



NATURE'S FURY

LET CBS 58
READY WEATHER

**GET YOU
PREPARED**

WHAT MAKES A
TORNADO

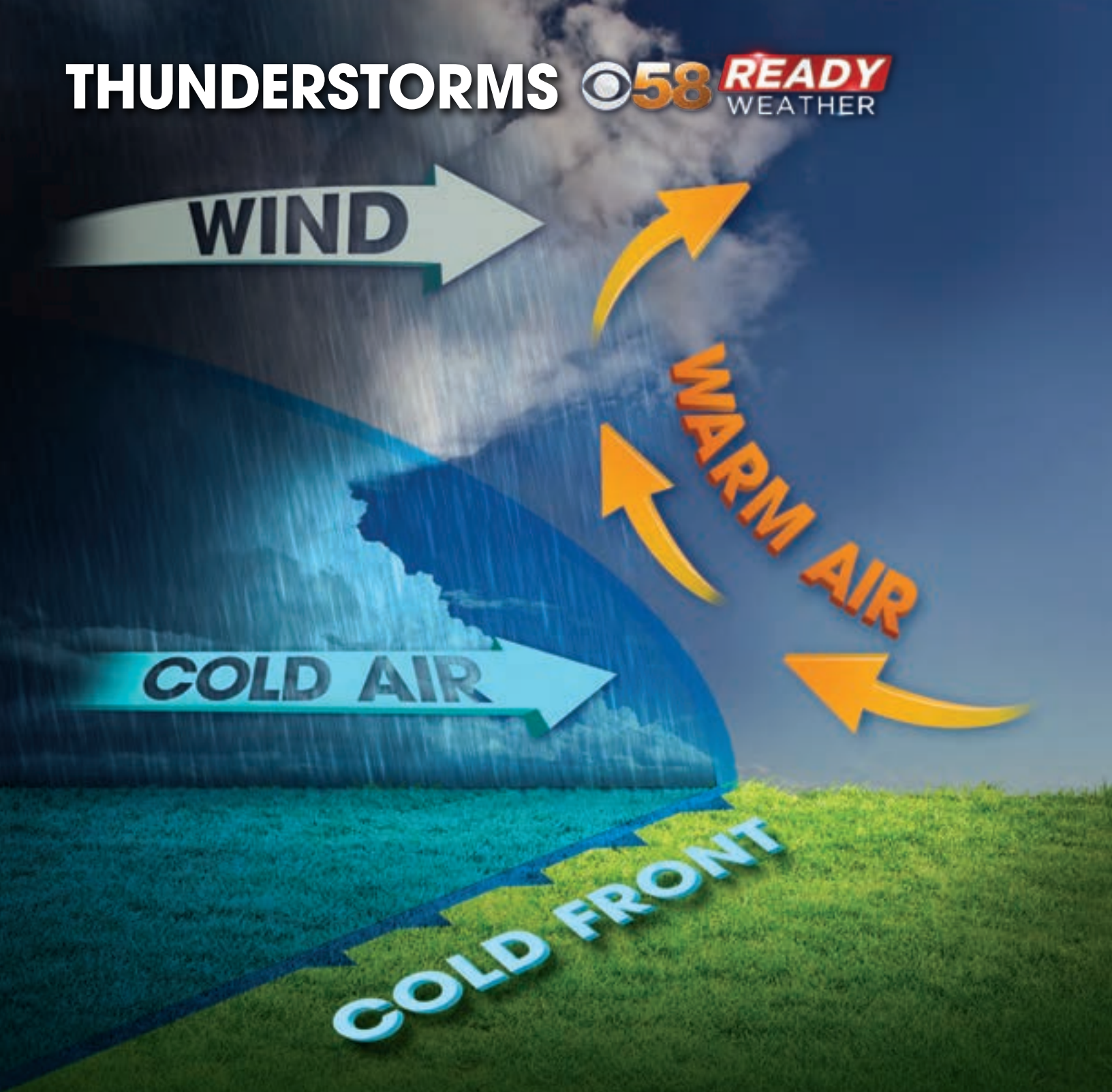
**KNOW YOUR
READY SPOT**



THUNDERSTORMS

58

READY
WEATHER



In order for thunderstorms to grow large enough to produce tornadoes, a few ingredients need to be added. Thunderstorms like to form where a cold front bumps into warm, moist air. In the image above, when the cold front meets the warmer air mass, it pushes the warmer air above the cold air. This is the energy thunderstorms need to form. The power of the rising air, or updraft, keeps millions of water droplets in suspension until they become so heavy they fall as rain. A tornado may form if a downward-spinning column of air inside the thunderstorm touches the ground.

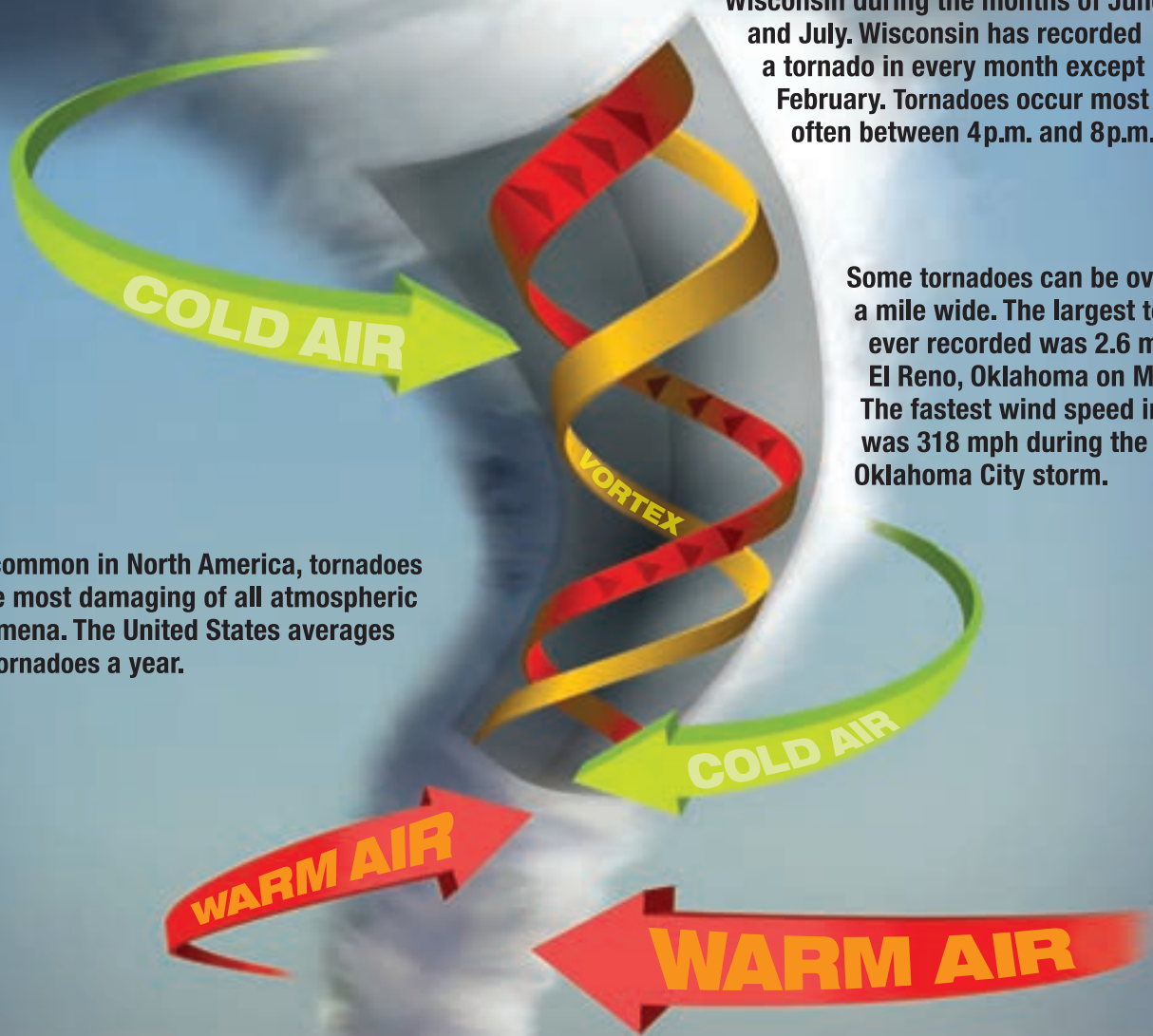
WHAT MAKES A TORNADO?

During severe thunderstorms, a rapid and violently rotating column of air forms to create a tornado!

Tornadoes are most common in Wisconsin during the months of June and July. Wisconsin has recorded a tornado in every month except February. Tornadoes occur most often between 4p.m. and 8p.m.

Some tornadoes can be over a mile wide. The largest tornado ever recorded was 2.6 miles wide in El Reno, Oklahoma on May 31, 2013. The fastest wind speed in a tornado was 318 mph during the May 3, 1999 Oklahoma City storm.

