

# Meteorologists say this year's warm winter provided key ingredient for Midwest killer tornadoes

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Debris scatters the ground near damaged homes following a severe storm Friday, March 15, 2024, in Lakeview, Ohio. Credit: AP Photo/Joshua A. Bickel

This winter's record warmth provided the key ingredient for a Midwest

outbreak of deadly tornadoes and damaging gorilla hail that hit parts of the Midwest Wednesday and Thursday, tornado experts said.

At least three people were killed in Thursday's tornado outbreak in Ohio, Kentucky, Indiana and Arkansas, which came a day after large hail struck Kansas. It's a bit early, but not unprecedented, for such a [tornado outbreak](#) usually associated with May or April, but that's also because of the hottest winter in both U.S. and global records, meteorologists said.

"In order to get severe storms this far north this time of year, it's got to be warm," said Northern Illinois University meteorology professor Victor Gensini.

## **TORNADO RECIPE**

For tornadoes and storms with large hail to form, two key ingredients are needed: [wind shear](#) and instability, said Gensini and National Severe Storms Laboratory scientist Harold Brooks.

Wind shear, which is when winds whip around at differing directions and speeds as they rise in altitude, is usually around all winter and much of spring because it's a function of the normal temperature difference we see across the country, Gensini said.

But instability, which is that juicy warm humid air close to the ground that is the signature of summer, is usually missing this time of year, Gensini and Brooks said.



In this image provided by Jeremy Crabtree, large chunks of hail are shown, Wednesday night, March 13, 2024, in Shawnee, Kan. Volatile weather was honing in on parts of Kansas and Missouri Wednesday night, with some storms bringing massive chunks of hail. Credit: Jeremy Crabtree via AP

That's because normally in the winter and into early spring, Arctic air plunges south, pushing the warm moist air south into the Gulf of

Mexico, leaving dry stable cool air in its place, said Matt Elliott, the warning coordination meteorologist for the National Oceanic and Atmospheric Administration. And that cool stable air keeps tornadoes and large hail from forming.

But not this year. There was only one real Arctic blast this year and that was two months ago, the meteorologists said.

"When we're warmer than normal we tend to get more warm tornadoes in the winter time," Brooks said. "It's not necessarily a causal affect, perhaps they're both happening because of the same thing."

## **STORMY MIDWEST**

Hunter Vance, 27, of Lakeview, Ohio, was talking with a friend on the phone when sirens began to blare. So he sought shelter inside his bathtub for 20 minutes. Then he came out to see the devastation.



Hunter Vance, right, and Gabrielle Taylor, second from right, eat lunch with others outside a damaged home following a severe storm Friday, March 15, 2024, in Lakeview, Ohio. Credit: AP Photo/Joshua A. Bickel

He remembers severe weather last year, but not this early.

"And it's never been worse than this," he added.

Gensini ticks off five tornado or large outbreaks in the Midwest or Great Lakes area in the past five weeks, which he said is unusual: Wisconsin getting its first-ever February tornado on Feb. 8; 32 tornadoes, including one a quarter-mile from his house on Feb. 27; large hail and a tornado around the Illinois-Iowa border on March 4; the gorilla hail of 4 inches and some tornadoes on March 13 and the tornadoes on March 14 that

killed at least 3 people in Ohio and hit elsewhere across the Midwest.

Tornado activity this time of year is much more common in the South, with what's happening "much further north than we normally expect," Gensini said.

NOAA's Elliott said it may be a tad early, but this is about the time of year that severe storms start to ramp up in the Midwest, but they do not usually peak until May.



The remains of mobile homes are visible following a severe storm Friday, March 15, 2024, in Lakeview, Ohio. Credit: AP Photo/Joshua A. Bickel

What happened this week "is really a typical springtime event," Elliott said.

Even after Thursday, the year is running slightly below normal in terms of [number of tornadoes](#) and tornado fatalities, according to NOAA's Storm Prediction Center. Before Thursday, tornadoes had [only killed two people](#), which is far less than the 15-year average of a dozen before March 14.

## EL NIÑO FACTOR

What also makes the Midwest outbreaks unusual is that there's an El Niño, though it is starting to fade. The natural El Niño, which is a warming of the central Pacific that changes weather worldwide, often leads to fewer [severe storms](#) in the Midwest especially in the spring, studies show.

That's not the case.

Gensini, [who co-authored one of the studies](#), and Columbia University's Adam Sobel, who [co-wrote another](#), both said the El Niño factor is just one of several variables and only tilts the odds slightly.

Brooks said he doesn't really trust El Niño as a springtime signal.



Debris is visible through the window of a damaged home following severe storms Friday, March 15, 2024, in Lakeview, Ohio. Credit: AP Photo/Joshua A. Bickel

## CLIMATE CHANGE

No one has done the traditional scientific studies that link specific tornado outbreaks to [human-caused climate change](#). There are so many issues that make that difficult, including poor tornado records in the past and tornadoes being small weather events for global climate models.

And among all the severe weather events such as floods, hurricanes, droughts and [heat waves](#), tornadoes have been one of the thornier issues in connecting to climate change. There may be something there, but it's



likely only a small factor, Brooks said.

But given how off the charts temperatures and other climate variables have been, Gensini said, "if there ever was a fingerprint of climate change on severe weather it would be this year."

Gensini has not made any formal attribution studies, but said "if you look at the recent Februaries and Marches in terms of the number of tornadoes, it's pretty easy to see that a change is happening," comparing it to the effect of steroids on baseball home runs in the 1990s and early 2000s.



Members of the Huntsville Volunteer Fire Department mark houses with a red x to signify that they have been search for victims following severe storms in Lakeview, Ohio., Friday, March 15, 2024. Severe storms with suspected

tornadoes have damaged homes and businesses in the central United States.  
Credit: AP Photo/Timothy D. Easley



A worker checks on the power in the area following a severe storm Friday, March 15, 2024, in Lakeview, Ohio. Credit: AP Photo/Joshua A. Bickel



A person surveys damage following a severe storm Friday, March 15, 2024, in Lakeview, Ohio. Credit: AP Photo/Joshua A. Bickel

## **MORE SOON**

Because of other natural climate factors, Gensini said there's a strong chance for another Midwest outbreak of tornadoes in the end of March or early April.

After that, Gensini said it could be a busy tornado spring for the Midwest, but there's also a chance that the Midwest will skip spring and go right to summer in terms of climate and then the storms would die down.

Last year tornado activity was as much as double the average through April and "then May was completely dead," NOAA's Elliott said.

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