

**Scouter's Guide
to
Severe Weather and Other Hazards
Camping and Other Outdoor Activities**

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NOTE: THIS IS NOT AN OFFICIAL BOY SCOUTS OF AMERICA PUBLICATION

Scouter's Guide to Severe Weather and Other Hazards Camping and Other Outdoor Activities

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Introduction

As a Scout Leader, camping and outdoor activities are what we do. But what happens when severe weather decides to join your campout or outdoor event. Being caught outside by yourself is one thing, being caught outside with a bunch of young scouts is a completely different subject.

You have to use your best judgment and err on the side of safety. If in doubt, bug out. Better to camp another night, than to push a bad situation. If the approaching danger allows the time, pack up and head for home or adequate shelter (i.e. *that large concrete block restroom, or maybe that restaurant or gas station you passed on the way into camp.*) If not, muster the boys, the other adult leaders, drop the tents, put something heavy on the wind-ward side of the tent, grasp the troop's First Aid Kit and seek the best available cover until the immediate danger has past and you can get everyone out safely or start recovery assistance.

Remember the boys are looking to you for how they should be acting. Your positive and calm attitude will go along way here. If you show confidence, so will most of your Scouts. If you call on them for help they will be there for you. But, if you show fear, you will have a bunch of scared kids that are liable to do anything to save themselves. Try to keep your head about you, show concern and seek the best information available to you. Those other adults are there for more than just youth protection, confer with both your adult and youth leaders, then make your decision. If you decide it's time to call it, act quickly and lead your charges to safety.

If you decide to stay, batten down the loose gear, double up the dining fly tie-downs and add the tent extra weather ropes. Identify good solid wind breaks (short rock outcrops, large fallen trees, caves and low lying spots. Stay away from tall trees and power poles. Be ready to move and move quickly.

Sometimes the weather sounds worse than it really is and turns out to be just some rain and high winds just as the storm starts. If you bug out everytime it starts raining, you won't be camping much. If you've got wet cold kids and sleeping bags in wet tents, move them into dry tents and see if anyone has dry stuff to borrow. Remember, "*What doesn't kill us, makes us stronger!*" In a few months, you'll be able to sit around the campfire and laugh about this event.

Bottom line: Use your best judgment. Seek all available counsel, weigh your options, then act!

Camping Tips

Whether you're roughing it in a tent or planning a large troop outing, there are many ways to make sure your experience is fun and safe. A Scout is expected to "*Be Prepared*". Consider the following safety tips:

- **Pack a first aid kit.** Your kit can prove invaluable if you or a member of your group suffers a cut, bee sting or allergic reaction. Pack antiseptics for cuts and scrapes, tweezers, insect repellent, bug spray, a snake bite kit, pain relievers, and sunscreen.
- **Bring emergency supplies.** In addition to a first aid kit, this includes: a map, compass, flashlight, knife, waterproof fire starter, personal shelter, whistle, warm clothing, high energy food, water, and insect protection.
- **Learn the ABC's of treating emergencies.** Recognizing serious injuries will enable you to attend to a victim until medical help arrives.
- **Be weather wise.** Keep an eye on current and predicted weather conditions. Weather can change very quickly. Know the signs for approaching storms or changing weather conditions. Avoid bare ridge tops, exposed places, lone trees, streams, and rocks during lightning storms.

Find shelter in a densely forested area at a lower elevation. Even in the summer, exposure to wind and rain can result in hypothermia.

- **Before you leave, find out the weather report.** When you arrive at the site, watch the skies for changes and carry a compact weather radio. In inclement weather, find shelter until the worse passes. Stay dry -- wet clothes and boots contribute to heat loss. Also try keeping sleeping bags and important gear dry at all times.
- **Arrive early.** Plan your trip so that you arrive at your actual campsite with enough daylight to check over the entire site and to set-up camp. Send an early crew if necessary to scout out a good campsite if the whole troop can't arrive before dark.
- **Check for potential hazards.** Be sure to check the site thoroughly for glass, sharp objects, branches, large ant beds, poison ivy, bees, and hazardous terrain.
- **Avoid areas of natural hazards.** Check the contour of the land and look for potential trouble due to rain. Areas that could flood or become extremely muddy can pose a problem.
- **Inspect the site.** Look for a level site with enough room to spread out all your gear. Also, a site that has trees or shrubs on the side of prevailing winds will help block strong, unexpected gusts.
- **Build fires in a safe area.** Your open fires and fuel-burning appliances must be far enough away from the tent to prevent ignition from sparks, flames, and heat. Never use a flame or any other heating device inside a tent. Use a flashlight or battery-powered light instead.
- **Make sure your fires are always attended.** Be sure you have an area for a fire that cannot spread laterally or vertically -- a grill or stone surface is ideal. When putting the fire out, drown it with water, making sure all embers, coals and sticks are wet. Embers buried deep within the pile have a tendency to reignite later.
- **Pitch your tent in a safe spot.** Most tents are not made of a flame-retardant fabric, so set up far enough away from the campfire. Keep insects out of your tent by closing the entrance quickly when entering or leaving.
- **Dispose of trash properly.** Remember to recycle -- use the proper recycling bins if available. Be cautious when using a propane stove. Read the instructions that come with the stove and propane cylinder. Use the stove as a cooking appliance only -- never leave it unattended while it's burning.
- **Watch out for bugs.** Hornets, bees, wasps, and yellow jackets are a problem at many campsites. Avoid attracting stinging insects by wearing light-colored clothing and avoiding perfumes or colognes. Should such an insect approach, do not wave wildly and swat blindly - instead use a gentle pushing or brushing motion to deter them.
- **Beware when encountering wildlife.** To ward off bears and raccoons, keep your campsite clean, and do not leave food, garbage, coolers, cooking equipment or utensils out in the open. Remember that bears are potentially dangerous and unpredictable -- never feed or approach a bear. Use a flashlight at night -- many animals feed at night and the use of a flashlight may warn them away. Both bears and raccoons are opportunist feeders, remove the opportunities.
- **Beware of poisonous plants.** Familiarize yourself with any dangerous plants that are common to the area. If you come into contact with a poisonous plant, immediately rinse the affected area with water and apply a soothing lotion such as calamine to the affected area.
- **Practice good hygiene.** Make sure you wash your hands, particularly after using the toilet and before handling food, to prevent everyone in your group becoming ill.

Source: USDA Forest Service

Trail and Backcountry Tips

- **Before starting out, do warm-up exercises.** Stretching gradually increases heart rate, temperature and circulation to your muscles. Also, after a night's rest, your muscles need warming. Stretching gets the body going and increases your flexibility.

