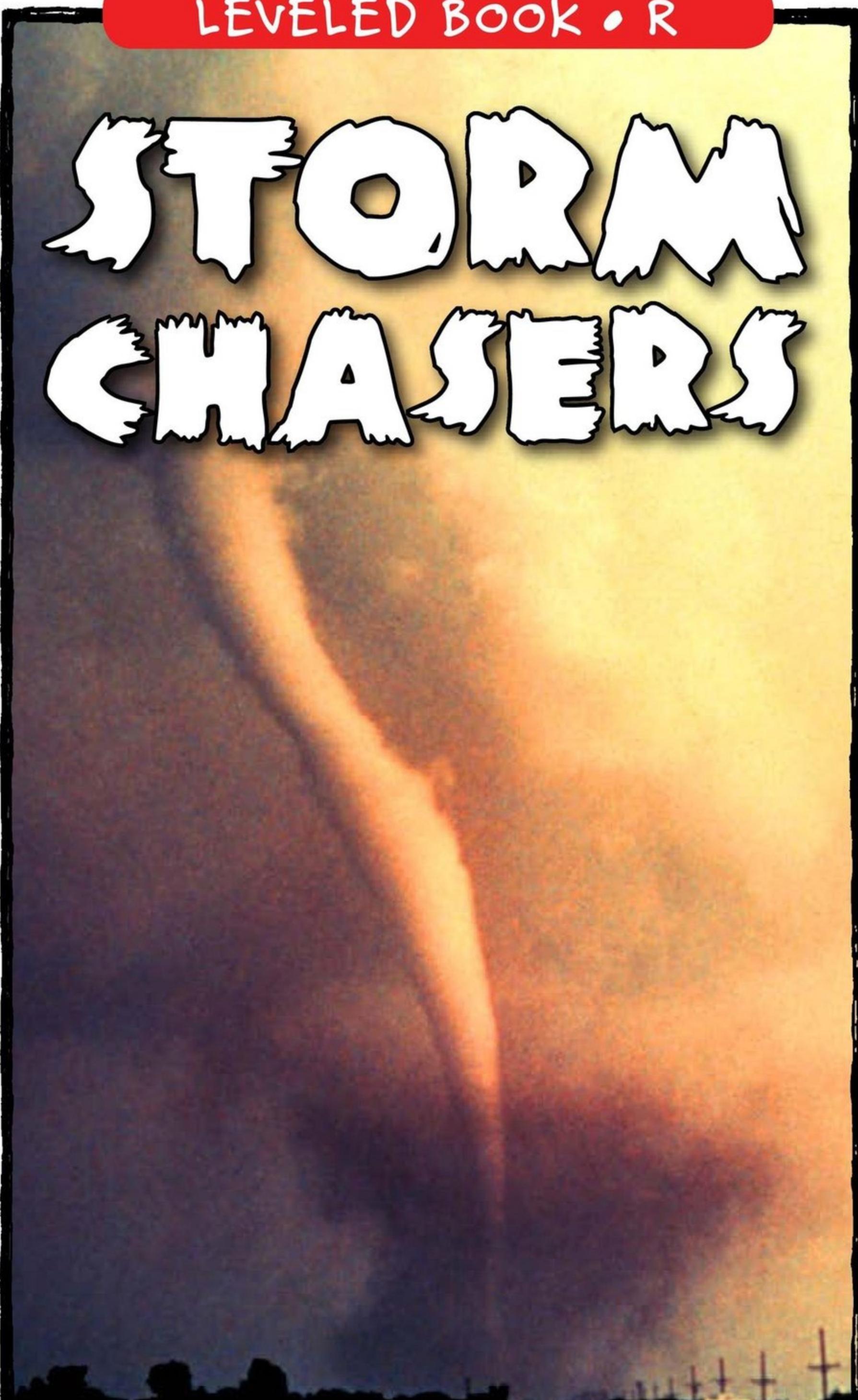


LEVELED BOOK • R

# STORM CHASERS



Written by Linda Johns

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Storm chasers film a funnel cloud.

