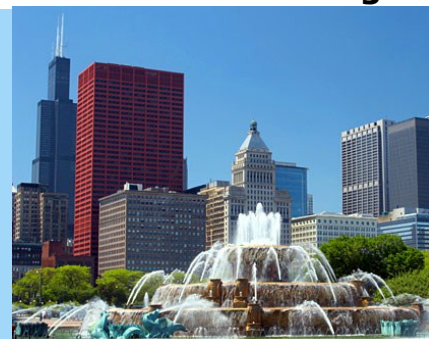




## National Weather Service Forecast Office Chicago

# Weather Currents



Summer 2013  
Volume 11, Issue 2

### Are You Ready for Severe Weather at an Outdoor Event? by Jim Allsopp, Warning Coordination Meteorologist

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Summer is here. During summer, many people make plans to attend large outdoor events such as concerts, professional sports, fairs and festivals. Many people also look forward to camping, boating, biking and hiking. Children and adults participate in recreational sports leagues. Part of the planning for these events revolves around the weather. What should you do if thunderstorms are in the forecast?

Thunderstorms pose a number of hazards to people exposed to the elements outdoors, including lightning, hail, damaging winds, flash flooding, and even tornadoes. During the summer of 2011, concert stages were collapsed by storms in Ottawa, Canada, Tulsa, Oklahoma, Indianapolis, Indiana, and Hasselt, Belgium. Twelve people were killed and dozens were injured in these events. For the period 2008-2012 there was an average of 29 lightning fatalities per year in the U.S. Many of the fatalities occurred when people were involved in recreational activities outdoors. This spring there have already been two lightning fatalities in Illinois. A man was killed by lightning while fishing in a boat on a river, and a girl was killed in a park. On May 31, a tornado struck the St. Louis metro area while fans were waiting for the start of a baseball game at Busch Stadium. Fortunately, the tornado did not hit downtown near the stadium.



Website:  
[weather.gov/Chicago](http://weather.gov/Chicago)  
815-834-1435



Stage collapse at Indiana State Fair August, 2011. Photo by Matt Kryger, Indianapolis Star

Here are some outdoor thunderstorm tips;

### Before you go out

- Check the forecast. Go to [www.weather.gov/chicago](http://www.weather.gov/chicago), or your favorite weather web site, or listen to [NOAA Weather Radio](#) for the latest information. Don't rely on the forecast you heard last night. The weather changes, and forecasts are continuously updated with the latest information.
- If thunderstorms are in the forecast, check the [Hazardous Weather Outlook](#). The Hazardous Weather Outlook will provide details on specific thunderstorm threats and give the most likely time and location for thunderstorms to occur.

### When you arrive at the event

- Become familiar with the venue. Where are exits, restrooms, or potential shelter areas?
- Are there potential hazards in case lightning or high winds occur? Look for things such as overhead power lines, tree limbs, or loose objects that can become airborne or that could collapse in high winds, like signs, trash cans, or temporary structures like stages or scaffolding.
- Can you see the sky to the west (direction most storms come from)?

### During the event

- Monitor the weather with a smart phone app or portable NOAA Weather Radio. While the National Weather Service does not provide cell phone apps, there are many available from private vendors. You can view radar images and have severe weather warnings sent to your phone as text messages. Check with your phone service provider or phone manufacturer's app store. Most cell phones will now receive tornado warnings through [Wireless Emergency Alerts](#).
- Take protective action if thunderstorms approach. Do not wait for an announcement from the event organizer. Some event organizers work closely with local emergency management, they monitor weather, and have specific severe weather emergency plans. Some do not. The personal safety of you and your family are **YOUR** responsibility! If you feel there is a significant threat from the weather, move to a safe location.



*F2 tornado damage to Atlanta Motor Speedway July 6, 2005. Photo by NOAA, NWS Atlanta.*

Here are some safety tips for specific threats.

### Lightning

- *There is no safe place outdoors when lightning is occurring!* Get inside an enclosed building. Picnic shelters, gazebos, porches, tents, and awnings are NOT enclosed buildings and they offer NO protection from lightning. An enclosed metal vehicle with the windows up is safe from lightning.
- Lightning often strikes the tallest object. Avoid being next to isolated tall trees, power poles or other objects that might be lightning targets. Do not be in an open field where you are the tallest object. At stadiums, get down to lower levels and indoor spaces if possible.
- Water is a good conductor of electricity. Do not be in a swimming pool or out boating on a river or lake if there is a lightning threat.
- If you see lightning or hear thunder, it is not safe to be outdoors. Do not wait until it starts to rain to take action. Lightning can strike several miles from the parent thunderstorm in places where it is not raining. Blue sky may be visible. Remember, “When lightning roars, go indoors!”