- **Start out slowly**, gradually increasing your pace and distance traveled.
- **Let the slowest person** in your hiking, paddling, and biking or cross-country skiing party set the pace. This is especially important when children are a part of your group.
- **Plan the trip ahead of time** and assign tasks that people enjoy. If someone doesn't cook, don't force him or her. The goal is to have a good time outdoors.
- **Take turns leading** the group and sharing decision-making responsibilities.
- **Hike, bike, or ski only on marked trails** in wilderness areas unless bushwhacking is allowed and you have excellent navigation skills.
- **Hike and travel in groups** as much as possible, especially during winter and in hazardous terrain.
- **Leave your itinerary** with a friend or family member and check in with them upon your return.
- **Learn basic repair skills** for changing a bike tire, fixing a backpack, camp stove or mending a snowshoe. Remember to take repair kits on your trail.
- **Mountain weather is generally cooler, cloudier, and windier than in lowland areas.** For every 1,000 feet of elevation, the temperature often drops three to five degrees. Thus, it's best to dress in layers. Polyester clothing worn closest to your skin will trap warm air next to the skin and transfer or wick body moisture away.
- **Wear sunglasses and a hat or visor when you hike, ski or paddle.** Snow blindness, caused by the sun's glare on snow, can also be caused by sunlight reflecting off water and boulders. Keep your eyes and face covered especially during your first few days outdoors.
- **Bring sunscreen no matter the season.** You can get painful sunburn even in subfreezing temperatures.
- **Bring a customized first aid kit** tailored to your outing.
- **Develop an emergency plan before you start your trip.** Make sure everyone knows what to do if they become lost or a medical emergency arises. Give children whistles with the instructions to "stop and blow" if they become lost.
- **Take frequent rests or vary your pace to recover from strenuous activity spurts.** A steady pace will get you there with less discomfort than the sprint-and-catch-your-breath approach.
- **Drink plenty of water.** Water is heavy to carry, but thirst on the trail is a hazard. Take a tip from athletes: before a hike, drink some water so you're well hydrated and energized. Never drink your total supply between refills.
- **Backcountry water supplies are unpredictable.** It's better to arrive at a gushing stream with 1/3 quart of water left, than to arrive at an empty stream and have no water left at all. Treat or filter all water.
- **Pack carbohydrate-energy bars, granola, candy, or fruit.** They provide an instant pick-me-up on the trail.
- **Give yourself about two hour's daylight to set up camp.**
- **Pay attention to local regulations, particularly concerning campfires.** In many desert or drought areas, fires are prohibited and you must use a camp stove.

Source: USDA Forest Service

If You Get Lost

No matter how much advance planning you may do before an outdoor activity, even the most experienced outdoorsman can get lost. Here are some tips to remember when exploring the great outdoors.

- **Pay close attention to your surroundings** and landmarks, and relate this to your location on a map.

- **Stay calm if you get lost.** Panic is your greatest enemy. Try to remember how you got to your present location.
- **Trust your map and compass,** and do not walk aimlessly. If you are on a trail, don't leave it.
- **Stay put if it is nightfall,** if you are injured, or if you are near exhaustion.
- **As a last resort,** follow a drainage or stream downhill. This can be hard going but will often lead to a trail or road.

Source: USDA Forest Service

RECOMMENDED ACTIONS FOR SEVERE WEATHER

By becoming familiar with and implementing the following recommended actions, you and your troop will be better prepared in the event of thunderstorms, tornadoes and flooding. If you were at home, you could watch the television to keep up on any dangers, but at a campsite, your best bet is a NOAA Weather Radio and if you are at a staffed site, the camp staff and rangers. Most staffed camps have already set up procedures for the “**go to**” locations for emergency situations. Ask them!

THUNDERSTORMS

BEFORE THUNDERSTORMS

Know the terms used to describe severe thunderstorm threats:

- **Severe Thunderstorm Watch** -- Severe thunderstorms are possible. Watch the sky and listen to the radio for more information. Be prepared to take shelter.
- **Severe Thunderstorm Warning** -- Severe thunderstorms are occurring. Take shelter. Turn on a battery-operated radio to receive warnings and severe weather statements.
- Purchase a National Oceanic and Atmospheric Administration (NOAA) Weather Radio with a battery backup and tone-alert feature, which automatically alerts you when a Watch or Warning is issued.
- Know the county(s) in which you live, are camping and working. The National Weather Service uses county names when watches, warnings and advisories are issued and broadcast. Specific Area Message Encoder (SAME) Weather Radios can be programmed to alarm only for a specific county or group of adjacent counties.
- Check the weather forecast before leaving for extended outdoor periods and postpone plans if severe weather is imminent.
- Keep a list of emergency phone numbers. Teach your scouts how and when to call 911 for emergency assistance.
- Choose a friend or family member who lives out of the area for separated family members to call to report their whereabouts and condition.
- Maintain a disaster supply kit.

DURING THUNDERSTORMS

- Monitor the radio for the latest weather information.
- Avoid using the telephone until the storm passes.
- Delay taking baths or showers until after the storm passes.
- If you are driving, pull safely to the shoulder away from trees and power lines. Lightning can flash from trees or power poles into a vehicle through the radio antenna. Normally, in the open, a vehicle is a safe shelter from lightning. Avoid touching metal parts of the vehicle when lightning is nearby.

- Telephone lines and metal pipes can conduct electricity. Unplug appliances. Avoid using the telephone (except for emergencies) or any electrical appliances. (Leaving electric lights on, however, does not increase the chances of your home being struck by lightning.)
- Draw blinds and shades over windows. If windows break due to objects blown by the wind, the shades will help prevent some of the glass from shattering into your home.

PROTECTING YOURSELF OUTSIDE

- If outdoors, seek shelter immediately. If you can hear thunder, you are probably close enough to the storm to be struck by lightning. (*Lightning has been known to strike up to 10 miles from the storm center.*)
- If you are caught above the tree line when a storm approaches, descend quickly. Avoid isolated trees. It is better to run into a forest.
- If you are in a wooded area, seek shelter under a thick growth of relatively small trees. If you have a choice between short and tall, go with the short trees.
- Electric storms can also develop in the middle of the night. To lower your odds, don't pitch your tent near the tallest trees in the vicinity.
- If you find yourself in a position where there is no immediate shelter available, find a low-lying, open place away from trees, poles or metal objects. Make sure the place you pick is not subject to flooding.
- Don't sit or lie down, because these positions provide much more contact with the ground, providing a wider path for lightning to follow. If you are with a group and the threat of lightning is high, spread out at least 50 feet apart to minimize the chance of everybody getting hit.
- Be a very small target! If you feel your skin tingle or your hair stand on end, do the "LIGHTNING SAFE CROUCH " Squat low to the ground on the balls of your feet. Place your hands on your knees with your head between them. Make yourself the smallest target possible, and minimize your contact with the ground. Stay this way until the storm passes, perhaps 15 to 45 minutes.
- Don't return to an open area too soon. People have been struck by lightning near the end of a storm, which is still a dangerous time.
- Swimmers, anglers, and boaters should get off lakes or rivers and seek shelter when storms approach. Drop any fishing rods. Boaters who cannot get off the water before the storm hits should crouch low. Once on land, get at least 100 yards away from shore.
- Go to a safe shelter immediately such as inside a sturdy building. A hard top automobile with the windows up can also offer fair protection. Keep car windows closed and avoid convertibles.
- Avoid isolated trees or other tall objects, bodies of water, sheds, fences, convertible automobiles, tractors and motorcycles.

AFTER THUNDERSTORMS

- Monitor the radio for emergency information or instructions.
- Check for injured victims. Render first aid if necessary. Most lightning strike victims can be revived with CPR. Do not attempt to move severely injured victims unless absolutely necessary. Wait for emergency medical assistance to arrive.
- Do not make unnecessary telephone calls.
- If driving, be alert for hazards on the roadway.
- Check on neighbors or relatives who may require special assistance.

IF SOMEONE IS STRUCK BY LIGHTNING

- People struck by lightning carry no electrical charge and can be handled safely.
- Call for help. Get someone to dial 9-1-1.
- The injured person has received an electrical shock and may be burned, both where they were struck and where the electricity left their body. Check for burns in both places. Being struck by lightning can also cause nervous system damage, broken bones, and loss of hearing or eyesight.
- Give first aid. If breathing has stopped, begin rescue breathing. If the heart has stopped beating, a trained person should give CPR. If the person has a pulse and is breathing, look and care for other possible injuries.

