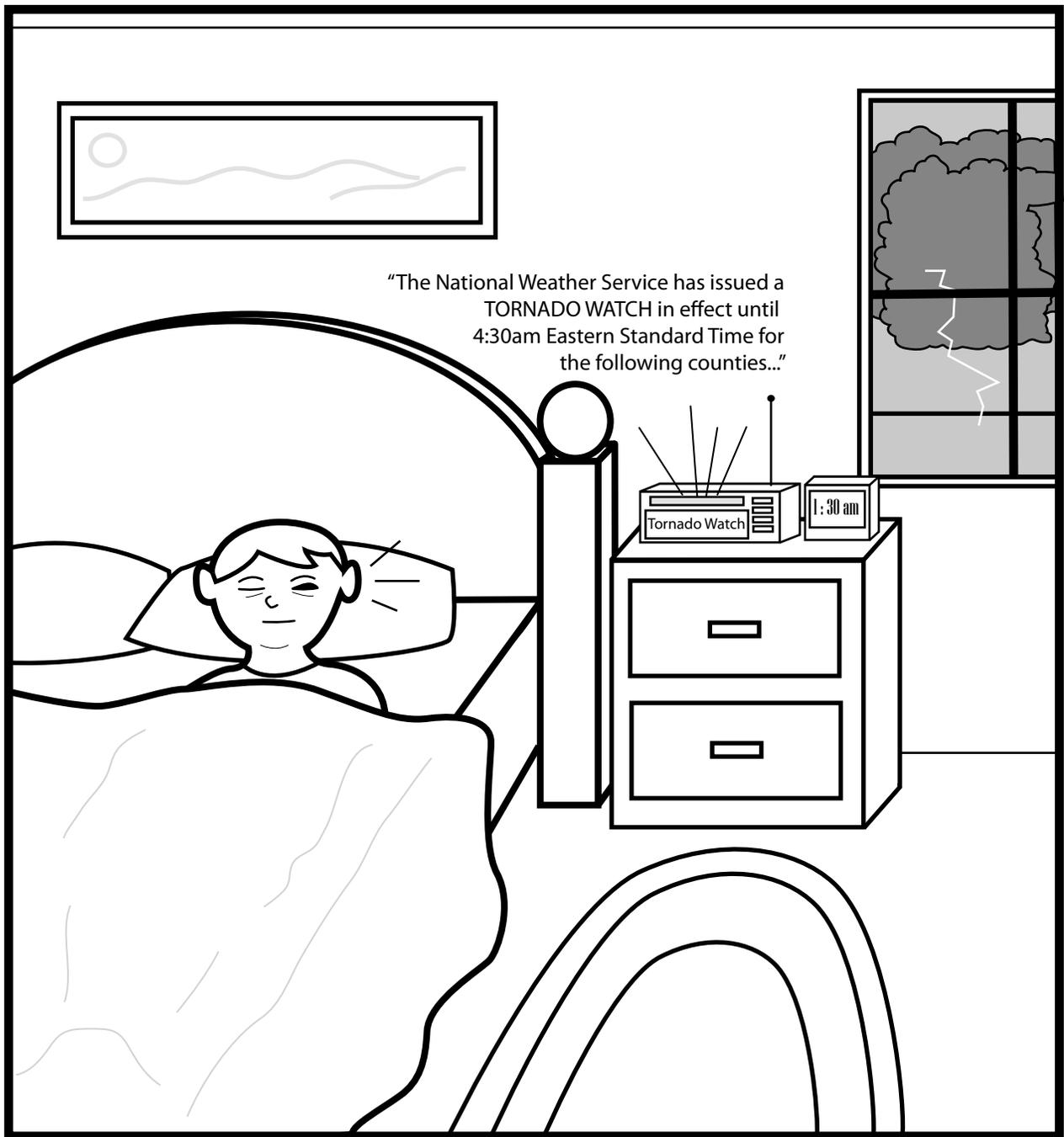


**SEVERE WEATHER
AWARENESS CAMPAIGN
CHILDREN'S ACTIVITY BOOK**



**INDIANA DEPARTMENT
OF HOMELAND SECURITY**



"The National Weather Service has issued a
TORNADO WATCH in effect until
4:30am Eastern Standard Time for
the following counties..."

NOAA All-Hazard Radios

A NOAA all-hazard radio is a great way to stay informed about the changing conditions around you. The radios can be programmed to alert you and your family about possible threatening conditions where you live. All-hazard radios are especially good to have around when you are asleep and unable to hear important messages that might be broadcast on TVs and radios. There are NOAA all-hazard radios available that allow you to receive watches and warnings for counties you specifically select - look for radios that use the S.A.M.E. system. All-hazard radios are another way to be sure you and your family are safe - every household should have one!

EASY



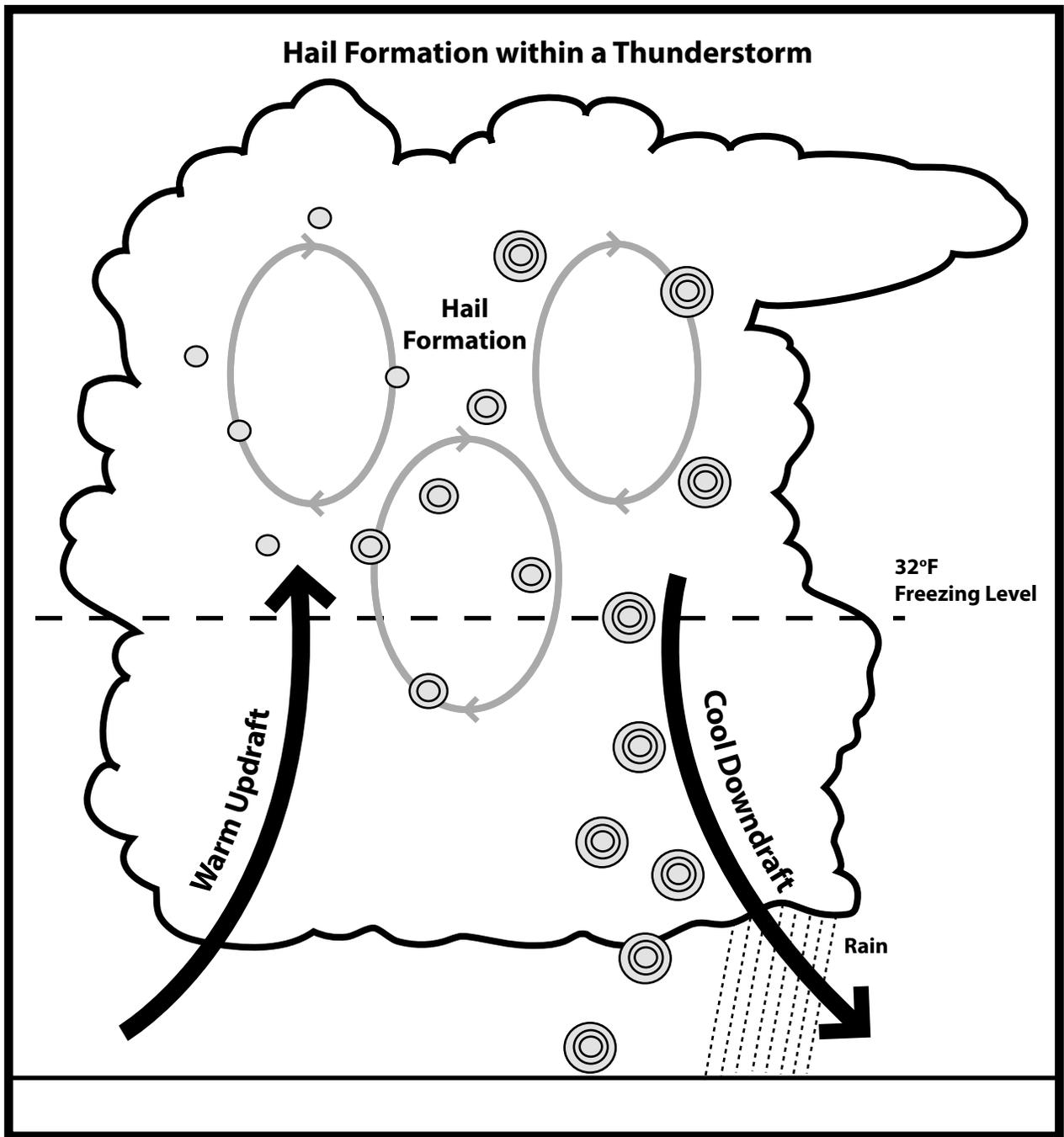
FIND THE WORDS LISTED BELOW IN THE PUZZLE ABOVE.
WORDS CAN BE FOUND UP, DOWN AND STRAIGHT ACROSS. GOOD LUCK!

