

TORNADOES IN OKLAHOMA

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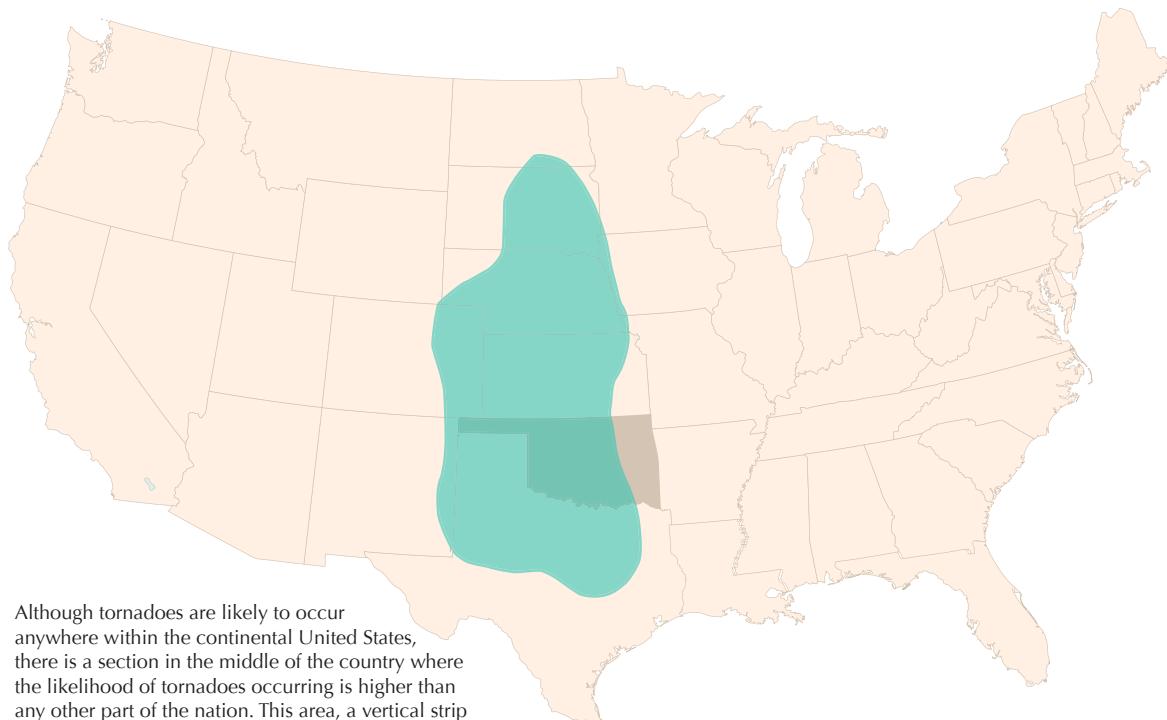
INTRODUCTION

Tornadoes are some of the world's most severe phenomena. They can be miles long, with wind speeds over two hundred miles per hour, and can develop in minutes. These storms cannot be stopped, and the damage they cause is almost unfathomable.

The state of Oklahoma is particularly well known for the amount of tornadoes which strike there, year after year. This book looks into tornadoes in Oklahoma throughout history, and tries to clear up any misconceptions about what these storms are and what they do.

WHERE ARE TORNADOES IN THE U.S.?

The United States' tornado alley



Although tornadoes are likely to occur anywhere within the continental United States, there is a section in the middle of the country where the likelihood of tornadoes occurring is higher than any other part of the nation. This area, a vertical strip ranging from Texas to South Dakota, contains the highest concentration of tornadoes year after year.