TORNADOES

BEFORE A TORNADO

Know the terms used to describe tornado threats:

- **Tornado Watch** -- Tornadoes are possible. Watch the sky and listen to the radio for more information. Be prepared to take shelter. If you see any rotating funnel-shaped clouds, report them immediately by telephone to your local law enforcement agency. If you are in a camper or mobile home, this is the time to move to a more substantial structure.
- **Tornado Warning** -- A tornado has been sighted or indicated by weather radar. Take shelter. Turn on a battery-operated radio and wait for the "all clear" announcement by authorities.

Refer to the "Before" section under THUNDERSTORMS plus the following:

- Determine the best location in your campsite and area to seek shelter when threatened by a tornado. A basement or cellar will usually afford the best protection. If an underground shelter is not available, identify an interior room or hallway on the lowest level.
- Know how to shut off electricity, gas and water at main switches and valves. Know where gas pilots are located.
- Decide how and where your troop will reunite.
- If you are staying in a camper or mobile home, identify a safe shelter outside of your mobile home such as a community park shelter, a neighbor or friend's house, or a nearby public building.

DURING A TORNADO

Take the following actions when a **Tornado Warning** has been issued by the National Weather Service, when sirens have been activated, or when a tornado has been sighted near your area.

AT HOME

- Go at once to your predetermined shelter (storm cellar, basement or the lowest level of the building). In a basement, go under the stairs, under a heavy piece of furniture or a workbench. Stay there until the danger has passed.
- If there is no basement, go to an inner hallway or a small inner room without windows, such as a bathroom or closet.
- Stay away from windows, doors and outside walls.
- Go to the center of the room. Outside windows and walls may be penetrated by high speed, wind-borne objects.
- Get under a piece of sturdy furniture, such as a workbench or heavy table, and hold onto it.

- Use pillows, mattresses or cushions to protect your head and neck.
- If in a camper or mobile home, get out and seek shelter elsewhere. A camper or mobile home can overturn very easily even if precautions have been taken to tie down the unit. If there isn't a substantial shelter nearby, seek shelter in a low-lying area. Shield your head with your hands.

IN A SCHOOL, NURSING HOME, HOSPITAL, SHOPPING CENTER, OR WORKPLACE

- Go to the designated storm shelter, basement, or to an inside hallway on the lowest level.
- Avoid places with wide-span roofs, such as auditoriums, cafeterias, gymnasiums and large hallways. Stay away from windows and open spaces.
- Get under a piece of sturdy furniture, such as a workbench or heavy table or desk, and hold onto it. If sturdy furniture is not available, make yourself the smallest target possible.
- Squat low to the ground. Put your head down and cover your head and neck with your hands.
- If in a high-rise building, go to small, interior rooms or hallways on the lowest level possible and seek protection as detailed above. Stay away from windows and outside walls.

OUTDOORS

- If possible, get inside a substantial building.
- If shelter is not available or there is no time to get indoors, lie in a ditch, culvert or low-lying area. Use your arms to protect your head and neck. Stay aware of the potential for flash flooding.

IN A VEHICLE

- Never try to outrun a tornado in a vehicle. Heavy rain, hail and traffic may impede your movement. Tornadoes can change directions quickly and can easily lift up a vehicle and toss it through the air.
- Get out of the vehicle immediately and try to take shelter in a nearby building. Do NOT park under a bridge or underpass. They act as a vortex to intensify the winds effect.
- If there isn't time to get indoors, get out of the vehicle and lie in a ditch, culvert or low-lying area away from the vehicle.

AFTER A TORNADO

- Monitor the radio for emergency information or instructions.
- Check for injured victims. Render first aid if necessary.
- Check on other campers, neighbors or relatives who may require special assistance.
- Do not attempt to move severely injured victims unless absolutely necessary. Wait for emergency medical assistance to arrive.
- Use the telephone only for emergency calls.
- Exit damaged buildings. Re-enter only if absolutely necessary using great caution.
- If driving, be alert for hazards on the roadway.
- If unaffected by the tornado, stay out of the damaged area until local officials allow entry. Your presence may hamper emergency operations.

FLOODING

BEFORE A FLOOD

Know the terms used to describe flood threats:

- **Flood Watch** -- Flooding or flash flooding is possible. Be prepared to move to higher ground. Listen to NOAA Weather Radio, commercial radio or commercial television for additional information.
 - **Flood Warning** -- Flooding is occurring or will occur soon. If advised to evacuate, do so immediately.
 - **Flash Flood Warning** -- A flash flood is occurring or is imminent. Move to higher ground immediately. Flash floods develop MUCH quicker than river floods.
 - **Flood Statement** -- Minor flooding of creeks and streams, streets, low-lying areas or basement flooding is occurring or is imminent.
- Learn flood-warning signs, and if used in your area, any community alert signals.
 - Know how to shut off electricity, gas and water at main switches and valves. Know where gas pilots are located and how the heating system works.

DURING A FLOOD

- Monitor the radio for the latest weather information.
- If instructed to do so by local authorities, turn off utilities at their source.
- Listen to a battery-operated radio for evacuation instructions.
- If advised to evacuate, do so quickly.
- Evacuation is much simpler and safer before floodwaters become too deep for ordinary vehicles to drive through.
- Follow recommended evacuation routes. Short cuts may be blocked.
- People lose their lives by attempting to drive over a flooded roadway. The speed and depth of the water is not always obvious. There may be a hidden portion of the roadway washed out under the water. Two feet of water will carry away most automobiles.

AFTER A FLOOD

- Flood dangers do not end when the water begins to recede. Listen to a radio or television and don't return until authorities indicate it is safe to do so.
- When you are allowed to return, remember to help your neighbors who may require special assistance.
- Inspect foundations for cracks or other damage.
- When entering buildings, use extreme caution.
- Look for fire hazards.
- If your home was damaged, check the utilities.
- Stay out of buildings that remain in the floodwaters.
- Avoid coming in contact with floodwaters. The water may be contaminated with oil, gasoline or raw sewage.
- Do not wade through a flooded stream to protect or retrieve belongings.
- Consider your and the scout's health and safety. Wash your hands frequently with soap and clean water if you come in contact with floodwaters. Listen for news reports to learn whether the community's water supply is safe to drink.
- Throw away food -- including canned goods -- that has come in contact with floodwaters.

- Stay alert for areas where floodwaters have receded. Roads may have weakened and could collapse under the weight of a vehicle.
- Do not let children play in or near floodwaters, flooded creeks or flood retention ponds.
- Stay away from downed power lines. Report them to the utility company immediately.
- If unaffected by the flood, stay out of the area until allowed to enter by officials. Your presence may hamper emergency operations.
- Monitor the radio for special information about where to go to get assistance for housing, clothing and food. Other programs are available to help you cope with the stress of the situation.

