

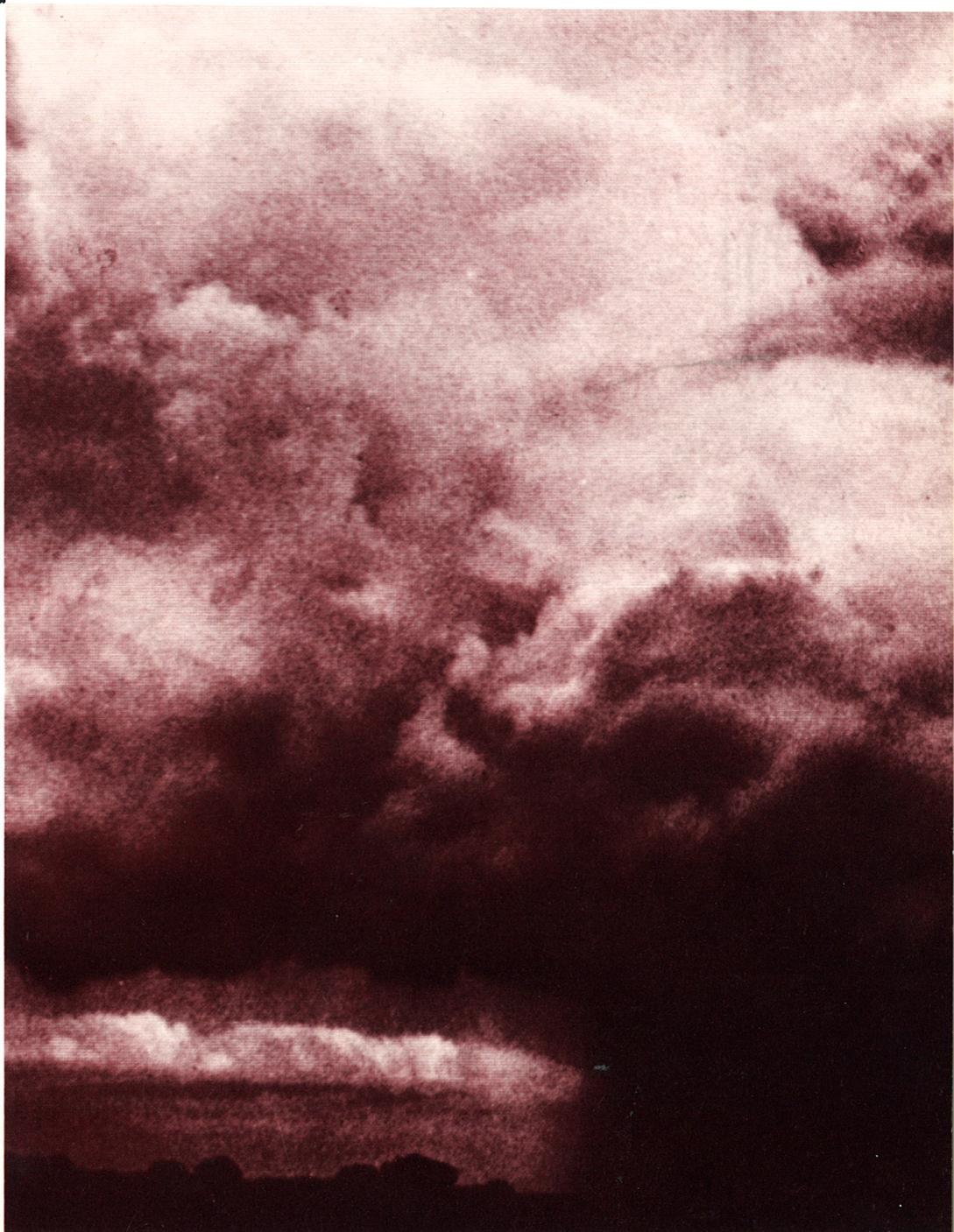
A UNITED STATES  
DEPARTMENT OF  
**COMMERCE**  
PUBLICATION



# Severe Local Storm **WARNING SERVICE**

AND TORNADO STATISTICS, 1953-1971

U.S. DEPARTMENT  
OF COMMERCE  
National  
Oceanic and  
Atmospheric  
Administration