ANVIL
CLOUD
FEMA
HAIL
HIGH
HUMIDITY

LIGHTNING
LOW
NWS
RADAR
RAIN
SAFETY

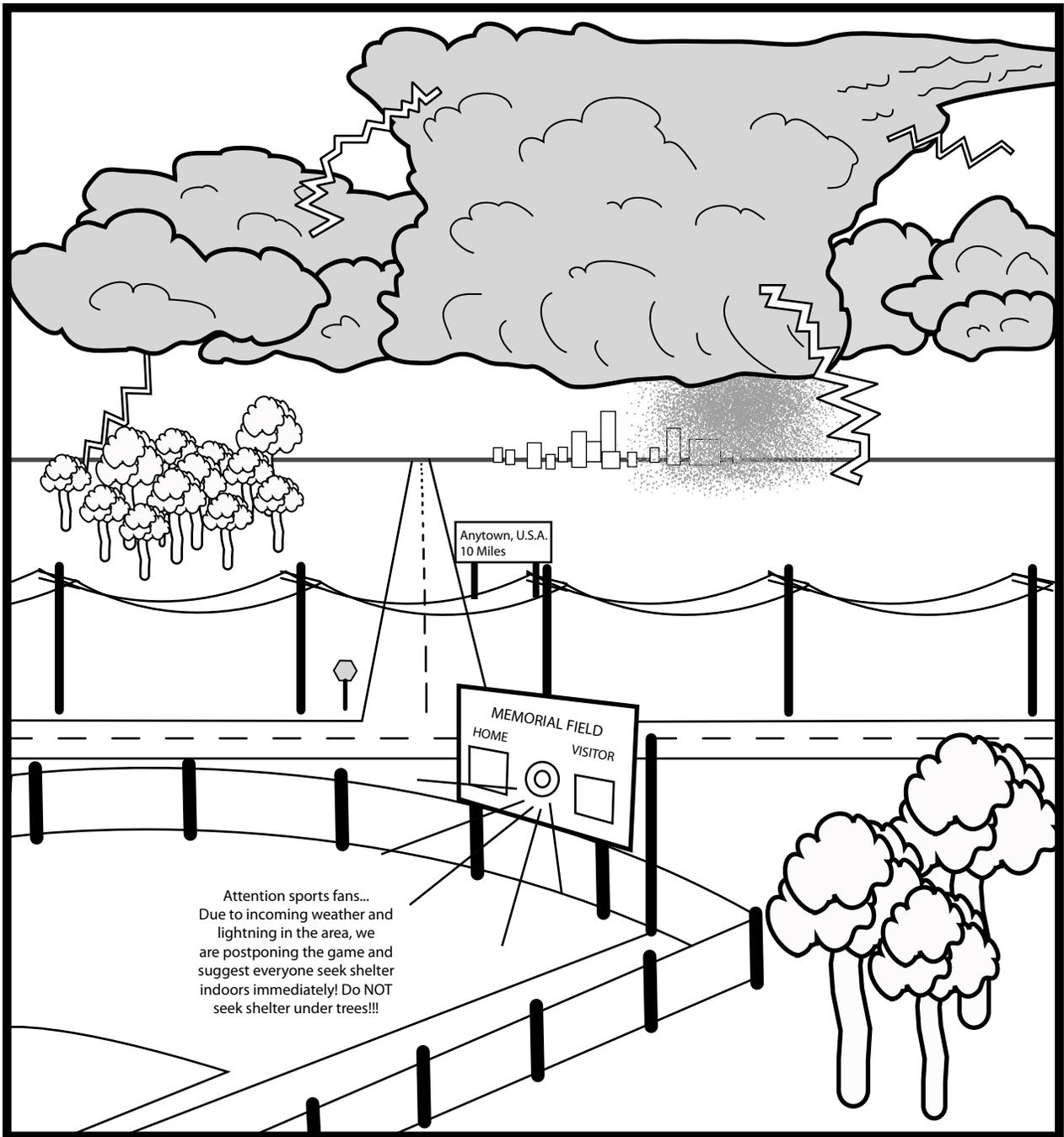
SEVERE
SHELTER
SKY
SPOTTER
SUPERCCELL
THUNDER

THUNDERSTORM
TORNADO
WARNING
WATCH
WEATHER
WIND



Hail Formation

Hail can be dangerous and damaging. Hail causes about \$1,000,000,000 (1 billion) in crop and property damages each year in the United States! Hail forms inside strong thunderstorms that have warm updrafts and cool downdrafts (updrafts and downdrafts refer to strong currents of air). Tiny water droplets can get picked up by the updraft and carried above the freezing level (where water changes to ice) and the droplet freezes. The cool downdraft can carry the frozen droplet down below the freezing level again where it starts to thaw just a little bit. The partially frozen droplet can then get carried upward again by the updraft where it re-freezes after crossing the freezing level again. This cycle produces a new layer of ice around the droplet. This process can happen several times before the hailstone becomes too heavy to be carried back into the storm and gets carried to the ground in the downdraft. You can often see several rings or layers of ice on hailstones.



Attention sports fans...
Due to incoming weather and
lightning in the area, we
are postponing the game and
suggest everyone seek shelter
indoors immediately! Do NOT
seek shelter under trees!!!

Lightning Safety

Lightning is very dangerous! There are an estimated 25,000,000 lightning strikes each year in the United States! When you are outdoors be sure to watch for developing thunderstorms. If you can hear thunder you are close enough to be struck by lightning! Lightning can travel as far as 10 miles away from the thunderstorm that produced it. If you are outdoors go inside and stay away from corded phones, computers and other electronic devices that are connected to power. Stay out of swimming pools, bath tubs, showers and other water and away from plumbing. Never seek shelter under trees! If you cannot get to a shelter stay low to the ground on the balls of your feet with your head tucked, but NOT laying flat. Wait at least 30 minutes after the last lightning strike before going outdoors again. If a person is struck by lightning call 9-1-1 immediately!

UNSCRAMBLE THE WEATHER-RELATED WORDS. THEN MATCH THE HIGHLIGHTED LETTER FROM EACH WORD WITH THE CORRECT NUMBERED BOX AT THE BOTTOM TO SPELL OUT THE MESSAGE.

- 1 TTDHRROESNUM
- 2 NIWD
- 3 TIINNGGLH
- 4 DRARA
- 5 OTONDRA
- 6 RHSTLEE
- 7 LIHA
- 8 STSERADI TKI
- 9 GROOTMYEEL
- 10 UNREHTD
- 11 NROODAT YLLEA
- 12 NRSIE
- 13 TACHW
- 14 NIRA
- 15 GRWNNAI
- 16 ETRAHWE ODRIA
- 17 YTFESA

6	13	4	11	7	14	17	5	10	1	8	2	

OF THE !