SOURCES OF WEATHER AND WEATHER SAFETY INFORMATION

For additional information on severe weather or other hazards, contact the following:

- Your local Emergency Management Agency (EMA/ESDA)
- Your local chapter of the American Red Cross (ARC) or www.redcross.org
- The nearest office of the National Weather Service (NWS)
- Illinois Emergency Management Agency website at www.state.il.us/iema
- National Weather Service Forecast Office websites:
 - Chicago (Romeoville), IL www.crh.noaa.gov/lot
 - Davenport, IA www.crh.noaa.gov/dvn
 - Green Bay, WI www.crh.noaa.gov/grb
 - Lincoln, IL www.crh.noaa.gov/ilx
 - Milwaukee (Sullivan), WI www.crh.noaa.gov/mkx
 - St. Louis, MO www.crh.noaa.gov/lx
 - Paducah, KY www.crh.noaa.gov/vah

NOAA WEATHER RADIO

Listen to NOAA Weather Radio for the latest weather forecasts. The National Weather Service broadcasts weather information, including watches, warnings and advisories 24 hours a day. Weather radio transmitters have a range of about 40 miles. Weather radio transmitters that cover Illinois are shown below. To find the weather radio transmitter that serves your location, go to the following web site: For Illinois, go to: www.nws.noaa.gov/nwr/CnlyCov/nwrIL.htm. For Wisconsin, go to: www.nws.noaa.gov/nwr/CnlyCov/nwrWI.htm.

NWR Specific Area Message Encoding (SAME) Code

Using the SAME code for your location will enable your weather radio to alert you **only** of weather and other emergencies for the county(s)/ area(s) programmed. NWR receivers without the SAME capability alert for emergencies anywhere within the coverage area of the NWR transmitter, typically several counties, even though the emergency could be well away from the listener.

- When an NWS office broadcasts a warning, watch or non-weather emergency, it also broadcasts a digital SAME code that may be heard as a very brief static burst, depending on the characteristics of the receiver. This SAME code contains the type of message, county(s) affected, and message expiration time.
- A programmed NWR SAME receiver will turn on for that message, with the listener hearing the 1050 Hz warning alarm tone as an attention signal, followed by the broadcast message.
- At the end of the broadcast message, listeners will hear a brief digital end-of-message static burst followed by a resumption of the NWR broadcast cycle.

SAME is also used in the Emergency Alert System (EAS). Using SAME, broadcasters may receive NWR warning messages for rebroadcast in accordance with EAS rules.

Illinois

County Coverage

<u>COUNTY/ CITY/AREA</u>	<u>NWR SAME #</u>	<u>TRANSMITTER</u>	<u>FREQ.</u>	<u>REMARKS</u>				
Adams	017001	Hannibal, MO	162.475					
Adams	017001	Kahoka, MO	162.450	NW				
Adams	017001	Macomb	162.500					
Alexander	017003	Cape Girardeau, MO	162.550					
Alexander	017003	Marion	162.425					
Bond	017005	Salem	162.475					
Boone	017007	Crystal Lake	162.500					
Boone	017007	DeKalb	162.550					
Boone	017007	Rockford	162.475					
Brown	017009	Hannibal, MO	162.475					
Brown	017009	Jacksonville	162.525					
Brown	017009	Macomb	162.500					
Bureau	017011	Dixon	162.525					
Bureau	017011	Princeton	162.425					
Calhoun	017013	Jerseyville	162.450					
Carroll	017015	Dixon	162.525					
Carroll	017015	Dubuque, WI	162.400	W 1/2				
Carroll	017015	Freeport	162.450					
Carroll	017015	Maquoketa, IA	162.425					
Cass	017017	Jacksonville	162.525					
Cass	017017	Macomb	162.500					
Cass	017017	Springfield	162.400					
Champaign	017019	Champaign	162.550					
Christian	017021	Shelbyville	162.500					
Christian	017021	Springfield	162.400					
Clark	017023	Newton	162.450					
Clark	017023	Paris	162.525					
Clay	017025	Newton	162.450					
Clinton	017027	Salem	162.475					
Coles	017029	Champaign	162.550					
Coles	017029	Paris	162.525					
Cook	017031	Chicago	162.550					
Cook	017031	Crystal Lake	162.500					
Cook	017031	Lockport	162.425					
Crawford	017033	Newton	162.450					
Cumberland	017035	Newton	162.450					
De Witt	017039	Champaign	162.550					
De Witt	017039	Springfield	162.400					
DeKalb	017037	DeKalb	162.550					
DeKalb	017037	Plano	162.400					
DeKalb	017037	Rockford	162.475					
Douglas	017041	Champaign	162.550					
Douglas	017041	Paris	162.525					
DuPage	017043	Chicago	162.550					
DuPage	017043	Lockport	162.425					
DuPage	017043	Plano	162.400					
Edgar	017045	Champaign	162.550					
Edgar	017045	Paris	162.525					
Edwards	017047	Evansville, IN	162.550					
Edwards	017047	Newton	162.450					
Effingham	017049	Newton	162.450					
Effingham	017049	Shelbyville	162.500					
Fayette	017051	Salem	162.475					
Fayette	017051	Shelbyville	162.500					
Ford	017053	Champaign	162.550					
Ford	017053	Crescent City	162.500					
Ford	017053	Odell	162.450					
Franklin	017055	Marion	162.425					
Fulton	017057	Macomb	162.500					
Fulton	017057	Peoria	162.475					
Gallatin	017059	McLeansboro	162.400					
Greene	017061	Jacksonville	162.525					
Greene	017061	Jerseyville	162.450					
Grundy	017063	Lockport	162.425					
Grundy	017063	Odell	162.450					
Grundy	017063	Plano	162.400					
Hamilton	017065	McLeansboro	162.400					
Hancock	017067	Burlington, IA	162.525	N				
Hancock	017067	Kahoka, MO	162.450					
Hancock	017067	Macomb	162.500					
Hardin	017069	Marion	162.425					
Henderson	017071	Burlington, IA	162.525					
Henderson	017071	Macomb	162.500					
Henry	017073	Princeton	162.425	E				
Henry	017073	Quad Cities	162.550					
Iroquois	017075	Crescent City	162.500					
Iroquois	017075	Kankakee	162.525					
Iroquois	017075	Odell	162.450					
Jackson	017077	Marion	162.425					
Jasper	017079	Newton	162.450					
Jefferson	017081	Salem	162.475					
Jersey	017083	Jerseyville	162.450					
Jo Daviess	017085	Dubuque, WI	162.400					
Jo Daviess	017085	Freeport	162.450					
Jo Daviess	017085	Maquoketa, IA	162.425					
Johnson	017087	Marion	162.425					
Kane	017089	Crystal Lake	162.500					
Kane	017089	DeKalb	162.550					
Kane	017089	Lockport	162.425					
Kane	017089	Plano	162.400					
Kankakee	017091	Crescent City	162.500					
Kankakee	017091	Kankakee	162.525					
Kankakee	017091	Lockport	162.425					
Kankakee	017091	Odell	162.450					
Kendall	017093	Lockport	162.425					
Kendall	017093	Plano	162.400					
Knox	017095	Galesburg	162.400					
Knox	017095	Macomb	162.500					
Knox	017095	Peoria	162.475					
La Salle	017099	Odell	162.450					
La Salle	017099	Plano	162.400					
La Salle	017099	Princeton	162.425	W				
Lake	017097	Crystal Lake	162.500					
Lake	017097	Racine, WI	162.450					
Lawrence	017101	Newton	162.450					
Lee	017103	DeKalb	162.550	East				
Lee	017103	Dixon	162.525					
Lee	017103	Princeton	162.425	S				
Lee	017103	Rockford	162.475					
Livingston	017105	Odell	162.450					
Logan	017107	Springfield	162.400					
Macon	017115	Springfield	162.400					
Macoupin	017117	Hillsboro	162.425					
Macoupin	017117	Springfield	162.400	N 1/2				
Madison	017119	St. Louis, MO	162.550					
Marion	017121	Salem	162.475					
Marshall	017123	Odell	162.450					
Marshall	017123	Peoria	162.475					
Marshall	017123	Princeton	162.425					
Mason	017125	Macomb	162.500					
Mason	017125	Peoria	162.475					
Mason	017125	Springfield	162.400					