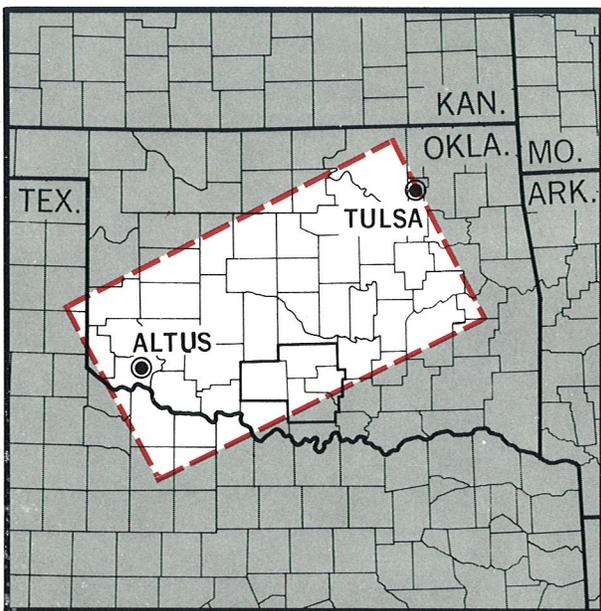
## Severe Local Storm Warning Service

**Severe local storms** are tornadoes and thunderstorms which are accompanied by high winds, hail, and heavy rains. These storms are small and short-lived weather phenomena which are the most difficult weather features to forecast precisely, given our present knowledge, theory, equipment, and techniques. Although it is not possible to predict exactly where and when severe thunderstorms and tornadoes will occur, it is possible to predict general areas where the probability of severe thunderstorms and tornado development is greatest by detecting the larger-scale events which are usually associated with such storms.

This important forecasting function is performed by the National Severe Storms Forecast Center in Kansas City,

Missouri. This facility is operated by the National Weather Service, a major element of NOAA, the National Oceanic and Atmospheric Administration of the U.S. Department of Commerce.

Meteorologists at Kansas City monitor conditions in the North American atmosphere, using surface data from hundreds of points and radar summaries, satellite photographs, meteorological upper-air profiles (obtained by sounding balloons) and reports from pilots. From these thousands of pieces of information, weathermen determine the area that is most likely to experience severe thunderstorms or tornadoes. Information on this area is then issued to National Weather Service offices and the public in the form of a watch bulletin.