12 3 16 15 9

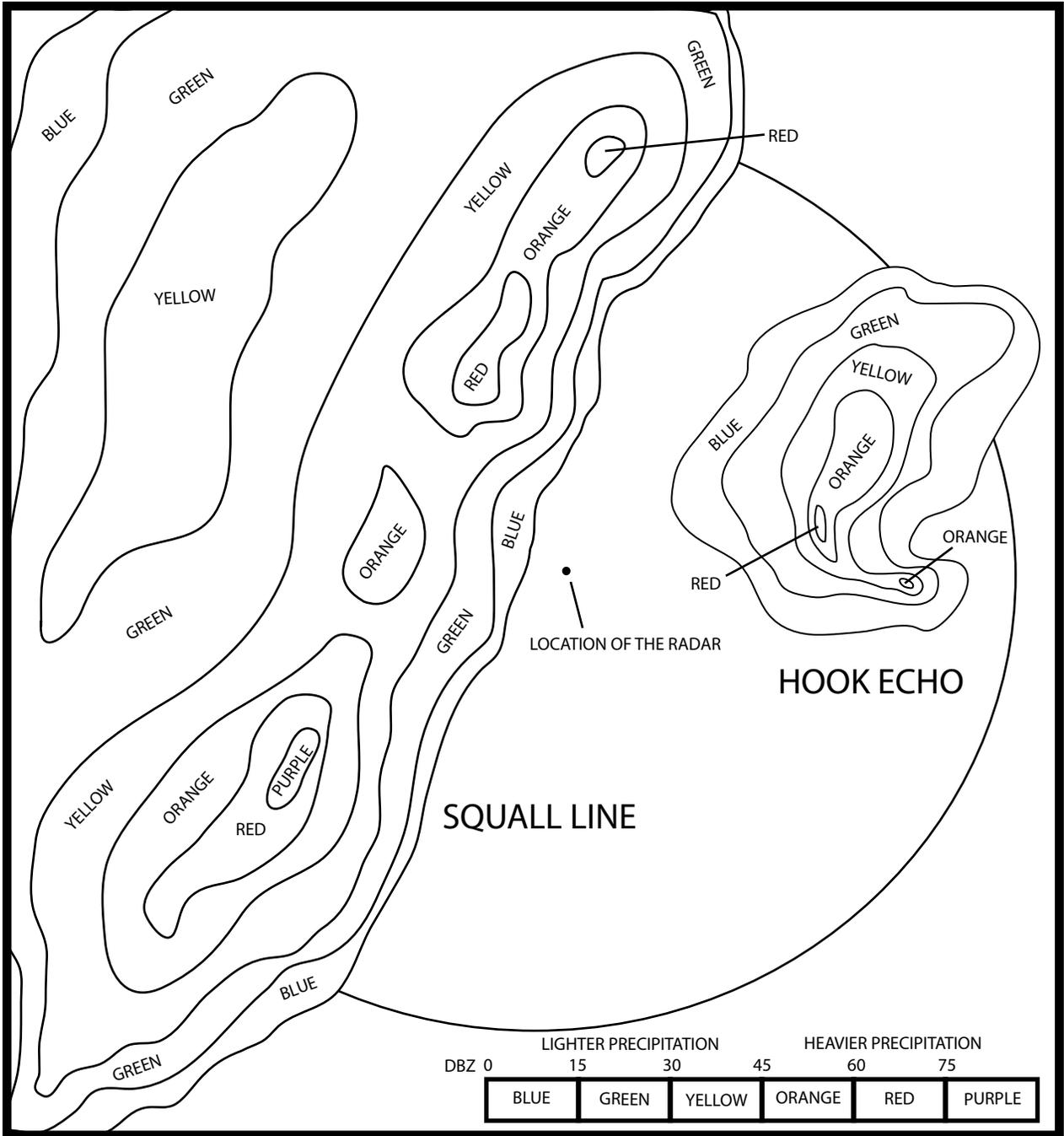


Shelters in Public Places

Severe weather doesn't always happen when you are at home or school. Most large public facilities have severe weather plans as well as shelters or locations within them for your safety. Some places, such as shopping malls, have signs posted that are similar to the one above showing you the way to the severe weather shelter. The next time you are out in a public building like a mall or museum, look around and see if you can locate the severe weather shelter.

If there is no sign posted for a shelter, where do you think the safest place would be?

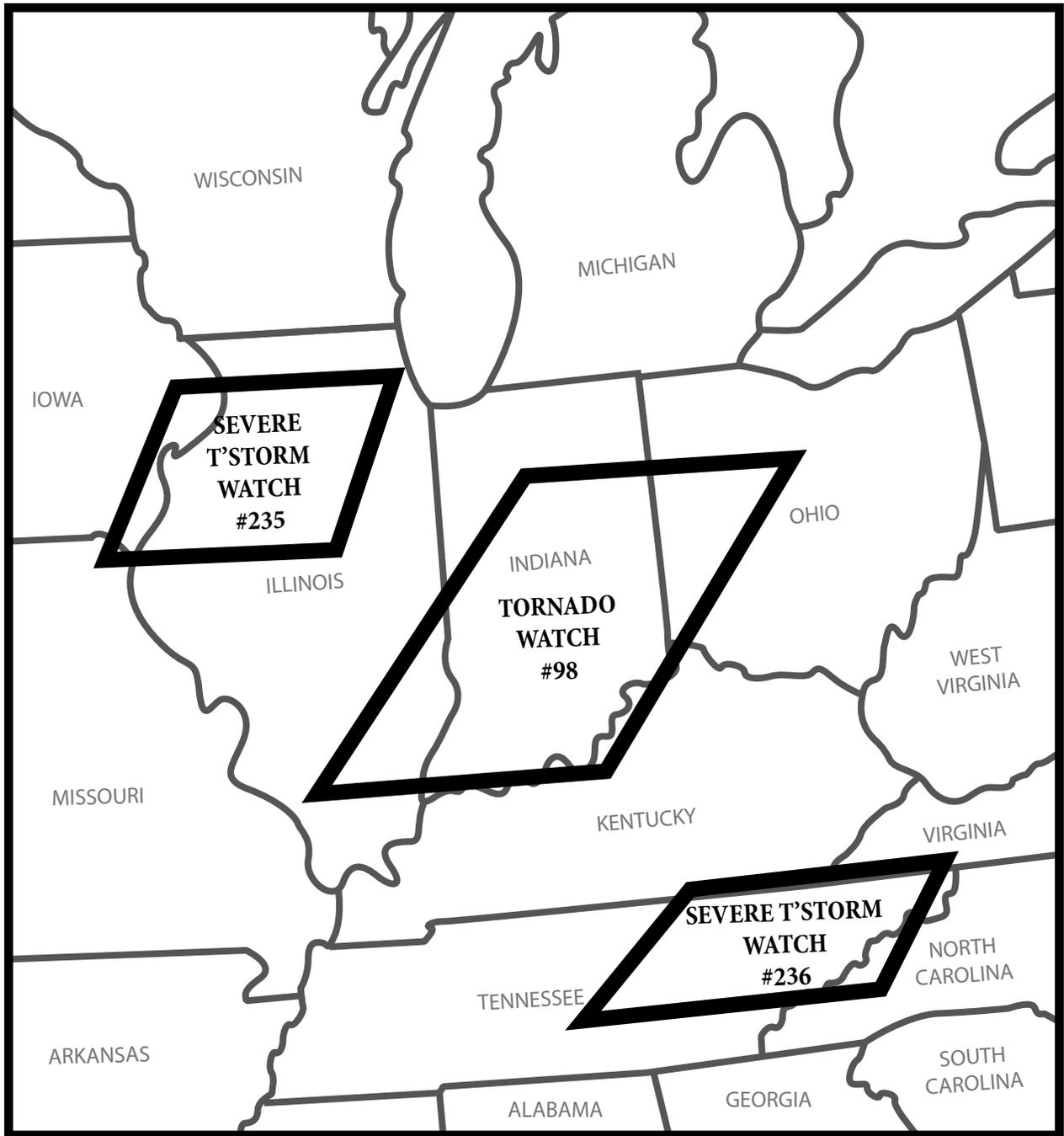
Write your answer here: _____



Color the Radar

Radar is used by the National Weather Service to help detect precipitation. Precipitation is another word for water or liquid. For example, precipitation may fall from clouds as rain or snow. Radar measures precipitation as reflected energy and measures it in a unit called decibels (or DBZ for short). Radar can help detect incoming severe weather. Squall lines and hook echoes can produce severe weather and tornadoes. The National Weather Service uses radar everyday to help issue watches and warnings.

Can you color in the pictures above by matching the colors correctly? When you are done you will be able to see examples of what squall lines and hook echoes might look like on radar.