Massac	017127	Marion	162.425	
Massac	017127	Mayfield, KY	162.475	
McDonough	017109	Macomb	162.500	
McHenry	017111	Crystal Lake	162.500	
McHenry	017111	Racine, WI	162.450	
McLean	017113	Bloomington	162.525	
McLean	017113	Odell	162.450	
McLean	017113	Peoria	162.475	
Menard	017129	Springfield	162.400	
Mercer	017131	Burlington, IA	162.525	SW
Mercer	017131	Quad Cities	162.550	
Monroe	017133	St. Louis, MO	162.550	
Montgomery	017135	Hillsboro	162.425	
Montgomery	017135	Springfield	162.400	N 1/2
Morgan	017137	Jacksonville	162.525	
Morgan	017137	Springfield	162.400	
Moultrie	017139	Champaign	162.550	
Ogle	017141	DeKalb	162.550	East
Ogle	017141	Dixon	162.525	
Ogle	017141	Freeport	162.450	
Ogle	017141	Rockford	162.475	
Peoria	017143	Peoria	162.475	
Perry	017145	Chester	162.450	
Perry	017145	Marion	162.425	
Piatt	017147	Champaign	162.550	
Pike	017149	Hannibal, MO	162.475	
Pike	017149	Jacksonville	162.525	
Pope	017151	Marion	162.425	
Pope	017151	Mayfield, KY	162.475	
Pulaski	017153	Marion	162.425	
Putnam	017155	Peoria	162.475	
Putnam	017155	Princeton	162.425	
Randolph	017157	Chester	162.450	
Rochland	017159	Newton	162.450	
Rock Island	017161	Quad Cities	162.550	
Saline	017165	Marion	162.425	
Saline	017165	McLeansboro	162.400	
Sangamon	017167	Springfield	162.400	

Schuyler	017169	Macomb	162.500	
Scott	017171	Jacksonville	162.525	
Shelby	017173	Shelbyville	162.500	
St. Clair	017163	St. Louis, MO	162.550	
Stark	017175	Peoria	162.475	
Stark	017175	Princeton	162.425	
Stephenson	017177	Freeport	162.450	
Stephenson	017177	Rockford	162.475	
Tazewell	017179	Bloomington	162.525	
Tazewell	017179	Peoria	162.475	
Union	017181	Cape Girardeau, MO	162.550	
Union	017181	Marion	162.425	
Vermilion	017183	Champaign	162.550	
Vermilion	017183	Crescent City	162.500	
Wabash	017185	Evansville, IN	162.550	
Warren	017187	Burlington, IA	162.525	W
Warren	017187	Galesburg	162.400	
Warren	017187	Macomb	162.500	
Washington	017189	Salem	162.475	
Wayne	017191	Newton	162.450	
Wayne	017191	Salem	162.475	
White	017193	Evansville, IN	162.550	
White	017193	McLeansboro	162.400	
Whiteside	017195	Dixon	162.525	
Whiteside	017195	Princeton	162.425	SE
Whiteside	017195	Quad Cities	162.550	
Will	017197	Kankakee	162.525	
Will	017197	Lockport	162.425	
Will	017197	Odell	162.450	
Will	017197	Plano	162.400	
Williamson	017199	Marion	162.425	
Winnebago	017201	DeKalb	162.550	
Winnebago	017201	Freeport	162.450	
Winnebago	017201	Rockford	162.475	
Woodford	017203	Bloomington	162.525	
Woodford	017203	Odell	162.450	
Woodford	017203	Peoria	162.475	

Wisconsin County Coverage

<u>COUNTY/ CITY/AREA</u>	<u>NWR SAME #</u>	<u>TRANSMITTER</u>	<u>FREQ.</u>	<u>REMARKS</u>
Adams	055001	Baraboo	162.450	
Adams	055001	Coloma	162.400	
Ashland	055003	Ashland	162.525	
Ashland	055003	Park Falls	162.500	
Barron	055005	Ladysmith	162.550	
Barron	055005	Menomonie	162.400	
Barron	055005	Spooner	162.475	
Bayfield	055007	Ashland	162.525	
Bayfield	055007	Duluth, MN	162.550	
Brown	055009	Green Bay	162.550	
Buffalo	055011	LaCrescent, MN	162.550	
Buffalo	055011	Rochester, MN	162.475	
Buffalo	055011	Winona	162.425	
Burnett	055013	Pine City, MN	162.425	
Burnett	055013	Spooner	162.475	
Calumet	055015	Fond Du Lac	162.500	
Calumet	055015	Green Bay	162.550	
Chippewa	055017	Ladysmith	162.550	
Chippewa	055017	Menomonie	162.400	
Chippewa	055017	Withee	162.425	
Clark	055019	Black River Falls	162.500	
Clark	055019	Wausau	162.475	
Clark	055019	Withee	162.425	
Columbia	055021	Baraboo	162.450	
Columbia	055021	Madison	162.550	

Crawford	055023	LaCrescent, MN	162.550	
Crawford	055023	Prairie Du Chien	162.500	
Dane	055025	Baraboo	162.450	
Dane	055025	Madison	162.550	
Dodge	055027	Fond Du Lac	162.500	
Dodge	055027	Madison	162.550	
Dodge	055027	Milwaukee	162.400	
Door	055029	Green Bay	162.550	
Door	055029	Sister Bay	162.425	
Douglas	055031	Duluth, MN	162.550	
Douglas	055031	Spooner	162.475	
Dunn	055033	Menomonie	162.400	
Eau Claire	055035	Black River Falls	162.500	
Eau Claire	055035	Menomonie	162.400	
Eau Claire	055035	Withee	162.425	
Florence	055037	Crandon	162.450	
Fond du Lac	055039	Fond Du Lac	162.500	
Fond du Lac	055039	Milwaukee	162.400	
Fond du Lac	055039	Sheboygan	162.525	
Forest	055041	Crandon	162.450	
Forest	055041	Rhineland	162.400	
Grant	055043	Dubuque	162.400	
Grant	055043	Prairie Du Chien	162.500	
Green	055045	Freeport, IL	162.450	
Green	055045	Madison	162.550	
Green	055045	Rockford, IL	162.475	
Green Lake	055047	Coloma	162.400	

