

# Hazards Caucus Alliance Fact Sheet

www.hazardscaucus.org

# TORNADOES

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. In an average year, about 1,000 tornadoes are reported across the United States, resulting in 80 deaths and over 1,500 injuries, according to the National Oceanic and Atmospheric Administration. The most violent tornadoes are capable of tremendous destruction, with damage paths as wide as a mile and as long as 50 miles and wind speeds of 250 mph or more. Destruction of homes, crops, and utility infrastructure cost the U.S. hundreds of millions of dollars every year.



**A Tornado near Dimmit, Texas in 1995.**

Courtesy NOAA, accessed through Earth Science World Image Bank ([www.earthscienceworld.org/images/](http://www.earthscienceworld.org/images/))

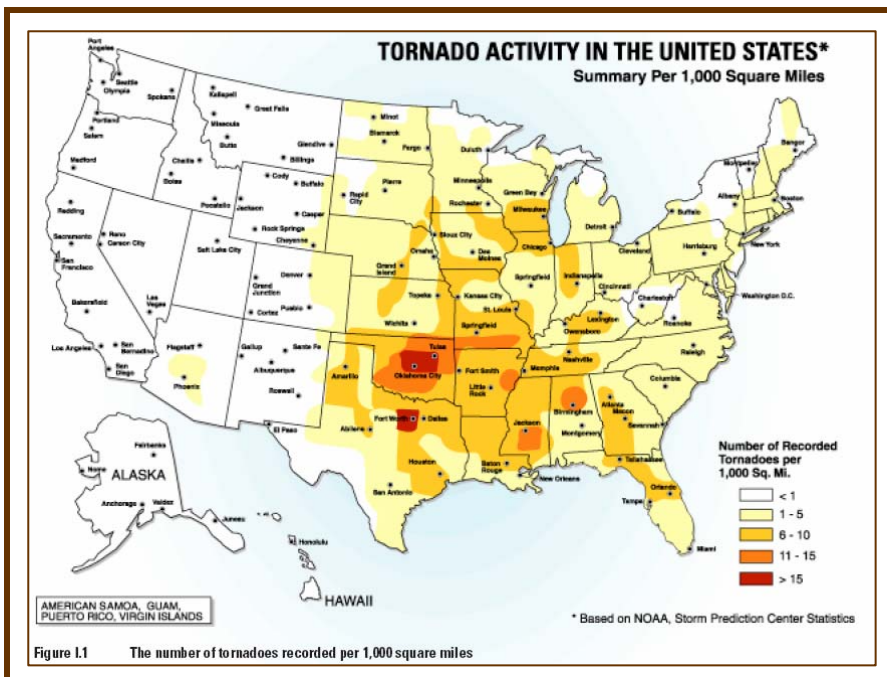


Figure 1.1 The number of tornadoes recorded per 1,000 square miles

## Enhanced Fujita Tornado Damage Scale

**Category F0: Light Damage** (wind speeds below 85 mph); Some damage to chimneys; branches broken off trees; sign boards damaged; broken glass in windows and doors.

**Category F1: Moderate Damage** (86–110 mph winds); Roofs of mobile homes removed; loss of rooftop HVAC equipment; trees uprooted; electrical transmission poles bent.

**Category F2: Considerable Damage** (111–135 mph winds); Frame homes shift off foundation; boxcars overturned; tree trunks snapped; cars lifted off ground; electrical transmission poles broken.

**Category F3: Severe Damage** (136–165 mph winds); Roof and walls torn off well-constructed houses, mobile homes completely destroyed; trains overturned; trees debarked; heavy cars lifted off ground and thrown.

**Category F4: Devastating Damage** (166–200 mph winds); Well-constructed houses leveled; structure with weak foundations blown off some distance; cars thrown and large missiles generated.

**Category F5: Incredible Damage** (wind speeds over 200 mph); Strong frame houses lifted off foundations and swept away; automobile sized missiles fly through the air in excess of 100 meters (109 yards); significant structural deformation to high-rise buildings.

National Oceanic & Atmospheric Administration, <http://www.noaa.gov/tornadoes.html>

## How To Prepare For A Tornado

### BEFORE:

- Develop a tornado safety plan with your family
- Prepare a survival kit
- Build a safe room
- Know local emergency weather TV/radio stations

### DURING:

- Shelter in a safe room or interior closet or bathroom indoors; if outdoors, lie in a nearby ditch or low-lying area
- Exit vehicles & stay clear of windows, glass, and objects which may become airborne
- Be cautious of flying debris or flash floodwaters in low areas
- **Do not** seek shelter under highway overpasses

### AFTER:

- Treat injured persons
- Watch for washed out roads, contaminated buildings, contaminated water, gas leaks, broken glass, damaged electrical wiring, and slippery floors.
- Inform local authorities about health and safety issues, including chemical spills, downed power lines, washed out roads, smoldering insulation, and dead animals.