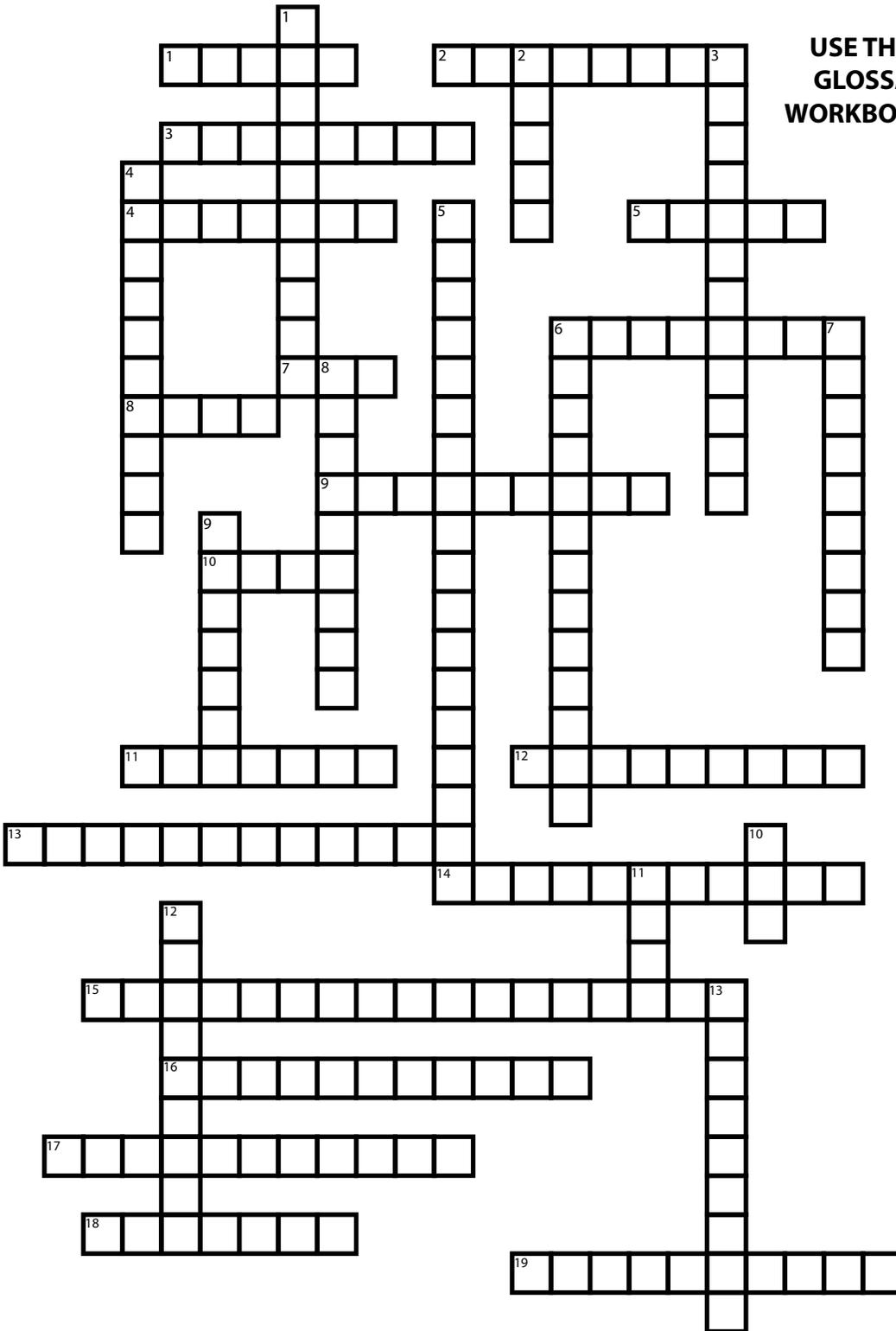


Watches

The Storm Prediction Center (SPC) is the agency responsible for issuing severe thunderstorm and tornado watch boxes in the United States. Watch boxes identify areas that are at risk for hazardous weather; however the exact timing and location of the event is still uncertain. Watch boxes are intended to make the public aware of the risk for hazardous weather and provide lead time for those who need to prepare for such an event. Watch boxes are given their own number as an identifier. Each watch box is accompanied by a text message that gives details about the watch. You can receive details about a watch either online (by going to www.spc.noaa.gov or www.nws.noaa.gov), by listening to a NOAA all-hazard radio, by tuning to your local television weather station or news station(s), or by listening to a local radio station (most media outlets alert the public when there is a threat for hazardous weather).

ADVANCED WEATHER CROSSWORD PUZZLE

USE THE CLUES BELOW ALONG WITH THE GLOSSARY OF TERMS PROVIDED IN THIS WORKBOOK TO COMPLETE THE CROSSWORD PUZZLE. GOOD LUCK!



ACROSS

1. You would find this elongated cloud shape at the top of a thunderstorm.
2. The temperature to which air must be cooled for water vapor to condense.
3. The amount of water vapor in the atmosphere.
4. A _____ does not require the visible presence of a funnel cloud.
5. Radio Detection and Ranging.
6. Known as the force exerted by the interaction of the atmosphere and gravity.
7. National Weather Service.
8. Also known as an 'anticyclone'.
9. An electrical discharge from a thunderstorm.
10. This type of precipitation can come in the form of lumps of ice.
11. This is issued by the National Weather Service when a hazard is "imminent" or already happening.
12. The forward edge of a mass of cold air intruding into an area of warmer air.
13. _____ determines whether atmospheric motion is toward or away from the radar.
14. The study of the atmosphere and atmospheric phenomena, or events.
15. These can cause damage in a straight line instead of in a more circular pattern like tornadoes might cause.
16. A rotating, cone-shaped column of air extending downward from the base of a thunderstorm, but not in contact with the ground.
17. The rotating updraft, or upward rising of air, in a thunderstorm.
18. Air that flows outward from a thunderstorm.
19. A _____ may extend for hundreds of miles.

DOWN

1. Working to lessen risk by lowering its chances of occurring or by reducing its effects if it does occur.
2. This forecast is issued in advance to alert the public of the possibility of a particular hazard.
3. A storm with lightning and thunder.
4. This is made up of mostly oxygen and nitrogen.
5. Wind gusts greater than 58 miles per hour and/or hail larger than 3/4" in diameter.
6. _____ can be liquid or solid water particles.
7. Federal _____ Management Agency.
8. This indicates the updraft of or the inflow to a thunderstorm.
9. Sound produced when lightning heats the air causing it to rapidly expand.
10. Also known as a 'cyclone'.
11. Liquid water droplets that fall from the atmosphere.
12. The forward edge of a mass of warm air intruding into an area of cooler air.
13. This type of thunderstorm can take on a "hook like" shape.

Anvil - A flat, elongated cloud formation at the top of a thunderstorm.

Atmosphere - The gaseous envelope surrounding the earth, made up of mostly oxygen and nitrogen.

Cold front - The forward edge of a mass of cold air intruding into an area of warmer air. The cold front forces the warmer air to rise, where its moisture cools, condenses and forms rain.

Dew point - The temperature to which the air must be cooled for water vapor to condense.

Doppler radar - A type of weather radar that determines whether atmospheric motion is toward or away from the radar. It uses something called the "Doppler effect" to measure the speed, or velocity, of particles suspended in the atmosphere.

Federal Emergency Management Agency (FEMA) - The federal agency responsible for providing leadership and support to reduce the loss of life and property and to protect our institutions from all types of hazards.

Funnel cloud - A rotating, cone-shaped column of air extending downward from the base of a thunderstorm, but not in contact with the ground. When it reaches the ground it is then called a tornado.

Hail - Precipitation in the form of circular or irregular-shaped lumps of ice.

High - The center of an area of high pressure, accompanied by anticyclonic (or clockwise turning) and outward wind flow in the northern hemisphere. Also known as an anticyclone.

Humidity - The amount of water vapor (water in a gas form) in the atmosphere.

Lightning - An electrical discharge from a thunderstorm.

Low - The center of an area of low pressure, accompanied by cyclonic (or counterclockwise) and inward wind flow in the northern hemisphere. Also known as a cyclone.

Mesocyclone - The rotating updraft, or upward rising of air, in a thunderstorm.

Meteorology - The study of the atmosphere and atmospheric phenomena, or events.

Mitigation - Working to lessen risk by lowering its chances of occurring or by reducing its effects if it does occur.

National Weather Service (NWS) - One of six scientific agencies that make up the National Oceanic and Atmospheric Administration (NOAA) of the US government. NWS is responsible for issuing hazardous weather products such as watches, warnings and advisories in order to protect the public.

Outflow - Air that flows outward from a thunderstorm.

Precipitation - Liquid or solid water particles that fall from the atmosphere and reach the ground.

Pressure - The force exerted by the interaction of the atmosphere and gravity. Also known as atmospheric pressure.

Radar - An instrument used to detect precipitation by measuring the strength of the signal that is reflected back by the particles in the atmosphere. RADAR = RAdio Detection And Ranging.

Rain - Liquid water droplets that fall from the atmosphere.

Severe thunderstorm - A strong thunderstorm with wind gusts greater than 58 miles per hour and/or hail with a diameter larger than 3/4" or more.

Squall line - A solid or nearly solid line of thunderstorms or strong winds that may extend for hundreds of miles.

Straight line winds - Thunderstorm winds most often found with the gust front, or leading edge of a thunderstorm downdraft. They can cause damage which occurs in a "straight line" instead of in a more circular pattern like tornadoes might cause.

Supercell - A highly organized thunderstorm with a rotating updraft, known as a mesocyclone. It poses a high threat to life and property and often produces large hail, strong winds and tornadoes. Some supercell thunderstorms take on a "hook like" shape.

Thunder - The sound produced as lightning heats the air causing it to rapidly expand.

Thunderstorm - A storm with lightning and thunder. It is usually associated with gusty winds, heavy rain and sometimes hail and tornadoes.

Tornado - A violently rotating column of air below the base of a thunderstorm and in contact with the ground. A tornado does not require the visible presence of a funnel cloud.

Wall cloud - A cloud lowering beneath the base of a thunderstorm. Wall clouds indicate the updraft (or rising of air) of or the inflow to a thunderstorm.

Warm front - The forward edge of a mass of warm air intruding into an area of cooler air.

Warning - A warning is issued when a particular hazard is "imminent" or already happening. Examples would include tornado warnings and severe thunderstorm warnings.

Watch - A forecast issued in advance to alert the public of the possibility of a particular hazard. Examples would include a tornado watch and severe thunderstorm watch.

ADVANCED



FIND THE WORDS LISTED BELOW IN THE PUZZLE ABOVE.

WORDS CAN BE FOUND UP, DOWN, STRAIGHT ACROSS OR DIAGONALLY. GOOD LUCK!