## CHASING THE WIND

What kind of person chases a storm? Most people run for cover when the weather turns nasty. But for storm chasers, high winds, **funnel clouds**, and lightning are part of the job.

Some storm chasers are filmmakers and photographers trying to capture spectacular images of a tornado. But most storm chasers are scientists and **meteorologists** who study the weather. They put themselves in the paths of tornadoes to collect information that will help them better predict tornadoes and save lives. Their job is dangerous and may seem thrilling, but being out in severe weather makes storm chasers extra careful.

## What's in a Name?

The word *tornado* comes from the Spanish word *tronada*, which means "thunderstorm." Other common names used for a tornado are cyclone, twister, and whirlwind. A tornado over water is called a **waterspout**.



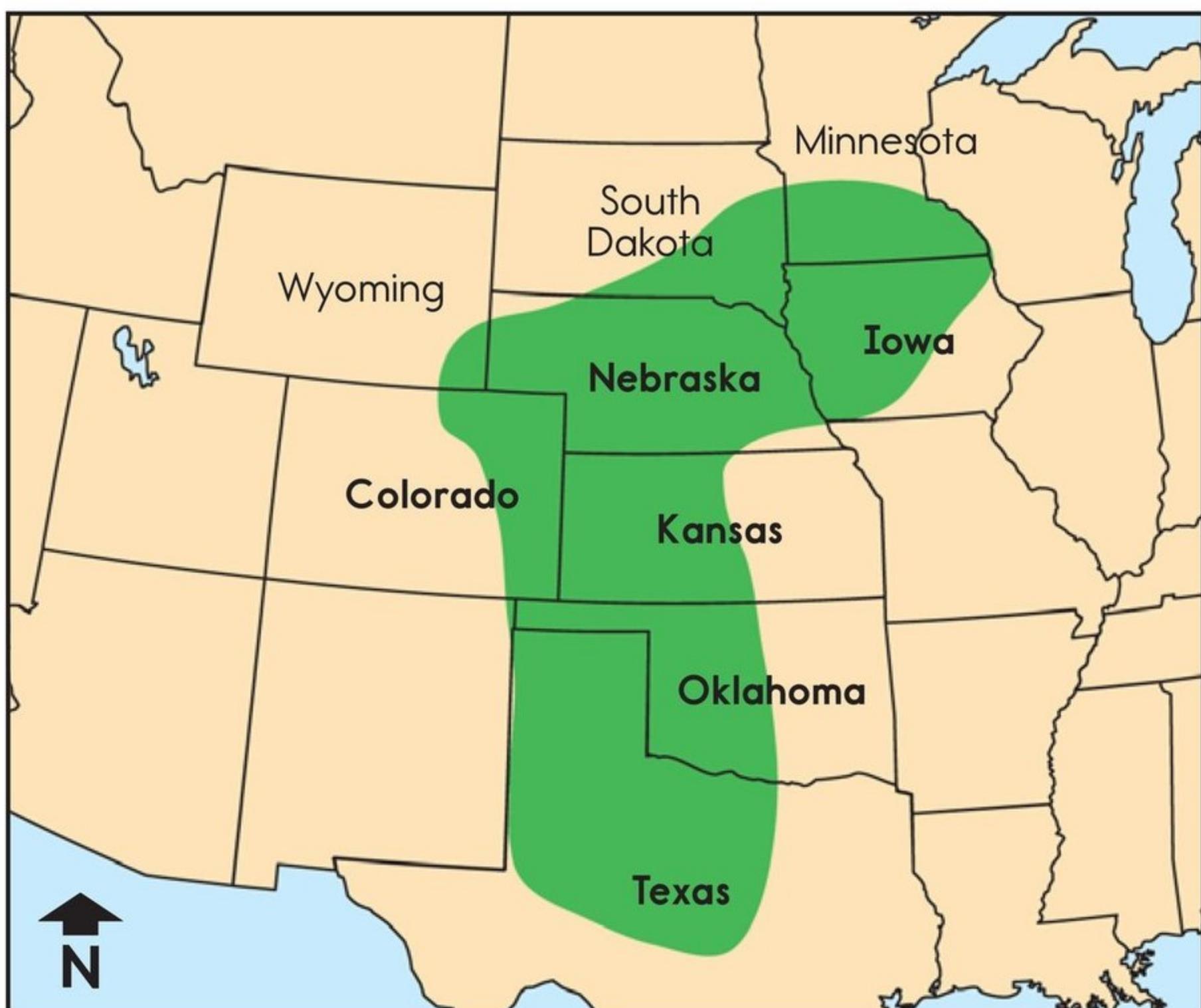
A waterspout forming over water.