## Federal Agencies Involved

**National Oceanic and Atmospheric Administration (NOAA)**- A federal agency under the Department of Commerce which focuses on the condition of the oceans and atmosphere.

<http://www.noaawatch.gov/themes/severe.php>

**National Weather Service (NWS)**- Division of NOAA which forecasts weather conditions and issues warnings and watches for the U.S. and its territories.

<http://www.nws.noaa.gov/om/brochures/tornado.shtml>

**National Severe Storm Laboratory (NSSL)**- An institution under NOAA which conducts advanced atmospheric research.

<http://www.nssl.noaa.gov/>

**Federal Emergency Management Administration (FEMA)**-The federal agency given the responsibility to aid the public in disaster mitigation, response and recovery. FEMA is under the Department of Homeland Security.

<http://www.fema.gov/hazard/tornado/>



Tornado damage in Kissimmee, FL. ( Michael Collier)

## Terms to Remember

**Fujita Scale** - A scale of wind damage intensity in which wind speeds are inferred from an analysis of wind damage.

**Straight-line Winds** - Generally, any wind that is not associated with rotation, used mainly to differentiate them from tornadic winds.

**Supercell** - A thunderstorm with a persistent rotating updraft. They are rare, but are responsible for a remarkably high percentage of severe weather events - especially tornadoes, extremely large hail and damaging straight-line winds.

**Wall Cloud** - A localized, persistent, often abrupt cloud lowering from a rain-free base. Rotating wall clouds usually develop before strong or violent tornadoes, by anywhere from a few minutes up to nearly an hour.

## National Weather Service Alerts

### Tornado Watch

Tornadoes are possible. Remain alert for approaching storms. Watch the sky and stay tuned to NOAA Weather Radio, commercial radio, or television for information.

### Tornado Warning

A tornado has been sighted or indicated by weather radar. Take shelter immediately.

[http://www.fema.gov/hazard/tornado/to\\_terms.shtml](http://www.fema.gov/hazard/tornado/to_terms.shtml)

## Signs Indicative of Tornadic Weather

There are several common signs to look for that will help identify environments that may produce a tornado. Look for a **greenish coloring in the clouds**, a tabular cloud lowering stoutly from the base called a **wall cloud**, and persistent, sustained **rotation** in the wall cloud. Often, the winds of a tornado produce a **roaring noise similar to a freight train**. Because they are not visible in all tornadoes, looking for a condensation **funnel cloud is not** the best way to look for a tornado. If any or all these features are identified, seek shelter and look for weather information.

## Building a Safe Room

A safe room is a specially-designed room to protect people from tornadoes and violent storms. Safe rooms are generally small rooms heavily reinforced with steel and/or concrete to withstand severe weather events.

Safe rooms come in various sizes, designs, and materials. Lower-cost, easier to install safe rooms are often made of steel and can be placed in existing rooms, basements, or attached to the outside of a home. More elaborate designs are incorporated into reinforced basement walls and are constructed out of a combination of steel and concrete. Some safe rooms are prefabricated and are transported directly to the home to be installed, with little construction by the homeowners necessary.

Because safe rooms have shown to save lives during a tornado, FEMA has made several designs available to guide the construction of a safe room. Also, several state and federal agencies offer small grants to subsidize the cost of construction.

[http://www.fema.gov/hazard/tornado/to\\_saferoom.shtml](http://www.fema.gov/hazard/tornado/to_saferoom.shtml)



Construction workers build a steel-reinforced concrete safe room, which will be placed inside a home. Many safe rooms are prefabricated like this example and are transported to homes throughout the U.S. ([cement.org](http://www.cement.org))

The **Congressional Hazards Caucus** is co-chaired by Senators Mary Landrieu (LA), Ben Nelson (NE), and Lisa Murkowski (AK) and Representatives Dennis Moore (KS), Jo Bonner (AL) and Zoe Lofgren (CA). The Caucus helps individuals, businesses, and communities better prepare for and mitigate the costs of disasters. The Caucus seeks to foster dialogue on steps that government and citizens can take to lessen the severity of these disasters. To learn more about the Caucus, visit [www.hazardscaucus.org](http://www.hazardscaucus.org).