



# Keystone Tornado Events in South Carolina



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**September 26, 2023**

Photo: The 1994 Lexington and Lake Murray  
Beryl F-3 Tornado (SCDNR Archive Photo)

# OVERVIEW

This report's purpose is to inform South Carolina's elected officials, emergency managers, other decision-makers, and the interested public about the risks posed to the state by tornadoes and general tornado safety information.

A tornado is a violently rotating column of air extending from a cumulonimbus cloud to the ground. Wind speeds in a tornado range from about 75 miles per hour in weaker tornadoes to about 300 miles per hour in the most violent tornadoes. South Carolina's strongest recorded tornadoes are estimated to have produced winds around 185 mph. The size of a tornado varies widely as well. Storm chasers have produced video documentation of tornadoes less than ten yards wide. The widest tornadoes on record were over two miles wide. In South Carolina, the widest tornado on record was about 1.25 miles wide.

Today, tornadoes are rated using the Enhanced Fujita Scale, or EF Scale. It uses analysis of damage caused by a tornado to estimate the wind speed within the tornado. It is an improvement to the Fujita Scale or F Scale, used before February 1, 2007. Research meteorologist and University of Chicago professor Theodore Fujita created the original Fujita Scale in 1971.

## The Enhanced Fujita Scale

EF Rating	3-Second Wind Gust, mph
<b>0</b>	<b>65-85</b>
<b>1</b>	<b>86-110</b>
<b>2</b>	<b>111-135</b>
<b>3</b>	<b>136-165</b>
<b>4</b>	<b>165-200</b>
<b>5</b>	<b>Over 200</b>

The scale has six levels, zero to five, each corresponding to a range of wind speeds. A primary change from the earlier F Scale to the EF Scale was to account for research that showed that lower wind speeds cause more significant damage than previously thought. For example, the threshold for the highest level changed from 261 mph on the F Scale to 201 mph on the EF Scale.

The strongest tornadoes on record in South Carolina were rated at EF-4, or F-4 during the days of the original Fujita Scale. Eleven EF-4 or F-4 tornadoes have occurred in South Carolina's history since 1950. No official ratings are available for tornadoes that occurred before 1950.

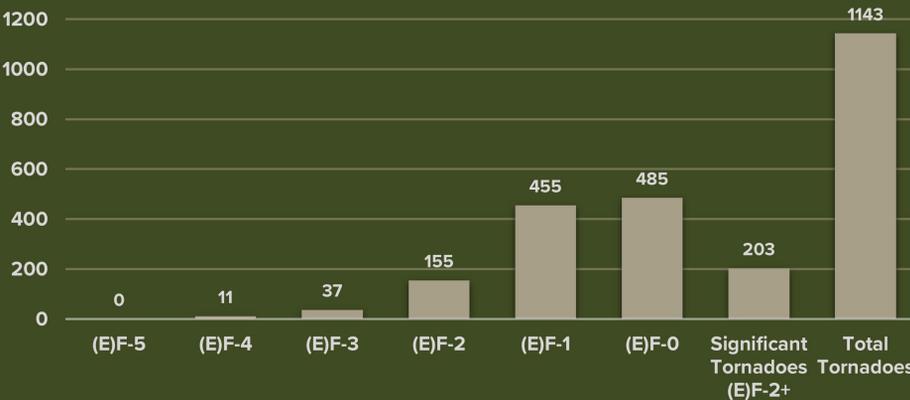
However, tornado research meteorologist Thomas Grazulis has studied tornadoes that occurred as early as 1680 from photographs and newspaper accounts and provided unofficial ratings for significant tornadoes for the 1680-1949 period. He rated several of South Carolina's tornadoes before 1950 at F-4. South Carolina's most deadly tornado on record, the Horrell Hill Tornado of 1924, was one he rated F-4.

About 87 percent of South Carolina's tornadoes are relatively weak, rated at F-0 or EF-0 and F-1 or EF-1. However, it is important to remember that all tornadoes are dangerous and that even tornadoes that cause damage rated at EF-0 are life-threatening to those caught outdoors.

# SOUTH CAROLINA TORNADO STATISTICS

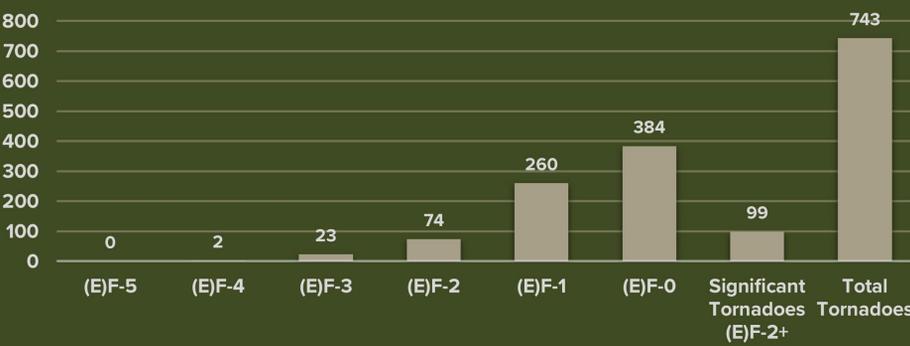
Since reliable tornado reports began in the 1950s, there has been a steady increase in annual tornado reports. There are a few reasons for this. Increasing population density accounts for some of the increase because more people living in an area make it more likely for a tornado to be seen or that it damages property. The advent of professional storm chasing is another reason for more tornado reports. However, the commissioning of the WSR-88d (NEXRAD) radar network in the 1990s made tornadoes much easier to detect, and the number of reported tornadoes increased considerably when this network entered service. WSR-88d became available in 1995 in South Carolina, with the commissioning the first of these in the state near Columbia on June 1. Three other radars providing primary coverage in South Carolina entered service over the following months: Wilmington, NC on July 6, 1995; Greer, SC on March 7, 1996; and Charleston, SC on June 6, 1996. Each operated in evaluation status for months before its commissioning date while providing useful data. For example, Columbia's WSR-88d began operation for data evaluation on June 27, 1994.

