

Atlantic hurricanes now twice as likely to strengthen from weak to major intensity in 24 hours, researchers suggest

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Atlantic hurricanes may now be more than twice as likely to strengthen from a weak Category 1 hurricane to a major Category 3 or stronger hurricane in a 24-hour period than they were between 1970 and 1990, suggests a paper [published](#) in *Scientific Reports*. The paper also suggests

that hurricanes are now more likely to strengthen more rapidly along the east coast of the U.S. than they were between 1970 and 1990.

Better communication methods are needed to warn at-risk communities as it is difficult to predict when in its lifespan a [hurricane](#) will strengthen most rapidly, according to the author.

The fastest intensification of hurricanes or [tropical storms](#) typically occurs over areas of unusually warm sea surface temperatures, and increasing storm intensification rates have been linked to warmer oceans under [climate change](#). However, the changes in the intensification rates of hurricanes across the whole of the Atlantic basin have been unclear.

Andra Garner analyzed how the [wind speed](#) changed over the lifespan of every Atlantic hurricane between 1970 and 2020. The hurricanes were split into three time periods: a historical era (1970–1990), an intermediate era (1986–2005), and a modern era (2001–2020).

The author calculated the greatest increase in wind speed over any 24-hour period within the hurricane's lifespan to establish the maximum intensification rate. They found that the probability of a hurricane's maximum intensification rate being 20 knots (37 km per hour) or greater had increased from 42.3% in the historical era to 56.7% in the modern era. Additionally, the probability of a hurricane strengthening from a weak hurricane to a [major hurricane](#) in 24 hours had increased from 3.23% to 8.12%.

Finally, the author found that the locations where hurricanes were most likely to experience their maximum intensification rate had changed between the eras. Hurricanes were more likely to strengthen most quickly off the US Atlantic coast and in the Caribbean Sea, and less likely to strengthen most quickly in the Gulf of Mexico.

The author notes that four of the five most economically damaging Atlantic hurricanes have occurred since 2017, and all had strengthened rapidly during their lifespans. They suggest that better hazard preparation plans and communication systems be developed for communities at risk.

More information: Andra J. Garner, Observed increases in North Atlantic tropical cyclone peak intensification rates, *Scientific Reports* (2023). [DOI: 10.1038/s41598-023-42669-y](https://doi.org/10.1038/s41598-023-42669-y).
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