ANVIL
 AWARENESS
 BICYCLE HELMET
 CLOUDS
 COLD FRONT
 DAMAGE
 DEBRIS
 DITCH
 ELECTRICITY
 FAMILY DISASTER KIT

FEMA
 FLASH
 GREEN SKY
 HAIL
 INTERIOR ROOM
 LIGHTNING
 MICROBURST
 MITIGATE
 NATIONAL WEATHER SERVICE
 NOAA WEATHER RADIO

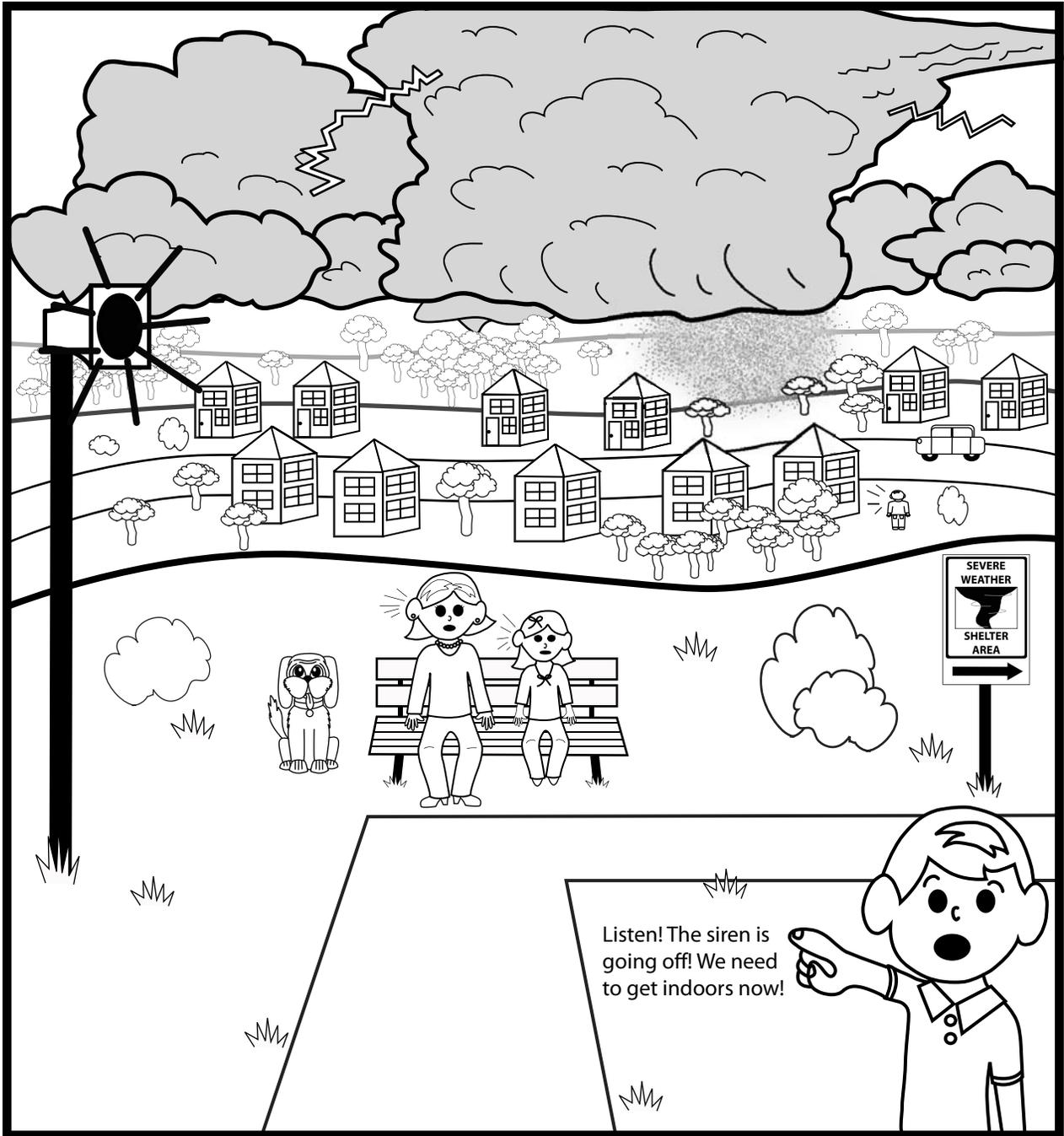
OUTBREAK
 PETS
 RAIN
 REPORT
 SAFETY
 SEVERE
 SHELTER
 SQUALL LINE
 STORM PREDICTION CENTER
 STRAIGHTLINE WIND

SUPERCCELL
 TELEVISION
 THUNDER
 THUNDERSTORM
 TORNADO
 WALL CLOUD
 WARM FRONT
 WARNING
 WATCH
 WEATHER



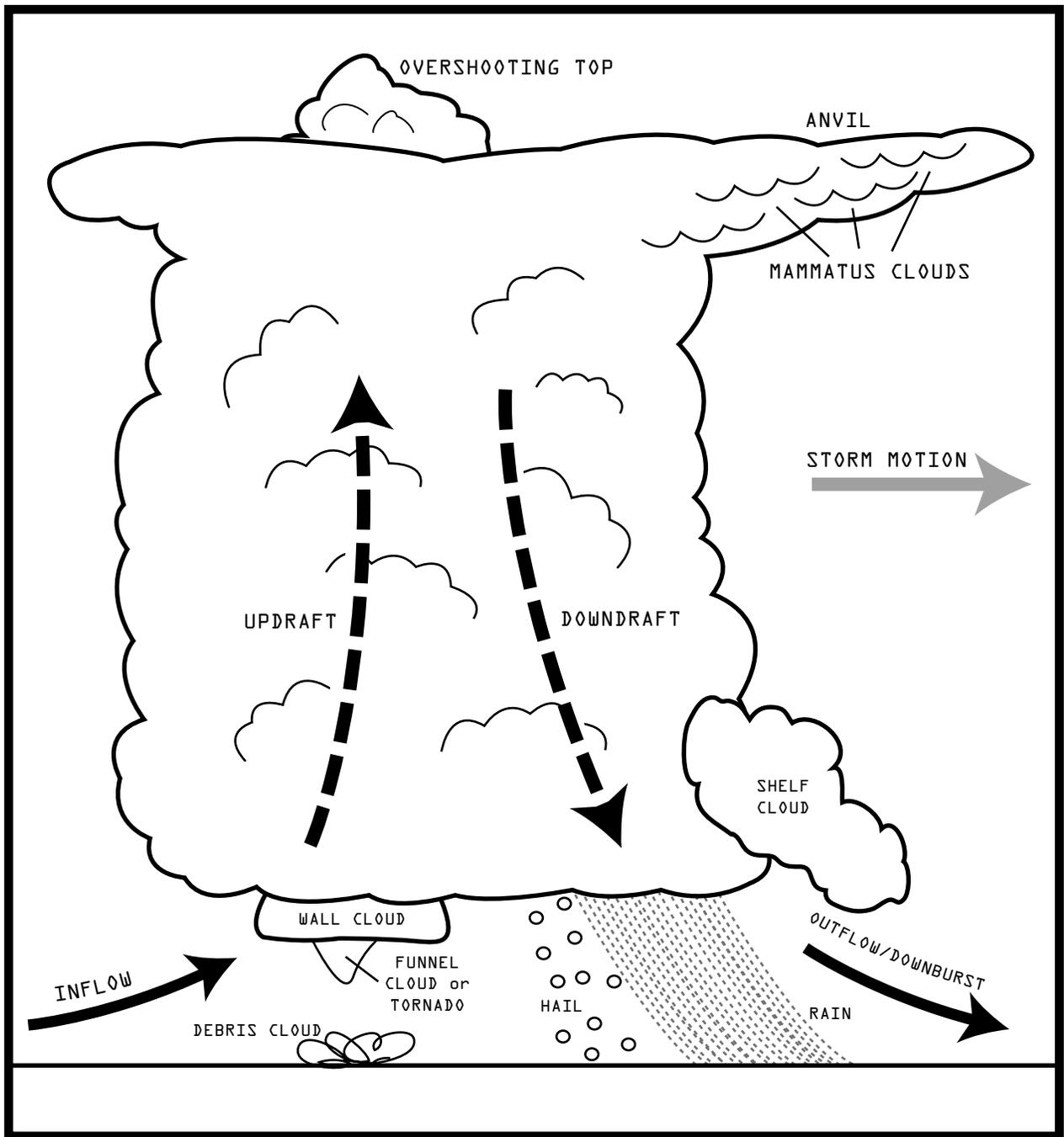
Tornadoes

Tornadoes are violently rotating columns of air with a circulation that reaches the ground. Tornadoes almost always begin as a funnel that forms under a wall cloud. Some say that tornadoes sound like a “freight train” (or other loud roaring noise). On a local scale, tornadoes are the most destructive type of atmospheric event. There were 1092 confirmed tornadoes in the United States in 2007 according to the Storm Prediction Center (SPC). It is important that you seek shelter in the safest place possible during a tornado. Most deaths that are associated with tornadoes are the result of being struck by flying debris. Be sure to review your emergency plan and know where the safest place is in your home as well as the buildings you visit frequently, like schools and shopping malls.