## Tornadoes In South Carolina By Rating, 1950 To Present



About 65% of all tornadoes reported in South Carolina since 1950 have occurred from 1994 to 2022, with 35% occurring in the 44 years prior. This much higher rate of reported tornadoes since 1994 means that an analysis of South Carolina's tornadoes should be divided into three separate eras: the time before reliable reports began in 1950, the period since reliable tornado reporting began in 1950, and the WSR-88d (NEXRAD) era, starting in 1994 in South Carolina. The sparsity and questionable reliability of tornado reports before 1950 make statistics from this era of low value, aside from a study of the effects of each outbreak and individual tornado.

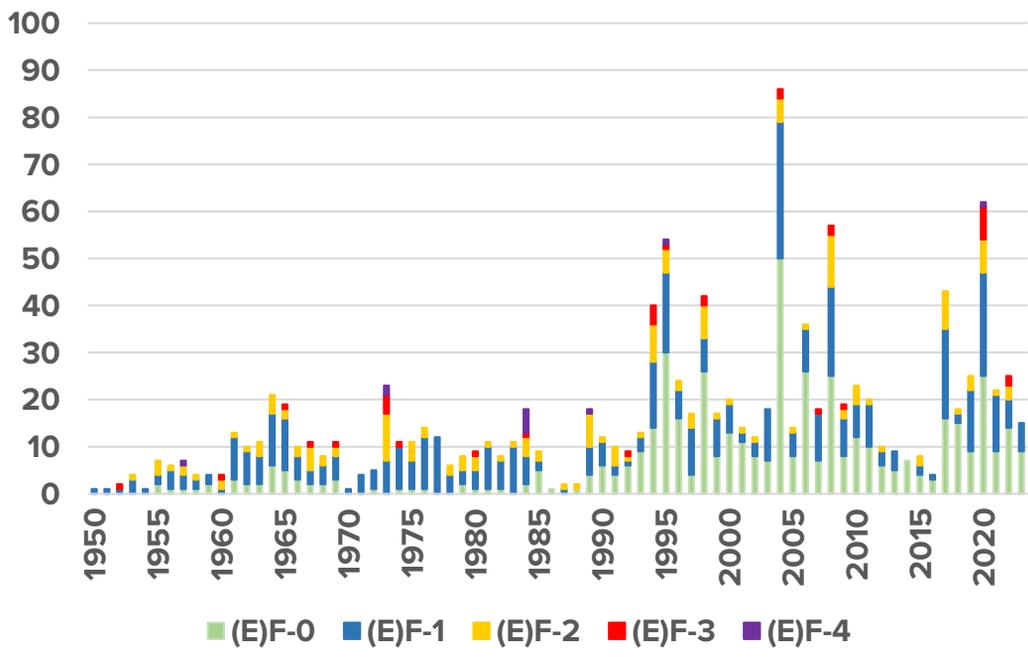
## Tornadoes In South Carolina By Rating 1994 To Present



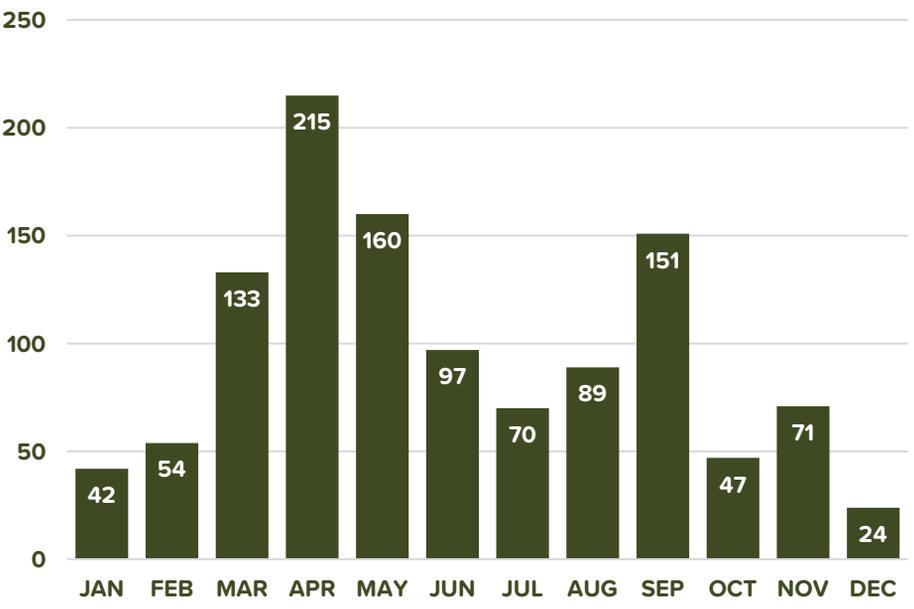
In state history, no tornadoes rated EF-5 or F-5 have occurred in South Carolina. In addition to the 11 reported tornadoes rated at EF-4 or F-4 in state history since 1950, a few more before 1950 were unofficially rated at F-4 by Thomas Grazulis; one was the 1924 Horrell Hill Tornado. While more tornadoes have occurred from 1994 to 2022, nine of the eleven F-4 or EF-4 tornadoes in state history since 1950 occurred before 1994. Nearly the same number of significant (EF-2+ or F-2+) tornadoes occurred from 1994 to 2022 compared to 1950 to 1993, but the annual rate from 1994 to 2022 is higher; 3.3 per year since 1994 versus 2.3 per year from 1950 through 1993.

