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Sea Level Rise Is Speeding Up in Parts of the Southeastern U.S.

A combination of natural factors has driven the rise, but climate change has exacerbated the problem

By Scott Waldman, ClimateWire on August 10, 2017

Credit: Westend61 Getty Images

Sea-level rise isn't just happening; it's accelerating. And some areas of the United States—like Florida—are seeing "hot spots" where the ocean can creep up six times faster than average.

Those are the findings of two new studies published yesterday, which have potentially troubling implications for urban planners trying to address sea-level rise. They also help explain why residents of Florida and North Carolina have seen sharp increases in coastal flooding in recent years.

Sea levels in the Southeast—between Cape Hatteras, N.C., and Miami—rose dramatically between 2011 and 2015, according to a new study published

in *Geophysical Research Letters*. The spike in sea levels is driven by a combination of natural factors that is exacerbated by human-caused sea-level rise.

last century, said Andrea Dutton, a geological science professor at the University of Florida and a co-author of the study. It also shows there is more vulnerability on the Atlantic coast, home to many of America's major cities, than is typically recognized, she said.

"The whole coastline is vulnerable to this type of behavior as we move into the future," she said.

The natural factors driving the burst in sea level included an El Niño and the North Atlantic Oscillation, the shift in atmospheric pressure over the ocean, researchers found. The increase, as well as one observed from 2009 to 2010, occurred around Cape Hatteras, where the Gulf Stream cuts from the coastline and into the deeper ocean.

The hot spots show that short-term factors also drive sea level and often are overlooked by urban planners preparing infrastructure for more flooding, Dutton said. While much of the research predicting future sea level focuses on long-term trends, short-terms rises in sea level can also bring major changes, she said. That makes regional planning more difficult and suggests that sea-level-rise projections could be too conservative, she said.

"Things can really change in five years, and when you look at the projections, you don't really get that sense," she said. "I think the projections give you a false sense of security because you say, 'OK, we're not going to get to this level until the year 2060 or whatever.' But in reality, it can happen much faster."

While rising sea levels are traditionally hard to pinpoint, a growing base of research has found that sea levels are steadily rising and even accelerating. A separate study published yesterday shows that sea levels have risen steadily over the last few centuries, and the rate of the rise has doubled and even tripled in recent decades.

Global sea levels saw virtually no rise between A.D. 1 and 1800, according to the new

researcher at University College Dublin and lead investigator of the study along with researchers at Tufts University, Rutgers University and Nanyang Technological University in Singapore.

The rise corresponds with the beginnings of the industrial age, when factories began spewing carbon dioxide into the atmosphere that warmed the Earth at an unprecedented rate. The study was among the first to apply the methods of statistics to more precisely measure sea levels by emphasizing the precision of modern monitoring equipment and comparing it with the sedimentary record. It found that sea levels on the East Coast of the United States are rising more rapidly than at any time in the last 2,000 years.

Currently, the rate of rise is still relatively modest, at 3 or 3.5 millimeters per year, or 3 centimeters per decade. But if rates continue to rise at their current pace, or even faster as some have predicted, that can signal major problems for coastal cities in the future, Parnell said.

“No one is going to lose their homes or anything like that over 3 centimeters,” he said. “But if you think that starts to increase a bit more, if tidal ranges start to increase as a response to that, which is another thing that can happen, you get into problems of flooding, and you compound on top of that increased extreme rainfall, it’s another small ingredient into a worrying near future.”

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