Outdoor Warning Sirens

Most communities have outdoor warning sirens. You may even hear them being tested on a regular basis to ensure they work properly. Outdoor warning sirens are meant to warn those who are outdoors and cannot see or hear important messages, such as warnings issued by the National Weather Service that may come across radios or televisions. If you are outdoors and hear a siren going off, you should seek shelter immediately and monitor conditions around you - turn on your radio or television, or check your NOAA all-hazard radio if you have one. Outdoor warning sirens are NOT meant to warn those indoors. Sometimes, you can hear them indoors if you are close enough, but do NOT rely on outdoor warning sirens as your primary method of getting warnings when you are inside. Be alert and monitor weather conditions regularly!

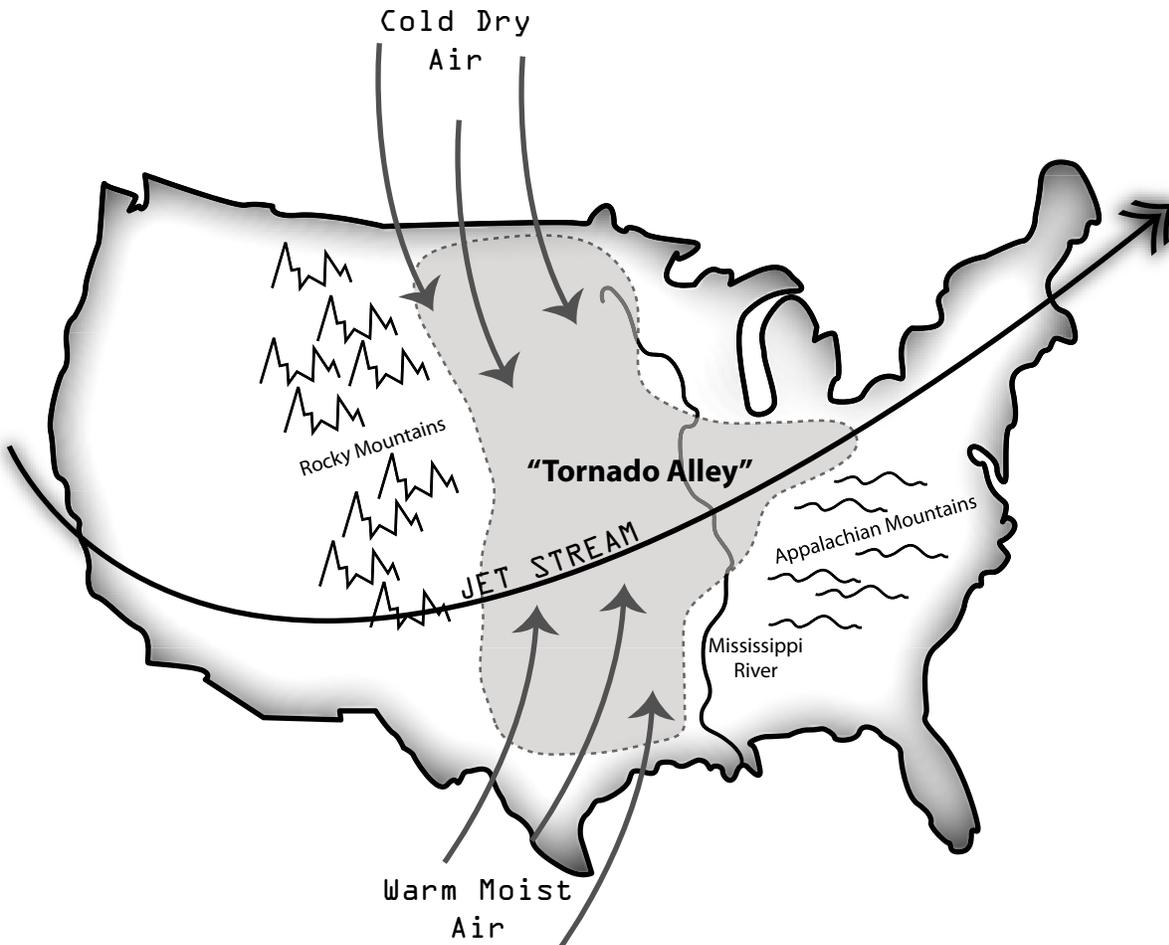


Thunderstorms

Tens of thousands of thunderstorms occur each year in the United States. There are three main types of thunderstorms: single-cell thunderstorms (like “pulse” thunderstorms), multi-cell thunderstorms/multi-cell clusters (like squall lines), and supercell thunderstorms. Most thunderstorms are not severe in nature. Supercell thunderstorms produce nearly all the significant tornadoes that occur in the United States. The diagram above shows what a supercell thunderstorm looks like.

In order for a thunderstorm to be considered “severe” by the National Weather Service, it must either produce hail that is greater than $\frac{3}{4}$ ” in diameter, have winds of 58 miles per hour or stronger, or produce a tornado.

Classic "Tornado Alley" did not include portions of the Midwest extending east of the Mississippi River. Today, some scientists consider these areas part of the current "Tornado Alley" region.



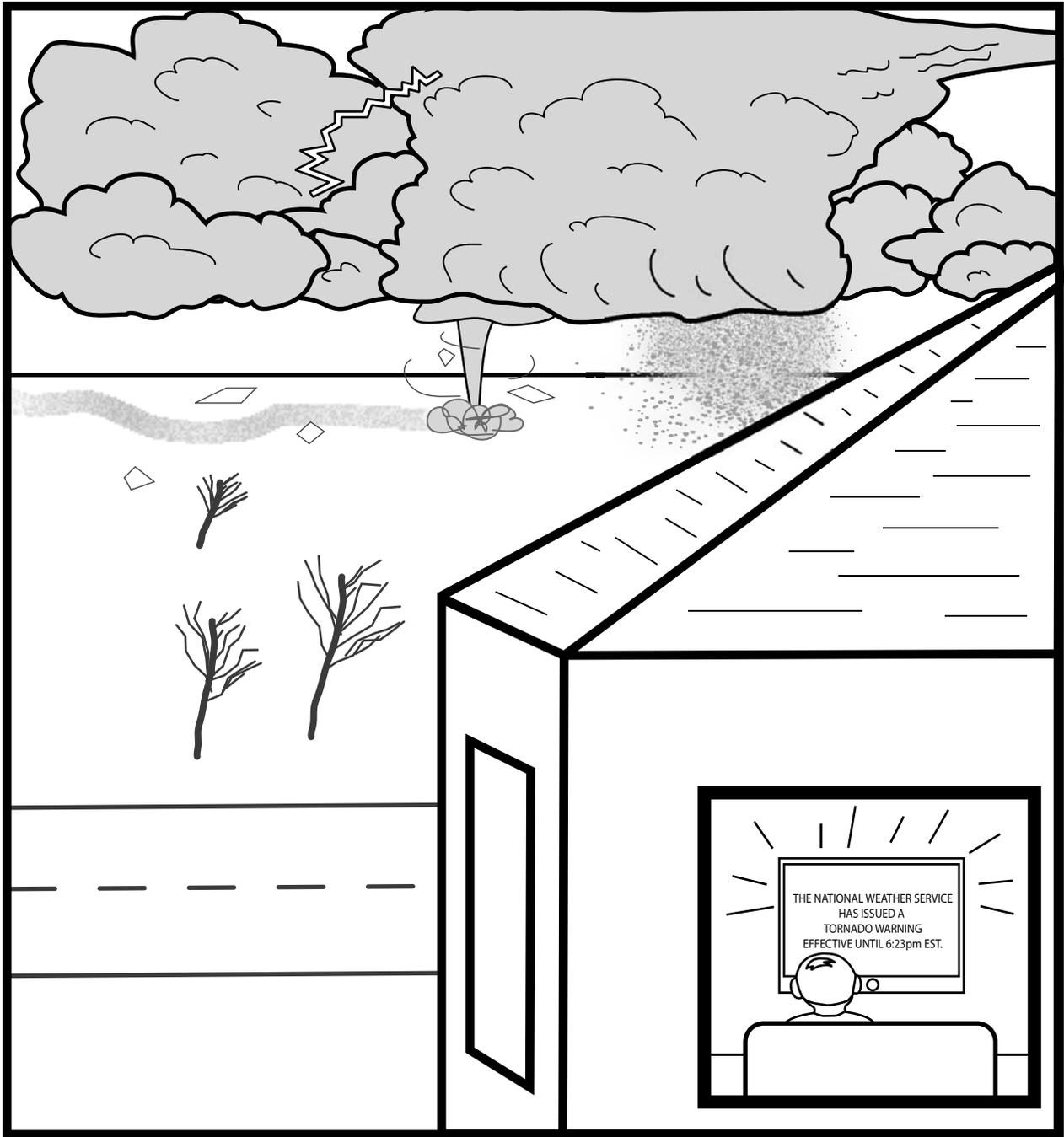
Enhanced Fujita (EF) Scale for Tornado Damage
(3-second wind gusts measured in miles per hour (mph))