**NATIONAL WEATHER SERVICE TORNADO WATCH BULLETIN**

ISSUED 2:35 PM CST APRIL 19, 1972

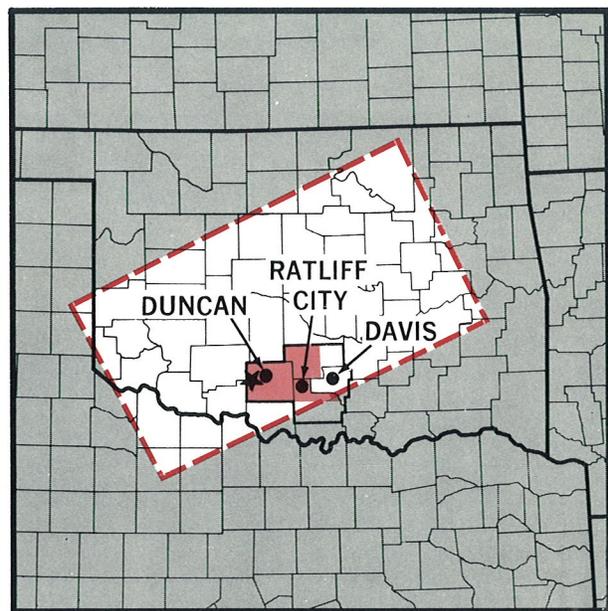
MOST OF SOUTHWEST AND CENTRAL OKLAHOMA AND A PORTION OF NORTH CENTRAL TEXAS

THE THREAT OF TORNADES WILL EXIST IN THESE AREAS FROM 3:30 PM UNTIL 9:30 PM CST THIS WEDNESDAY AFTERNOON AND EVENING. SCATTERED SEVERE THUNDERSTORMS WITH LARGE HAIL AND LOCALLY DAMAGING WINDS ARE ALSO FORECAST. THE GREATEST THREAT OF TORNADES AND SEVERE THUNDERSTORMS IS IN AN AREA ALONG AND SEVENTY MILES EITHER SIDE OF A LINE FROM THIRTY MILES SOUTHWEST OF ALTUS, OKLAHOMA TO THIRTY MILES SOUTH SOUTHEAST OF TULSA, OKLAHOMA.

PERSONS IN OR CLOSE TO THE TORNADO WATCH AREA ARE ADVISED TO BE ON THE WATCH FOR LOCAL WEATHER DEVELOPMENTS AND FOR LATER STATEMENTS AND WARNINGS.

A severe thunderstorm watch or tornado watch bulletin usually identifies an area about 140 miles wide by 200 miles long. Although the watch bulletin states approximately where and for how long the severe local storm threat will exist, it does not mean that severe local storms will not occur outside the watch area or time frame. **The watch is only an indication of where and when the probabilities are highest.** Persons within 75 miles of the watch area should also be on the alert for threatening conditions.

The watch bulletins are transmitted to all National Weather Service offices. Designated offices prepare and issue a re-defining statement which specifies the affected area in terms of counties, towns, and locally well-known geographic landmarks. These messages are disseminated to the public by all possible means, and are



**TORNADO WARNING BULLETIN**

NATIONAL WEATHER SERVICE OKLAHOMA CITY OKLAHOMA

ISSUED 3:50 PM CST APRIL 19, 1972

A TORNADO WARNING IS IN EFFECT UNTIL 4:50 PM CST FOR PERSONS IN STEPHENS, NORTHERN CARTER AND WESTERN GARVIN COUNTIES IN OKLAHOMA.

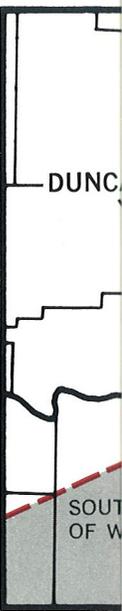
A TORNADO WAS INDICATED BY RADAR 6 MILES SOUTHWEST OF DUNCAN OKLAHOMA AT 3:50 PM CST AND IS MOVING TOWARD THE EAST NORTHEAST AT 40 MPH.

IF THREATENING CONDITIONS ARE SIGHTED, BE PREPARED TO MOVE TO A PLACE OF SAFETY.

used to guide the activities of local government, law enforcement agencies, severe local storm reporting networks, and emergency agencies in preparing for severe weather.

**Watches are not warnings. Until a severe thunderstorm or tornado warning is issued, persons in and near watch areas should maintain their normal routines, but watch for threatening weather and listen to radio or television for further severe weather information.**

A severe thunderstorm warning or tornado warning bulletin is issued by a local office of the National Weather Service when a severe thunderstorm or tornado has actually been sighted in the area or indicated by radar. Warnings describe the "downstream" area that could be affected. This area is determined from the location, size, direction (which can be erratic) and



**TORNADO WARNING BULLETIN**  
NATIONAL WEATHER SERVICE OKLAHOMA CITY OKLAHOMA  
ISSUED 4:40 PM CST APRIL 19, 1972

A TORNADO WAS INDICATED BY RADAR 6 MILES SOUTHWEST OF DUNCAN OKLAHOMA AT 3:50 PM CST AND IS MOVING TOWARD THE EAST NORTHEAST AT 40 MPH.