Green Lake	055047	Fond Du Lac	162.500		Portage	055097	Coloma	162.400	
Iowa	055049	Baraboo	162.450		Portage	055097	New London	162.525	
Iowa	055049	Madison	162.550		Portage	055097	Wausau	162.475	
Iron	055051	Ashland	162.525		Price	055099	Ladysmith	162.550	
Iron	055051	Park Falls	162.500		Price	055099	Park Falls	162.500	
Jackson	055053	Black River Falls	162.500		Price	055099	Rhineland	162.400	
Jackson	055053	LaCrescent, MN	162.550		Racine	055101	Milwaukee	162.400	
Jefferson	055055	Madison	162.550		Racine	055101	Racine	162.450	
Jefferson	055055	Milwaukee	162.400		Richland	055103	Baraboo	162.450	
Juneau	055057	Baraboo	162.450		Richland	055103	Richland Center	162.475	
Juneau	055057	Coloma	162.400		Rock	055105	Janesville	162.425	
Kenosha	055059	Crystal Lake, IL	162.500		Rock	055105	Madison	162.550	
Kenosha	055059	Milwaukee	162.400		Rock	055105	Rockford, IL	162.475	
Kenosha	055059	Racine	162.450		Rusk	055107	Ladysmith	162.550	
Kewaunee	055061	Green Bay	162.550		Rusk	055107	Menomonie	162.400	
La Crosse	055063	LaCrescent, MN	162.550		Rusk	055107	Withee	162.425	
La Crosse	055063	Winona	162.425		Sauk	055111	Baraboo	162.450	
Lafayette	055065	Dubuque	162.400		Sauk	055111	Madison	162.550	
Lafayette	055065	Freeport, IL	162.450		Sawyer	055113	Ladysmith	162.550	
Lafayette	055065	Madison	162.550		Sawyer	055113	Park Falls	162.500	
Langlade	055067	Crandon	162.450		Shawano	055115	Green Bay	162.550	E 1/2
Langlade	055067	Rhineland	162.400		Shawano	055115	New London	162.525	
Langlade	055067	Wausau	162.475		Shawano	055115	Wausau	162.475	W 1/2
Lincoln	055069	Rhineland	162.400		Sheboygan	055117	Fond Du Lac	162.500	
Lincoln	055069	Wausau	162.475		Sheboygan	055117	Milwaukee	162.400	S 1/2
Manitowoc	055071	Green Bay	162.550		Sheboygan	055117	Sheboygan	162.525	
Manitowoc	055071	Sheboygan	162.525		St. Croix	055109	Menomonie	162.400	
Marathon	055073	Wausau	162.475		St. Croix	055109	Minneapolis/St. Paul, MN	162.550	
Marathon	055073	Withee	162.425		Taylor	055119	Ladysmith	162.550	
Marinette	055075	Crandon	162.450		Taylor	055119	Wausau	162.475	
Marinette	055075	Green Bay	162.550	S 1/2	Taylor	055119	Withee	162.425	
Marinette	055075	Sister Bay	162.425		Trempealeau	055121	Black River Falls	162.500	
Marinette	055075	Wausaukee	162.400		Trempealeau	055121	LaCrescent, MN	162.550	
Marquette	055077	Baraboo	162.450		Trempealeau	055121	Winona	162.425	
Marquette	055077	Coloma	162.400		Vernon	055123	Baraboo	162.450	
Menominee	055078	Green Bay	162.550	E 1/2	Vernon	055123	LaCrescent, MN	162.550	
Menominee	055078	New London	162.525		Vernon	055123	Richland Center	162.475	
Menominee	055078	Wausau	162.475	W 1/2	Vilas	055125	Crandon	162.450	
Milwaukee	055079	Milwaukee	162.400		Vilas	055125	Park Falls	162.500	W 1/3
Milwaukee	055079	Racine	162.450		Vilas	055125	Rhineland	162.400	
Monroe	055081	Black River Falls	162.500		Walworth	055127	Crystal Lake, IL	162.500	
Monroe	055081	Coloma	162.400	E 1/2	Walworth	055127	Milwaukee	162.400	
Monroe	055081	LaCrescent, MN	162.550		Walworth	055127	Racine	162.450	
Oconto	055083	Crandon	162.450		Washburn	055129	Ladysmith	162.550	
Oconto	055083	Green Bay	162.550	SE 1/2	Washburn	055129	Spooner	162.475	
Oconto	055083	Wausaukee	162.400		Washington	055131	Fond Du Lac	162.500	
Oneida	055085	Crandon	162.450		Washington	055131	Milwaukee	162.400	
Oneida	055085	Park Falls	162.500		Washington	055131	Sheboygan	162.525	
Oneida	055085	Rhineland	162.400		Waukesha	055133	Milwaukee	162.400	
Oneida	055085	Wausau	162.475		Waukesha	055133	Racine	162.450	
Outagamie	055087	Green Bay	162.550		Waupaca	055135	New London	162.525	
Outagamie	055087	New London	162.525		Waupaca	055135	Wausau	162.475	
Ozaukee	055089	Milwaukee	162.400		Wausara	055137	Coloma	162.400	
Ozaukee	055089	Sheboygan	162.525		Wausara	055137	New London	162.525	
Pepin	055091	Menomonie	162.400		Winnebago	055139	Fond Du Lac	162.500	
Pierce	055093	Menomonie	162.400		Winnebago	055139	Green Bay	162.550	
Pierce	055093	Minneapolis/St. Paul, MN	162.550		Winnebago	055139	New London	162.525	
Polk	055095	Menomonie	162.400		Wood	055141	Black River Falls	162.500	
Polk	055095	Minneapolis/St. Paul, MN	162.550	SW	Wood	055141	Coloma	162.400	
Polk	055095	Pine City, MN	162.425		Wood	055141	Wausau	162.475	
Polk	055095	Spooner	162.475		Wood	055141	Withee	162.425	

Adopted from publications of the National Weather Service Forecast Offices and the American Red Cross

Home Survival Kit Plan (Plan for up to three days of supplies)

- First aid kit and essential medications
- Non-perishable food and can opener
- At least one gallons of water per person, per day, for drinking and sanitation
- Protective clothing, rainwear, bedding or sleeping bags
- Battery-powered radio or TV, flashlight and extra batteries for each
- Special items for infant, elderly or disabled family members
- Emergency heating/cooking source
- Heating fuel (propane, kerosene, fuel oil, etc.)
- Large garbage bags and a roll of duct tape
- Fire extinguisher and smoke detector
- Written instructions on how to turn off electricity, gas and water if authorities advise you to do so (Remember, you'll need a professional to turn natural gas service back on)

Car/Truck Survival Kit

- Blankets/sleeping bags
- Flashlight with extra batteries
- Knife and/or Multi-tool
- High calorie, non-perishable food
- A smaller can and waterproof matches to melt snow for drinking water
- Sand or cat litter
- Shovel
- Windshield scraper
- Tool kit
- Towrope
- Jumper cables
- Water container
- Large garbage bags and a roll of duct tape
- Compass
- Local road maps

Frequently Asked Questions

1. Regarding the lightning threat, what about metal tent supports, wire bed frames, handling cooking utensils, wearing a metal-framed backpack, rubber-soled shoes, plastic frame packs, non-metallic tent supports, wooden flooring, etc., etc., etc.?

A lightning flash nearing the ground during its descent has found a path through thousands of feet of air, which acts as an excellent insulator. The presence or absence of a metallic object in your vicinity is very unlikely to make any meaningful difference in the threat from that approaching lightning channel. If you are attached to a wire or metal object that reaches well up above your surroundings, that would make a difference! Otherwise, none of the objects in your immediate vicinity will have a significant effect on your risk of being struck by lightning. Your body . . . essentially a bag of salty water (plus assorted chemicals) . . . is already an excellent conductor of electricity and a thin insulating layer (like a wooden floor, or rubber-soled shoes) is not going to stop a flash from going through you to the ground. Such things also will neither protect you from, nor enhance your chances of, being hit by ground currents or side flashes from a lightning flash hitting nearby. Please remember ... the flash has gone through thousands of feet of insulating air even before it got close to you. All these nearby objects are virtually irrelevant.

