propelling Florence toward the Southeast coastline. Another blocking pattern, expected to emerge later this week over the

Great Lakes, could lock Florence in place for days — which would result in an abject fresh-water flood that could extend hundreds of miles inland.

For decades, hurricane scientists fretted about when the effects of climate change would become apparent. Tropical meteorology is tricky, and in the past the models have given conflicting results. But on the East Coast, the trends are more clear: Stronger hurricanes are happening more often, and farther north. They are bringing more rain, and — as the seas rise, their coastal floods are literally changing the shape of the coastline.

At a moment when there's so much happening that it's difficult to look beyond the day's scandals and headlines, it's important to remember what's at stake. In November 1936, in a speech to the British House of Commons, Winston Churchill made a bone-chilling — yet unpopular at the time — pronouncement on the growing threat of Nazi Germany that could easily be applied today to climate change:

“Owing to past neglect, in the face of the plainest warnings, we have now entered upon a period of danger. . . . The era of procrastination, of half-measures, of soothing and baffling expedients, of delays, is coming to its close. In its place we are entering a period of consequences. . . . We cannot avoid this period; we are in it now.”

We can think of this in two ways: We are, at once, living in the previous generation's worst-case scenario and our children's chance of a lifetime. With catastrophic weather all around us, we are continuing to make the problem worse. In 2017, the world emitted the most greenhouse gases in a single year in human history. Yet with each new day, there remains ample opportunity to steer humanity on a radically different path that could still greatly limit the impact of much worse climate change on every living species for countless generations.

We have entered the heart of climate change's period of consequences. That is not cause for despair or remorse; it is a time for courageous action. Eric Holthaus is a meteorologist and staff writer for Grist.