

Sea Levels Along The Northeast Rose Almost 4 Inches In Just 2 Years: Study



James Gerken: Feb 25, 2015

Sea levels across the Northeast coast of the United States rose nearly 3.9 inches between 2009 and 2010, according to a new study from researchers at the University of Arizona and the National Oceanic and Atmospheric Administration. The waters near Portland, Maine, saw an even greater rise -- 5 inches -- over the two-year period.

While scientists have been observing higher sea levels across the globe in recent decades, the study found a much more extreme rise than previous averages. Such an event is "unprecedented" in the history of the tide gauge record, according to the researchers, and represents a 1-in-850 year event.

"Unlike storm surge, this event caused persistent and widespread coastal flooding even without apparent weather processes," the study's authors wrote. "In terms of beach erosion, the impact of the 2009-2010 [sea level rise] event is almost as significant as some hurricane events."

The analysis relied on data from dozens of tide gauges along the eastern seaboard. The nearly 4-inch rise for the Northeast represents the average of 14 tide gauges located between New York and Canada. Tide gauges farther south in the Mid-Atlantic and Southeast indicated a sea level rise far less extreme in 2009 and closer to average in some areas. The jump occurred most quickly between April 2009 and March 2010.

The study found that the increase in the Northeast was caused by a 30 percent slowdown in a major ocean current system known as the Atlantic meridional overturning circulation (AMOC) and a fluctuation in atmospheric pressure at sea level. The Gulf Stream is one component of the AMOC, which moves warm water northward in the upper levels of the Atlantic.

A 2014 study of the AMOC over that period found the slowdown also contributed to severe winter conditions in northwestern Europe and the intensity of the 2010 Atlantic hurricane season, which was the third-most active on record.

The U.N.'s Intergovernmental Panel on Climate wrote in its latest report that AMOC currents are "very likely" to weaken in the 21st century. Models project that unusual rises in sea level, like that observed in the study, will be bigger and more frequent along the Northeastern seaboard this century, study coauthor Jianjun Yin told The Huffington Post.

And events like the one observed in the study, combined with ongoing global sea level rise, "will pose an even higher coastal flooding risk," Yin told Mashable.

A 2012 study determined that sea levels between North Carolina and Boston are rising at a rate three to four times faster than the global average. Yet this only represents a rise of 2 to 3.7 millimeters per year since 1980, far less than the 100 millimeters observed in the Northeast between 2009 and 2010.

This week's study, published in Nature Communications, follows a new report from the New York City Panel on Climate Change that warns of significant sea level rise and coastal flooding threats for the city in coming decades. Sea levels in New York City have already risen more than a foot since 1900, and the trend is very likely to accelerate: If greenhouse gas emissions from human activities are not curtailed, the panel projects seas to rise by an additional 11 to 21 inches by the middle of the century, by 18 to 39 inches by the 2080s, and by as much as 6 feet by the end of the century.
