



## Hurricane season ends; Florida ducks storms again

*By Kate Spinner*

*Published: Monday, November 28, 2011*

A positive hurricane trend is emerging, at least for the United States and Florida: Despite more storms, fewer hurricanes are striking.

This season, which officially ends on Wednesday, will mark the sixth year in a row that hurricanes avoided Florida — a record-breaking lull — and the sixth year without a major hurricane strike on the U.S.

Hurricane Irene, a Category 1 at landfall in North Carolina, and Tropical Storm Lee, which swept through Louisiana, were the only tropical systems this year to strike the U.S. Only Irene brought significant damage, mostly from flooding rain.

It might be random luck, or a temporary shift in long-term weather patterns, meteorologists said.

Since 1995, weather patterns have generally deflected more hurricanes and tropical storms away from the U.S., said Phil Klotzbach, a research scientist with Colorado State University's Tropical Meteorology Project.

Why that pattern has developed and whether it will persist is uncertain. And, Klotzbach cautioned, there have been exceptions, notably 2004 and 2005, when several damaging hurricanes struck the U.S. Gulf Coast, including Florida.

"Globally it just looks like there has been this wave train pattern," Klotzbach said. The pattern creates ridging high pressure over the western U.S. and troughing low pressure to the east.

When the trough is over the eastern U.S., tropical systems get redirected out to sea or toward the Canadian Maritimes.

"Instead of heading west and making landfall, they tend to go north," Klotzbach said.

This year and 2010 year were pronounced examples. Both ranked in the top 10 for overall storm numbers, with 19 last year and 18 this year, said Jeff Masters, founder and lead meteorologist for Weather Underground.

The U.S. saw strikes from only three of those 37 storms, less than 10 percent. In comparison, between 1995 and 2009, about 33 percent of all named storms made a U.S. landfall, Masters said.

Masters noted other strange developments this year. Sea surface temperatures in the tropical Atlantic — which help fuel storms — reached nearly record-breaking warmth. Meanwhile, the atmosphere was unusually stable and dry across most of the Atlantic, including the Gulf of Mexico.

Conditions this year led to a quieter hurricane season than forecasters had predicted. All of the seasonal forecasting groups, including the National Oceanic and Atmospheric Administration's Climate Prediction Center, called for a very active season. While the number of storms met or exceeded predictions, the number of storms reaching hurricane strength fell short of forecasts.

"We ended up with an average amount of hurricanes and well above average for named storms, said Ken Clark, expert senior meteorologist with AccuWeather.com. "We thought that maybe it would be a little more busy."

Stable dry air and wind shear - strong competing winds that break hurricanes apart — kept most storms from reaching great intensity, even though sea surface temperatures were well above the threshold needed for strong systems.

Although the tropical Atlantic was exceptionally warm, sea temperatures farther north were cooler, Klotzbach said. He said the temperature difference probably caused more dry air from the north to creep south, helping to rob storms of needed moisture.

In addition, wind shear across the Atlantic basin was higher than forecasters anticipated earlier in the year. Forecasters thought that cooler-than-normal Pacific seas would calm westerly wind shear — strong winds that move from west to east. Instead, wind shear persisted, in part due to weather patterns in the Indian Ocean, Klotzbach said.

The combination of dry air, wind shear and warm tropical Atlantic seas led to an unusual proportion of weak tropical systems to hurricanes. Of the 18 storms that formed, only seven became hurricanes. Nate, originally classified as a tropical storm, was upgraded to a hurricane last week, based on a post-storm analysis by the National Hurricane Center.

Usually, more than half of all tropical storms become hurricanes in the Atlantic, Masters said. This year, about a third reached hurricane strength.

"Bring on more seasons like this," Masters said, referring to the steering patterns and weak storm strength.

Weather patterns, however, tend to go in cycles, and there are always unpredictable breaks in the pattern. That makes it a challenge for forecasters to say whether next year will bring a repeat.

"Hurricanes are like bananas; they come in bunches," Masters said. "You go a bunch of years in a row not seeing much and then you get clobbered."