*Lightning strike at U.S. Cellular Field May 26, 2013. Photo by Alfred Lumbara.*

## Heavy Rain and Flash Flooding

- Do not park or camp in a low lying area, or near a creek, stream, or drainage ditch if heavy rain is expected. Even if it is not raining at your location, nearby heavy rain could cause creeks or streams to flood.
- If your clothes become wet and temperatures drop, hyperthermia is possible, even in summer.

## Hail

- Cover your head and seek shelter. Picnic shelters, gazebos, porches, tents, and awnings may provide temporary shelter from hail, but they offer NO protection from lightning, which also occurs with most hail storms.
- If you experience large hail, the size of golf balls or larger, you are likely in the core of a dangerous supercell thunderstorm. Supercells are also capable of producing tornadoes, damaging winds, heavy rain and frequent lightning. Move to sturdy shelter as quickly as possible.

## High Winds

- Be aware of loose lightweight objects that can become airborne, such as trash bins, or signs
- Be aware of tall objects that can topple or collapse, such as tree limbs, power lines, scaffolding, or temporary stages
- Be aware of large fabric covered objects that can act as sails, such as tents, awnings, trampolines, or stage backdrops.
- Seek shelter in a sturdy building and stay away from windows.



*Jogger injured by hail in Iowa, April 2010. Photo by Pat Crawford*

## Tornadoes

- Have a portable [NOAA Weather Radio](#), a [WEA](#)-capable phone, or a cell phone app that can alert you when a tornado warning is issued for your area. Know where you are! Warning areas are described as portions of counties. Specific cities, highways and other landmarks are referenced in National Weather Service warnings. Warnings can be displayed graphically as a small polygon or box overlaid on a map or radar display.
- Move to substantial shelter. The best shelter is underground in a basement. The next best shelter is reinforced concrete. If no basement or concrete shelter, go to a small interior room on the lowest floor, away from windows. A good rule of thumb is to put as many walls between you and the tornado as possible. If you are camping or at an outdoor fair or festival with no shelter available, lie flat in a low spot, get behind a wall, berm, or embankment, lie flat and cover your head.
- Temporary structures, campers and mobile homes are poor tornado shelters. More than 40% of tornado fatalities occur in mobile homes. Vehicles can be pelted or damaged by blowing debris or they can become airborne and get crushed. Do not try to escape a tornado in your vehicle. Evacuate to more substantial shelter when a tornado watch is issued or if your area is in a moderate or high risk for severe weather. Once the tornado warning is issued it is probably too late to evacuate.

## Summary

It is important to have a severe weather plan for any outdoor activity. Make sure everyone in your group knows the plan. Make sure to monitor weather by using a portable NOAA Weather Radio or smart phone app. Take immediate action and get to shelter if severe weather threatens.

Have a safe summer!

## Heading Out to the Beach This Summer?

by Ricky Castro, Meteorological Intern

The National Weather Service Chicago Office resumed issuing Surfzone forecasts for the shoreline of Lake and Cook Counties in Illinois and Lake and Porter Counties in Indiana for the summer 2013 swim season beginning Friday May 24<sup>th</sup>.

### **New for this Year:**

#### **Beach Hazard Statements**

Beach Hazard Statements will be issued over the summer on days when dangerous swimming conditions are expected. The Beach Hazard Statement addresses various beach hazards and replaces the Rip Current Statements that have been issued in past years. See the Service Change Notice at: [www.nws.noaa.gov/om/notification/scn13-33BHS\\_expansion.htm](http://www.nws.noaa.gov/om/notification/scn13-33BHS_expansion.htm) for more details on this transition.

*Swim Hazard Risk Replaces Rip Current Risk in the Surfzone Forecast:*

Part of the transition to Beach Hazard Statements will include the Surfzone Forecast. The Surfzone Forecast will no longer refer to Rip Current Risk, but instead Low, Moderate and High Swim Hazard Risk.

### **Factors Contributing to Dangerous Swimming Conditions**

#### **High Waves**

High waves pose several dangers to swimmers at Lake Michigan beaches. First, high waves will cause swimmers to become fatigued. Large waves are very powerful and can push a person off a sandbar and into deeper water, requiring them to swim through a rapid succession of waves to get back to more shallow water.

#### **Rip Currents and Structural Currents**

Also, high waves result in dangerous rip currents and structural currents. Rip currents are strong, fast moving channels of water that form rapidly and flow quickly away from shore through breaks or low spots in the sandbar. Structural currents are strong, fast moving currents which frequently flow along piers, breakwalls and jetties toward deeper water offshore.

