

TORNADOES

Source: The National Hurricane center (<http://www.nhc.noaa.gov/>) – August 2002

Hurricanes can also produce tornadoes that add to the storm's destructive power. Tornadoes are most likely to occur in the **right-front quadrant** of the hurricane. However, they are also often found elsewhere **embedded in the rainbands**, well away from the center of the hurricane.



Some hurricanes seem to produce no tornadoes, while others develop multiple ones. Studies have shown that more than half of the landfalling hurricanes produce at least one tornado; Hurricane Buelah (1967) spawned 141 according to one study. In general, tornadoes associated with hurricanes are less intense than those that occur in the Great Plains (see the **Fujita Intensity Scale** below). Nonetheless, the effects of tornadoes, added to the larger area of hurricane-force winds, can produce substantial damage.

We have no way at present to predict exactly which storms will spawn tornadoes or where they will touch down. The new Doppler radar systems have greatly improved the forecaster's warning capability, but the technology usually provides lead times from only a few minutes up to about 30 minutes. Consequently, **preparedness is critical**.

Tornado Facts

- When associated with hurricanes, tornadoes are not usually accompanied by hail or a lot of lightning, clues that citizens in other parts of the country watch for.
- Tornado production can occur for days after landfall when the tropical cyclone remnants maintain an identifiable low pressure circulation.
- They can also develop at any time of the day or night during landfall. However, by 12 hours after landfall, tornadoes tend to occur mainly during daytime hours.

Fujita scale

The Fujita scale (F-scale) uses actual damage to determine a tornado's wind speed

- **F0 Gale Tornado**
40-72 mph
Some damage to chimneys. Tree branches broken off. Shallow rooted trees uprooted.
- **F1 Moderate Tornado**
73-112 mph
Peels surface off roofs. Mobile homes overturned. Moving autos pushed off roads.
- **F2 Significant Tornado**
113-157 mph

Considerable damage. Roofs torn off frame houses. Large trees snapped or uprooted. Light-object missiles generated.

- **F3 Severe Tornado**

158-206 mph

Severe damage. Roofs and some walls torn off well constructed homes. Trains overturned. Most trees in forests uprooted. Heavy cars lifted off ground.

- **F4 Devastating Tornado**

207-260 mph

Well-constructed houses leveled. Structures with weak foundations blown off some distance. Cars thrown and large missiles generated.

- **F5 Incredible Tornado**

261-318 mph

Strong frame houses lifted off foundations and disintegrated. Automobile-sized missiles fly through the air in excess of 100 mph. Trees debarked.

Tornado Safety Actions *FOR MOBILE AND MANUFACTURED HOMES*

► Monitor [NOAA Weather Radio](#).

► Have a plan of where to go during a tornado threat—a nearby pre-identified safe structure within walking distance.

► When a tornado watch is issued, be prepared to take action.

► When conditions warrant, move to the pre-identified safe structure.

► If you live in a mobile or manufactured home park, get together with other residents and the park owner/manager to designate safe shelter areas in the park or community.

Tornado Safety Actions *OFFICES, CONDOMINIUMS AND OFFICES*

► Monitor [NOAA Weather Radio](#).

► When action is required, take shelter in an interior hallway on a lower floor, closet or small room.

► As a last resort, get under heavy furniture, away from windows.

Top Ten U.S. Killer Tornadoes

1. **States:** Missouri, Illinois, Indiana
Date: March 18, 1925
Dead: 695
Injured: 2027
F-Scale: F5
Information: The so-called Tri-State Tornado was by far the worst tornado disaster in U.S. history. The tornado wreaked havoc for more than three hours. Records were set for both speed and path length. Tornado damage stretched from Reynolds, Iron, Madison, Bollinger, Cape Girardeau and Perry counties in Missouri, through Jackson, Williamson, Franklin, Hamilton, and White counties in Illinois and Posey, Gibson and Pike counties in Indiana. The worst devastation was in Illinois, where the town of Gorham was destroyed. In Murphysboro, 25 deaths occurred in three schools, with students crushed under falling brick and stone walls.
2. **States:** Louisiana, Mississippi
Date: May 7, 1840
Dead: 317
Injured: 109
F-Scale: Unknown
Information: The so-called Natchez Tornado touched down in Concordia Parish, Louisiana, and Adams County, Mississippi. Most of the deaths occurred on the Mississippi River, since the tornado tracked for some time directly over the waterway. The death toll from the tornado is undoubtedly higher than officially listed, as many slave deaths were probably not included in the total.
3. **States:** Missouri, Illinois
Date: May 27, 1896
Dead: 255
Injured: 1,000
F-Scale: F4
Information: The St. Louis Tornado touched down six miles west of Eads Bridge. Buildings and homes along the river were swept away or damaged, although the steel span bridge was largely undamaged.
4. **States:** Mississippi
Date: April 5, 1936
Dead: 216
Injured: 700
F-Scale: F5
Information: The Tupelo Tornado began near Coffeeville, Yalobusha County. It leveled hundreds of houses and killed entire families. A movie theater was turned into a hospital with the popcorn machine used to sterilize instruments. One hundred-five box cars were brought

into town to serve as temporary housing.

5. **States:** Georgia
Date: April 6, 1936
Dead: 203
Injured: 1600
F-Scale F4
Information: The Gainesville Tornado, actually a pair of tornadoes, hit at the start of the work day. The funnel clouds took different paths into the city, but converged in a four-block area that was destroyed. Debris filled the streets up to 10 feet deep and about 750 houses were destroyed. The Cooper Pants Factory, a multi-story building, collapsed and caught fire, killing about 70 workers.
6. **States:** Texas, Oklahoma, Kansas
Date: April 9, 1947
Dead: 181
Injured: 970
F-Scale F5
Information: The Woodward Tornado hit Gray, Roberts, Hemphill, Lipscomb counties in Texas, Ellis, Woodward and Woods counties in Oklahoma and Barber and Kingman counties in Kansas. Along much of its path, the tornado was reportedly one to two miles wide. The entire town of Glazier and most of Higgins was destroyed.
7. **States:** Louisiana, Mississippi
Date: April 24, 1908
Dead: 143
Injured: 770
F-Scale F4
Information: The Amite/pine/purvis Tornado was reported to be two miles wide. Only seven of 150 homes in Purvis were reported left standing.
8. **States:** Wisconsin
Date: June 12, 1899
Dead: 117
Injured: 200
F-Scale F5
Information: The New Richmond Tornado began as a waterspout on Lake St. Croix, then moved northeast in the direction of New Richmond. The massive amount of flying debris resulted in multiple deaths and a 3,000 pound safe was carried a block by the winds. More than 300 buildings were damaged or destroyed.
9. **States:** Michigan
Date: June 8, 1953

Dead: 115
Injured: 844
F-Scale F5
Information: The Flint Tornado destroyed homes on both sides of Coldwater Road and killed multiple family members of at least 20 families.

10. **States:** Texas
- Date:** May 11, 1953
- Dead:** 114
- Injured:** 597
- F-Scale** F5
- Information:** The Waco Tornado destroyed 200 business buildings and damaged another 400, including a six-story furniture store that collapsed.