Every year, hundreds of tornadoes rip through the central part of the United States. They can flip over cars, tear roofs off houses, and destroy crops. Most tornado winds blow about 160 kilometers per hour (100 miles per hour). The strongest tornadoes, sometimes called *super tornadoes*, have wind speeds of 402 kph to more than 482 kph (250–300 mph). A super tornado destroys everything in its path. Less than two percent of all tornadoes have winds of more than 322 kph (200 mph).



## TORNADO ALLEY

More than 800 tornadoes a year touch down in the United States, and more than half of Earth's tornadoes hit the central section of the United States called "**Tornado Alley**." Some of the states in Tornado Alley are: Iowa, Nebraska, Colorado, Kansas, Oklahoma, and Texas. Most storm chasing happens in these states—in the spring in the southern states of the Great Plains, and in the late summer in the northern states.



The states of Tornado Alley



Tornado devastation in Illinois in 1925

Every state in the United States has experienced a tornado! They just tend to be stronger and more frequent in the central part of the country. Texas has the most recorded tornado touchdowns of any state.

On March 8, 1925, one of the worst tornadoes in U.S. history ripped through Missouri, Illinois, and Indiana. The tornado traveled on the ground for 352 kilometers (219 miles) and lasted three and a half hours. More than 600 people died in that tornado, and 10,000 people lost their homes.