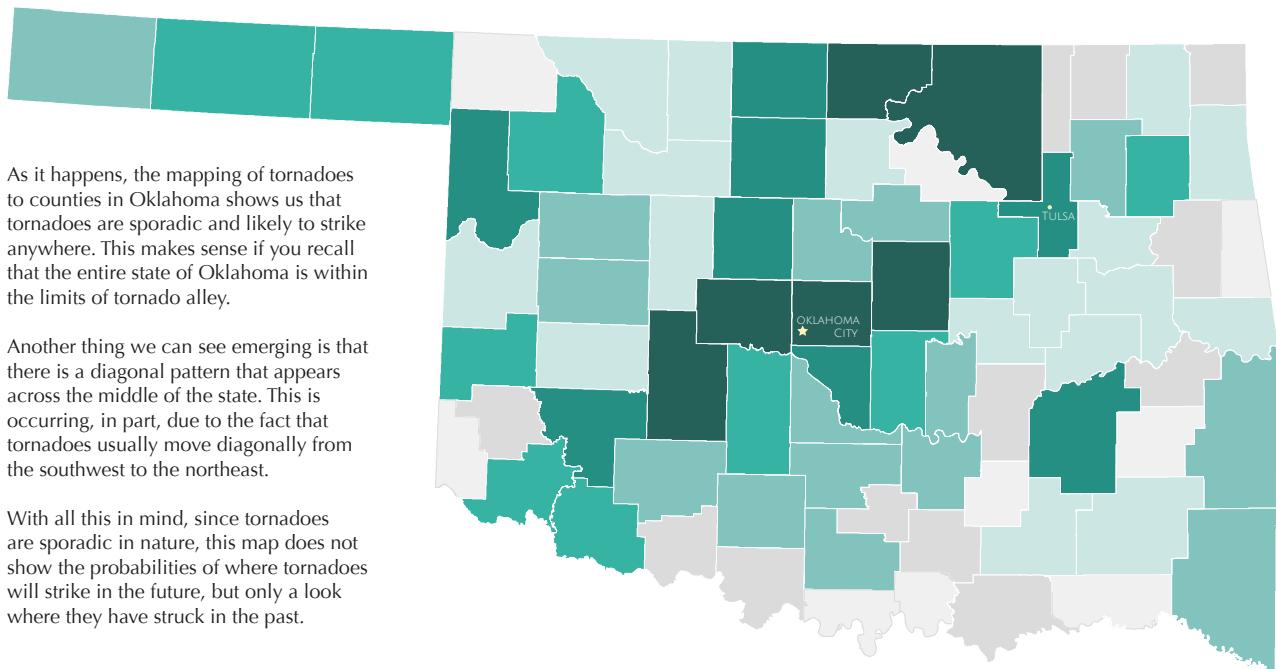
Interestingly, this area has no true boundaries, meaning that the exact location of Tornado Alley is a creation of part opinion and part historical data of past storms.

