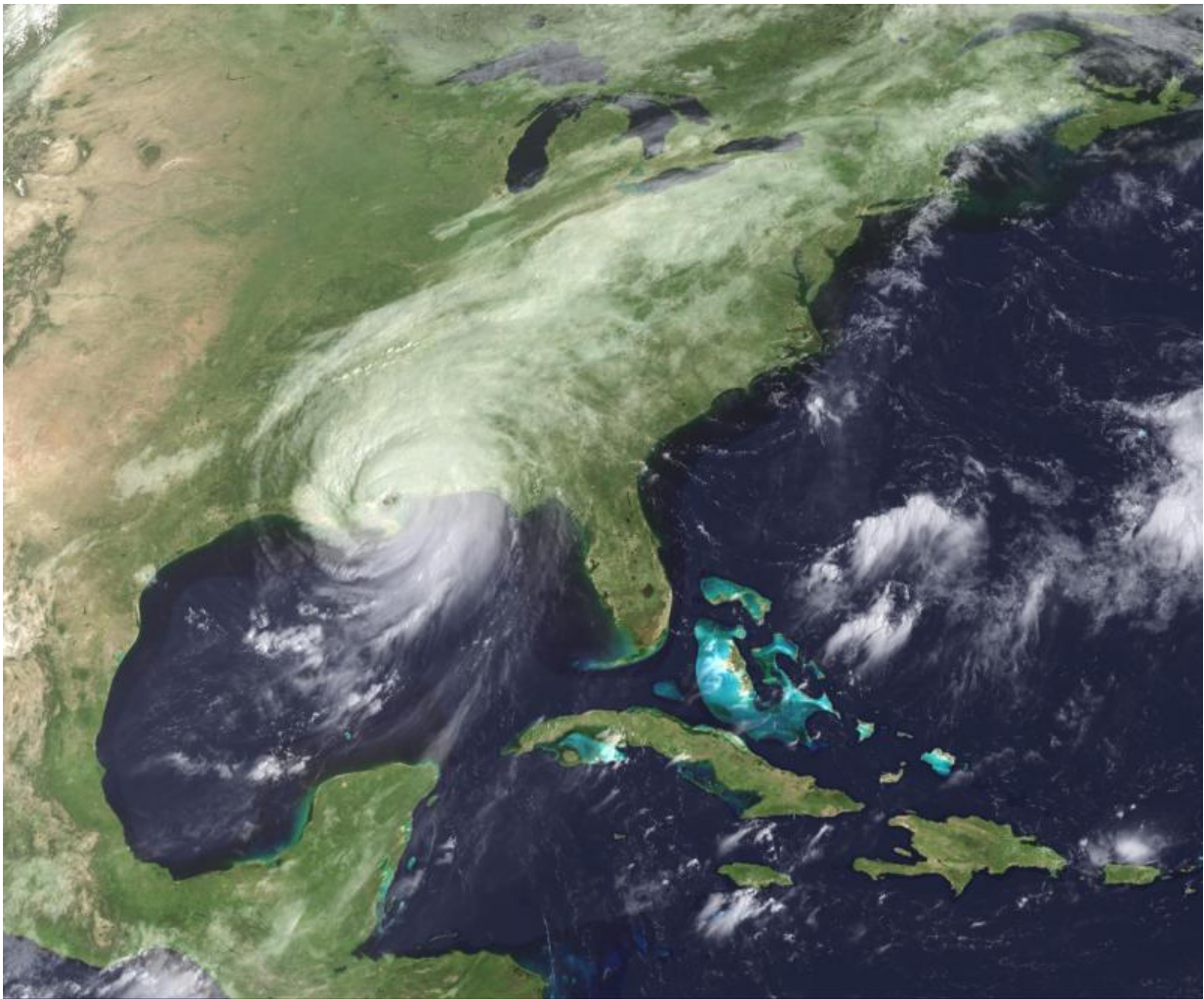


No major US hurricane landfalls in nine years

May 14 2015, by Leslie Mccarthy



The United States hasn't experienced the landfall of a Category 3 or larger hurricane in nine years – a string of years that's likely to come along only once every 177 years, according to a new NASA study.

The current nine-year "drought" is the longest period of time that has passed without a [major hurricane](#) making landfall in the U.S. since reliable records began in 1850, said Timothy Hall, a research scientist who studies hurricanes at NASA's Goddard Institute for Space Studies, New York.

The National Hurricane Center calls any Category 3 or more intense [hurricane](#) a "major" storm. The last major storm to make landfall in the U.S. was Hurricane Wilma on Oct. 16, 2005 – the fourth major storm landfall of that year, which was the most active Atlantic hurricane season on record. Of course, storms smaller than a Category 3 have made landfall with destructive results, such as Hurricane Sandy in 2012.

Hall and colleague Kelly Hereid, who works for ACE Tempest Re, a reinsurance firm based in Connecticut, ran a statistical hurricane model based on a record of Atlantic tropical cyclones from 1950 to 2012 and sea surface temperature data. While hurricane records stretch back to 1850, the data becomes less complete prior to 1950, Hall said. The study was published recently in *Geophysical Research Letters*.

The researchers ran 1,000 computer simulations of the period from 1950-2012 – in effect simulating 63,000 separate Atlantic hurricane seasons. They found that a nine-year period without a major landfall is likely to occur once every 177 years on average.

While the study did not delve into the meteorological causes behind this lack of major hurricane landfalls, Hall said it appears it is a result of luck.

"The last nine hurricane seasons were not weak – storms just didn't hit the U.S.," Hall said. "It seems to be an accident of geography, random good luck."

When 2014 passed without a major hurricane landfall, the period from 2006-2014 surpassed the previous record for an absence of known major hurricane landfalls in the U.S., which occurred from 1861 to 1868. The researchers became curious about the probability of nine years passing without a major landfall.

The nine-year period stands out, too, because it immediately followed the most active Atlantic hurricane season on record. As major hurricanes Dennis, Katrina, Rita and Wilma all hit the U.S., debate intensified about how global warming might drive hurricane activity.

Hall said the past nine years show why there are still questions about the connection between hurricanes and the warming of Earth's atmosphere and ocean.

"Hurricanes respond in complicated ways to their environment," Hall said. Regarding the larger climate change-hurricane question, he said, "It's one of the areas of climate change research where reasonable people can still disagree."

A trickier problem than simply deriving the odds of such a "landfall drought" is trying to predict when the drought might end. Even though a long period of time has passed, the probability that any given year will end the drought is still the same every year, Hall said.

Think of it this way: If you flip a coin and it comes up heads nine times in a row, there is still a 50-50 chance that the 10th flip will come up tails. Hall and Hereid's statistical analysis found that in any given year there is a 39 percent probability of one or more major hurricane landfalls on the

U.S and that that probability does not depend on the drought length. So what are the chances of this historic period coming to an end in 2015, based solely on the odds of the historical record? Thirty-nine percent, Hall said.

"Each year is roughly independent of the year before," Hall said. "There are known signals, and natural cycles, and possibly human-induced influences. But for the most part, they are independent, especially for the rare intense landfalls."

Provided by NASA

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