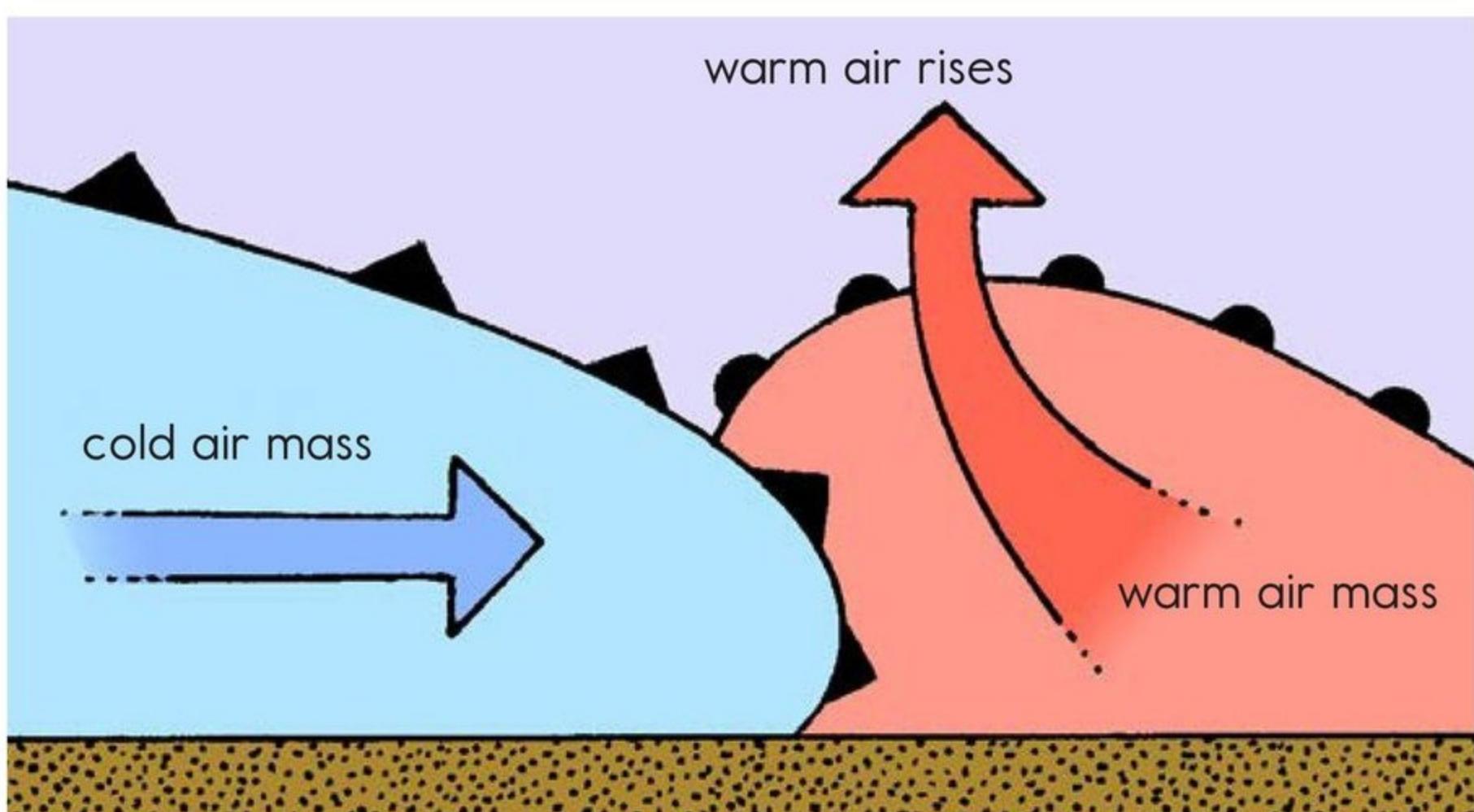
# TORNADO WEATHER

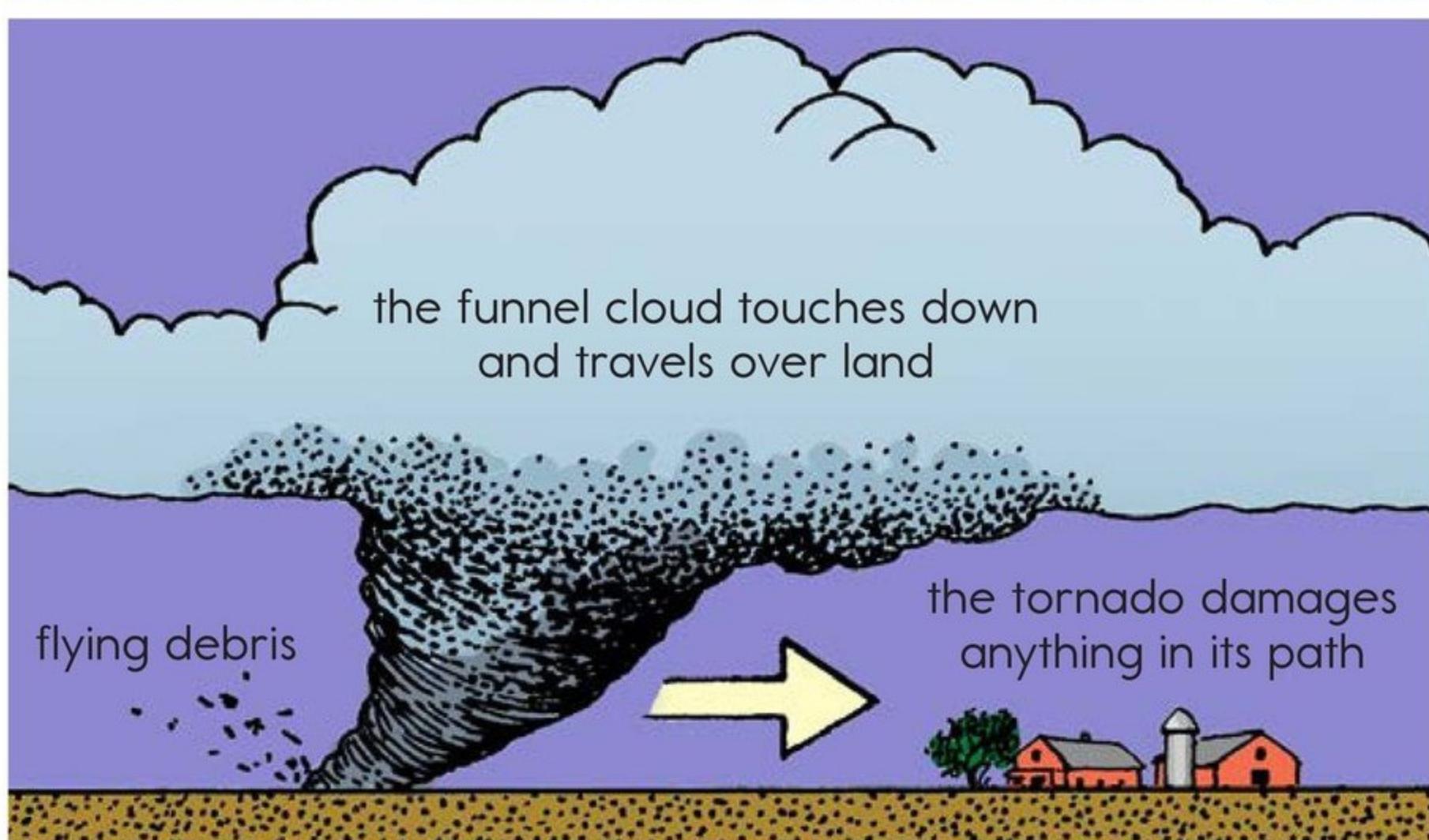
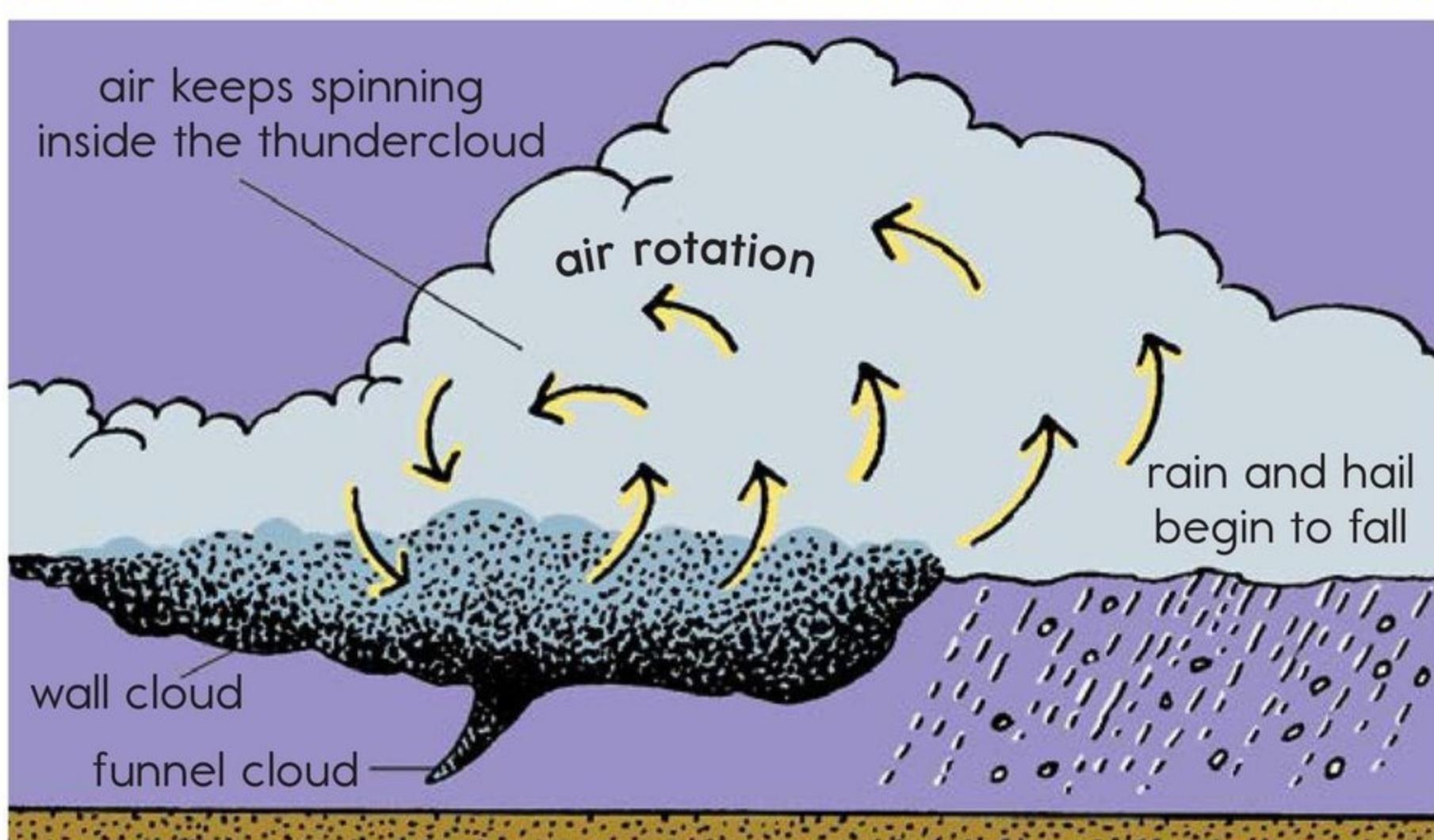