 TRADITIONAL TORNADO ALLEY

 THE STATE OF OKLAHOMA

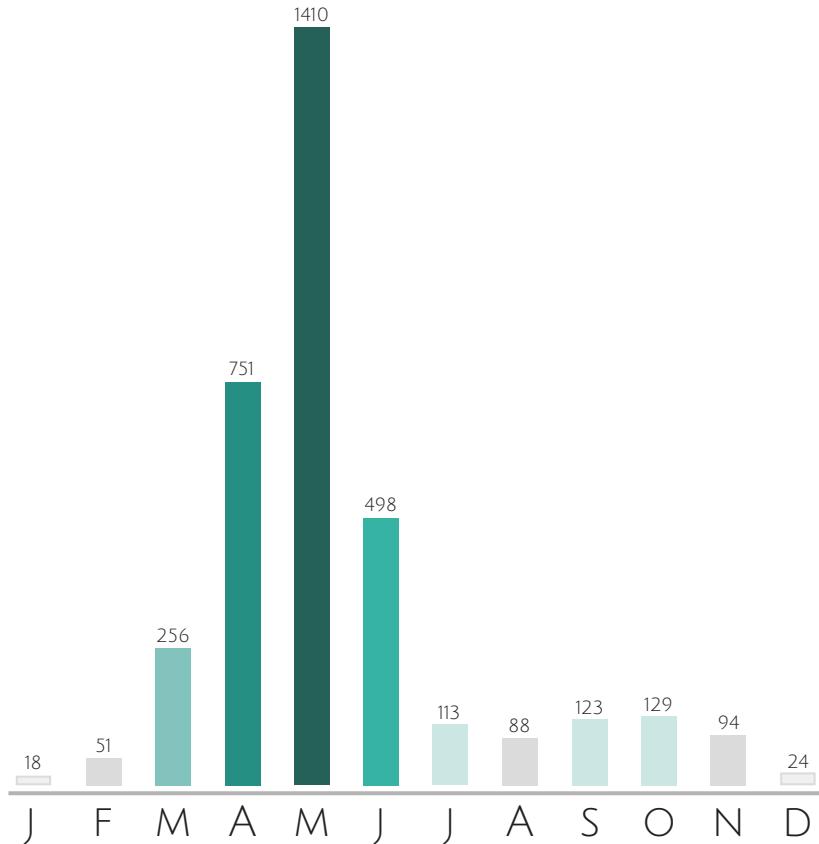
WHERE ARE THE TORNADOES IN OKLAHOMA?

Tornado strikes by county since 1950



WHEN DO TORNADOES OCCUR?

Total Tornadoes by Month from 1950-2013



WHY SO MANY IN MAY?

In the graph we can see that the month of May has more tornadoes than any other month by a long shot. The reasoning behind this is that in the Month of May, spring is turning into summer, which naturally causes high temperature differentials across the United States. At no other point in the year are these differences so drastic. These differentials meet each other in the middle of the country, namely around Oklahoma, and cause violent meteorological occurrences, including flashfloods, hailstorms, thunderstorms, and tornadoes.

HOW ARE TORNADOES SCORED?

The rating system for Tornadoes

FUJITA SCALE

F NUMBER	3 SECOND GUST (MPH)
0	45-78
1	79-117
2	113-157
3	158-207
4	208-260
5	261-318

In 1971, Dr. T. Theodore Fujita of the University of Chicago devised a scale to classify U.S. tornadoes into six damage categories, called F0-F5. F0 describes the weakest tornadoes and F5 describes only the most destructive tornadoes. The Fujita tornado scale (or the "F-scale") has subsequently become the definitive scale for estimating wind speeds within tornadoes based upon the damage caused by the tornado. It is used extensively by the National Weather Service in investigating tornadoes, by scientists studying the behavior and climatology of tornadoes, and by engineers correlating damage to different types of structures.