Most common in North America, tornadoes are the most damaging of all atmospheric phenomena. The United States averages 1200 tornadoes a year.



1. Warm air rapidly rises and experiences wind shear, eventually becoming tilted the higher it goes.
2. Warm air twists, and as speed increases, more warm air is drawn up through the low pressure area in the vortex.
3. As the vortex gets stronger, the funnel begins to drop to the ground.

DANGER ALLEY


Tornado Alley is located in the heart of the United States -- the Great Plains. Tornadoes can happen anywhere in the country and the world but Texas, Oklahoma and Kansas have the greatest tornado activity each year. In fact, the United States has more tornadoes each year than any other place in the world. The most favorable time of the year for tornadoes to form is from late spring to early fall, but they can also occur during the winter months.

Dixie Alley is another hot spot for tornado activity and it includes Alabama, Louisiana and Georgia.

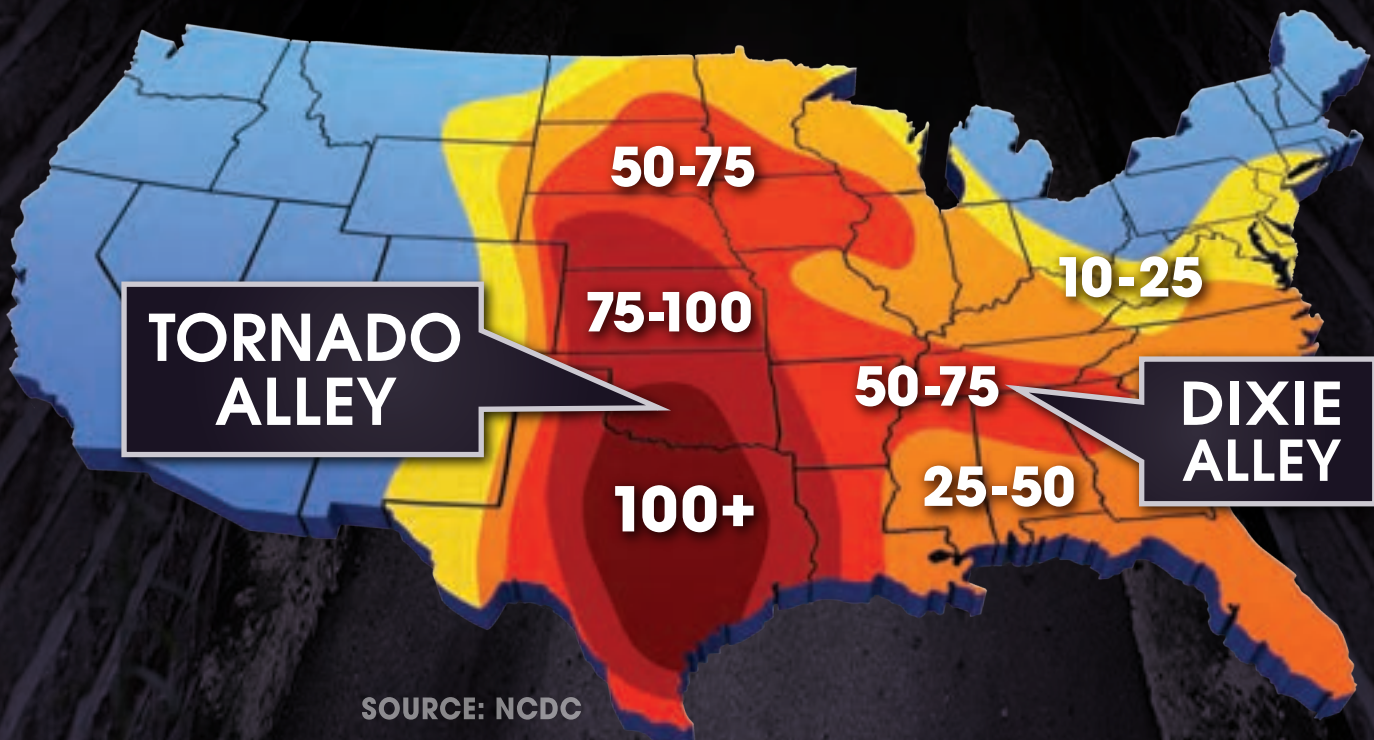
Weather forecasters are always on the lookout for tornadoes in this area especially during the late winter and early spring months.

STATES WITH HIGHEST AVERAGES:

1. Texas	155
2. Kansas	96
3. Florida	66
4. Oklahoma	62
5. Nebraska	57
20. Wisconsin	23



AVERAGE ANNUAL TORNADOES BY STATE



SOURCE: NCDC

THE FUJITA SCALE

Dr. Tetsuya Theodore Fujita was considered to be the foremost tornado scientist in the world. He was born in Japan and studied weather. He eventually accepted a position with the University of Chicago in 1953. There he developed the "Fujita Scale" to classify tornadoes based on the amount of damage they caused. His weather studies led to many discoveries and he continued his passion for meteorology until his death in 1998.



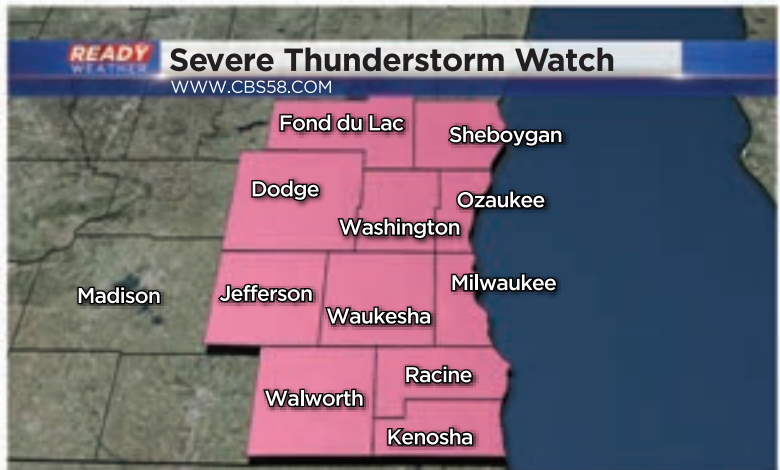
Advances in studying tornadoes have led to a new scale implemented in 2006. The Enhanced Fujita Scale rates the strength of tornadoes from EF0 to EF5. Twisters that cause the most damage and destruction are rated as an EF5.

ENHANCED FUJITA SCALE		DESTRUCTION CAUSED
EF0	65-85 MPH	WEAK OUTBUILDING
EF1	86-110 MPH	STRONG OUTBUILDING
EF2	111-135 MPH	WEAK FRAMEHOUSE
EF3	136-165 MPH	STRONG FRAMEHOUSE
EF4	166-200 MPH	BRICK STRUCTURE
EF5	+200 MPH	CONCRETE BUILDING

WATCHES AND WARNINGS

When severe thunderstorms are in the forecast, your local meteorologists are on the lookout non-stop. The same goes for the meteorologists at the National Weather Service and the Storm Prediction Center. The NWS and SPC will issue watches and warnings that you see on the bottom of your television screen during severe weather.

When conditions are favorable for storms to develop in your area, a watch is issued. These storms should be taken very seriously because they are capable of damaging or destroying property as well as posing a risk to life.



SEVERE THUNDERSTORM WATCH	Issued when there is a possibility that thunderstorms may produce large hail or wind speeds greater than 58 mph within the next 3 hours.
SEVERE THUNDERSTORM WARNING	Issued when a storm produces large hail or has wind speeds greater than 58 mph. Also means that a tornado is capable of forming.
TORNADO WATCH	Issued when thunderstorms in and near the forecast area may produce tornadoes within the next 3 hours.
TORNADO WARNING	Issued when a tornado has been spotted or indicated by radar.

WILD LAKE WINDS **READY** WEATHER

Waterspouts fall into two categories: fair weather waterspouts and tornadic waterspouts.

Tornadic waterspouts are tornadoes that form over water, or move from land to water. They have the same characteristics as a land tornado. They are associated with severe thunderstorms, and are often accompanied by high winds and seas, large hail, and frequent dangerous lightning.