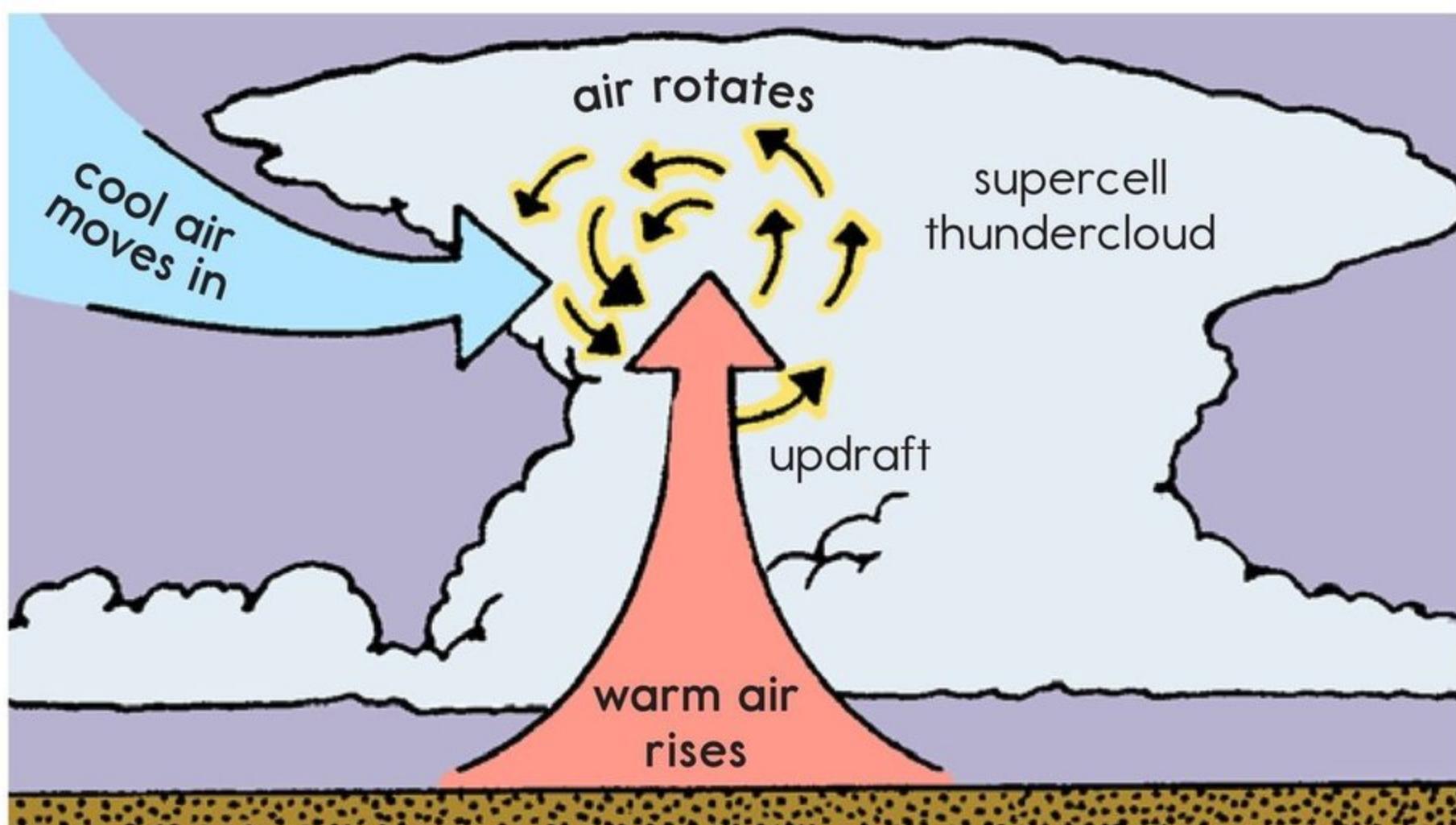
Meteorologists have studied tornadoes by observing them and collecting data, but they still have much to learn. They know about most of the weather conditions needed to form a tornado. But they still do not know why some funnel clouds touch down, becoming tornadoes, and others do not.

