

Spinning the Tornado Story

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No doubt about it, it's been a good month for tornadoes even by the "spinny" standards of May, when most twisters occur. Even more predictable than the development of severe storms in spring, however, is the phenomenon of people trying to tie such bad weather to global warming. Witness Tom Toles's cartoon in the May 7 Washington Post, which intoned, "These superpowerful tornadoes are the kind of storm we're likely to see more of with global climate change." Who'd he get that from, Al Gore?

It has become Standard Operating Procedure in climate change hype to never bother with inconvenient facts. Tons of tornado data are only a few mouse-clicks away. And they show that Toles was dead wrong in his implication that the recent storms show any link to the slight warming of the atmosphere that has occurred in recent decades. In fact, just the opposite may be occurring despite a perception of increased storminess.

Two interesting facts: The number of reported tornadoes has increased for decades while the number of deaths has dropped.

What's going on is called "radar." Thanks to an awful 1953 tornado in Worcester, Massachusetts (far from the Oklahoma and Texas "tornado alley"), the Weather Bureau (today's National Weather Service) went on a crash program to develop a national network of weather radar. Spearheaded by David Atlas and Ted Fujita (whose "F-scale" rates tornado severity on a 1-5 basis, as is done for hurricanes), meteorologists soon learned that when the radar paints a thunderstorm that looks more like a comma than a blob, there's often a tornado buried in the curliest point.

It took several years for the original radars, known as WSR-57's, to cover the country. But by 1970 the job was nearly complete. As more radars came online, more and more tornadoes were reported. It's interesting that as this network stabilized, from 1970 through 1990, so did the number of tornadoes.

Beginning in 1988, a new network began to take shape that was even better at detecting potential twisters. Instead of painting a picture of a thunderstorm, the new machines, called Doppler radars and designated as WSD-88's, actually measure the change in a storm's velocity by tracking the movement of raindrops. When those drops start to rotate, it's not long before there's a tornado warning. The rotation fields often develop before the comma shape, which means more tornado warnings. This gets people's attention, and saves more and more lives. Not surprisingly, the number of tornadoes increased again, in the 1990's this time proportional to the number of WSD-88's, which now blanket the nation. By the beginning of this century, with the new network now in place, the number has stabilized again.

Any reporter (or cartoonist) doing his homework might have asked if indeed the number of big storms (categories 3-5 on the Fujita scale) is increasing. The fact is that the vast majority of tornadoes are in the "weenier" classes. Only about 5 percent reach category 3 or higher. (The severity data is at <http://www.spc.noaa.gov/archive/tornadoes/>. Click on, graph it up, and you'll see that the number of severe tornadoes is dropping.)

Where does the notion that tornadoes must increase because of global warming come from? Another panel in the Post's cartoon reads: "With energy added to the atmosphere, more frequent and intense storms are a probable outcome."

Perhaps a refresher course in high school earth science might be in order here. Tornadoes occur because a portion of a normally quiescent thunderstorm begins to spin. That spinning is done in large part by a dip in the strong westerly winds ("jet stream" in common parlance) that sometimes penetrates the U.S. when thunderstorms are common. The jet stream is the result of the temperature contrast between the poles and the tropics. Global warming reduces this contrast (warming the poles much more than the tropics) and reduces the spin. That means fewer tornadoes, not more.

Obviously, it's a lot hotter in June, July, and August than it is in the peak of the tornado season in May. So much for the hot-air-tornado link. And why are there so many tornadoes in Mississippi in February?

Rather, the key ingredient that spins garden-variety thunderstorms into killer tornadoes, the jet stream, is missing during the hottest part of the year, having migrated north to Canada for the summer. Warm it up and the migration will start earlier, it will move further north.

That may explain why the number of severe tornadoes is declining. They may be running out of spin, unlike stories attempting to relate these destructive storms to global climate change.