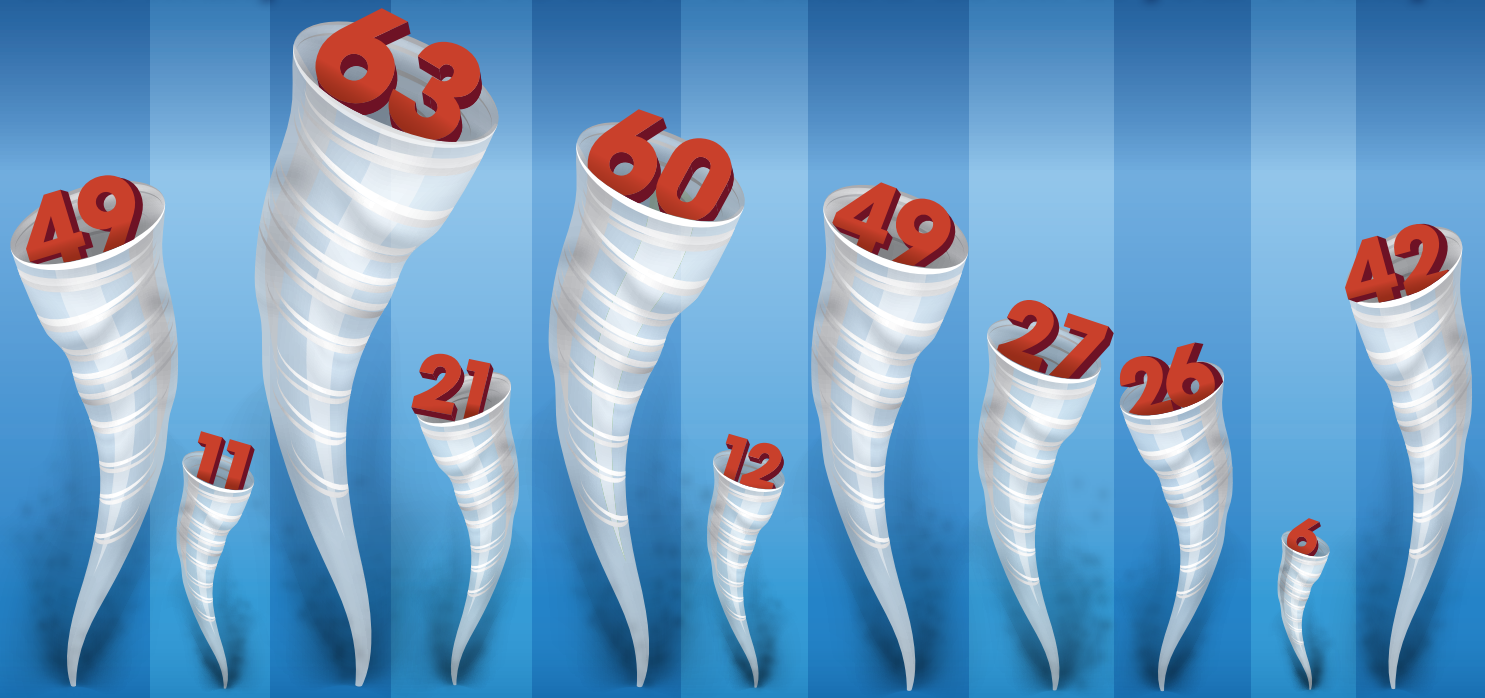
Fair weather waterspouts usually form along the dark flat base of a line of developing cumulus clouds. This type of waterspout is generally not associated with thunderstorms. While tornadic waterspouts develop downward in a thunderstorm, a fair weather waterspout develops on the surface of the water and works its way upward. By the time the funnel is visible, a fair weather waterspout is near maturity. Fair weather waterspouts form in light wind conditions so they normally move very little.

If a waterspout moves onshore, the National Weather Service issues a tornado warning, as some of them can cause significant damage and injuries to people. Typically, fair weather waterspouts dissipate rapidly when they make landfall, and rarely penetrate far inland.

Southeastern Wisconsin experiences waterspouts during the late summer and early fall. Warmer lake temperatures combined with cold air aloft provide the instability needed for waterspouts to form.

The largest waterspout outbreak over the Great Lakes in recorded history occurred during the fall of 2003. Between September 27th and October 3rd, an unbelievable 66 waterspouts were sighted! On one day alone, 21 waterspouts were seen over Lake Ontario. One confirmed waterspout even made it to land, causing some shoreline damage.

How many tornadoes have touched down in your county?

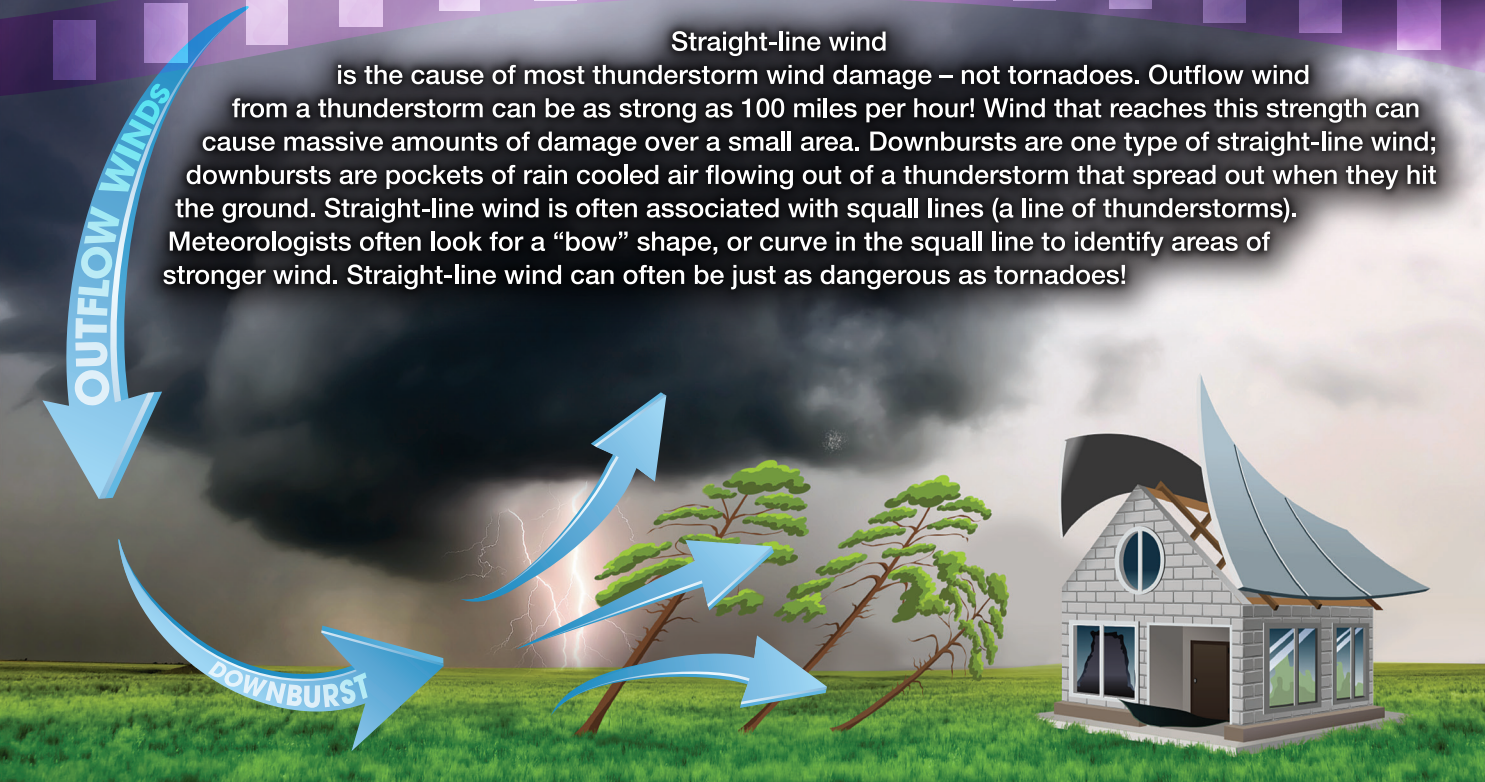


Tornado totals in each county from 1950 to 2023

BLOWN AWAY

JETSTREAM

Straight-line wind is the cause of most thunderstorm wind damage – not tornadoes. Outflow wind from a thunderstorm can be as strong as 100 miles per hour! Wind that reaches this strength can cause massive amounts of damage over a small area. Downbursts are one type of straight-line wind; downbursts are pockets of rain cooled air flowing out of a thunderstorm that spread out when they hit the ground. Straight-line wind is often associated with squall lines (a line of thunderstorms). Meteorologists often look for a “bow” shape, or curve in the squall line to identify areas of stronger wind. Straight-line wind can often be just as dangerous as tornadoes!