The increase in annual tornado count since the mid-1990s comes from an increase in reported weaker tornadoes rated F-0 or EF-0 and F-1 or EF-1. The number of significant tornadoes, rated F-2 or EF-2 and higher, has changed little since around 1970. The more violent tornadoes cause more severe damage that is likely to be noticed without the assistance of improved radar technology.

### South Carolina Tornadoes 1950 to September 2023



### South Carolina Tornadoes By Month All Reported Tornadoes 1950-September 2023



Like the rest of the southern states, South Carolina can see tornadoes in any month of the year. Significant tornadoes can occur at any time of year as well. However, the most active part of the year for tornadoes in the state is March through May. Significant tornadoes are most common during this part of the year. September is also an active tornado month due to tornadoes spawned by tropical cyclones (tropical depressions, tropical storms, and hurricanes). Tornadoes spawned by tropical cyclones tend to be relatively weak, but a few significant ones occur.

A third, smaller peak occurs in November, the "second season" of severe weather, when cold fronts penetrate the southern states frequently, with warm and humid air masses often in place ahead of them. The result is a springlike storm environment conducive to supercell thunderstorms, where warm and unstable air surges northward in advance of a cold front trailing the center of a strong midlatitude storm system.



## State Climatology Office

# South Carolina's Keystone Tornadoes

### February 19: The Darlington Enigma Tornado

Thomas Grazulis estimates this tornado to be of F-3 intensity. It hit Darlington County at around 11:25 p.m., killing six (possibly as many as ten) and hurting 50 near Darlington. One of at least 13 tornadoes of the Enigma Outbreak, it destroyed at least 30 homes and missed downtown Darlington by a half-mile. The tornado scattered debris for miles from its origin.

1884

### April 30: The Horrell Hill Tornado

Rated F-4 by Thomas Grazulis, it is considered the worst in South Carolina's history. Along its 105-mile-long damage path through Aiken, Lexington, Richland, Sumter, Lee, and Darlington Counties, it killed 53 people, the largest death toll from a single tornado in state history, and injured 534. It began northeast of Aiken near 11:00 a.m. and ended north of Timmonsville at midafternoon. The path was up to  $\frac{3}{4}$  of a mile wide. The worst loss of life was in Horrell Hill in Richland County, including four students at the Horrell Hill School. The tornado destroyed 300 homes and over 1,000 other buildings, with damage estimated at \$17.1 million (2022 dollars).

1924

### May 5: The Anderson and Belton Tornado

Rated F-3 by Thomas Grazulis, this tornado killed 19 and injured 100 in Anderson County. It also caused \$8.2 million (2022 dollars) of damage in Anderson and Laurens counties. The worst damage and loss of life occurred in Belton, where eleven people died in a mill community.

1933

### April 16: The Abbeville and Greenwood Tornado

A tornado rated F-4 by Thomas Grazulis tracked about 50 miles from Abbeville to Prosperity starting at around 1 a.m., killing 14 and injuring 200. Eight of the deaths and 150 of the injuries occurred at a hospital in Greenwood that the tornado demolished. Damage totaled \$8.2 million (2022 dollars) along the damage path in Abbeville, Greenwood and Newberry Counties.

1944

### March 31: The Calhoun Falls and Abbeville Tornado

This F-4 tornado cut a 23-mile path through Abbeville and Greenwood Counties, killing seven and injuring 30. It destroyed a motel in Calhoun Falls and damaged or destroyed 164 homes in the area, sending damage estimates into the millions.

1973



## State Climatology Office

# South Carolina's Keystone Tornadoes

### March 28: The Bennettsville to McColl Tornado

Part of the state's worst tornado outbreak on record, seven people died and 100 were injured by this F-4 tornado Marlboro County, which ended just across the state line in North Carolina. A fourth of the homes in McColl were damaged or destroyed, along with numerous other structures in along damage path up to a mile wide, including a strip mall, apartments, and hangars at the Marlboro County Airport. Hundreds were left homeless. The cost of the damage was estimated at \$72.1 million (2022 dollars).

### April 13: The Estill-Scotia-Nixville-Fechtig Tornado

This EF-4 tornado was the worst of 27 tornadoes to hit the state on this day and the most intense tornado in South Carolina so far in the 21<sup>st</sup> Century. It is also the only significant tornado to hit Hampton County since 1950. It killed five people and caused 60 injuries on its 24-mile path in Hampton County, which was up to  $\frac{3}{4}$  of a mile wide. It began at about 6:30 a.m. and damaged or destroyed dozens of homes. Several mobile homes were destroyed, some with their occupants thrown 30-50 yards away. Cost estimates are unavailable but likely would be well into the millions.

1984

### March 28: The Winnsboro Tornado

This tornado started near Lake Monticello and ended near Lake Wateree. It killed five people, injured 49, and destroyed dozens of homes and several businesses along a 21-mile-long path that was nearly  $\frac{3}{4}$  of a mile wide in some areas.

