

Meteorological Mainstream...

A spectacular and very destructive twin vortex tornado smashed its way across northeastern Nebraska on the afternoon of June 16, laying waste to half of the small town of Pilger. Two died and 16 were injured in the “twister sisters” storm. The National Weather Service (NWS) rated the dominant funnel at EF4 with the secondary tornado at an EF2. An EF4 has winds of 166 to 200 mph, and winds run 111 to 135 mph in the EF2. NWS meteorologist Brian Smith said, “You certainly don’t see that very often. It was the first time I’ve seen that in Nebraska and I’ve been here for 20 years.”



NBC News / June 16, 2014 / Near Pilger, NE

Twin---vortex tornadoes have happened before, with one well---known in the weather world taking place on April 11, 1965 near Elkhart, Indiana during the “Palm Sunday Outbreak”. The Elkhart tornado only maintained its double funnel structure for a couple of minutes:



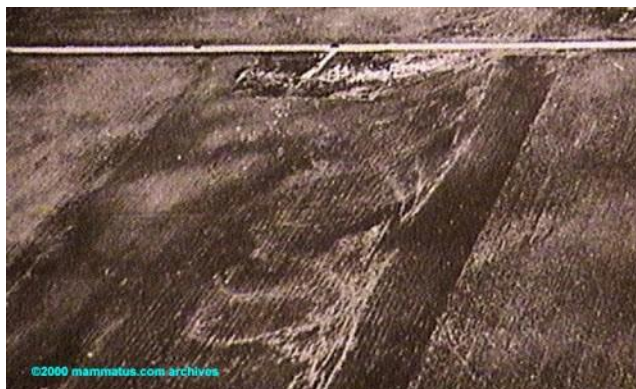
Photo of Elkhart “Double Funnel” tornado captured by Paul Huffman of The Elkhart Truth/ April 11, 1965

The Multiple---Vortex Tornado

A much more common and very destructive phenomenon is the multiple---vortex tornado.

A multiple vortex (or MV) twister is composed of one dominant funnel with several much smaller ones that “dance” around it, each lasting only a minute or two. MV tornadoes are especially dangerous because the wind speed inside the smaller vortexes is significantly higher than in the parent tornado, **sometimes up to 100 mph greater**. It’s virtually impossible to predict if a given storm will produce a single “normal” tornado or the multi---vortex variety.

Insurance adjusters might be able to recognize the effects of MV tornadoes by the type of damage they produce. A typical multi---vortex event will leave a damage path with similar severity from one side to the other, but there will be narrow areas embedded inside the track with greater degrees of damage. The MV signature will tend to take the form of arcs that may be several hundred yards in length. These curved zones of damage are created as the smaller vortices whirl around the main circulation as seen in this aerial photo:



Mammatus.com

Canadian Twister

The town of Angus, Ontario, about 60 miles (100km) north of Toronto received a most unwelcome visit from an EF---2 tornado on June 17, the day after the Pilger storm. According to Environment Canada, the twister packed winds of about 111 mph (180km/h), making at a low---end EF2. It damaged 20 to 30 homes, some quite severely, but no one was hurt. Canada averages 80 tornadoes annually while the States get around 1,300 in an average year.



The Angus tornado / June 17, 2014 / Image: CBC News

2014: More Tornadoes than Last Year

The year 2014 is well ahead of 2013 in total tornadoes with about 700 so far this year in the United States compared to around 600 through June 25 last year. We've had a fairly active jet stream pattern across the Great Plains this month and that's one reason for both the Pilger and Angus tornadoes.