IF THREATENING CONDITIONS ARE SIGHTED, BE PREPARED TO MOVE TO A PLACE OF SAFETY.

IF THREATENING CONDITIONS ARE SIGHTED, BE PREPARED TO MOVE TO A PLACE OF SAFETY.

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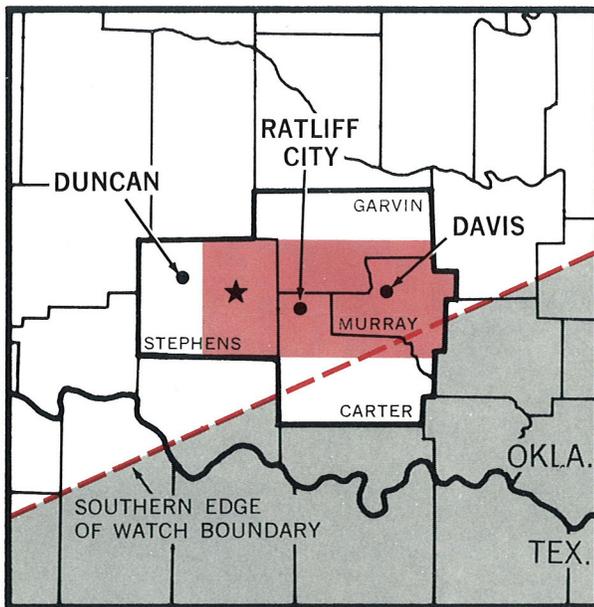
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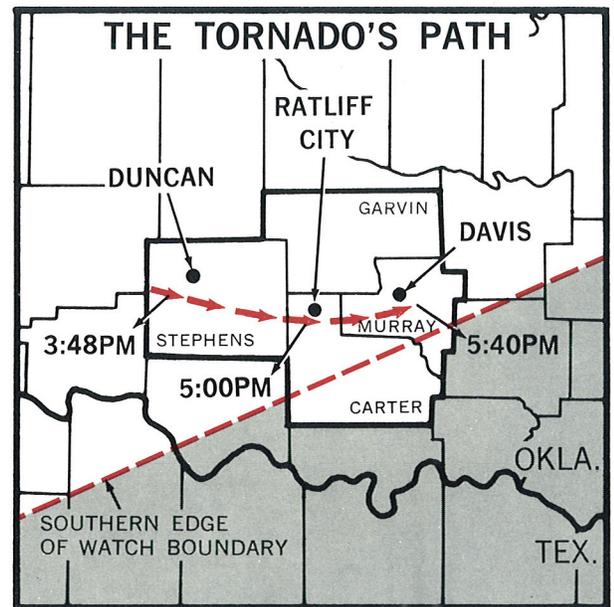


TORNADO WARNING BULLETIN  
NATIONAL WEATHER SERVICE OKLAHOMA CITY  
OKLAHOMA  
ISSUED 4:40 PM CST APRIL 19, 1972

A TORNADO WARNING IS IN EFFECT UNTIL 5:50 PM  
CST FOR PERSONS IN EASTERN STEPHENS, SOUTHERN  
GARVIN, NORTHERN CARTER AND MURRAY COUNTIES  
IN OKLAHOMA.

A TORNADO WAS INDICATED BY RADAR 15 MILES  
EAST SOUTHEAST OF DUNCAN OKLAHOMA AT 4:30 PM  
CST AND IS MOVING TOWARD THE EAST AT 30 MPH.

IF THREATENING CONDITIONS ARE SIGHTED, BE PRE-  
PARED TO MOVE TO A PLACE OF SAFETY.



## KEY

--- WATCH BOUNDARY

WARNING AREA

→ TORNADO'S PATH

● WATCH REFERENCE POINT

★ TORNADO

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be erratic) and

speed of movement of the severe thunder-  
storm or tornado. Since tornadoes are not  
always indicated by radar or observed by  
severe storm spotters, a **warning may not  
always be given** and persons should be on  
the alert to the possibility whenever  
threatening conditions are nearby.

