

August 27, 2011

## Seeing Irene as Harbinger of a Change in Climate

By [JUSTIN GILLIS](#)

The scale of [Hurricane Irene](#), which could cause more extensive damage along the Eastern Seaboard than any storm in decades, is reviving an old question: are [hurricanes](#) getting worse because of human-induced [climate change](#)?

The short answer from scientists is that they are still trying to figure it out. But many of them do believe that hurricanes will get more intense as the planet warms, and they see large hurricanes like Irene as a harbinger.



### [Damage From Hurricane Irene Scars East Coast](#)

Hurricane Irene mowed across coastal North Carolina and Virginia as it churned up the Atlantic Seaboard.

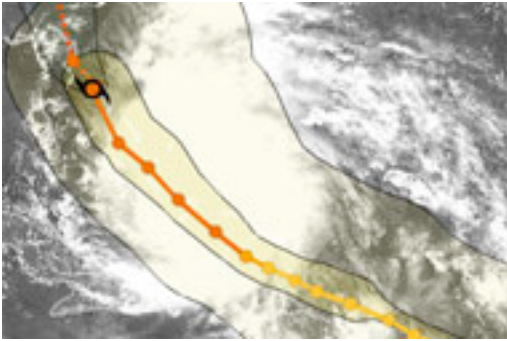
While the number of the most intense storms has clearly been rising since the 1970s, researchers have come to differing conclusions about whether that increase can be attributed to human activities.

“On a longer time scale, I think — but not all of my colleagues agree — that the evidence for a connection between Atlantic hurricanes and global climate change is fairly compelling,” said Kerry Emanuel, an expert on the issue at the Massachusetts Institute of Technology.

Among those who disagree is Thomas R. Knutson, a federal researcher at the government’s Geophysical Fluid Dynamics Laboratory in Princeton, N.J. The rising trend of recent decades occurred over too short a period to be sure it was not a consequence of natural variability, he said,

and statistics from earlier years are not reliable enough to draw firm conclusions about any long-term trend in hurricane intensities.

“Everyone sort of agrees on this short-term trend, but then the agreement starts to break down when you go back longer-term,” Mr. Knutson said. He argues, essentially, that Dr. Emanuel’s conclusion is premature, though he adds that evidence for a human impact on hurricanes could eventually be established.



### [Hurricane Tracker: Irene](#)

While scientists from both camps tend to think hurricanes are likely to intensify, they do not have great confidence in their ability to project the magnitude of that increase.

One climate-change projection, prepared by Mr. Knutson’s group, is that the annual number of the most intense storms will double over the course of the 21st century. But what proportion of those would actually hit land is another murky issue. Scientists say climate change could alter steering currents or other traits of the atmosphere that influence hurricane behavior.



### [Readers’ Photos of Hurricane Irene](#)

Storms are one of nature’s ways of moving heat around, and high temperatures at the ocean surface tend to feed hurricanes and make them stronger. That appears to be a prime factor in explaining the power of Hurricane Irene, since temperatures in the Atlantic are well above their long-term average for this time of year.

The ocean has been getting warmer for decades, and most climate scientists say it is because greenhouse gases are trapping extra heat. Rising sea-surface temperatures are factored into both Mr.

Knutson's and Dr. Emanuel's analyses, but they disagree on the effect that warming in remote areas of the tropics will have on Atlantic hurricanes.

Air temperatures are also rising because of greenhouse gases, scientists say. That causes land ice to melt, one of several factors leading to a rise in sea level. That increase, in turn, is making coastlines more vulnerable to damage from the storm surges that can accompany powerful hurricanes.

Overall damage from hurricanes has skyrocketed in recent decades, but most experts agree that is mainly due to excessive development along vulnerable coastlines.

In a statement five years ago, Dr. Emanuel, Mr. Knutson and eight colleagues called this "the main hurricane problem facing the United States," and they pleaded for a reassessment of policies that subsidize coastal development — a reassessment that has not happened.

"We are optimistic that continued research will eventually resolve much of the current controversy over the effect of climate change on hurricanes," they wrote at the time. "But the more urgent problem of our lemming-like march to the sea requires immediate and sustained attention."