SOLVE THE WORD-NADO

58

READY
WEATHER

1. A severe thunderstorm _____ is issued when a storm produces large hail or has wind speeds greater than 58 MPH.
2. _____ cause damage which occurs in the same direction, not circular like tornadoes.
3. The _____ helps your local meteorologists during severe weather.
4. The sound of _____ is produced as lightning heats the air causing it to rapidly expand.
5. A solid or nearly solid line of thunderstorms or strong winds is called a _____.
6. It's very important to know where your _____ is before severe weather strikes.
7. In order to be considered an EF5 tornado, wind speeds must be _____ MPH or greater.
8. A _____ is a storm associated with lightning and thunder.
9. A _____ is seen when it's raining behind you and the sun is out.
10. Dixie Alley includes the states of Alabama, Georgia and _____.
11. Wisconsin set a record of 27 tornadoes during the _____ outbreak.
12. A tornado that rotates in the opposite direction is called _____.
13. A wind _____ is short lived, but stronger than sustained wind.
14. Most tornadoes move from southwest to _____.
15. Florida is the _____ capital of the United States.
16. CBS58 is your READY _____ station.
17. A _____ is the boundary between air masses.
18. Meteorologists use _____ to track storms.
19. A thermometer measures _____.

DO YOU KNOW YOUR SPACE WEATHER?

Answer these 10 questions about space weather and the aurora. Email your answers to **planetarium@mpm.edu** and receive a free admission to *Virtual Wisconsin Stargazing!*

1. What is another name for the Aurora Borealis?
 - a. "Cool lights in the sky"
 - b. "Sky dancing"
 - c. "Northern lights"
2. What is the aurora?
 - m. Fires from distant forests
 - n. An illusion caused by air pollution
 - o. Our atmosphere being electrified
3. What causes Earth's air to get electrified and produce light?
 - m. Intense dust storms on Mars
 - n. Intense moonlight
 - o. Intense charged particles from the sun
4. This blast of charged particles from the sun is released in a ____?
 - j. Solar flare
 - k. Coronal mass ejection
 - l. Both J and K
5. Most charged particles from the sun are deflected by the Earth's ____?
 - a. Magnetic field
 - b. Volcanoes
 - c. Earthquakes
6. Our magnetic field is produced by Earth's ____?
 - t. Lightning
 - u. Moving molten iron core
 - v. Volcanoes
7. Some charged particles from the sun get caught in Earth's magnetic field and spiral toward ____?
 - r. Magnetic north and south poles
 - s. The equator
 - t. Our tallest buildings
8. As these charge particles race toward the poles, they smash (BAM!) into the Earth's ____?
 - m. Radio telescopes
 - n. Volcanoes
 - o. Air
9. These collisions produce electrical discharges (AURORA!) from air molecules of nitrogen and ____?
 - r. Oxygen
 - s. Hydrogen
 - t. Einsteinium
10. To find out more about the aurora and space, visit Wisconsin's biggest planetarium, located ____?
 - a. At the Milwaukee Public Museum
 - b. In a galaxy far, far away
 - c. On the planet Vulcan

HINT:

The answers of each question spell out a secret phrase.

WHAT IS LIGHTNING?

Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning.

What causes lightning to be colored rather than the usual white or blue?

Lightning can appear to be many different colors depending on what the light travels through to get to your eyes. In snowstorms, where it is somewhat rare, pink and green are often described as colors of lightning. Haze, dust, moisture, raindrops and any other particles in the atmosphere will affect the color by absorbing or diffracting a portion of the white light of lightning.

How hot can lightning make the air?

Energy from lightning heats the air anywhere from 18,000 degrees Fahrenheit to up to 60,000 degrees Fahrenheit.

How many volts and watts are in lightning?

Lightning can have 100 million to 1 billion volts, and contains billions of watts.

What is thundersnow?

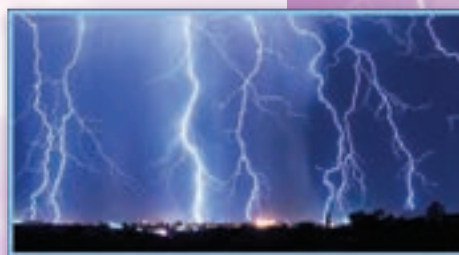
Although thunderstorms are less common in the winter, sometimes lightning can occur within snowstorms. Called thundersnow, relatively strong instability and abundant moisture may be found above the surface, such as above a warm front, rather than at the surface where it may be below freezing.

How many flashes a year are there?

Over the contiguous 48 states, an average of 25,000,000 cloud-to-ground flashes have been detected every year since the lightning detection network covered all of the continental US in 1989.

What are the odds of being struck by lightning?

The odds of being struck in your lifetime (estimated to be 80 years) are 1 in 13,000.



THE SKY IS FALLING!



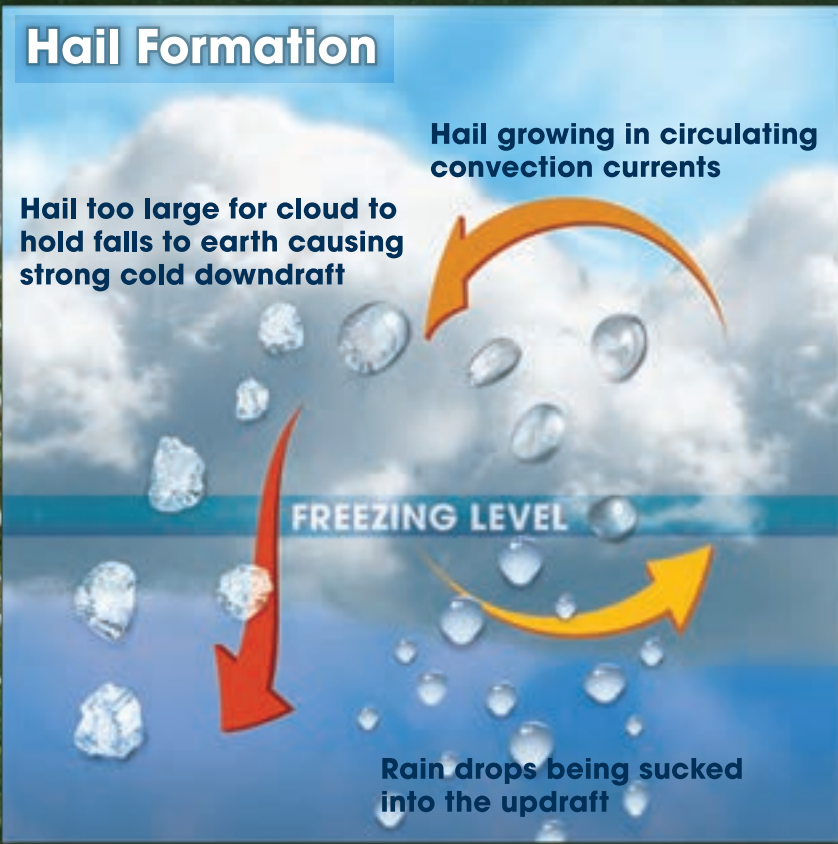
Hail Formation

Hail too large for cloud to hold falls to earth causing strong cold downdraft

Hail growing in circulating convection currents

FREEZING LEVEL

Rain drops being sucked into the updraft



Sample of Hail Damage



Sample of Hail Balls



IT'S ELECTRIFYING!

Lightning is the most underrated weather hazard! In the United States there are an estimated 25,000,000 lightning strikes each year, and it kills more people each year than tornadoes and hurricanes. If you can hear thunder you are likely within striking distance of the lightning. Almost all lightning will occur within 10 miles of its parent thunderstorm, but it CAN strike as far as 50 miles away! If you are outdoors when a storm approaches, avoid open fields and hill tops. Also, do NOT go near trees, bodies of water or large metal objects. Your best bet is to immediately head indoors. If you can't make it inside, stay low to the ground in an open area but not lying flat. Once 30 minutes have passed since the last lightning strike it will be safe to head back outdoors.



How long does it take for thunder to travel 1 mile?

)))) 5 SECONDS))))

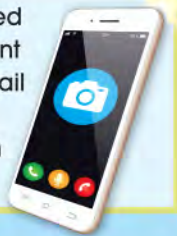


It is important to have a plan in place so that you and your family are safe when severe weather strikes. That plan should include knowing where your Ready Spot is in your home.

The CBS58 Ready Weather Team wants you to find the Ready Spot in your home. Then, designate that Ready Spot by hanging up your very own Ready Spot Indicator which you should print out of this book.



Once you have talked to your family and used the indicator to find your **Ready Spot**, we want to see you holding it in your **Ready Spot**! Email us a picture to weather@cbs58.com so we can show everyone that you are ready when severe weather strikes!



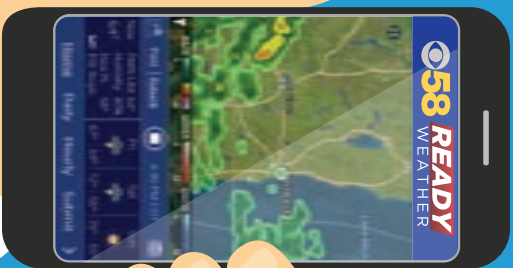
HOUSE: A basement is the safest place in the home. If you do not have a basement, take cover in the center part of your house, on the lowest floor in a closet or in a bathroom. Closets and bathrooms are the next best option after a basement because they lack windows. Sturdy furniture can also protect you from falling debris. Always remember to stay away from windows and do not attempt to open windows.