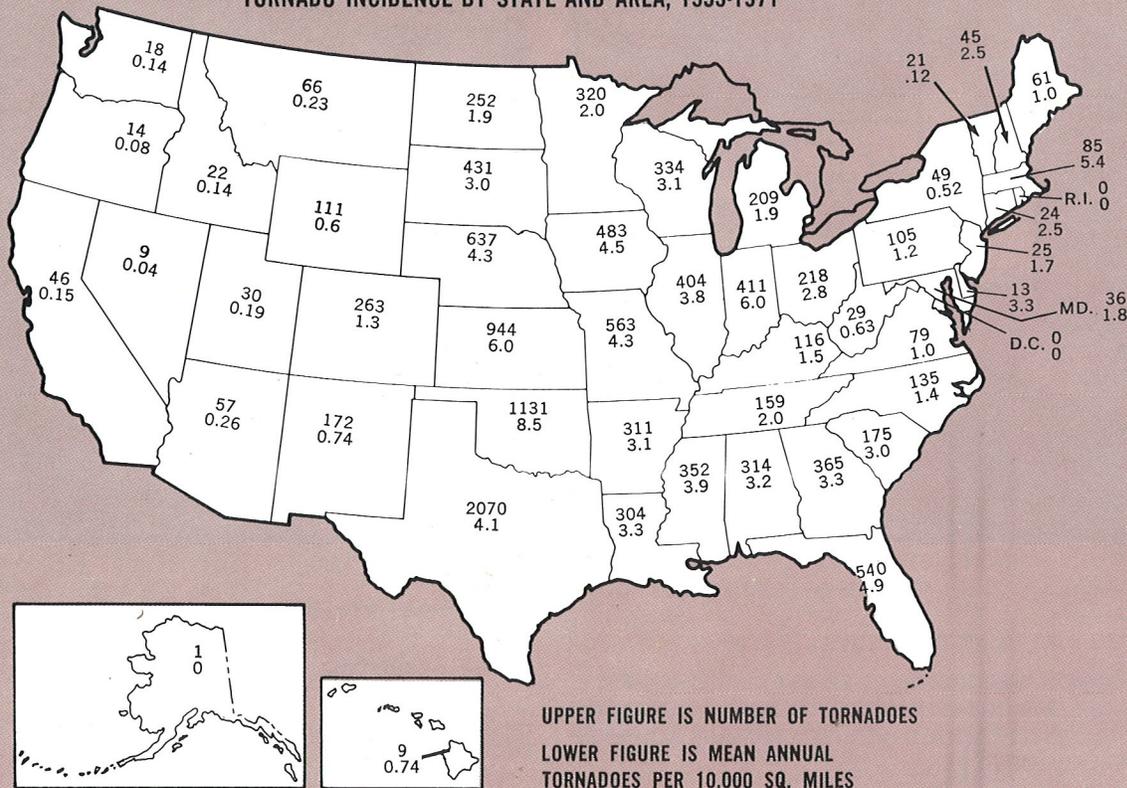
**When a warning is received, persons  
close to the storm should take cover im-  
mediately, especially in the case of a tor-  
nado warning. Persons farther away from  
the storm should be prepared to take cover  
if threatening conditions are sighted.**

**Severe weather statements** are pre-  
pared by local offices of the National  
Weather Service to keep the public fully  
informed of all current information, par-  
ticularly when *watch* or *warning* bulletins  
are in effect. Statements are issued at least  
once each hour, and more frequently when

the severe weather situation is changing  
rapidly. In this way, a close watch is kept  
on weather developments, and information  
is quickly disseminated to the counties for  
which the National Weather Service office  
has responsibility.

