

Climate change altering frequency, intensity of hurricanes

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Climate change may be the driving force behind fewer, yet more powerful hurricanes and tropical storms, says a Florida State geography professor.

In a paper published today by *Nature Climate Change*, Professor Jim Elsner and his former graduate student Namyoung Kang found that rising ocean temperatures are having an effect on how many [tropical storms](#) and hurricanes develop each year.

"We're seeing fewer hurricanes, but the ones we do see are more intense," Elsner said. "When one comes, all hell can break loose."

Prior to this research, there had been some discussions among scientists about how warmer [ocean temperatures](#) affected the intensity of a hurricane. Elsner and Kang wanted to further explore that concept as well as the number of storms that occurred each year.

Hurricanes can form when ocean waters are 79 degrees Fahrenheit or more. As the warm water evaporates, it provides the energy a storm needs to become a hurricane. Higher temperatures mean

higher levels of energy, which would ultimately affect wind speed.

Specifically, Elsner and Kang projected that over the past 30 years, storm speeds have increased on average by 1.3 meters per second—or 3 miles per hour—and there were 6.1 fewer storms than there would have been if land and water temperatures had remained constant.

"It's basically a tradeoff between frequency and intensity," Elsner said.

According to the National Oceanic and Atmospheric Administration, the Earth is roughly 1.53 degrees Fahrenheit warmer than it was last century.

Elsner and Kang said the yearly temperatures can also be a good indicator of what's yet to come in a given storm season.

"In a warmer year, stronger but fewer tropical cyclones are likely to occur," said Kang, now deputy director of the National Typhoon Center in South Korea. "In a colder year, on the other hand, weaker but more tropical cyclones."

For the 2015 Atlantic storm season, which begins June 1, the Weather Channel has projected a total of nine named storms, five hurricanes and one major hurricane. The 30-year average is 12 named storms, six hurricanes and three major hurricanes.

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More information: Trade-off between intensity and frequency of global tropical cyclones, [DOI: 10.1038/nclimate2646](https://doi.org/10.1038/nclimate2646)

Provided by Florida State University

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