1989

### May 5: The Chesnee Tornado

Two were killed and 35 were injured by an F-4 tornado that cut a nine-mile path in northeastern Spartanburg County and far northwestern Cherokee County on May 5. About 100 homes were damaged, some stripped from their foundation. Damage cost was estimated at \$7.2 million (2022 dollars), mostly in Spartanburg County.

1994

### August 16: The Lexington Beryl Tornado

One of the 23 tornadoes spawned by Tropical Storm Beryl struck Lexington County, including downtown Lexington and around Lake Murray, starting at about 1:35 p.m. This F-3 tornado hurt 40, but no deaths occurred. Major damage occurred at a factory, an electrical substation, three churches, 49 businesses and 257 homes. The cost was estimated at about \$100 million (2022 dollars).

2020



## State Climatology Office

# South Carolina's Keystone Tornado Outbreaks

### February 19-20: at least 13 tornadoes

**F-3: 2**

**F-2: 7**

#### **F-0 and F-1: at least four**

The "Enigma Outbreak," possibly America's worst tornado outbreak of the 19th Century, caused at least 37 tornadoes in the Southeast. A map created by pioneer storm researcher John P. Finley depicts 13 of the tornadoes hitting South Carolina, affecting Anderson, Spartanburg, Fairfield, Chester, Lancaster, Greenwood, Newberry, Aiken, Darlington, Orangeburg, Clarendon, and Williamsburg Counties. Thomas Grazulis provided unofficial ratings for those he thought to be of F-2 and higher intensity. The tornadoes killed 27 people in South Carolina and hurt 182. Damage estimates from this era are uncertain, but conservative figures bring the cost to about \$25 million (2022 dollars).

**1884**

### April 30: At least four tornadoes

**F-4: 1**

**F-3: 2**

**F-2: 1**

The Horrell Hill Tornado, rated F-4 by Thomas Grazulis, would put this outbreak among South Carolina's worst on its own. However, there was also an F-3 in Anderson County, an F-3 in Sumter and Florence Counties, and an F-2 hit rural areas of Union, Chester, and York Counties on the same day. The tornadoes killed 75, with 831 hurt, making it the state's worst outbreak in those terms. Along with the tornadoes the parent thunderstorms caused wind, hail, and lightning damage. The Horrell Hill Tornado's parent supercell brought hail stones larger than baseballs to the southern part of Columbia and killed one person with lightning.

**1924**

### December 13: Seven tornadoes

**F-4: 1**

**F-3: 4**

**F-2: 2**

Tornadoes affected Greenwood, Newberry, Laurens, and Lexington Counties, killing two people in Ninety Six in a cloth factory and a young boy in a mobile home in Prosperity. The tornadoes injured 34 people and caused \$122.1 million in damage (2022 dollars), including dozens of homes and businesses. There was major damage at Mid-Carolina High School in Prosperity.

**1973**

### March 28: 11 tornadoes

**F-4: 5**

**F-3: 1**

**F-2: 4**

**F-1: 0**

Tornadoes killed 19 people in South Carolina, and 415 were hurt, with \$665 million (2022 dollars) in damage. In terms of the damage and number of violent (F-4 or EF-4 or higher) tornadoes, this is the state's worst outbreak. Along with the tornadoes, there was damage from hail and wind with the parent storms. Marlboro County was the hardest hit area. Two F-4 tornadoes killed nine and caused extensive damage in Bennettsville, McColl, and Tatum.

**1984**



## State Climatology Office

# South Carolina's Keystone Tornado Outbreaks

### August 16: 23 tornadoes

**F-4: 0 F-3: 5 F-2: 5 F-1: 7 F-0: 8**

Tropical Storm Beryl's remnants spawned 23 tornadoes in South Carolina on August 16, including three rated at F-3. The tornadoes affected 15 counties, with seven hitting Lexington County. The worst of the tornadoes was an F-3 that struck downtown Lexington, then ended over Lake Murray. Another F-3 hit rural Lexington County, and the third F-3 affected rural Union and Spartanburg Counties. The tornadoes injured 46 people, with 40 hurt by the Lexington area tornado alone, and caused \$105 million (2022 dollars) in damage, \$73 million by the Lexington tornado.

1994

### September 6-7: 46 tornadoes

**F-4: 0 F-3: 1 F-2: 3 F-1: 16 F-0: 26**

Hurricane Frances caused the most tornadoes reported in South Carolina from a single event, but most of them hit rural areas. It was part of a larger outbreak of 103 tornadoes over seven states. The tornadoes injured 13 people in South Carolina, but there were no deaths. The F-3 tornado hit Kershaw County north of Camden. The most damaging tornado was an F-2 that hit the Sumter area, passing near Sumter High School, damaging 55 homes, and demolishing nine. The total damage from the tornadoes was about \$4.3 million (2022 dollars).

2004

### March 15: 32 tornadoes

**EF-4: 0 EF-3: 2 EF-2: 3 EF-1: 15 EF-0: 12**

The 'Ides of March' tornadoes caused no deaths in South Carolina, but 14 were hurt, and there was \$55.6 million (2022 dollars) in damage in 26 counties. The EF-3 tornadoes caused major damage in Branchville in Orangeburg County and Prosperity in Newberry County. One of the EF-2 tornadoes brought extensive damage to Allendale County. An EF-1 tornado caused widespread damage in Southwestern Florence County.