MOBILE HOME: Mobile homes and trailers can overturn during high winds and should be evacuated when tornadoes are possible. Your mobile home community should have a community shelter nearby. If there is no safe place, leave the building and take shelter in a culvert or ditch.

CARS or TRUCKS: Do not try to outrun a tornado in your car! Leave your car and get into the nearest ditch. Highway overpasses are not as safe as ditches or culverts.

SCHOOLS or OFFICES: Your school or office building will have a shelter area. It's important to get there as quickly as possible. Interior hallways on the lowest floor are the safest place to be. Do not take shelter in auditoriums, gymnasiums and other structures with long, wide, free-span roofs.





Let the CBS 58 Ready Weather App Keep You One Step Ahead of the Sky

- LIVE RADAR
- TRACK STORMS IN REAL TIME
- GET CURRENT CONDITIONS
- DAILY & HOURLY FORECASTS

DOWNLOAD THE CBS 58 WEATHER APP



EMERGENCY CHECKLIST



Food and water

Battery-powered or hand cranked radio and a NOAA Weather Radio with tone alert and batteries.



Flashlight with signal-strobe



First Aid Kit



Whistle to signal for help

FIND YOUR SAFE SPOT

HOUSE

Option 1: Basement in a central location away from windows.

Option 2: If you do not have a basement, take cover in the central part of your house, on the lowest floor in a closet or in a bathroom away from windows.

APARTMENT

Option 1: If you are on the first floor, take cover in the central part of the apartment, in a closet or in a bathroom away from windows.

Option 2: If you do not live on the ground floor, attempt to seek shelter on the lowest floor possible in an interior room away from windows.

Option 3: If you do not live on the ground floor and cannot seek shelter on a lower floor, take cover in the most interior part of the building away from windows and elevators.

MOBILE HOME

DO NOT STAY IN A MOBILE HOME DURING A TORNADO!

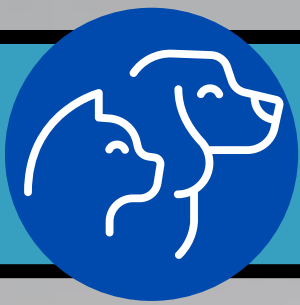
Option 1: Your mobile home community should have a community shelter nearby.

Option 2: If there is no safe place, leave the building and take shelter in a culvert or ditch.

SCHOOLS OR OFFICES

DO NOT TAKE SHELTER IN AUDITORIUMS, GYMNASIUMS OR OTHER STRUCTURES WITH LONG, WIDE, FREE-SPANNING ROOFS.

Take shelter in an interior hallway on the lowest floor.



PET PREPAREDNESS TIPS

KNOW THE FACTS 🐾 BE PREPARED 🐾 PROTECT YOUR PETS

It is important to make sure all family members are prepared for any emergency - including pets!

PLAN AHEAD

- Take time to create an emergency plan for your pets.
- Create an emergency kit for your dog, cat, or any other pets
 - What do they need to stay safe?
 - What will make them feel comfortable?

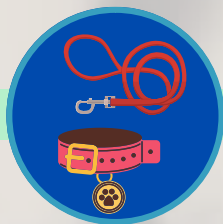
TIPS TO PREPARE

- Know where pet shelters are located in your community
- Get your cat or dog microchipped so shelters can contact you if you are separated from your pets
- If you have to leave home because of a disaster, bring pets with you

PET EMERGENCY KIT CHECKLIST



Food
Water
Dishes



Extra collar
and leash



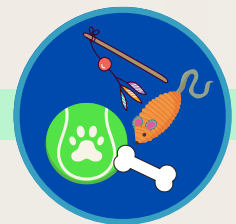
Vet records
Medications



Litter box
Pet waste bags



Kennel or
pet carrier



Extra toys
Treats



ReadyWisconsin

Be Informed. Plan Ahead. Take Action.

<https://readywisconsin.wi.gov>





FAIRDALE FURY

APRIL 9, 2015



On April 9, 2015, an EF4 tornado ripped through the town of Fairdale, Illinois and was the first violent twister of the season. Wind speeds clocked in at 200 MPH as it damaged nearly every home in the town.

The tornado tore a 30-mile path of damage through north-central Illinois just 68 miles Northwest of Chicago's downtown. The supercell that produced the tornado was a part of a larger severe weather outbreak. From Oklahoma to Pennsylvania, 18 other states dealt with severe weather including tornadoes and baseball-sized hail.

All the ingredients were present for this violent tornado. Warm, moist air pushed up from the Gulf of Mexico thanks to low pressure over Iowa and the atmosphere was very unstable.

An EF4 tornado is very rare in north-central Illinois. For this reason, Fairdale does not have a siren system to warn of approaching tornadoes. The tornado, at its highest intensity, measured a half-mile wide and traveled 15 to 20 miles on the ground. The damage was devastating along the twister's path. Buildings and homes were flattened, and cars were mangled. Of the 150 people in the town, two lost their lives and several more were injured.



PATH OF DESTRUCTION



West Bend F4 Tornado

The April 4, 1981, West Bend tornado was a fatal F4 anticyclonic tornado that struck in the early morning hours. It killed 3 people, and injured another 53, and was the strongest tornado in the country that year. The tornado was largely unexpected and the storm that produced it did not display features of a typical severe storm. This was the first documented anticyclonic tornado ever recorded. Because of this the National Weather Service issued only a Severe Thunderstorm Warning prior to the West Bend Tornado, causing local law enforcement to not sound the tornado sirens in time.



Barneveld, WI F5 Tornado

The Barneveld tornado was the first F5 in Wisconsin since the 1958 Colfax tornado which killed 21. The June 8th, 1984 Barneveld tornado was responsible for nine deaths and nearly 200 injuries while causing about \$25 million in damage. At 12:41 AM, this F5 tornado drove through the center of Barneveld, finally dissipating in northern Dane county around 1:40 AM after traveling 36 miles for 59 minutes.



At its peak, the tornado was nearly a quarter-mile wide. A sharp bolt of lightning followed by a deafening clap of thunder cut the electricity to the town just a few minutes before the tornado struck Barneveld, awakening many residents before the tornado struck.

To this date, the Barneveld Tornado remains the second costliest tornado, based on official damage costs, in Wisconsin history with total damage estimated at \$40 million. The Oakfield, WI tornado on July 18, 1996 remains the costliest tornado in state history, with total estimated damage costs at \$40.4 million

Oakfield, WI Tornado

On July 18, 1996 a violent tornado struck the Oakfield, WI community at 7:15 PM. Four homes were completely swept clean off their foundations and a couple automobiles became airborne missiles for a distance of about 400 feet. The core width of the most intense damage was about 150 to 200 yards, although at times, some secondary damage was observed in a 400 yard wide path. Oakfield residents heard local sirens about 8 minutes before the tornado entered the village. Residents reported that they had difficulty popping their ears as the tornado roared through their neighborhood.



Miraculously, no one was killed, but there were 12 injuries. Some of the injured were hospitalized. Along the tornado path, 60 homes and 6 businesses were destroyed. An additional 130 homes and businesses were damaged.

A rare and powerful thunderstorm tracked across northwest Wisconsin during the early evening of May 16, 2017. The storm produced a strong, 83 mile long track tornado which affected 4 counties, and was on the ground for over 2 hours! This is one of the longest track tornadoes ever to occur in Wisconsin since official National Weather Service records began in 1950. To put this in perspective, the average Wisconsin tornado has a path length of just under 6 miles.

The longest Wisconsin tornado on record occurred April 5th, 1929. That tornado traveled 187 miles from Pierce county to Iron county at a speed of 68 mph!

The Chetek tornado first developed over southeastern Polk County, east of Clear Lake, then tracked mostly eastward across southern Barron and southern Rusk counties.

One hard hit area occurred just north of Chetek, WI where high-end EF-2 damage was found. The greatest damage that was observed occurred north of the Village of Conrath in Rusk County. The tornado became an EF-3 (140 mph) and destroyed several houses. The remainder of the tornado's path ranged from EF-0 to EF-1, with mainly tree damage and minor structural damage.



WORD TWISTER

● NGWRAIN _____

ANOTORD _____

TAFOSRCE _____

XERVOT _____

PEPODRL _____

GOOFNILD _____

LGTGNHINI _____

UTOSHNRDMTR _____

EPOASFST _____

● CUDOL _____

DINW _____

LAIH _____

DOPPLER
WARNING

FORECAST
WIND

VORTEX
TORNADO

FLOODING
SAFE SPOT

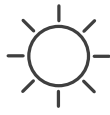
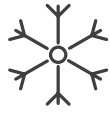
LIGHTNING
THUNDERSTORM

CLOUD
HAIL



What's the Weather Today?

WEATHER JOURNAL



Fill in the calendar & draw a weather icon that describes the weather every day.
For a more detailed journal, record the daily temperature, wind, & rainfall totals.