#### **Strong Offshore Winds**

Dangerous swim conditions can also develop with strong offshore winds. Although wave heights would tend to be lower with offshore winds, strong winds can still cause dangerous structural currents in the Chicago area. Southerly winds over 35 mph resulted in dangerous currents near a pier at Loyola Park Beach on May 24, 2012, a contributing factor in the tragic drowning of a 15 year old female.

Furthermore, particularly at the Indiana Dunes beaches, strong southerly winds pose a unique hazards to those on rafts. These winds can create a current that pulls rafts well away from shore into deeper water. A 31 year old male drowned on June 18, 2012 at Lake View Beach in Beverly Shores when his raft capsized and blew away from him after drifting over a quarter mile from shore due to 30 mph southerly winds. The chief ranger at the Indiana Dunes National Lakeshore also reported that there were several rescues in summer 2012 alone due to rafts being drifted well offshore.

**Criteria for Issuance of Beach Hazard Statements**

NWS Chicago will issue a Beach Hazard Statement when there is a high swim hazard risk to either of the following:

1. High waves of at least 3 to 5 feet and dangerous currents.
2. Winds of 30 mph or higher and dangerous currents.

We will no longer be issuing statements for a moderate risk, but a moderate risk will be highlighted in the Surfzone forecast.

**New Graphical Beach Forecast Page and Additional Changes to Beach Forecast**

NWS Chicago is excited to unveil a new graphical webpage for the Recreational Beach Forecasts for northeast Illinois and northwest Indiana. This page will be linked through September on the bottom right portion of our webpage under **Summer Preparedness Pages**. The link to the page is: [http://www.crh.noaa.gov/lot/?n=rip\\_risk](http://www.crh.noaa.gov/lot/?n=rip_risk).



Below is a look at the layout of the page on a day with a “High Risk” of swimming hazards. The red coloring along the county shorelines indicates the high risk. The coloring for low risk is green and the coloring for a moderate swim risk is yellow. When you click on the map for each county, a text window will pop up with the specific surf zone forecast for that county. Underneath the Indiana maps are helpful links for beach hazards and Lake Michigan beach information, as well as our latest Weather Story and regional radar.

### Lake Michigan Recreational Beach Forecasts

**WEDNESDAY**

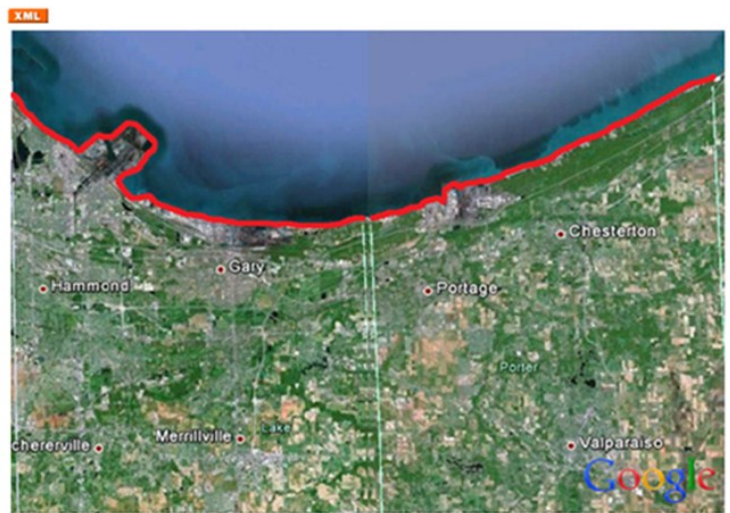
[Click to read the entire Forecast](#)



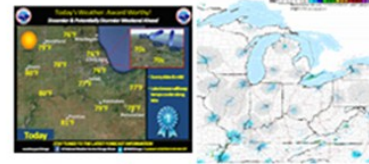
### Lake County and Cook County Swim Risk



### Lake County, Indiana and Porter County Swim Risk



- Beach Hazards Information**
  - [Great Lakes Beach Hazards Page](#)
  - [NWS Beach Forecasts and Beach Hazard Statements](#)
  - [Beach Safety and the Flag System](#)
- Lake Michigan Beach Information**
  - [Lake Michigan Beach Reports](#)
  - [Chicago Park District Beach Water Quality Forecasts](#)
  - [Chicago Park District Beach Information](#)
  - [Lake County Illinois Beach Advisory Information](#)
  - [Indiana Dunes Beach Status](#)



Be Careful and enjoy the beaches!

[Weather Safety and Preparedness information for Illinois and Indiana](#)

Another change we made to the Surfzone Forecast itself is to add the UV Index, Sunrise and Sunset Times and an extended forecast for planning purposes. Here's an example:

SURFZONE FORECAST FOR ILLINOIS AND INDIANA  
NATIONAL WEATHER SERVICE CHICAGO IL  
243 PM CDT TUE JUN 18 2013

ILZ006-191945-  
LAKE-  
INCLUDING THE BEACHES OF...ILLINOIS BEACH STATE PARK  
243 PM CDT TUE JUN 18 2013

...BEACH HAZARDS STATEMENT IN EFFECT THROUGH LATE TONIGHT...