## The recipe for a tornado includes:

- warm moist air near the ground
- cool dry air above the ground
- a cold air mass colliding with a warm air mass

These diagrams explain how a tornado forms.





## Watch or Warning?

A tornado watch means that conditions are right for a tornado. Listen to the radio or watch the television for updates on weather conditions.

A **tornado warning** means that a tornado has been spotted nearby. Get inside immediately.



## CAN YOU PREDICT A TORNADO?

You can't always tell when a tornado might strike, but there are some clues. Sometimes you can see funnel clouds in the sky before they touch the ground. At other times you can see certain cloud formations, called **wall clouds**, which precede severe storms or **supercells**, but not all severe storms produce tornadoes.

Storm chasers are gaining more knowledge with the data they collect from each tornado, but meteorologists still can't predict tornadoes the way they can predict how sunny or rainy it will be in five to seven days. However, meteorologists can tell us when conditions are right for a tornado. Then they can issue a **tornado watch**.

## TORNADO SAFETY

Here are a few things to keep in mind:

- Get inside a house or a building.
- Go to a basement. If a basement isn't available, go to the lowest floor in your house or building. Go into a hallway or an interior room.
- Stay away from windows.
- Get under a desk or table, or another sturdy piece of furniture.
- If you're outside and can't get safely indoors, find the closest low area, such as a ditch, and cover your head with your arms and hands to protect yourself.



Storm shelter in Alabama mobile home park





Meteorologists look at Doppler radar to track storm activity.

Meteorologists use **Doppler radar** to track weather conditions. Doppler radar helps them determine the wind direction and find early signs of rapidly rotating air inside thunderstorms. It also helps them determine precise wind directions. Meteorologists can give people about a 20-minute warning for a tornado. Twenty minutes may not sound like much, but an advance warning can save lives.

Scientists can learn how severe a storm is by studying Doppler radar. They can also pinpoint the exact location of the storm and how long it will last. On average, tornadoes last 10 minutes, but they can last only seconds or stretch on for hours.

Tornadoes are measured by F-scale ratings. The scale is named for Theodore Fujita, a scientist who invented a method for measuring tornadoes.