2008

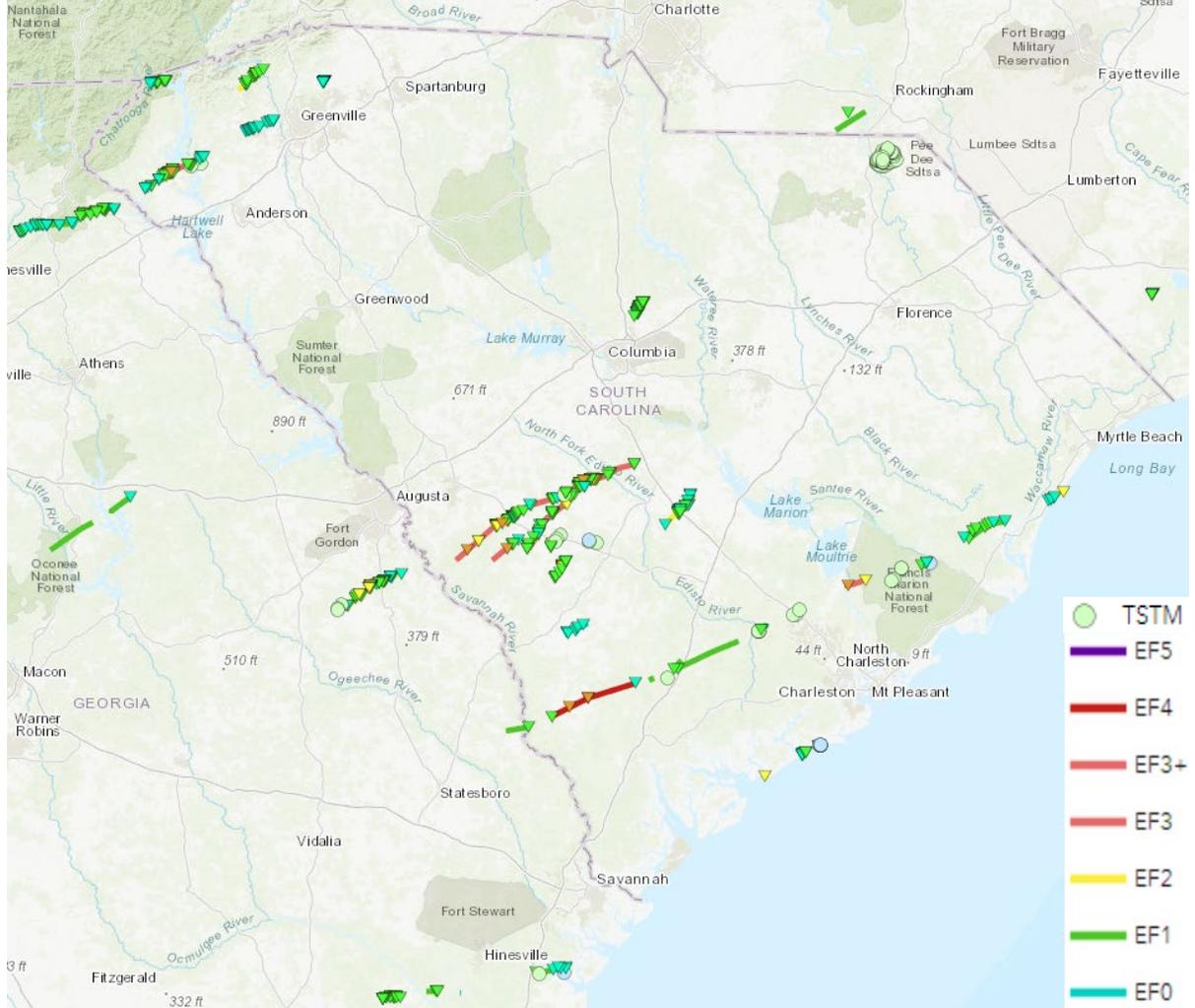
### April 13: 28 tornadoes

**EF-4: 1 EF-3: 7 EF-2: 4 EF-1: 12 EF-0: 4**

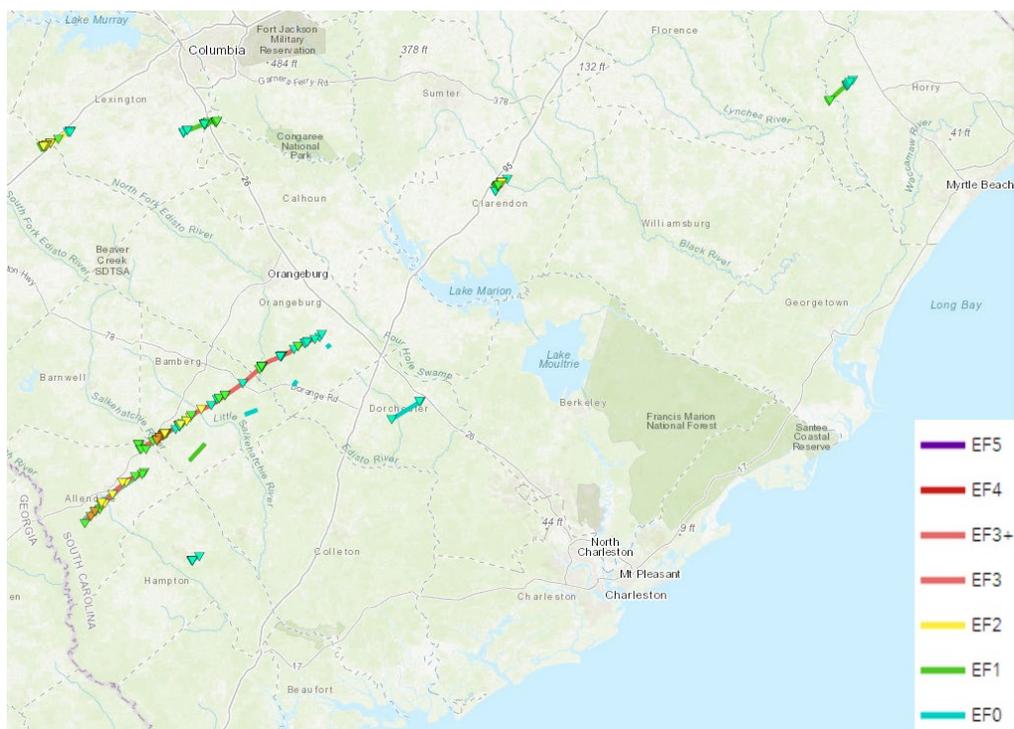
These tornadoes struck mostly during the pre-dawn hours, and the outbreak is South Carolina's worst of the 21st Century so far in terms of overall impact. It is the state's worst outbreak for the number of significant tornadoes (F or EF-2+). The tornadoes affected 16 counties, killing nine people and injuring 86. The tornadoes caused damage estimated at \$208 million (2022 dollars). The worst tornado was the Estill-Scotia-Nixville-Fechtig EF-4 that cut a 24-mile-long and up to  $\frac{3}{4}$  mile wide path through Hampton County.

2020





*Map from NOAA's Damage Assessment Toolkit showing damage points and tornado tracks from the tornado outbreak of April 13, 2020. Round markers indicate non-tornado damage. This outbreak produced the only EF-4 or F-4-rated tornado so far in the 21st Century in South Carolina.*



*Map from NOAA's Damage Assessment Toolkit showing damage points and tornado tracks from the April 5-6, 2022, tornado outbreak.*

# TORNADOES WITH LANDFALLING TROPICAL CYCLONES

Tropical cyclones usually spawn tornadoes as they move over land. Most tornadoes spawned by a tropical cyclone moving over land are short-lived and weak.