.TOMORROW...  
SKY/WEATHER.....SUNNY.  
MAX TEMPERATURE.....63-68.  
BEACH WINDS.....EAST WINDS AROUND 10 MPH.  
AVERAGE WAVE HEIGHT...1 TO 3 FEET.  
WATER TEMPERATURE..... UPPER 50S.  
UVI INDEX.....8 - VERY HIGH.  
SUNRISE.....5:14 AM CDT.  
SUNSET.....8:31 PM CDT.  
SWIM HAZARD RISK.....LOW...WHICH MEANS THAT LARGE WAVES AND  
STRONG CURRENTS ARE NOT EXPECTED ALONG THE  
SHORE.

.EXTENDED...  
.THURSDAY...MOSTLY SUNNY. HIGHS IN THE MID 70S. SOUTHEAST WINDS  
AROUND 5 MPH.  
.FRIDAY...PARTLY CLOUDY. SLIGHT CHANCE OF THUNDERSTORMS. HIGHS IN THE  
UPPER 70S. SOUTH WINDS AROUND 10 MPH.  
.SATURDAY...PARTLY CLOUDY. CHANCE OF THUNDERSTORMS. HIGHS IN THE  
LOWER 80S. SOUTH WINDS AROUND 10 MPH.

To view the surfzone forecast, go to this [link](#) or click the link near the top of the new Graphical Beach Forecast Page.

### People heading to Lake Michigan beaches this summer should:

1. Check [www.weather.gov/chicago](http://www.weather.gov/chicago) or NOAA Weather Radio to see if any Beach Hazard Statements are in effect, and if they are, plan to stay out of the water that day.
2. Swim on lifeguarded beaches when possible.
3. Refer to warning flags at local beaches for the latest information before going into Lake Michigan waters.

*Flag Definitions:* Green: OK to swim; Yellow: Caution is urged; Red: Hazardous to swim

Swimming at Lake Michigan beaches is a wonderful part of living in or visiting this area, but on days when waves are high and/or currents are strong, it is a very dangerous activity and one that should be postponed until the hazardous conditions subside. Please stay informed and safe this summer, and enjoy the beaches!