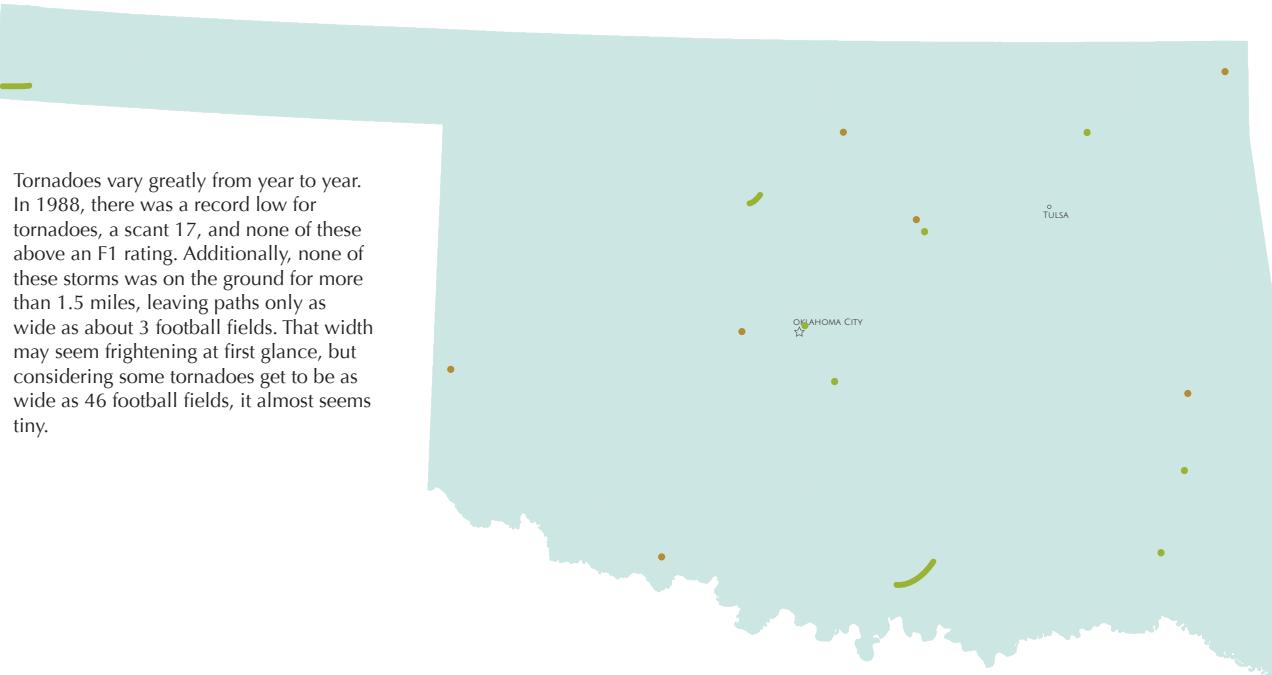
ENHANCED FUJITA SCALE

EF NUMBER	3 SECOND GUST (MPH)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	200+

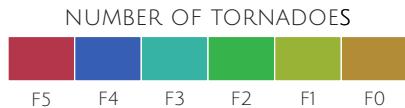
The devastating tornadoes in Jarrell, TX on 27 May 1997 and Oklahoma City on 3 May 1999 demonstrated that the wind estimates in the original F-scale may be too high. The original Fujita scale has several other weaknesses. These include that the rankings don't account for construction variability, and that there is no definitive correlation between damage and wind speed. So, to account for these weaknesses, the Enhanced Fujita, or EF scale, was created. This scale has been in use since 2007.

WHICH YEAR HAD THE LEAST TORNADOES?