MONTH							YEAR

RECORD OUTBREAK

AUGUST 18, 2005



August 18th, 2005 was a devastating severe weather day across the entire state of Wisconsin. A total of 27 tornadoes were confirmed that day, the most tornadoes recorded in the state in a single day. This broke the previous record of 24 tornadoes set on May 8, 1988.

The most significant tornado that developed hit the town of Stoughton, WI. This F3 rated tornado had winds close to 200 mph. The tornado was on the ground for almost an hour and carved a 20-mile long, half-wide path of destruction across rural subdivisions and farms just north of Stoughton, Wisconsin.

One person died in their basement from fireplace and chimney bricks that crashed through the floor. Some homes in town were completely leveled, and a F4 rating was considered. Further investigation revealed that the homes were not well-built, and the slow movement of the tornado negated a rating higher than F3.

Debris from this tornado was lofted and carried downstream to scattered locations across Jefferson, Waukesha, Milwaukee, Walworth, Racine, and Kenosha counties. 23 people were injured.



SOUTHERN GREAT LAKES DERECHO

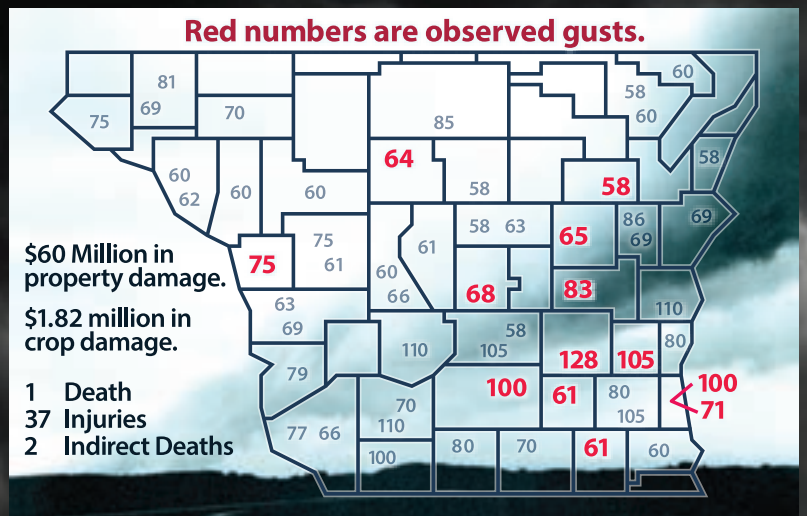
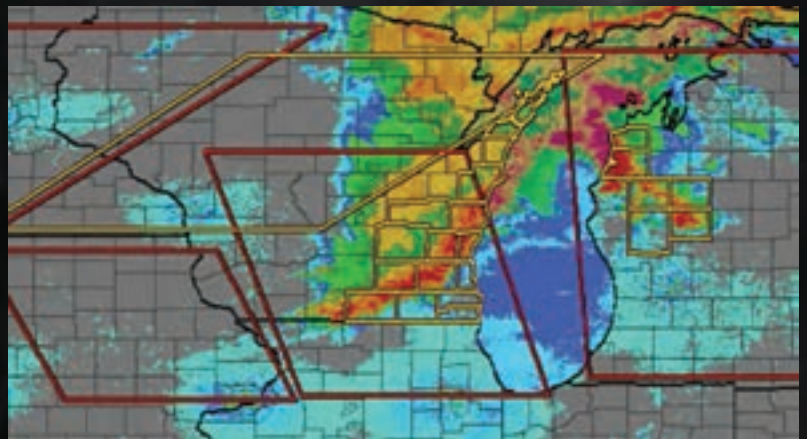
MAY 31, 1998



The "Southern Great Lakes Derecho of 1998" traveled 975 miles from southern Minnesota to north central New York in 15 hours, with an average speed of 65 mph. It became one of the most damaging North American derechos in history, destroying over 400 homes and businesses and damaging almost 20,000 others.

As the derecho crossed central and southern Wisconsin, almost every point experienced winds above severe limits. Wind gusts from 70 to 100 mph were common in the southern half of the state. Extremely strong measured wind gusts from 100 to 128 mph were recorded in a band from northeast of Madison to the northern part of the Milwaukee metropolitan area. The strong winds knocked down hundreds of power poles and thousands of trees. About 250,000 customers lost electrical power. Some residences and businesses remained without power for five or six days. Affected utility companies and some emergency managers stated that this was the most damaging and widespread straight-line thunderstorm wind event to affect southern Wisconsin in 100 years.

Over 5000 homes, businesses, and farm buildings were damaged and about two dozen homes and businesses were destroyed. Total damage estimates for Wisconsin exceeded \$60 million in 1998 U.S. dollars. In Washington County a person was killed when a tree fell through the roof of her home and onto the bed where she was sleeping. Thirty seven other people were injured as the derecho roared through Wisconsin.



SEVERE WEATHER ENERGY SAFETY TIPS

Sometimes, storms and strong winds can knock down our power lines. Downed power lines can be very dangerous. If you are outside after a storm, watch out for power lines that may be hard to see in streams or puddles. **Stay at least 25 feet away from downed power lines and flooded areas, and have an adult contact us.**

Severe weather can cause natural gas leaks. Natural gas smells like rotten eggs. If you smell natural gas, do not use a light switch or even a phone — a spark could ignite the gas. Get everyone out of the house and have an adult contact us for help.

If your home is flooded, have an adult contact us to disconnect power and natural gas service. To be safe, always assume that basement flood water is energized. Walking through a wet or flooded basement can be dangerous.



Go to [we-energies.com](https://www.we-energies.com) for more energy safety information.

Energy you can depend on

YOUR **READY** WEATHER TEAM



Drew Burgoyne ▶ Chief Meteorologist

Drew's fascination with weather and television started at a very early age. Drew grew up in Green Bay and graduated college with a degree in Meteorology. Since then, he has spent the past 15 years forecasting the weather and reporting from the eye of the storm. He has covered tornadoes live on the air and has spent countless late nights reporting on severe weather.

An event that molded Drew's interest in weather forecasting was the devastating 1984 tornado in Barneveld, Wisconsin.

"That violent tornado was one of the worst in Wisconsin's history. Those folks had little warning, so if I can help the public prepare for the weather, I'll be doing my job."

Drew and his wife, Adrienne have a son Brett and a daughter Reese. They enjoy exploring the area with their kids.



Rebecca Schuld ▶ Meteorologist

A Green Bay native, Rebecca's fascination with weather began as a young child watching storms roll in. The insatiable need to always "know why" led her to pursue a career in weather. Rebecca graduated with a degree in Environmental Biology from UWGB in 2005 and has continued graduate work in Meteorology from USDA Graduate School.

In early 2010, she was awarded the AMS Seal of Approval from the American Meteorological Society and she took top honors for "Best Weathercast" in a medium size market for the 2013 Wisconsin Broadcasters Association Awards.



Justin Thompson-Gee ▶ Meteorologist

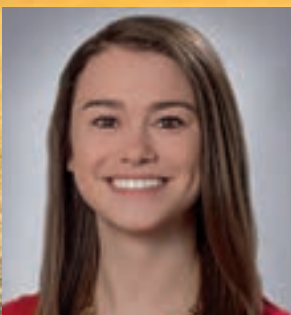
Justin has spent all of his adult life in the Midwest, though he actually grew up in New York. Living in the Northeast Justin had a chance to experience it all: thunderstorms, big winter nor'easters and the occasional threat of a tropical storm.

After moving to the Midwest, Justin received his BS in Meteorology from Valparaiso University in northern Indiana. While at Valpo he took an interest in storm chasing and logged over 18,000 miles chasing throughout the Plains states. After graduation, Justin moved to Minnesota where he worked for local TV in Rochester, MN forecasting for southeastern Minnesota and northern Iowa.



Michael Schlesinger ▶ Meteorologist

Michael knew he had weather in his blood at the early age of 4 while watching the tornado scene in "The Wizard of Oz". The fact he was actually born on Groundhog Day, one of his favorite movies about a TV weather forecaster, only reinforces his passion for what he does. Michael attended Penn State University, considered to be one of the best meteorology schools in the country. While in school he interned at The Weather Channel. He spent some time working in "Tornado Alley" at a company called WeatherData. But for most of his career he has been forecasting the weather for various news stations, and has been a meteorologist at CBS 58 for more than five years.



Sam Kuffel ▶ Meteorologist

Sam was born and raised in southeast Wisconsin, so she's no stranger to our active weather. Like most meteorologists, Sam's passion for weather began at a young age, but her desire to be a meteorologist was heightened when two tornadoes tore through her hometown of Kenosha in January 2008. Sam went on to study at UW-Milwaukee where she graduated with a degree in Atmospheric Science. While at UWM, she worked for a private forecasting company called Innovative Weather, where she had the opportunity to provide specific forecasts for WE Energies, Summerfest, and the Milwaukee Brewers. Sam started her career at a local TV station in Wausau before making the move to CBS at the end of 2019.