Not every landfalling tropical cyclone that passes through or near South Carolina causes tornadoes. None of the three that affected the state in 2022 (Colin, Ian, and Nicole) caused any tornadoes. However, in 2021, both Elsa (with five) and Fred (with ten) spawned tornadoes while affecting the state, as did Isaias (with one) and Sally (with twelve) in 2020.

Tropical cyclones have caused some of South Carolina's worst tornado outbreaks. Beryl of 1994 caused 23 tornadoes in South Carolina on August 16, the worst being an F-3 tornado that caused extensive damage from Lexington to Lake Murray and injured 40 people. Frances of 2004 caused the state's biggest tornado outbreak for the number of tornadoes in a single event as it passed through South Carolina as a tropical storm. Frances caused 46 tornadoes over September 6-7, the most intense being an F-3 tornado near Camden that injured one person and caused damage at a horse ranch. 2004 also brought Jeanne to South Carolina, which caused another 17 tornadoes in the state on September 27 while passing through as a tropical depression.



*Damage to a building in Lexington caused by an F-3 tornado spawned by Beryl on August 16, 1994 (SCDNR Archive Photo).*



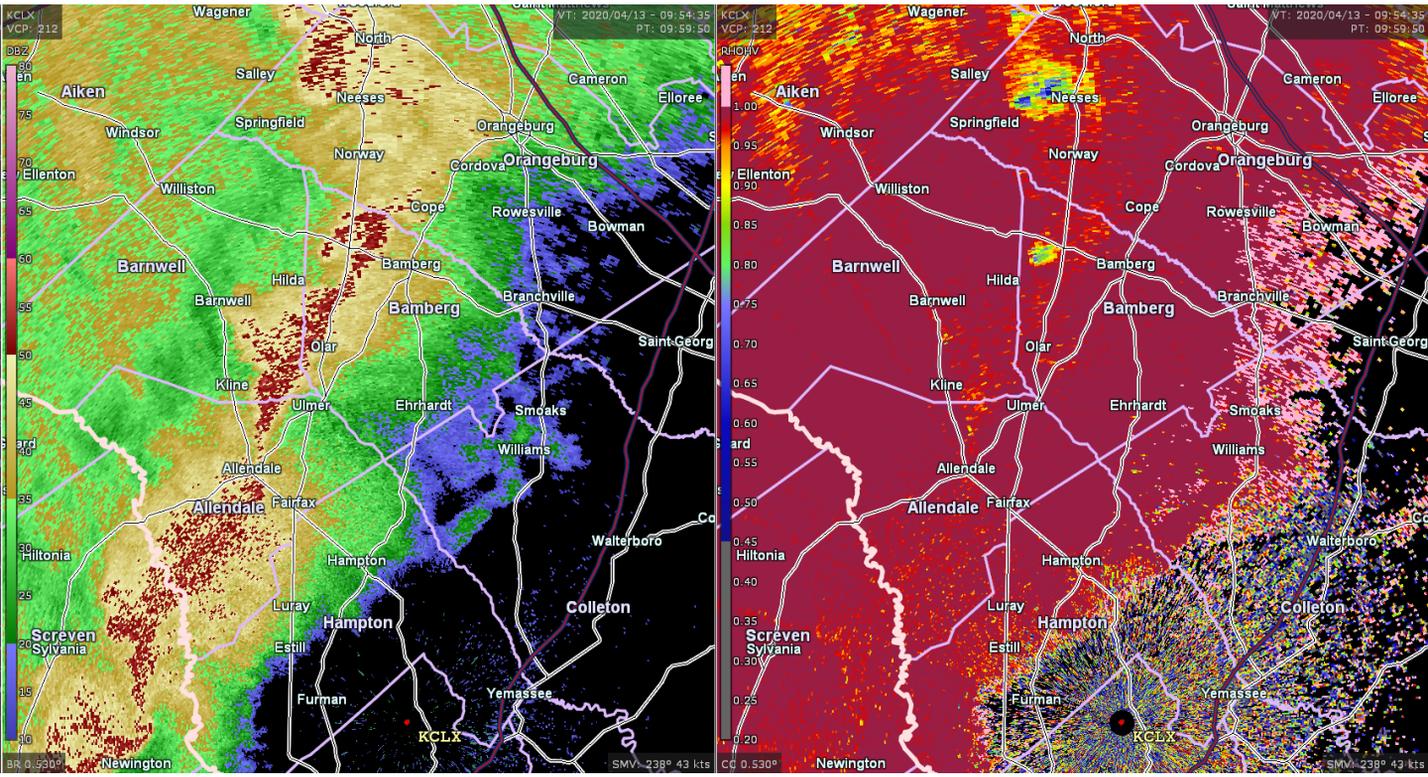
*Damage to a horse stable near Camden, with a horse trailer thrown on top of it, caused by the F-3 tornado spawned by Frances on September 7, 2004 (SCDNR Archive Photo).*