2. If we have to go through an open area in order to reach shelter in a thunderstorm, should we do it?

If the lightning is already occurring near you, do not move into an open area wherein you would be the tallest object around. It's too late and you would be better off staying in an area surrounded by trees or other tall objects than taking a chance crossing an open area. If the lightning is not yet in your immediate vicinity but is approaching (the time from flash-to-bang is getting shorter), then if you have time to cross the open area to reach a better shelter, then do so quickly so that you're not caught in the open. If the flash-to-bang time is less than about 30 seconds, then you are most likely better off with the shelter you have.

3. Suppose we're caught on a hike by an approaching tornado. Should we seek shelter in ditches or ravines?

Sheltering in ditches or ravines is, at best, a poor choice that is only used as a last resort. First of all, make certain that you are actually in the path of the tornado . . . if it is not moving right-to-left or left-to-right, then it may be headed toward you. In the absence of a proper shelter (a cave, or some way to get below ground level), your best hope is to see if you can get out of the path in time. If the tornado is moving too rapidly for this to work, then a ditch or ravine may be your only option. When sheltering in a ditch, as noted above, cover your head with whatever you can, since ditches are often a place where debris is deposited . . . but it is preferable to being hit by flying debris, or being carried by the tornadic winds, which is how most people are injured in tornadoes. The problem with ditches and ravines in thunderstorms is that they might be swept by flash floods. Actually, it is very unlikely that you would be threatened by a tornado on a camping outing. Flash floods during thunderstorms, however, are much more likely.

4. Should we carry a battery-powered NOAA Weather Radio with us on our outings?

Provided you are likely to be constantly in range of a NOAA Weather Radio transmitter, I think this is an excellent idea! These are inexpensive, relatively light, and only one is needed for each group. Please check beforehand to determine whether or not your outing will be in range of a transmitter, though. You can check with the local office of the National Weather Service for information regarding the coverage areas for NOAA Weather Radio broadcasts.

Myths and Facts:

Myth: If it's not raining, then there is no danger from lightning.

Fact: Lightning often occurs as far as 10 miles away from any rainfall, in or around the future path of the storm.

Myth: Rubber shoe soles and auto tires will protect you from being struck.

Fact: These provide NO protection. The steel frame of a hardtop vehicle provides some protection, if you are not touching metal inside of the vehicle.

Myth: After being struck by lightning, a person carries an electrical charge, and should not be touched.

Fact: Not true. Attend to the victim without delay, CPR may be needed immediately.

Myth: "Heat lightning" without sound poses no threat, it simply occurs after very hot summer days.

Fact: This is from a thunderstorm too far away for the thunder to be heard. It may be moving in your direction.

EMERGENCY PROCEDURES FOR SCOUT SUMMER CAMPS

Thunderstorms

Includes procedures for: Hail, Lightning, High winds, and Tornado

- 1. Storm approach information** about possible severe storms will be received at the Administration Building, by one or more methods (Amateur radio, NOAA radio, or ESID storm detector). Unit leaders, Scouts, and Staff will be notified by radio or audible emergency signal. The Camp Director makes the decision when to sound which audible emergency signal, covered in number 3 and 4 below.

2. **Storm "Watch" condition.** This means conditions are favorable for a T-storm to develop. Camp Staff will notify each unit and program area. Adults should watch for and report any adverse weather changes to the Admin. Bldg., and be alert for the sounding of an audible emergency signal. Unit Leaders should take care not to unduly alarm Scouts or cause any panic, but should approach the situation in a calm manner.
3. **Storm "Warning" condition.** This means a T-storm is apparently approaching the Scout Camp. A typical T-storm may last between 15 minutes and approximately 1 hour. A wailing siren is the audible emergency signal for this condition, sounded from the Admin Building. All program areas will close immediately. Unit Leaders and Scouts will return to their campsites. Staff will report to the Admin Building. Upon return to campsites, Unit Leaders will conduct a headcount muster. If any person/s are not accounted for, a runner will be sent to the Admin Building with that information. Upon return to campsites, Unit Leaders and Scouts will secure their campsites, making sure all tents are tied down securely and flaps are tied shut. Follow instructions for lightning protection listed in Procedure #5 below. All personnel must be in tents, off the ground, on wood pallets. This is the best protection in campsites. Be alert for possible evacuation to the Dining Hall or other camp building. If in campsites, remain there until the "ALL CLEAR" - several short tones - is sounded. After every storm, Unit Leaders must check on the safe condition of all Scouts. Report any injuries or camp damage to the Admin Building.
4. **Evacuation to Dining Hall or other camp building for cover.** This step will be taken if information is received that severe wind, lightning, hail, or tornado is approaching. A continuous tone is the audible emergency signal to do this, sounded from the Admin Building. If time allows, runners and verbal notification may be made, instead of the above emergency signal. When in the Dining Hall for cover, all persons should stay away from the windows. The best cover is along the east and west walls near the side entrances, and along the back walls in the kitchen. In other camp buildings, the best cover is along an inside wall. All personnel should remain in the Dining Hall or other camp building until the "ALL CLEAR" - several short tones is sounded.
5. **If caught out of doors during an approaching storm.** Lightning is the hazard to protect most from. Avoid tall or isolated trees, open spaces, open water, wire fences, metal clotheslines, small sheds, metal equipment, wired telephones. Take off pack frames with external or internal metal frames. Some protection may be found in dense forest in a depressed area, under short trees, where taller trees on higher nearby areas offer protection. Do not huddle together in a group. Spread out at least 15 feet apart. If your skin tingles or hair tries to stand on end, immediately do the "LIGHTNING SAFE CROUCH". Squat low to the ground on the balls of your feet, with your feet close together. Place your hands on your knees, with your head between them. Be the smallest target possible, and minimize your contact with the ground.
6. **Flash Flood condition.** It is remotely possible after very heavy rain, for this condition to occur temporarily, especially in very low areas, or downstream of any lake dam overflow. Avoid low areas during and after heavy rains, especially after dark. All campsites are located out of such areas. Do not camp overnight close beside a stream.
7. **Serious injury or loss of life.** In this event, the Camp Director will begin official notification procedures. All media contacts will be conducted through the Camp Director. Staff and Scouts are not to contact or speak with the public media without the knowledge of the Camp Director.

LIGHTNING SAFE CROUCH

If caught out of doors during an approaching storm and your skin tingles or hair tries to stand on end, immediately do the "LIGHTNING SAFE CROUCH" (see picture at right).

Squat low to the ground on the balls of your feet, with your feet close together. Place your hands on your knees, with your head between them. Be the smallest target possible, and minimize your contact with the ground.



LIGHTNING SAFE CROUCH

Causes of Severe Weather

Thunderstorms

A thunderstorm forms when moist, unstable air is lifted vertically into the atmosphere. Lifting of this air results in condensation and the release of latent heat. The process to initiate vertical lifting can be caused by:

- Unequal warming of the surface of the Earth.
- Orographic lifting due to topographic obstruction of air flow.
- Dynamic lifting because of the presence of a frontal zone.

Immediately after lifting begins, the rising parcel of warm moist air begins to cool because of adiabatic expansion. At a certain elevation the dew point is reached resulting in condensation and the formation of a cumulus cloud. For the cumulus cloud to form into a thunderstorm, continued uplift must occur in an unstable atmosphere. With the vertical extension of the air parcel, the cumulus cloud grows into a cumulonimbus cloud. Cumulonimbus clouds can reach heights of 20 kilometers above the Earth's surface. Severe weather associated with some these clouds includes hail, strong winds, thunder, lightning, intense rain, and tornadoes.