TWISTED CROSSWORD

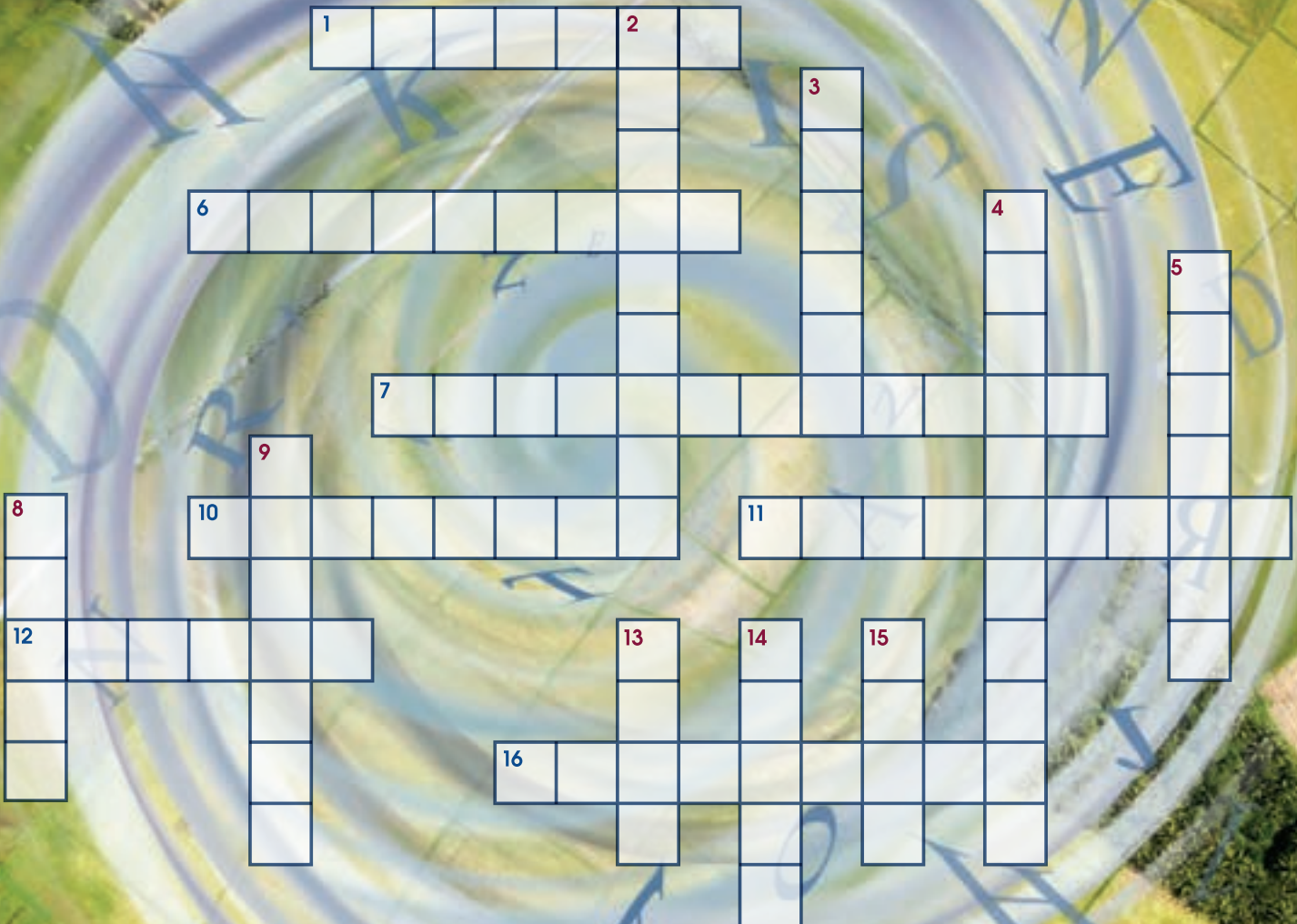


DOWN

2. AIR THAT FLOWS OUTWARD FROM A THUNDERSTORM
3. PERSON WHO DEVELOPED THE TORNADO SCALE
4. THE STUDY OF THE ATMOSPHERE AND ATMOSPHERIC PHENOMENA OR EVENTS
5. TYPE OF RADAR
8. YOUR READY WEATHER STATION
9. THIS IS ISSUED WHEN A TORNADO HAS BEEN SPOTTED OR INDICATED BY RADAR
13. THIS PRESSURE BRINGS SUNSHINE AND CALM WEATHER
14. THIS IS ISSUED WHEN SEVERE WEATHER IS POSSIBLE
15. THIS TYPE OF PRECIPITATION CAN COME IN THE FORM OF LUMPS OF ICE

ACROSS

1. A VIOLENTLY ROTATING COLUMN OF AIR
6. WHEN COLD AIR MOVES INTO AN AREA OF WARMER AIR (2 WORDS)
7. AN ACTIVE AREA FOR TORNADO FORMATION THAT INCLUDES THE STATE OF OKLAHOMA (2 WORDS)
10. THE SAFEST SPOT DURING SEVERE WEATHER
11. THUNDERSTORMS THAT ARE KNOWN TO PRODUCE TORNADOES
12. THE SEASON WHEN MOST TORNADOES FORM
16. THIS CAN BE FIVE TIMES HOTTER THAN THE SUN



- Answers:
1. Tornado
 2. Downdraft
 3. Fujita
 4. Meteorology
 5. Doppler
 6. Coldfront
 7. Tornado Alley
 8. CBS58
 9. Warning
 10. Basement
 11. Super Cell
 12. Spring
 13. High
 14. Watch
 15. Hall
 16. Lightning

Airplane-Inspired Paper Kite

With temperatures starting to change, spring is the best season to fly a kite. Check the wind speeds in your area and create this simple airplane-inspired kite for a fun afternoon activity.

Take it farther: Can you make modifications to change the flight of your kite, and how could you make a bigger, or create slightly more advanced kite?



Kite Flying Facts and Tips:

- The lakefront is known for having steady wind for kite flying due to the uneven temperatures of the land and water. This leads to better lift on your kite!
- Veterans Park in Milwaukee is known for being a great place to launch your kite.
- Wind speeds of 6 mph and higher are great for launching a kite. Specialized kites need wind speeds upwards of 30 mph.
- Kites fly best when skies are clear.
- For the best launch, run toward the wind to create the most lift under the wings of your kite.



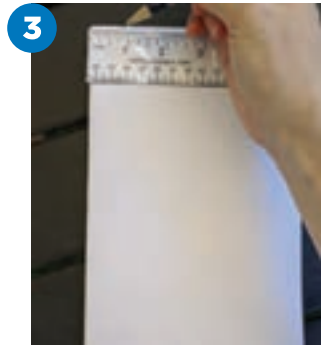
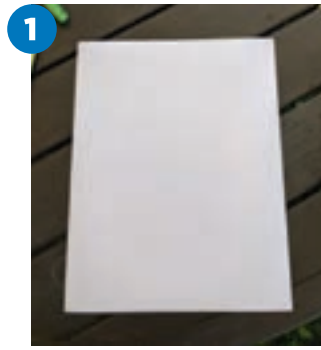
Supplies:

- Letter-sized paper (8.5"x11")
- Ruler
- Pencil
- Straw or chopstick
- Tape
- Long length of string
- Hole punch
- Optional: markers, paints, and/or other colorful paper scraps for decoration

Never fly a kite in a storm. If you hear thunder or see lightning, reel your kite in and head inside.

Airplane-Inspired Paper Kite Continued

Directions:



1. Take your piece of paper and fold it in half, like a book.
2. With the folded edge to the left and the open edges to the right, measure $\frac{3}{4}$ " from the top left corner and make a small mark.
3. Measure 3.5" from the bottom left corner and make another small mark.
4. Draw a line connecting these two marks to make a guideline to fold along.
5. Carefully fold the top flap of your paper along the line we just created.
6. Flip over your paper and repeat this fold on the other side, making sure the edges line up. Your paper should start to resemble a paper airplane at this point.
7. Lay the kite out so that the wide "wings" are flat and place your chopstick or straw across the top, lining up the ends with the corners. If necessary, ask an adult to use scissors to trim the chopstick or straw down to size so that it does not overhang the paper.

Optional: If you want to decorate your kite, now is the time! We used markers to draw on an abstract, nature-inspired pattern on the top of our kite. You could also use paints or paper scraps to decorate your kite, but be careful not to add too much weight to the finished kite or it may not fly as well.

8. Tape the straw or chopstick down securely to the kite. This will give added support in flight.
9. Punch a hole through the body/spine of the kite, about 2" down from the top. Use photos for reference. Use tape to reinforce this hole.
10. Securely tie one end of your string through this hole. Your airplane-inspired kite is complete!