# Tornadoes: Coming to a City Near You

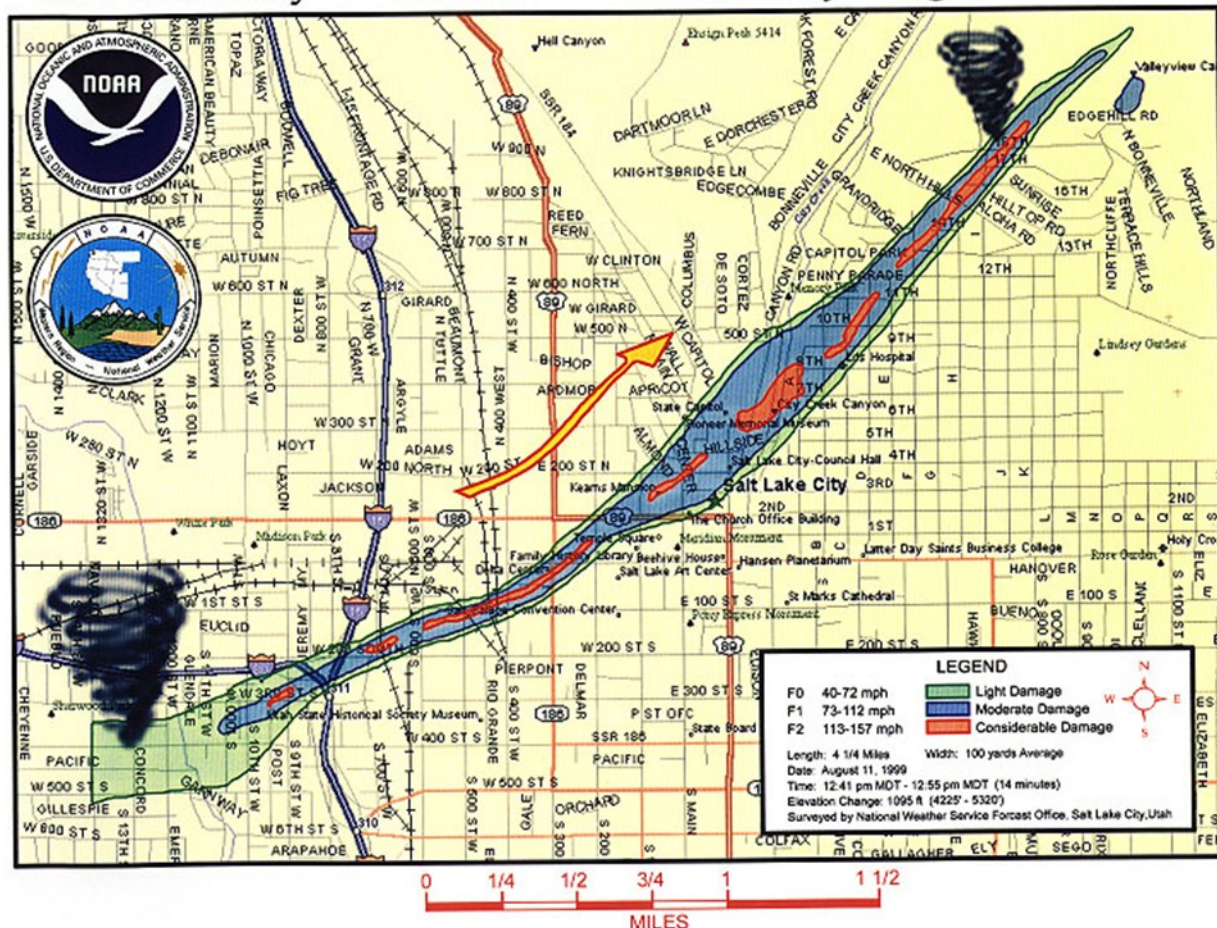
by Carissa Bunge, Student Volunteer

The violent tornado outbreaks that occurred throughout late May in Oklahoma City and surrounding areas has given rise to an endless stream of questions among the public. The recent discussions over tornado safety, chasing, and awareness has certainly been one of our nation's hot topics this summer. Several myths and misconceptions are being revealed. This provides the perfect opportunity for the meteorological community to convey the importance of tornado awareness to the general public. It is imperative to note the susceptibility Chicagoans face throughout tornado season; it is not a matter of *if* a tornado might happen, but *when* a tornado will happen.

## Myth #1: Tornadoes don't occur in highly populated metropolitan areas.

This is entirely false. A number of major U.S. cities such as Ft. Worth, St. Louis, Miami, Nashville, Salt Lake City, Washington D.C. and Chicago have all been hit by tornadoes. More specifically, the 1999 F2 tornado that touched down in the metropolitan area of Salt Lake City reminds us that even urban areas in mountainous terrain are at risk of tornado damage. The tornado lasted ten minutes, injured more than 80 people and caused \$170 million in damages.

### Salt Lake City - Tornado - Wednesday, August 11<sup>th</sup>, 1999



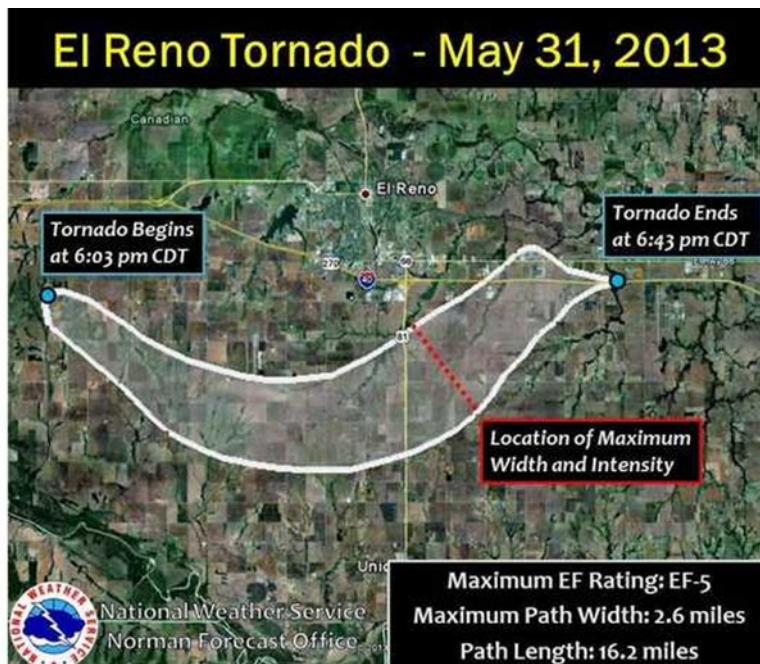
Map of Salt Lake City Tornado path from 1999

Another tornado struck downtown Miami in May of 1997. The F1 cut an eight mile long path and lasted about 15 minutes. While the damage was not necessarily devastating, the pictures captured from skyscrapers and local media were a stark reminder of how close tornados might come to such a densely populated city.