Year: 1988 Tornadoes: 17

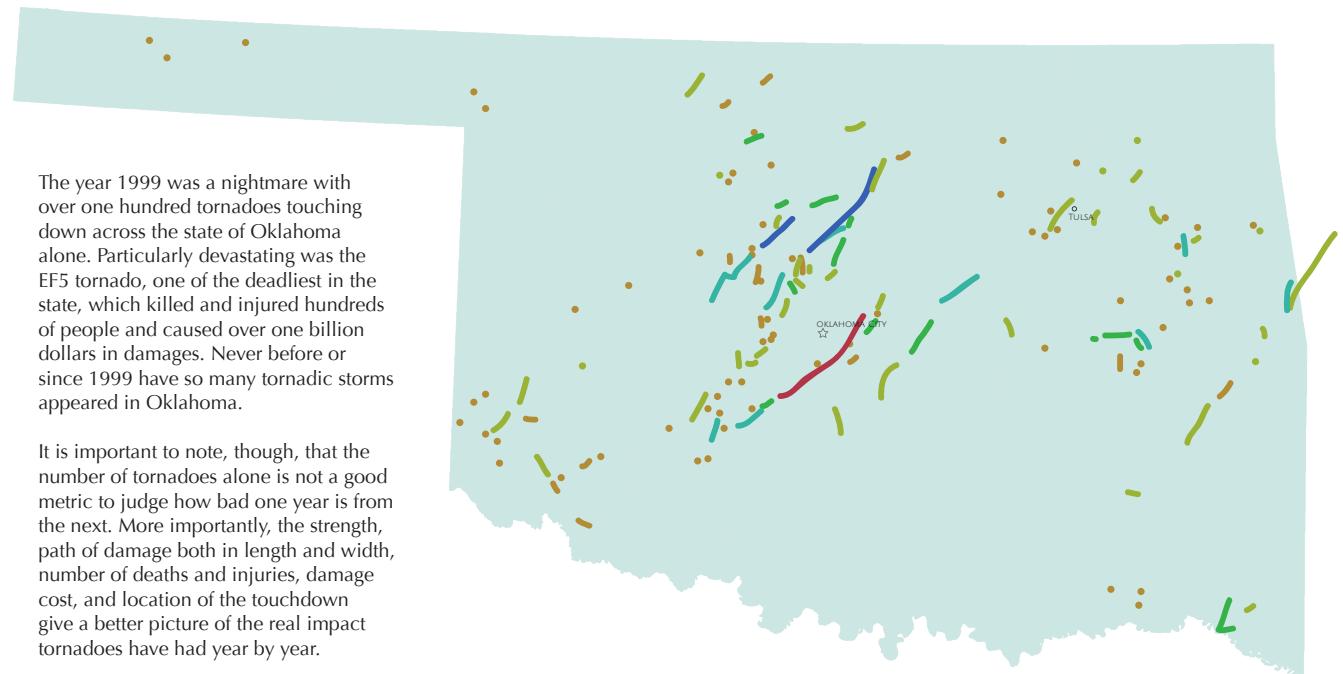


Tornadoes vary greatly from year to year. In 1988, there was a record low for tornadoes, a scant 17, and none of these above an F1 rating. Additionally, none of these storms was on the ground for more than 1.5 miles, leaving paths only as wide as about 3 football fields. That width may seem frightening at first glance, but considering some tornadoes get to be as wide as 46 football fields, it almost seems tiny.



WHICH YEAR HAD THE MOST TORNADOES?

Year: 1999 Tornadoes: 145



NUMBER OF TORNADOES



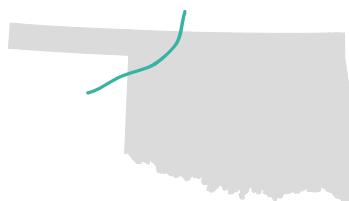
WHICH STORMS HAVE BEEN THE BIGGEST KILLERS?

The 6 deadliest tornadoes, ranked by deaths

1. APRIL 4, 1947



PEOPLE KILLED:	116
PEOPLE INJURED:	782
STRENGTH:	F5
DIAMETER:	1.8 MILES
PATHLENGTH:	98 MILES
DAMAGES:	\$8 MILLION



The tornado's path across Oklahoma

2. MAY 10, 1905



PEOPLE KILLED: 97
PEOPLE INJURED: 58
STRENGTH: F5
DIAMETER: 0.5 MILES
PATHLENGTH: 22 MILES
DAMAGES: UNKNOWN



The tornado's path across Oklahoma

WHICH STORMS HAVE BEEN THE BIGGEST KILLERS? *The 6 deadliest tornadoes, ranked by deaths*

3. MAY 2, 1920

PEOPLE KILLED: 71
PEOPLE INJURED: 100
STRENGTH: F4
DIAMETER: UNKNOWN
PATHLENGTH: 3 MILES
DAMAGES: UNKNOWN

The tornado's path across Oklahoma

4. APRIL 12, 1945



PEOPLE KILLED:	69
PEOPLE INJURED:	363
STRENGTH:	F5
DIAMETER:	0.5 MILES
PATHLENGTH:	28 MILES
DAMAGES:	\$15 MILLION



The tornado's path across Oklahoma

WHICH STORMS HAVE BEEN THE BIGGEST KILLERS?