Shifting Gears: El Nino and Severe Weather

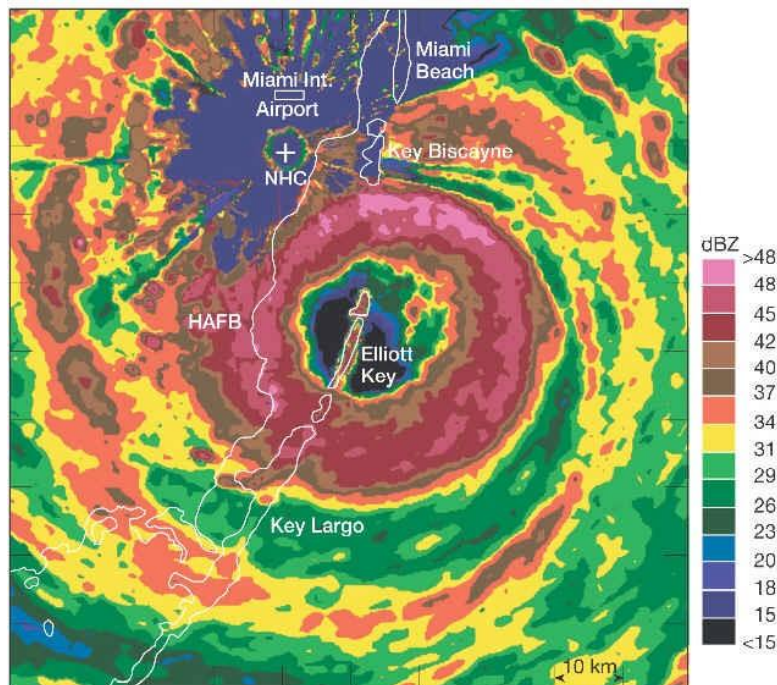
The latest Climate Prediction Center (CPC) report ramps up the potential for an El Nino to take shape as fall approaches. According to climate forecasters there's now a 70% chance it will develop before summer ends and an 80% chance it will take shape in the fall. Severe weather can increase over the south as the effect becomes more pronounced. So don't be surprised if there's a spike in adjustment work in the Oct---Nov period this year.

What about the Tropics?

While El Nino might make for a stormier fall than average over land, it tends to have an opposite effect on hurricanes. However ... it only takes one bad apple to bring woe to coastal residents, and chaos for adjusters.

Hurricane Andrew: El Nino No Help

A strong El Nino was winding down when Hurricane Andrew virtually obliterated the town of Homestead, Florida on August 24, 1992. Winds of 165 mph raked the area --- it's the second most expensive hurricane in U.S. history (behind Katrina). Here's how it looked on radar as it came ashore:



The total damage was estimated to be around \$26 billion with insured damages at \$16 billion. Fifteen died in Florida; the death toll would have been far higher but good warnings and mass evacuations no doubt made a large part of the difference. Homestead, Florida was ravaged by

the hurricane; a telling statistic shows that mobile homes have no better chance with a strong hurricane than they do in a tornado: of 1,176 mobile homes in Homestead, **only nine** were intact after Andrew passed. A total of 49,000 homes were destroyed by Andrew.

Hurricane Season 2014: A Quieter---Than---Normal Forecast

There's fairly high confidence that the **total number of tropical storms and hurricanes** is expected to be less than, or near the average for the Atlantic Basin in 2014.

NOAA is projecting a 50% chance of a below---normal season, a 40% chance of a near---normal season, and **only a 10% chance of an above---normal season**. Their projections are for:

- 8---13 Named Storms (30---year average is 12)
- 3---6 Hurricanes (30---year average is 6)
- 1---2 Major Hurricanes (30---year average is 3)

This forecast factors in a combination of higher---than---normal wind shear over the tropics and sea---surface temperatures that are expected to be slightly cooler than average. Wind shear "rips apart" tropical weather systems before they can mature into hurricanes, or at least stifles their growth, and this is a common occurrence in an El Nino year. Cooler ocean water leaves less available energy for storm development or intensification. There are other factors that are more difficult to pinpoint, but shear and ocean temps tend to be consistent factors governing hurricane and tropical storm activity.

One factor of note is the relationship between El Nino years and **where** tropical storms and hurricanes tend to make landfall. It seems that the eastern coast of the U.S. from the Carolinas all the way to Massachusetts is at statistically greater risk during these years, while coastal locations from Florida westward through the Gulf tend to get fewer hurricanes in El Nino years.

The Bottom Line:

We can analyze maps, computer projections, weather history and ocean currents until our eyes are red and our friends forsake us on Friday night, but that won't get us the magic hurricane forecast for 2014. However, we can say with moderate to high confidence that if we do get one (like Andrew) it's more likely to be a lone wolf, and the potential for this to be an east coast storm is a bit higher than it is for the Gulf.