**All-clear bulletins** are issued when-  
ever the threat of severe thunderstorms or  
tornadoes has ended in the area previously  
warned in a tornado or a severe thunder-  
storm *warning* bulletin. When a *warning*  
is cancelled, but a *watch* continues in ef-  
fect for the same area or a *warning* is in  
effect for an adjacent area, a "Severe  
Weather Bulletin" is issued; this qualified  
message is also issued when a portion, but  
not all, of a *watch* area is cancelled. This  
permits a continuous alert in the path of  
the storm, with the alert being cancelled  
as the severe weather moves through the  
*watch* area.

### TORNADO INCIDENCE BY STATE AND AREA, 1953-1971

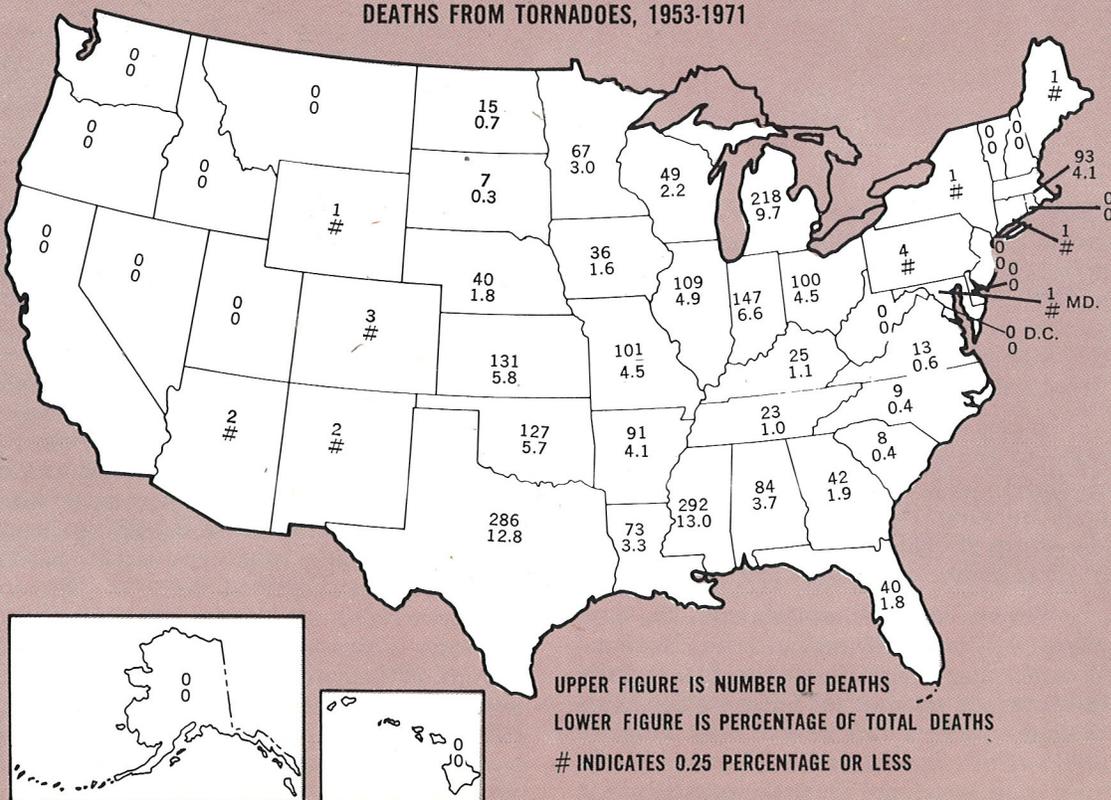


UPPER FIGURE IS NUMBER OF TORNADOES  
LOWER FIGURE IS MEAN ANNUAL TORNADOES PER 10,000 SQ. MILES

The greatest potential for casualties from tornadoes is not necessarily where the greatest number of tornadoes occur, but where there is a combination of high tornado incidence and a dense concentration of population. However, some oddities have occurred. Mississippi with only 2.8

percent of the total tornadoes and a moderate population density has experienced the greatest percentage (13) of the total tornado-related deaths. Oklahoma has the largest mean annual number of tornadoes per 10,000 square miles with 8.5.