*Miami F1 tornado in 1997*

More recently, El Reno, Oklahoma’s 2.6 mile wide monster EF-5 tornado on May 31st was another wake-up call as it drew devastatingly close to the highly populated Oklahoma City. The widest tornado on record touched down at 6:03 pm CDT, after which there were reports of power flashes near I-40 on Oklahoma City’s west side, where drivers were in gridlock after attempting to evacuate during rush hour. This issue of a highly congested road during a severe weather event is not unlikely – most tornados occur between 4 and 9 p.m., right as people are leaving work and school.



*Path of El Reno Oklahoma tornado May, 2013.*

**Myth #2: Tornadoes don't occur in places with significant geographical features such as mountains, lakes and rivers, and they don't occur outside of "Tornado Alley".**

Also entirely false – in 1987, a tornado swept through Yellowstone National Park, creating a path of destruction up and down a 10,000 ft. mountain. Another tornado was recorded at 12,000 feet in California's Sequoia National Park in July 2004. Violent tornadoes have crossed rivers of all shapes and sizes, such as the tri-state tornado of March 18<sup>th</sup> 1925, which crossed the Mississippi River. A tornado simply doesn't care about the terrain it might encounter.

Despite being most commonly found in the central United States, Tornadoes are not limited to any geographical location. Even Canada has tornadoes: Their first official F5 tornado was documented on June 22, 2007 in Elie, Manitoba. This was the most powerful tornado in Canadian history, destroying numerous houses and a flour mill over its 40 minute lifespan.



*Elie, Manitoba, Canada F5 tornado*

**Myth #3: Opening my windows will equalize the pressure difference caused by the tornado.**

This will only waste very precious time and put you and loved ones in even more danger. The number one priority in the event of severe weather is to seek shelter immediately. Windows should be avoided as much as possible.

**Myth #4: While taking cover, I should sit at the southwest corner of my shelter.**

This is completely unnecessary. The myth that the southwest corner of a basement might be safer is based on the argument that since tornadoes usually come from the southwest, debris will fall into the northeast portion of the basement. This is entirely untrue, as chaotic tornado winds can blow debris in any direction and tornadoes themselves can arrive from any direction. Preferably, the safest place in a basement is under sturdy furniture or in a bathtub. If you don't have a basement or saferoom, take cover in an interior bathroom or closet.

**Myth #5: You can always outrun a tornado in your car.**

Vehicles (as well as mobile homes) are one of the most dangerous places you could possibly be during a tornado because they are easily tossed and destroyed. When a tornado is bearing down at close range, it is critical to evacuate the car and find sturdy shelter. If no shelter is available, lie flat in a low spot as far from the road as possible to avoid flying vehicles. Be sure to stay away from any potential live wires that might result from downed power lines. Even trained storm chasers often find themselves in harm's way – here is a link to a video that portrays just how close many chasers came during the El Reno tornado May 31, 2013:

[http://www.slate.com/blogs/the\\_slatest/2013/06/04/](http://www.slate.com/blogs/the_slatest/2013/06/04/)

[spotter\\_network\\_video\\_watch\\_as\\_strom\\_chasers\\_tracking\\_the\\_largest\\_ever\\_u.html](http://www.slate.com/blogs/the_slatest/2013/06/04/spotter_network_video_watch_as_strom_chasers_tracking_the_largest_ever_u.html)



*Damage photo taken by a NWS survey team in Chapman, Kansas after an EF3 tornado on June 11th, 2008*

**Myth #6: If I find myself on the highway during a tornado, the best place to take cover is an overpass.**

This is among the worst places to be in the event of a tornado – deadly flying debris can be blasted into spaces between the bridge and grade and severely injure anyone taking cover there. Wind speeds in tornadoes can be over 200 mph and produce airborne debris that is channeled under the overpass. The wind tunnel effect of the overpass might even accelerate these winds, causing even greater risk of injury and even death. Not only is an overpass extremely unsafe as shelter, blocking roads might impede emergency vehicles from critical duties.

**Myth #7: A Tornado watch and a Tornado warning are the same thing**

A tornado *watch* defines an area shaped like a parallelogram, where tornadoes and other kinds of severe weather are *possible* in the next several hours. It signals that those in the area should be alert and prepared to go to shelter if tornadoes do occur and a warning is issued. This is the time to turn on the TV, listen to the radio, and make sure friends and family are aware of the potential for tornadoes. Tornado watches are issued by the NOAA/NWS Storm Prediction Center in Norman, Oklahoma. A tornado *warning* means that a tornado may be imminent in your area. It has either been spotted or Doppler radar has indicated thunderstorm circulation which can spawn a tornado. During a warning, take immediate safety precautions and seek shelter.