The 6 deadliest tornadoes, ranked by deaths

5. APRIL 27, 1942



PEOPLE KILLED:	52
PEOPLE INJURED:	350
STRENGTH:	F4
DIAMETER:	0.25 MILES
PATHLENGTH:	20 MILES
DAMAGES:	\$2.3 MILLION



The tornado's path across Oklahoma

6. MAY 3, 1999



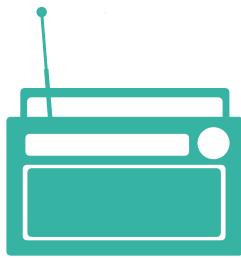
PEOPLE KILLED:	36
PEOPLE INJURED:	583
STRENGTH:	F5
DIAMETER:	1 MILES
PATHLENGTH:	38 MILES
DAMAGES:	\$1 BILLION



The tornado's path across Oklahoma

HOW ARE PEOPLE WARNED?

The channels used to alert citizens



Radio: Several stations will provide wall-to-wall severe weather coverage during high-end events with a focus on their local area.

The Emergency Alert System (EAS) is used to broadcast severe weather warnings. When stations are closed, they use the EAS to transmit severe weather warnings directly from the NWS to the public.



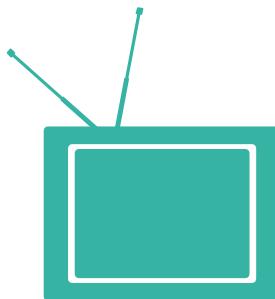
Internet: People can access up-to-date weather information from Oklahoma's news stations or the National Weather Service directly, simply through searching online.



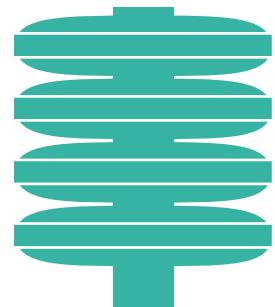
Smart Phones: People can receive cell phone notifications for National Weather Service warnings via either text messaging services or smartphone apps. However, it may take a few minutes to receive warnings depending on network coverage and which app is used.



Family and Friends: Although using family and friends as the main source of information during a tornado is not advised, receiving warnings and updates from family and friends is common in Oklahoma. Reaching out to loved ones helps to make sure that they have heard the warnings, and encourages people to take actions to protect themselves.



Television: Meteorologists relay information from the National Weather Service on all news stations in times of dangerous weather. This information is broadcasted alongside live radar displays and other visuals of where the threat is. During high-risk events, television stations will often only stream weather coverage, interrupting normal broadcasts.



Tornado Sirens: Sirens are erected on top of telephone poles in all cities to warn people to seek shelter in tornado situations. Local city governments control their municipal sirens, although they do often work closely with the National Weather Service. These sirens are tested every month to ensure that they can reliably warn Oklahomans when needed.

CREDITS:

PICTURES

Snyder: <http://www.srh.noaa.gov/images/oun/wxevents/19050510/whc-damage01.jpg>

Peggs Tornado: <http://www.usgarchives.net/ok/cherokee/photos/cyclpegs2.gif>

Antlers Tornado: <http://www.okgenweb.org/~okpushma/photo2/pics/jpc008col.jpg>

Pryor Tornado: <http://www3.familyoldphotos.com/files/images/2011/112311/OKpryor-tornado-3r2.preview.jpg>

May 3 Tornado: <http://fox41blogs.typepad.com/.a/6a0148c78b79ee970c01901bcf5207970b-pi>

United States Map: <http://www.vecteezy.com/map-vector/5937-united-states-map-vector>

Oklahoma County Map: <http://www.oesc.state.ok.us/lmi/employer/images/countymap.pdf>

Wifi and People icons: thenounproject.comw

ALL OTHER DATA

All textual information and data values were from the National Oceanic and Atmospheric Administration: <http://www.noaa.gov/>

Paths of tornadoes were taken from: <http://www.tornadolhistoryproject.com/>