The **F-ratings** are based on how much destruction a tornado caused. An F0 or F1 tornado is weak. But an F5 tornado is a monster with winds reaching speeds of 420 kph to 512 kph (261–318 mph). To give a tornado an F-scale rating, an expert looks at the damage after the tornado hits. The F-scale rating of a tornado can't really be predicted accurately ahead of the twister—only after it has hit.



People look over the damage caused by a tornado.



# TORNADO DEVASTATION

F-scale	Class	Wind Speed Estimate	Description
---------	-------	---------------------	-------------



64–116 kph  
(40–72 mph)  
Broken branches



117–180 kph  
(73–112 mph)  
Trees snapped, shingles and other roof surfaces removed



181–253 kph  
(113–157 mph)  
Large trees uprooted



254–332 kph  
(158–206 mph)  
Cars overturned; roofs and walls of houses torn off

F-scale	Class	Wind Speed Estimate	Description
---------	-------	---------------------	-------------



333–419 kph  
(207–260 mph)  
Houses leveled;  
cars tossed around



420–512 kph  
(261–318 mph)  
Houses torn off  
foundations; large  
objects tossed  
hundreds of feet

## Best Guess

The wind speeds in the Fujita scale have never been scientifically verified in real tornadoes because:

1. Nobody knows the “true” wind speeds at ground level in most tornadoes because it’s hard to get close enough to measure them.
2. The amount of wind needed to create similar-looking damage can vary greatly from one building to the next.



## **STORM CHASERS ON THE JOB**

Storm chasers have to be able to interpret radar reports to find tornadoes to study. They look at weather data as storms form to locate a storm that might produce a tornado. Making an educated guess and relying on other storm chasers with more experience can place them five miles away from a tornado when it hits instead of 50 miles away. Being close means they'll be able to collect the data they need to make better predictions.



### **Do You Know?**

The National Weather Service also relies on ordinary people to watch for tornadoes. In Tornado Alley, local police and emergency personnel are trained to spot tornadoes.



Storm chasers watch a tornado form.

A storm chaser's job can seem like a "hurry up and wait" game. Professional storm chasers spend about 10 days "hunting" storms for every minute they spend actually watching, collecting data, or filming a tornado.

Warren Faidley is a well-known storm chaser, photographer, and filmmaker. He says he sometimes has gone an entire year without seeing a tornado. When he does spot one, he wants to get the best possible pictures. But he also needs to stay a safe distance away. Winds that top 322 to 483 kph (200–300 mph) can toss cars around like toys. The trick for a storm chaser is to know when to get out of the area and how to predict a tornado's path.





The American Red Cross helps people left homeless by natural disasters, such as fires and tornadoes.

Storm chasers take their jobs seriously and believe they have an important mission. They now know that winds close to the earth may have a bigger role in forming a tornado than they previously thought. They know that the smaller the eye, or center, of the tornado, the faster it spins. But there is still so much to learn, and storm chasers work hard to collect more data to help all of us know more about the whirling storms that can destroy lives and rip apart entire towns in just a few minutes.

## GLOSSARY

- Doppler radar** (n.) a tracking system that tells the location and speed of storms, clouds, and precipitation (p. 12)
- F-ratings** (n.) numbers that tell how destructive and dangerous a tornado is (p. 13)
- funnel clouds** (n.) funnel-shaped cloud under the bottom of a thundercloud (p. 4)
- meteorologists** (n.) people who study the earth's atmosphere, climate, and weather (p. 4)
- supercells** (n.) rotating thunderclouds that reach high into the sky and often produce tornadoes (p. 10)
- Tornado Alley** (n.) an unofficial name given to an area in the central United States where tornadoes frequently touch down (p. 6)
- tornado warning** (n.) alert given when a tornado has been spotted nearby (p. 10)
- tornado watch** (n.) alert given when conditions are right for a tornado (p. 10)
- wall clouds** (n.) smaller clouds that produce little rain, if any, underneath the main cloud of a supercell (p. 9)
- waterspout** (n.) a tornado over water (p. 5)



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