Other tornado outbreaks from tropical cyclones occurred with Cleo in 1964 (six tornadoes, three significant), David in 1979 (five tornadoes, two significant), Earl in 1998 (five tornadoes, two significant), Allison in 2001 (ten tornadoes), Fay in 2008 (eight tornadoes, two significant), Nate in 2017 (eight tornadoes, two significant), Sally in 2020 (12 tornadoes), and Fred in 2021 (10 tornadoes).

Tropical cyclones can spawn tornadoes long after making landfall. For example, Beryl and Fred made landfall along Florida's Gulf Coast. South Carolinians need to understand this risk and remain alert for tornado warnings when a tropical cyclone is affecting the state.

# TORNADO PREDICTION

The science of predicting the occurrence of tornadoes and providing timely warnings to the public has improved considerably in recent decades. Much of the improvement comes from investment in improved weather radar technology. A leap forward occurred with the advent of WSR-88d (NEXRAD) radar during the 1990s. Another leap came with an upgrade of the radar network to dual-polarization capability in 2013-14. Today, weather radar enables meteorologists to detect rotation in supercell thunderstorms and sometimes detect tornado debris. Along with the improvement in tornado detection, this improved radar technology has lowered the false alarm rate.



*Weather radar imagery from the Charleston, SC radar from just before 6:00 a.m. EDT on April 13, 2020. Reflectivity data (left) shows thunderstorms over South Carolina. However, this alone would not definitively indicate that tornadoes were occurring. Doppler velocity data (not shown) would show rotating areas, but a meteorologist could not confidently say that a tornado was occurring. Correlation coefficient (CC) imagery (right) distinguishes rain from debris lofted by tornadoes. The low CC values (green and blue near Neeses and northeast of Hilda) indicate lofted tornado debris.*

A further reduction in the false alarm rate for tornado warnings has come from recent studies comparing conditions when supercell thunderstorms cause tornadoes against situations when they do not. Improvement has also come with forecasting conditions favorable for supercell thunderstorms that spawn most tornadoes. Today's weather forecasters can give the public days of advance notice when these conditions will be present. However, it is still only possible to provide minutes of lead time that a tornado may strike a precise location.



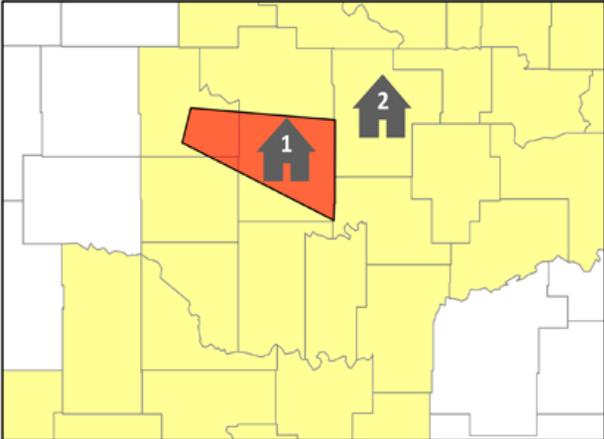
*Outlook from the Storm Prediction Center from April 11, 2020, valid for April 13, 2020.*

# TORNADO SAFETY AND RISK MITIGATION

Meteorologists, social scientists, and researchers in other fields have studied ways for people to protect themselves and their property from risks presented by tornadoes. These studies have led to improved tornado safety and dispelled myths that waste time when a tornado strike is imminent.

The most important thing to understand for residents of a tornado-prone area such as South Carolina is that preparation before a storm is critical to reducing impacts from a tornado strike and even for survival in many cases. There usually is no time to evaluate the best shelter options when a tornado is approaching. All residents of South Carolina should be familiar with tornado safety rules and know the best place to go in their homes and workplace before a tornado threatens.

Everyone should remain weather-aware and know when a tornado risk is in the forecast. It is critical to understand the meaning of watch and warning. A tornado watch means that conditions are favorable for tornadoes (and possibly other hazards like large hail and damaging straight-line wind) to occur.