EF 0	EF 1	EF 2	EF 3	EF 4	EF 5
65 - 85	86 - 110	111 - 135	136 - 165	166 - 200	Over 200

"Tornado Alley"

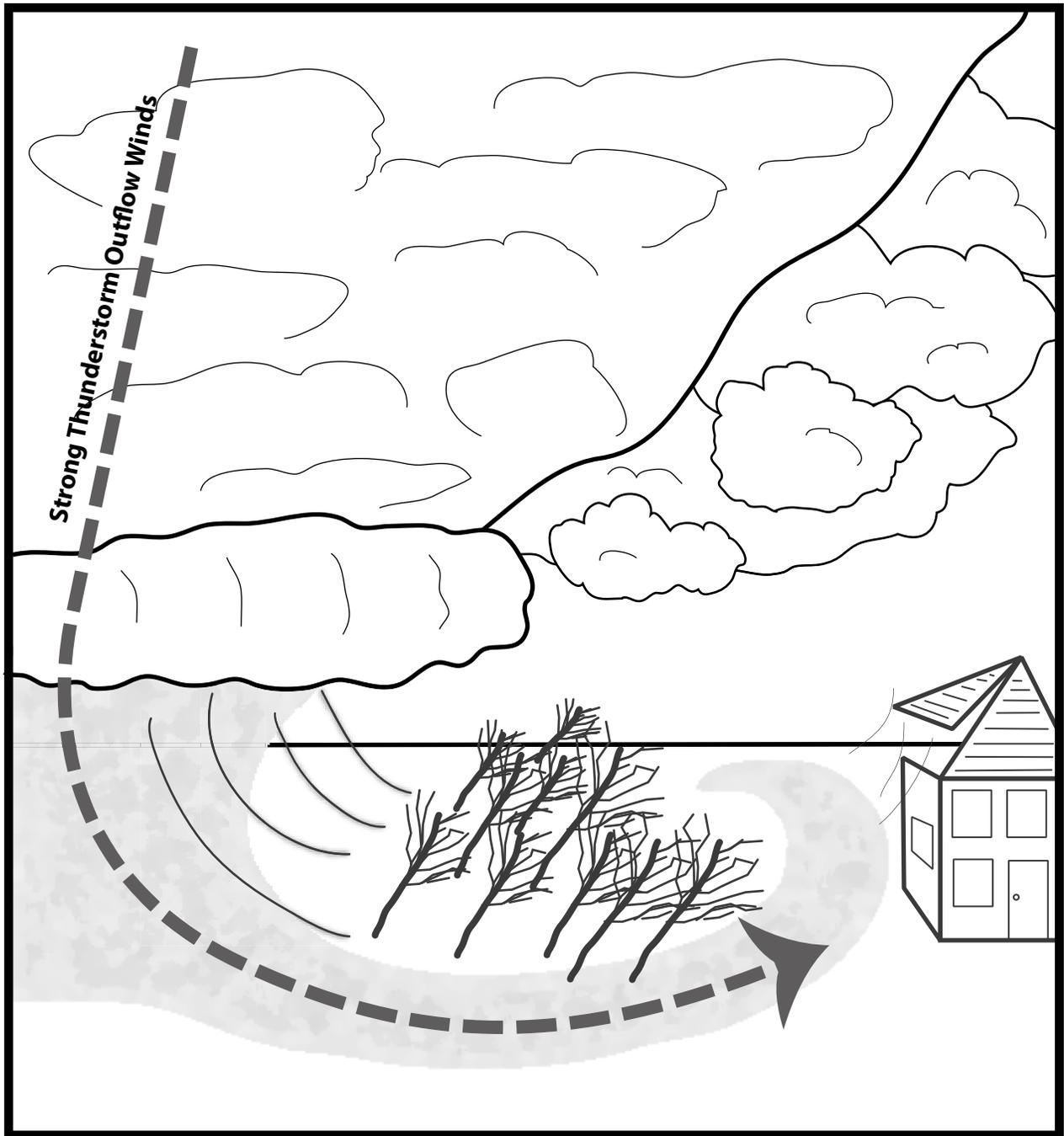
Tornadoes typically occur when cool, dry air from Canada moves down the front range of the Rocky Mountains and meets with warm, moist air being drawn north from the Gulf of Mexico. The high speed, high altitude winds, or jet stream, play an important role in formation and movement of weather.

"Tornado Alley" most commonly refers to the area in the central United States where the highest frequency of tornadoes occur. Although no state is immune to tornadoes, most tornadoes typically touchdown between the Rocky Mountains and the Appalachian Mountains. Tornadoes have occurred in every month of the year. Tornado strength, or intensity, is determined by using the Enhanced Fujita Scale for tornado damage.



Warnings

The National Weather Service (NWS) issues severe thunderstorm and tornado warnings. A warning means that a hazardous weather event is actually occurring. Warnings are issued for events that pose a threat to life or property. If you hear that a severe thunderstorm or tornado warning has been issued, seek shelter immediately! Implement your emergency plan and take shelter on the lowest level of the building or house you are in. If you don't have a basement seek shelter in an interior room with no windows, putting as many walls between you and the outside as possible. If you are outdoors or in a car and cannot seek shelter indoors, lay face-down in a ditch and cover your head with your hands. Do NOT seek shelter under highway overpasses!



Straight-line Winds

Straight-line winds are the cause of most thunderstorm wind damage - not tornadoes. Strong outflow winds from a thunderstorm can reach speeds of over 100 miles per hour! Winds that strong can cause serious damage over a large area. Downbursts are one type of straight-line wind; downbursts are pockets of rain-cooled air flowing out of a thunderstorm that upon hitting the ground spread out. Straight-line winds are often associated with squall lines (lines of thunderstorms), too. Meteorologists often look for a "bow" shape, or curvature in the squall line to identify areas of stronger winds. Straight-line winds can be very dangerous - in fact they can be just as dangerous as tornadoes!

What Should YOU Do?

Use this page to reference what you should do for each situation. Hang this page on your refrigerator or on a bulletin board where it is easy to find.

Severe Thunderstorm or Tornado WATCH:

Turn on your television or radio, check your NOAA all-hazard radio, or go online to www.spc.noaa.gov or www.nws.noaa.gov to find out the details of the watch that was issued. Be alert of changing weather conditions.

Severe Thunderstorm or Tornado WARNING:

Act NOW! Hazardous weather is ongoing. Implement your family plan and seek shelter immediately. If you have a radio, television or NOAA all-hazard radio that is accessible in your shelter/safe room you should monitor the situation and wait for the "all clear" that the weather has passed to resume activities.

Thunder and Lightning:

If you can hear thunder you are close enough to be struck by lightning! If you are outdoors seek shelter in a sturdy building. Do not seek shelter in small sheds, under trees, or in convertible automobiles. Stay out of water (like swimming pools & lakes). If you are outdoors and cannot seek shelter indoors be sure to stay away from tall objects like towers, fences, light poles and trees and stay low to the ground on the balls of your feet with your hands over your ears and your head tucked between your knees - DO NOT lie down; a hard-top automobile with the windows rolled up can provide some protection if needed. If you are indoors stay away from plumbing (do not take a shower or bath), stay off the telephone and computer, and turn off/unplug all non-essential appliances that are not needed for gathering weather information. Wait at least 30 minutes after the last lightning strike before going outdoors.

Hail:

If hail begins to fall, seek shelter indoors in a sturdy building. A hard-top automobile can also serve as shelter from hail if you cannot get indoors. Avoid convertible automobiles as shelter as hail can puncture through the soft top. Stay tuned to local media and your NOAA all-hazard for possible warnings associated with the storm.

Straight-line Wind:

Seek shelter indoors in a sturdy building. Turn on your radio, television, or NOAA all-hazard radio to hear further details. In some cases you may need to seek shelter in your "safe room" or designated shelter area.

If You Hear an Outdoor Siren:

Go indoors and turn on your radio, television, or NOAA all-hazard radio to get details about the possible hazardous weather event in your area.

Family Disaster Kit

The following items are recommendations from the Centers for Disease Control about what you should have in your family disaster kit.

Don't forget you can photocopy and complete the Red Cross' Emergency Contact Card on the last page of this booklet for each member of your family! Keep it with you in your wallet, purse or backpack!

Food & Water:

Keep at least 3 gallons of water per person, per day in your kit PLUS 4 gallons per person, per day if you are confined to your home. Don't forget about water for your pets, too! Keep a 3-day supply of food in your kit for each person and/or pet PLUS an additional 4-day supply for each person and/or pet if you are confined to your home.

