

<http://www.sciencenews.org/view/generic/id/47284>

[Home](#) / [News](#) / [News item](#)

A HURRICANE-SPAWNED TORNADO BOOM

Cyclones striking Gulf Coast in recent years have generated more twisters that those that hit the region in the mid-20th century

By Sid Perkins

Web edition : Friday, September 11th, 2009



[Enlarge](#)

Prolific sire

Hurricane Ivan, which struck the Gulf Coast early on Sept. 16, 2004, spawned 117 tornadoes. A new model may help scientists better predict the number of such tornadoes caused by hurricanes and tropical storms making landfall in the region.

Jacques Descloitres/NASA/GSFC

Hurricanes and tropical storms striking the Gulf Coast region since 1995 have spun off more twisters than those that hit during the mid-20th century, mostly because the more-recent storms have been broader and therefore have covered more area, a new study suggests.

Most tropical storms and hurricanes trigger tornado outbreaks upon striking land, says Judith A. Curry, an atmospheric scientist at the Georgia Institute of Technology in Atlanta. And even though most cyclone-spawned tornadoes are weak, they can cause significant death and destruction: The 117 tornadoes associated with Hurricane Ivan's landfall in 2004, for example, killed seven people, injured 47, and caused nearly \$97 million in property damage. Now, an analysis by Curry and her colleagues reveals that landfalling cyclones have become more prolific tornado producers than they used to be.

As part of the study, which appears online and in the Sept. 16 *Geophysical Research Letters*, the researchers tallied the tornadoes associated with hurricanes and tropical storms striking the Gulf Coast between 1920 and 2008. For the years since 1998, soon after a national network of NEXRAD weather radar instruments was completed, tornado counts are presumed to be complete and accurate, Curry says. For earlier years, however, Curry and her colleagues filled in possible gaps in the number of tornadoes actually observed using a computer model based on the NEXRAD-era data.

"This study is really intriguing," says Marshall Shepherd, an atmospheric scientist at the University of Georgia in Athens. Using the model, scientists may be able to better predict tornado frequency, storm damage and other hazards

associated with cyclones, he notes.

In the team's new model, four factors influence the number of cyclone-spawned tornadoes: the size, strength and direction of travel of the incoming cyclone as well as whether the landfall region is covered with large amounts of relatively dry air. When the humidity of the landfall region differs greatly from that of the moist air of an incoming cyclone, there's a higher likelihood of tornado formation in certain regions of the storm, Curry notes.

The number of tropical storms and hurricanes making landfall along the Gulf Coast each year varies in a decades-long cycle, the researchers note, with numbers generally higher when sea-surface temperatures in the tropical North Atlantic are warmer than average. So the team compared tornado tallies during similar phases of that cycle.

Sea-surface temperatures in the tropical North Atlantic have been in a warmer-than-normal phase since 1995. Since then, each landfalling Gulf Coast tropical storm or hurricane has spawned, on average, 15 tornadoes. But from 1948 to 1964, during the last warm phase, incoming cyclones triggered an average of only six such tornadoes, Curry says.

The largest part of this boost stems from the size of the landfalling storms: Cyclones striking the Gulf Coast since 1995 have been, on average, about 35 percent larger than those that made landfall from 1948 to 1964.

Curry and her colleagues aren't yet sure why modern-day cyclones are larger. However, the researchers speculate that the storms' increased size may result from forming farther out in the Atlantic and therefore having a longer time to grow before striking shore.