A K U O H E Y L Q K H S F K P R L W E I T A K S
Y E I J K T Y X Y A L J O L N V E B U W O L E Y
S E V E R E W E A T H E R V O A I Q I F K A E S
F Z S R H E Y A Z C V Y V C W T X H S T P Q O M
Y Q R S M H Z X V W Z F S F H E D T O F G U Z
N F F T F N S T M I Q V C E E T W E R P Y E H
L S Y V U A U Y N C V R G R R T R N F P T K
H G N D Z J S T D Z M F Y A O Q P A L R H
C K E P I D S Y N J J L V Y E D K E
D J I N U T A I C P V E B U T O I Y
L X W L L A I D W Z R L N U M P
Q Q H D K N S Q I O T E O X N Q
D Z S D C G F J C I S W M O M L
F P E U I C R Y H A K F Y W O E
T S G O U M N E K I L B G C X
B F T H L Y O X C W D L E M S
P S N O M C H C Q H H P S Z X
N F P R A L C X Z O N L S
I N M S M K E C W V W I
L E N I J S N F D C T
L I V T R L N Z O R
H T G A R M U S Z
W J H S N F
X T Z T K W C
D B E N D
Y J D I
C M H N
S R C G
R K U
E T

FIND THE FOLLOWING WORDS

TORNADO WINDS STORM LIGHTNING TWISTER VORTEX
WEATHER ALERT FUJITA SCALE SEVERE WEATHER FUNNEL CLOUD

Static Electricity

Touching a door sometimes gives you a shock. On a cold winter day your hair might not want to stay put. What's going on? You might be experiencing **static electricity**, an amazing phenomenon. With the power of science, you can bend water, make tape glow, and make items move inside of a bottle.

Think About This:

What can static electricity affect?

Glowing Tape

Use a piece of duct tape to observe how static electricity lights up the adhesive when two pieces are pulled apart.



Supplies:

- Duct tape
- A dark room

Directions:

1. Find a room that can be very dark. Usually, a bathroom will work, or a room without many windows.
2. Cut or tear the duct tape into two pieces of the same length - around 6 inches.
3. Lightly stick the two pieces of tape together with the sticky sides touching, but leave a small section unstuck, so that they can be pulled apart.
4. Turn off the lights.
5. Grab the unstuck ends of tape and pull the pieces of tape apart.
6. Observe what happens to the sticky part of the tape.



DISCOVERY WORLD

Water Bending

Use a statically-charged item to make water bend!

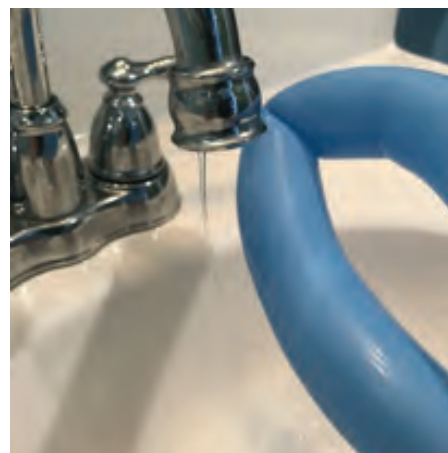
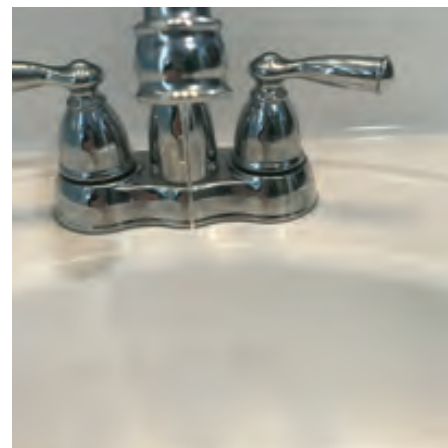
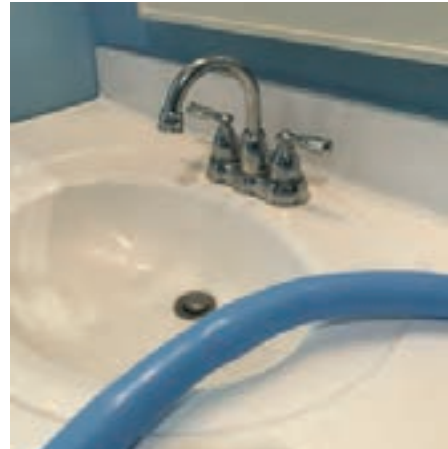


Supplies:

- An item to statically charge
Balloon, fine toothed comb, piece of PVC plastic and cloth, etc.
- Sink with water source

Directions:

1. Using one of the methods below to add a static charge to an item:
 - A balloon can be statically-charged by rubbing it on your hair or with a cloth
 - A plastic comb can be statically-charged by combing your hair about ten times. Make sure you're using a fine-toothed comb.
 - A piece of PVC pipe or piece of plastic can be statically charged by rubbing it with a cloth.
2. Turn on the faucet to get a thin, steady stream of water.
3. Bring the statically-charged item near the water, but don't let it touch the water.
4. Watch as the water stream bends toward the statically-charged item!



The Static Bottle

Static electricity can attract and repel small items. Use a plastic water bottle and tissue paper to create a static viewer.

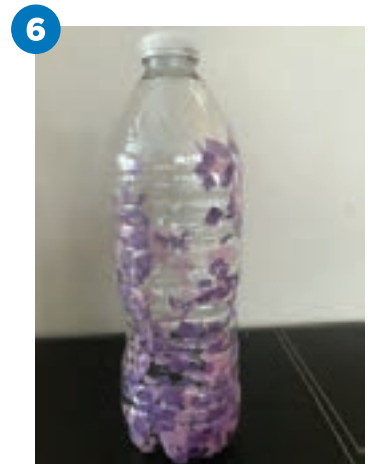


Supplies:

- Plastic bottle with top, completely dry
- 1-2 pieces of tissue paper or packing peanuts
- Scissors
- Optional: funnel or piece of paper

Directions:

1. Find an empty and dry plastic water bottle with a lid. Make sure that the bottle is completely dry.
2. Use scissors to cut tissue paper or packing peanuts into small pieces, approximately 1/8 inch in size (smaller than a pea). Make enough to cover the bottom of the bottle.
3. Transfer the pieces of tissue paper or packing peanuts to the bottle.
Note: it might be easier to use a funnel or a rolled-up piece of paper to transfer the pieces.
4. Close the lid tightly on the bottle.
5. Rub the plastic bottle against your hair to statically charge the bottle or bring a charged object near the bottle.
6. Hold the bottle in front of you and watch as the tissue paper sticks along the sides of the bottle.



What's Happening?

On the outside of every atom are tiny particles called **electrons**. Electrons orbit, or move around, the center of the atom and are easily knocked off. Each element has a certain number of electrons, but some elements have extra and some don't have enough. We say that an atom with too many electrons has a **negative charge** and an atom with too few electrons has a **positive charge**.

Static electricity is when there are too many or too few negatively-charged atoms on the surface of an object. Static electricity is caused by friction, or rubbing, of atoms – this could be when a balloon is rubbed on someone's head, when two different materials rub across each other, or even when ice particles in clouds bump into each other and the air. These charges will build up until they have a way to be discharged, or released.

With the Static Bottle experiment, the static charge is transferred to the pieces of tissue paper or packing peanut. The pieces are attracted to the side of the bottle and repel, or push away, from each other. A statically-charged item brought near the static bottle will cause the pieces inside to move, even if nothing touches the bottle. Over time, the pieces inside the bottle will lose their charge and will fall to the bottom of the bottle again.

Water is a special molecule because it has one side that has a negative charge and the other side has a positive charge. When a charged item, like a balloon, was brought near the stream of water, part of the water molecule was attracted to the balloon, while the other part was repelled. The stronger the charge, the more the water will bend.

Lots of materials have charges. One of the ways that adhesives can work is for the adhesive to have a charge different from what it is sticking to. When the tape pieces were pulled apart, the charges in the adhesive separated. When they collided, or hit, other molecules, they caused light to be released. This is called triboluminescence.

Though it can appear in many forms, static electricity always comes from atoms or molecules rubbing against or bumping into each other. It can be quick shocking!

Some objects are more positively charged while others are more negatively charged. The best combination to create static electricity is to use one material from the positively charged list and one from the negatively charged list.

These three experiments show the multiple ways that static electricity effects other substances and how it discharges the imbalanced charge.

Take it Further

Some objects are more positively charged while other are more negatively charged. Use the positive and negative charge list to see what items in your household you can rub together to gain a static charge. Be sure to use one from the "positive" side and one from the "negative" side.

The farther apart on the list they are, the greater the amount of static electricity they can produce. Are there items not listed that should be added?