### DEATHS FROM TORNADOES, 1953-1971



UPPER FIGURE IS NUMBER OF DEATHS  
LOWER FIGURE IS PERCENTAGE OF TOTAL DEATHS  
# INDICATES 0.25 PERCENTAGE OR LESS

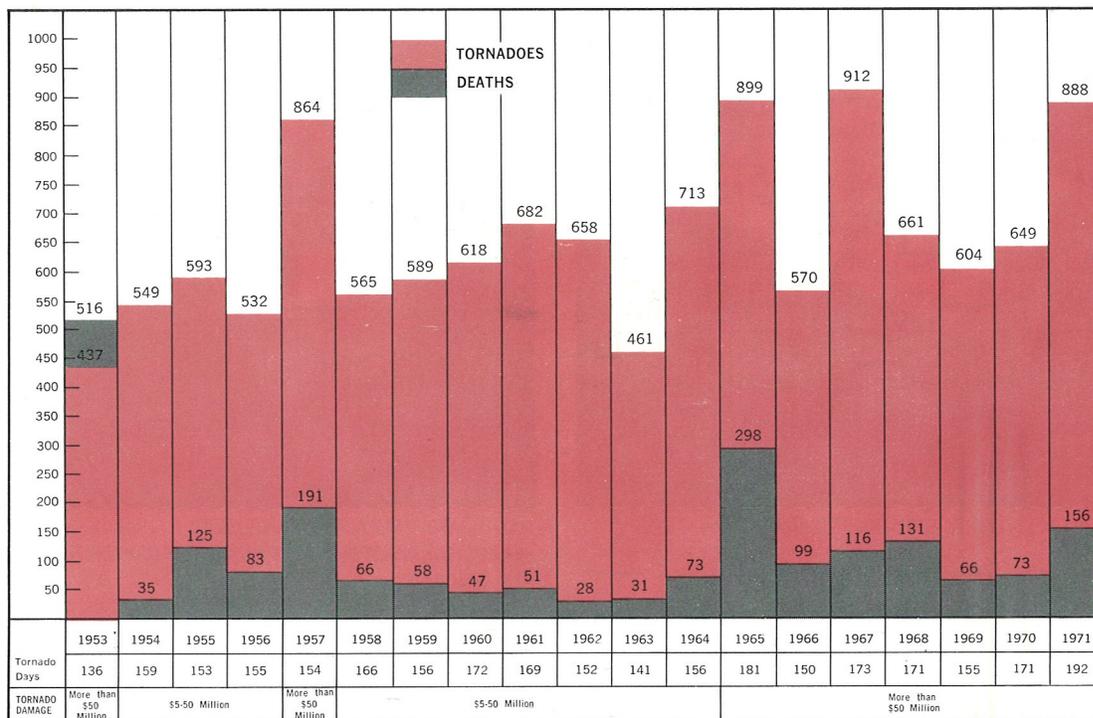
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# TORNADO STATISTICS (1953-1971)

## TORNADOES, DEATHS, TORNADO DAYS AND DAMAGE, 1953-1971



From 1916 through 1952, fewer than 300 tornadoes were reported in any one year. In 1953, the first full year the present warning system was used, more than 437 tornadoes were observed and reported, beginning the first period of reliable statistical history. Since 1953, partly through improved equipment and techniques, partly through increasing public participation, essentially complete tornado records have been available. This publication summarizes tornado incidence for the period 1953-1971. Based on this period, the average annual number of tornadoes and tornado-related deaths is 655 and 118 respectively. The greatest in any one year is 912 recorded in 1967. In 1971, 888 tornadoes in 44 states killed 156 persons, 110 of them in Mississippi on February 21.

## TORNADO INCIDENCE BY MONTH 1953-1971