The map shows South Carolina with a yellow shaded area indicating a Tornado Watch and a red shaded area indicating a Tornado Warning. Two house icons are labeled '1' and '2'. House '1' is located within the red warning area, while house '2' is in the yellow watch area.

### Tornado Products

- Tornado Warning**  
Tornado expected! Seek shelter. A tornado is occurring or will shortly at this location on the map.
- Tornado Watch**  
Tornado possible. Be prepared. Weather conditions favor thunderstorms capable of producing tornadoes at this location on the map.



**Wireless Emergency Alert**

**Emergency Alert**  
Tornado warning for this area until 8:15 pm. Take shelter immediately. Check local media. - NWS

When a tornado watch is issued, this is a time to review tornado safety information and ensure that your shelter is easily accessed and stocked with emergency equipment. The equipment can include flashlights, a first aid kit, a weather radio, and a motorcycle or bicycle helmet. Remain alert for possible warnings and have two or more ways to receive tornado warnings.

When the National Weather Service issues a tornado warning for your area, it means that a tornado is known to be occurring or can form suddenly in the warned area. The average lead time for a tornado warning is only nine minutes, so quickly move to your shelter area when a warning is issued. Blunt-force head injuries from flying debris are a common cause of tornado deaths, so if items like a helmet or hard hat are available, use them to protect your head. Crouching under a sturdy piece of furniture in your shelter can provide added protection from flying or falling debris.

## Know Where to Go

When Sheltering from a Tornado



The best choice for shelter from an approaching tornado is a storm cellar or FEMA Safe Room, but few South Carolinians have these options. For most South Carolinians facing a tornado approaching their home, an interior room, closet, or basement will give the best protection from flying debris.



Similar rules apply to the workplace. A windowless interior room on the lowest floor of a building or a below-ground room or garage is the best choice for shelter if a tornado is approaching.



*A mobile home destroyed by a tornado on March 28, 1984, near Loris in Horry County. This tornado was rated F-2 and struck at about 9:35 p.m. EST. (SCDNR Archive Photo)*

A study by the South Carolina Revenue and Fiscal Affairs office found that about 16 percent of South Carolina's homes are mobile homes. Those who reside in mobile homes must understand that their home does not protect from tornadoes. Houses on stilts also do not protect from tornadoes because they lack a solid foundation. Such structures must be quickly abandoned in favor of a predetermined sturdy shelter when a tornado approaches.

People caught outdoors or in a vehicle with a tornado approaching are in great danger and must quickly find a sturdy shelter. Those in a vehicle with no nearby shelter should remain in it with the engine running and seat belts fastened, leaning over to keep their head below the level of the windows. This will allow the vehicle's airbag system to deploy if the vehicle is tossed and help keep flying debris that may crash through the car's windows from striking the occupants heads. Motorists should only attempt to drive out of a tornado's path if there is a clear escape route at a right angle to the tornado's track. Attempts to outrun a tornado are rarely successful.

Those caught outdoors in the path of a tornado near no shelter and no access to a vehicle should look for a low-lying area such as a ditch or ravine. Lie flat in this area and cover your head and neck with your arms. Choose a place away from trees, if possible, or a spot with fewer trees to minimize

## TORNADOES AND ROAD SAFETY

**WHAT TO DO**

Get off the road. The best option is to drive to a designated shelter, basement or safe room.

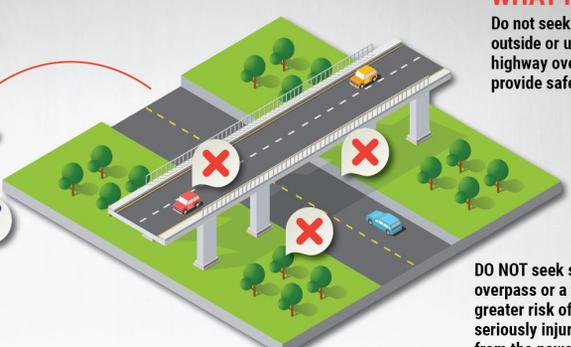


The next best option is a small, windowless room or hallway on the lowest floor of a sturdy building.



**WHAT NOT TO DO**

Do not seek refuge in a vehicle, outside or under an overpass. A highway overpass does not provide safety from a tornado.



DO NOT seek shelter under an overpass or a tree. This puts you at greater risk of being killed or seriously injured by flying debris from the powerful tornadic winds.

the risk of trees or large branches from them falling on you. Also, when in a vehicle or caught in the open, never use a bridge overpass as a tornado shelter. The wind will be channeled and accelerated through the opening under the overpass, and you will likely be hit by debris or carried away.

The [National Weather Service](https://www.weather.gov) and the [Ready.gov](https://www.ready.gov) websites provide detailed tornado safety information.



*A National Weather Service photo of damage from the 2020 Estill-Scotia-Nixville-Fechtig EF-4 Tornado. The near-total destruction of this well-built home east of Estill and southwest of Varnville resulted in the rating of EF-4. (National Weather Service Photo)*

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Sources for narratives, data, and images included in this document include the National Centers for Environmental Information (NCEI), the National Weather Service, NOAA's Damage Assessment Toolkit, and the South Carolina State Climatology Office.

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If you have any additional questions regarding the information provided in this document, please contact Dr. Hope Mizzell or Frank Strait at the State Climatology Office.

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# FOR FURTHER STUDY

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