**The Most Dangerous Myth of All: It can't happen to me.**

It absolutely can. The most violent tornado to hit the Chicagoland area was in Plainfield on August 28<sup>th</sup>, 1990. A tornado with winds over 200 mph ripped through Kendall County into northwestern Will between 3:15 and 3:45 p.m., killing 29 people and injuring more than 350. Throughout its 16.4 mile-long path, it destroyed 470 homes and caused \$160 million in damages. Because the tornado was concealed by rain and hail, there are no known videos or pictures - No one even reported the tornado to the NWS until 3:45. The F5 tornado remains the highest-intensity severe thunderstorm to ever hit the Chicago region.



*Remnants of Plainfield High School*

## What is a Gustnado?

by Jim Allsopp, Warning Coordination Meteorologist

This spring and summer there have been a few weather events where people reported seeing blowing or swirling dust in or near a thunderstorm and mistakenly reported tornadoes to local authorities or the National Weather Service (NWS). In some cases tornado sirens have been activated based on these reports, even though the NWS did not issue a tornado warning. The conflict of local warning activation when no official tornado warning has been issued can lead to confusion.

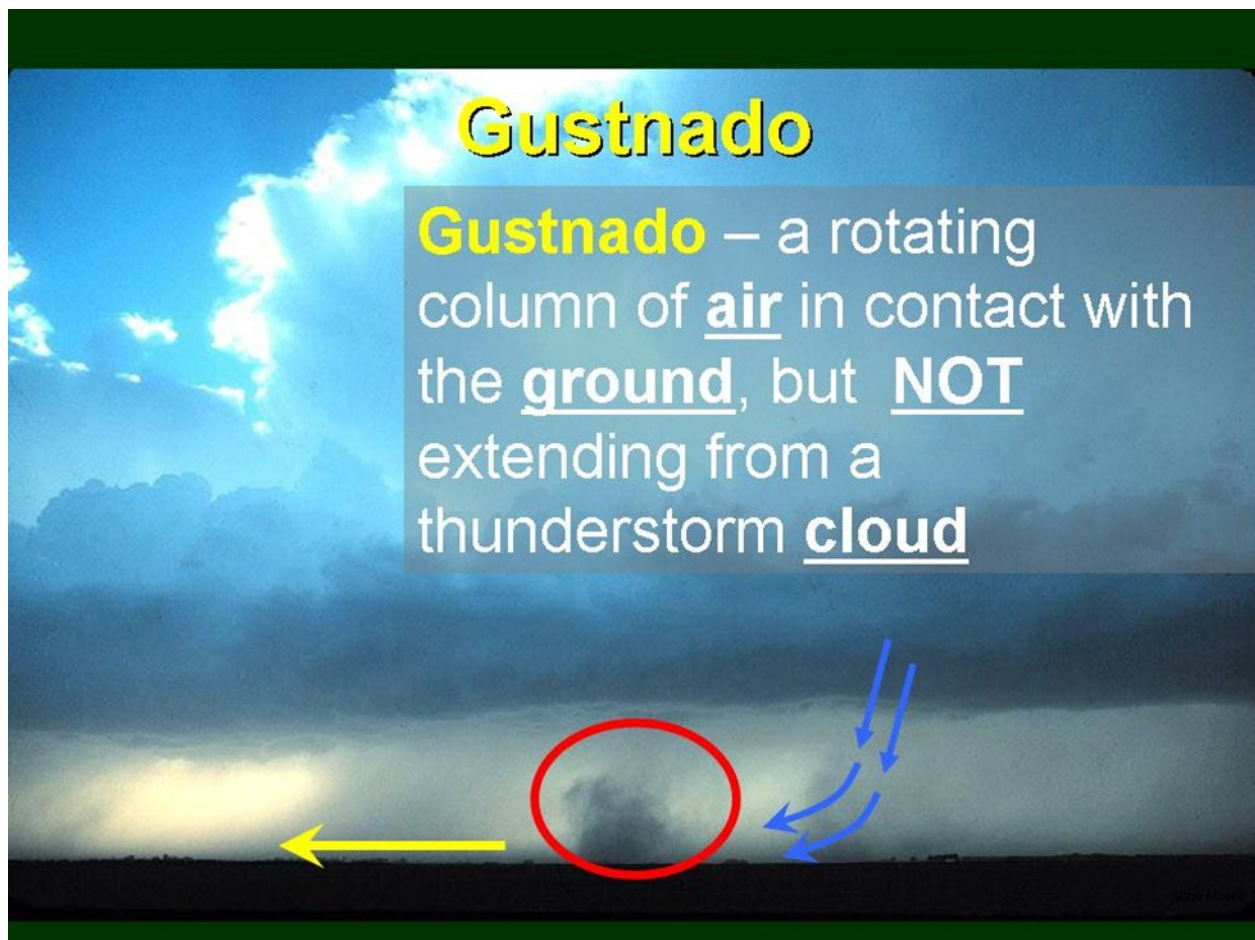
A **tornado** is a violently rotating column of air, pendant from a thunderstorm cloud, and often visible as a funnel cloud. The rotation must extend from the cloud base to the ground. A condensation funnel may or may not be visible. Tornadoes occur in areas of strong updraft into a thunderstorm or cumuli-form cloud and strong low level wind shear.