Infants:

Be sure you have plenty of diapers, formula, bottles, powdered milk and prescriptions (that don't require refrigeration) in your kit if you have an infant or small child in your family.

Seniors or Disabled Persons:

Keep any special items you might need like prescriptions, denture items, extra eye-glasses, hearing aid batteries, inhalers, etc. in your disaster kit.

Kitchen Accessories:

Include a manual can opener, plates & utensils, a utility knife, sugar & salt and other kitchen essentials in your kit.

Sanitation & Hygiene Items:

Items like shampoo, soap, deodorant, toothpaste, toothbrushes, comb & brush, lip balm, sunscreen, contact lenses, toilet paper, hand sanitizer, liquid detergent, garbage bags and any other essential items.

Clothing & Footwear:

Keep at least 1 complete change of clothing & footwear per person including rain gear, hats, gloves and any other seasonal items that might be needed.

Entertainment:

Books, magazines, etc.

Other Essential Items:

Paper, pencils, needles & thread, small A-B-C-type fire extinguisher, medicine dropper, whistle, duct tape, emergency preparedness manual.

A Map of the Area with Places You Can Go & Phone Numbers

A Portable, Battery-Powered Radio or Television and Extra, Fresh Batteries

Several Flashlights and Fresh Batteries

A First Aid Kit

Blankets or a Sleeping Bag for Each Person

Cash & Coins and Copies of Credit Cards

Copies of Medical Prescriptions

A Small Tent, Compass and Shovel

Candles & Matches (in a Waterproof Container)

An Extra Set of Keys & IDs

KEEP YOUR KIT HANDY IN SOMETHING LIKE A BACKPACK OR TOTE AND PUT IT SOMEPLACE THAT IS EASILY ACCESSIBLE BY THE WHOLE FAMILY AND CAN BE REACHED QUICKLY. KEEP AN EYE ON ANY EXPIRATION DATES ON ITEMS IN YOUR KIT AND REPLACE THEM IF NEEDED!

CROSSWORD PUZZLE

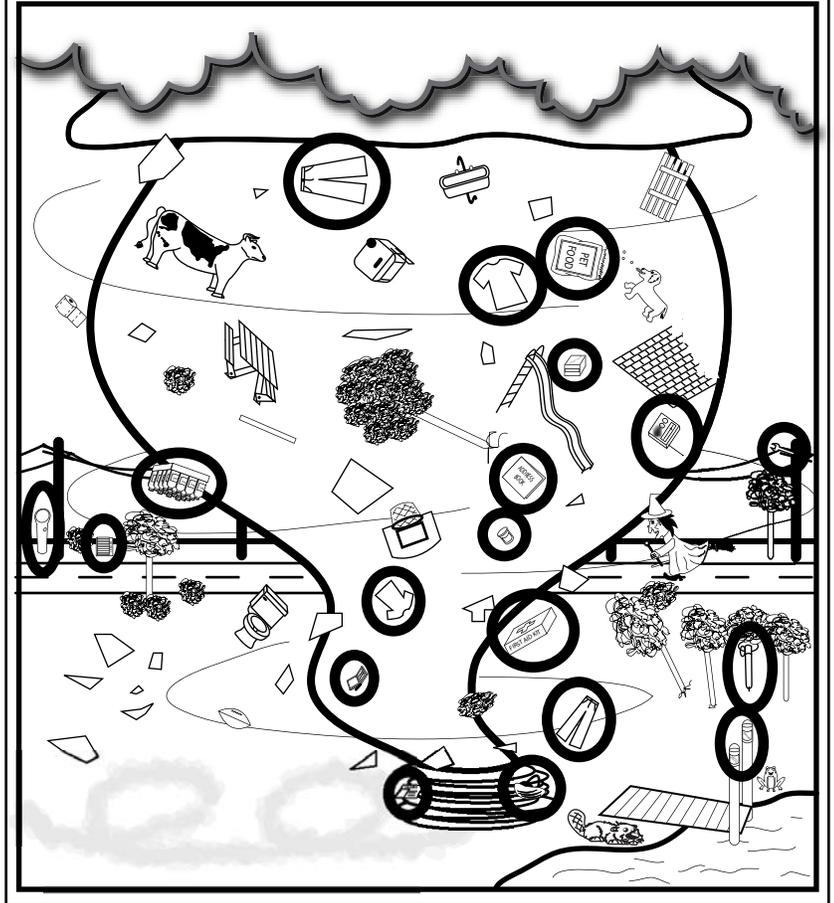
ACROSS

1. ANVIL
2. DEWPOINT
3. HUMIDITY
4. TORNADO
5. RADAR
6. PRESSURE
7. NWS
8. HIGH
9. LIGHTNING
10. HAIL
11. WARNING
12. COLD FRONT
13. DOPPLER RADAR
14. METEOROLOGY
15. STRAIGHTLINE WINDS
16. FUNNEL CLOUD
17. MESOCYCLONE
18. OUTFLOW
19. SQUALL LINE

DOWN

1. MITIGATION
2. WATCH
3. THUNDERSTORM
4. ATMOSPHERE
5. SEVERE THUNDERSTORM
6. PRECIPITATION
7. EMERGENCY
8. WALL CLOUD
9. THUNDER
10. LOW
11. RAIN
12. WARM FRONT
13. SUPERCCELL

TORNADO PICTURE SEARCH



WORD SCRAMBLE

- | | |
|-----------------|-------------------|
| 1. THUNDERSTORM | 10. THUNDER |
| 2. WIND | 11. TORNADO ALLEY |
| 3. LIGHTNING | 12. SIREN |
| 4. RADAR | 13. WATCH |
| 5. TORNADO | 14. RAIN |
| 6. SHELTER | 15. WARNING |
| 7. HAIL | 16. WEATHER RADIO |
| 8. DISASTER KIT | 17. SAFETY |
| 9. METEOROLOGY | |

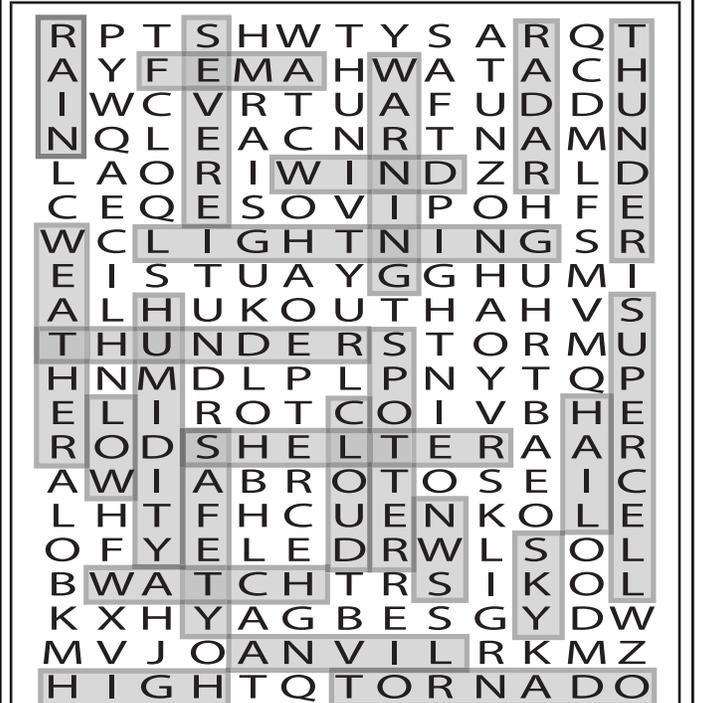
SECRET PHRASE: STAY INFORMED OF THE STORM

ANSWER PAGE

ADVANCED WORD SEARCH



EASY WORD SEARCH



Police: call 9-1-1 or
 Fire Dept.: call 9-1-1 or
 Ambulance: call 9-1-1 or
 Family Doctor:
 Poison Control Center: 1-800-222-1222
 Visit www.redcross.org for more information

Important Phone Numbers

Emergency Contact Card

 **American Red Cross**

Together, we can save a life

Name: _____

Home Address: _____

Household Members Contact Information

Out-of-town contact: _____

Family meeting place outside the neighborhood: _____

FOLD

FOLD

FOLD

American Red Cross Emergency Contact Card

Directions:

1. Make a copy of this card for each household member.
2. Cut out the card along the dotted lines.
3. Write in the contact information for each household member, such as work, school and cell phone numbers. If you need additional space, use the back side of the card.
3. Fold the card so it fits in your pocket, wallet or purse.
4. Carry your card with you so it is available in the event of a disaster or other emergency when you will want to contact each other.

For more information on creating a family disaster plan and a disaster supplies kit, as well as other valuable disaster preparedness information, visit www.redcross.org.