Tornadoes are often, but not always, associated with a wall cloud. A **wall cloud** is a localized and persistent lowering cloud formation that develops beneath the base of a cumulonimbus cloud. It is an area of strong inflow and updraft into the storm. The wall cloud is sometimes visibly rotating. They often appear in the rear flank or southwest quadrant of a thunderstorm.



*Wall cloud – an isolated lowering attached to a thunderstorm in an area of strong inflow and updraft*

A **gustnado** is a slang term for a short-lived, ground-based, shallow, vortex that develops on a gust front associated with either thunderstorms or showers. There is no apparent connection to the convective cloud above. They may be accompanied by rain, but usually are 'wispy', or only visible as a debris cloud or dust whirl at or near the ground. However, since the rotation does not extend to the cloud base, gustnadoes are not considered to be tornadoes. Gustnadoes are not associated with storm-scale rotation (i.e. mesocyclone) that is involved with true tornadoes; they are more likely to be associated visually with a shelf cloud that is found on the forward side of a thunderstorm. Gustnadoes are spawned along the leading edge of the downdraft and outflow of a storm, whereas tornadoes form in strong inflow and updraft into the storm.



*Diagram and definition of a gustnado*



*Gustnado along a shelf cloud – in an area of downdraft and outflow. This is not a tornado.*

A shelf cloud is a low, horizontal wedge-shaped arcus cloud, associated with a thunderstorm gust front. The shelf cloud is attached to the base of the parent cloud above it (usually a thunderstorm). Rising cloud motion often can be seen in the leading (outer) part of the shelf cloud, while the underside often appears turbulent, boiling, and wind-torn.



*Shelf cloud – a low, wedge shaped band of clouds on the leading edge of the outflow a thunderstorm. Tornadoes are unlikely with this feature. Photo by Jim Zandonai, Freeport, IL.*



Wind speeds in gustnadoes are often less than 60 mph and there is often little or no damage with them. In rare cases winds can be 60 to 80 mph or more and damage can be equivalent to that of an EF0 or EF1 tornado. But winds anywhere along the leading edge of a storm's outflow or gust front can be destructive, whether a gustnado occurs or not. It doesn't matter if the wind is blowing in a straight-line or swirling – if the wind is strong enough, damage can occur.

The most important ways to distinguish a tornado from a gustnado:

If you see swirling dust or debris at ground level, look up at the cloud base. Is there a funnel or an abrupt lowering that is rotating? If so, then you are probably witnessing a tornado. If not, it is likely a gustnado. Also, while tornadoes can occur along the leading edge of a storm in rare cases, they most often occur in the rear flank of the storm. Gustnadoes almost always form on the leading edge of the storm's outflow. Also, tornadoes are associated with strong inflow and updraft into the storm. If you are in a part of the thunderstorm dominated by cool downdraft and outflow, a tornado is highly unlikely.

A few other things to keep in mind:

Sirens are local outdoor warning systems activated by community or county authorities. Sirens are the responsibility of law enforcement, the fire department or emergency management agency in your area. Each county or community has its own threshold for activation. When sirens are activated you should move indoors to a safe place, then check NOAA Weather Radio, the NWS web page, or a good cell phone weather app to see if your location is included in a warning. The NWS now has the ability to issue warnings based on the storm's location and path and can often narrow down the threatened area, in an effort to reduce the apparent false alarm rate. While some local governments activate sirens based on the smaller storm-based warnings, many still activate for a warning anywhere in the county. Check with your local authorities to find out what the siren policy is in your area. Also, keep in mind that while tornadoes can be devastating, severe thunderstorms are also very dangerous and potentially deadly. Severe thunderstorms can produce large hail, 1 inch in diameter or greater, and damaging winds of 58 mph or greater. In rare cases downburst or "straight-line" winds from thunderstorms can be 80 to 100 mph or more, causing damage similar to that of an EF0 or EF1 tornado. Severe thunderstorm warnings should be taken seriously.

To learn more about identifying cloud features, plan to attend a NWS spotter training class next spring. Classes are offered from February through April, before severe weather season. Classes are free and open to anyone, and they take about 2 hours. Please check our web page, <http://weather.gov/chicago>, around mid January for a complete schedule of classes.