Generally, two types of thunderstorms are common:

- **Air mass thunderstorms** which occur in the mid-latitudes in summer and at the equator all year long.
- **Thunderstorms associated with mid-latitude cyclone cold fronts or dry lines.**
This type of thunderstorm often has severe weather associated with it.

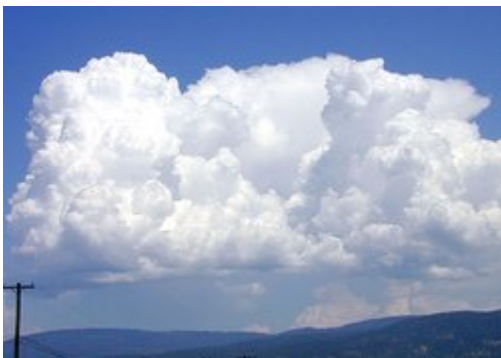


Figure 1: Developing thunderstorm cloud at the cumulus stage.

The most common type of thunderstorm is the air mass storm. Air mass thunderstorms normally develop in late afternoon hours when surface heating produces the maximum number of convection currents in the atmosphere. The life cycle of these weather events has three distinct stages. The first stage of air mass thunderstorm development is called the cumulus stage (Figure 1). In this stage, parcels of warm humid air rise and cool to form clusters of puffy white cumulus clouds. The clouds are the result of condensation and deposition which releases large quantities of latent heat. The added heat energy keeps the air inside the cloud warmer than the air around it. The cloud continues to develop as long as more humid air is added to it from below. Updrafts dominate the circulation patterns within the cloud.



Figure 2: Mature thunderstorm cloud with typical anvil shaped cloud.



Figure 3: Downdrafts from this mature thunderstorm are moving air and rain from the cloud to the ground surface

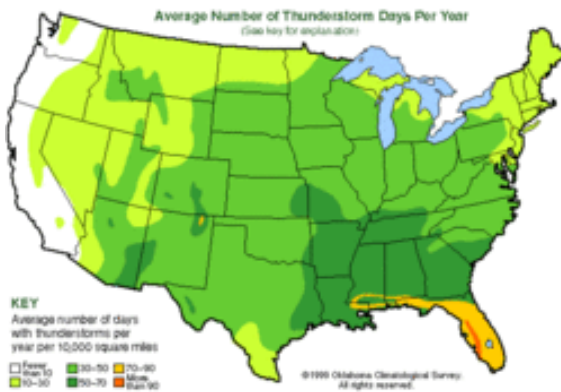


Figure 4: Average number of thunderstorm days per year in the United States.

clouds are further enhanced to become thunderstorms. Few thunderstorms occur along the west coast of the United States. This region is dominated by cool maritime polar air masses which suppress convective uplift over land.

Severe Thunderstorms

Most thunderstorms are of the variety described above. However, some can form into more severe storms if the conditions exist to enhance and prolong the mature stage of development. Severe thunderstorms are defined as convective storms with frequent lightning, accompanied by local wind gusts of 50-60 miles per hour, or hail that is $\frac{3}{4}$ inch in diameter or larger. Severe thunderstorms can also have tornadoes.

In most severe thunderstorms, the movement of the storm, in roughly an easterly direction, can refresh the storm's supply of warm humid air. With a continual supply of latent heat energy, the

The mature thunderstorm begins to decrease in intensity and enters the dissipating stage after about half an hour. Air currents within the convective storm are now mainly downdrafts as the supply of warm moist air from the lower atmosphere is depleted. Within about 1 hour, the storm is finished and precipitation has stopped.

Thunderstorms form from the equator to as far north as Alaska. They occur most commonly in the tropics where convective heating of moist surface air occurs year round. Many tropical land-based locations experience over 100 thunderstorm days per year. Thunderstorm formation over tropical oceans is less frequent because these surfaces do not warm rapidly. Outside the tropics, thunderstorm formation is more seasonal occurring in those months where heating is most intense.

Figure 4 describes the annual average number of thunderstorm days across the United States. According to this map, the greatest incidence of thunderstorms occurs in the southeast and in parts of Colorado, Arizona, and New Mexico. This particular spatial distribution suggests that extreme solar heating is not the only requirement for thunderstorm formation. Another important prerequisite is the availability of warm moist air. In the United States, the Gulf of Mexico supplies adjacent continental areas with moist maritime tropical air masses. These air masses are relatively unstable, quickly forming cumulonimbus clouds when surface heating is intense. The secondary maximums found in Colorado, Arizona, and New Mexico are due to another climatic factor. All of these areas are on the leeward side of the Rocky Mountains. Mountain slopes in these areas that face the sun absorb more direct solar radiation and become relatively warmer creating strong updrafts that form into cumulus clouds. If the differential heating is also supplemented by winds from the east, the cumulus

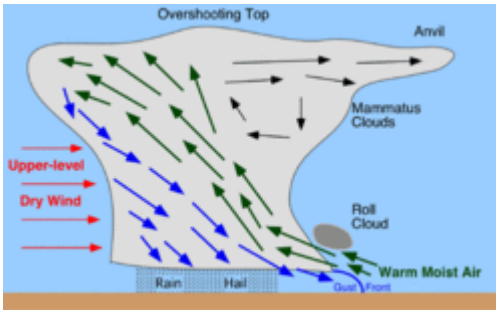


Figure 5: Model of the major features and circulation patterns associated with a severe thunderstorm.

updrafts and downdrafts within the storm become balanced and the storm maintains itself indefinitely. Movement of the severe storm is usually caused by the presence of a mid-latitude cyclone cold front or a dry line some 60 to 180 miles ahead of a cold front. In the spring and early summer, frontal cyclones are common weather events that move from west to east in the mid-latitudes. At the same time, the ground surface in the mid-latitudes is receiving elevated levels of insolation which creates ideal conditions for air mass thunderstorm formation. When the cold front or dry line of a frontal cyclone comes in contact with this warm air, it pushes it like a bulldozer both horizontally and vertically. If this air has a high humidity and extends some distance to the east, the movement of the mid-latitude cyclone enhances vertical uplift in the storm and keeps the thunderstorms supplied with moisture and energy. Thus, the mid-latitude cyclone converts air mass thunderstorms into severe thunderstorms that last for many hours. Severe thunderstorms dissipate only when no more warm moist air is encountered. This condition occurs several hours after nightfall when the atmosphere begins to cool off.

Figure 5 illustrates the features associated with a severe thunderstorm. This storm would be moving from left to right because of the motion associated with a mid-latitude cyclone. The upper-level dry air wind is generated from the mid-latitude cyclone. It causes the tilting of vertical air currents within the storm so that the updrafts move up and over the downdrafts. The green arrows represent the updrafts which are created as warm moist air is forced into the front of the storm. At the back end of the cloud, the updrafts swing around and become downdrafts (blue arrows). The leading edge of the downdrafts produces a gust front near the surface. As the gust front passes, the wind on the surface shifts and becomes strong with gusts exceeding 60 miles per hour, temperatures become cold, and the surface pressure rises. Warm moist air that rises over the gust front may form a roll cloud. These clouds are especially prevalent when an inversion exists near the base of the thunderstorm.

Some severe thunderstorms develop a strong vertical updraft, commonly known as a mesocyclone. Mesocyclones measure about 3 to 10 kilometers across and extend from the storm's base to its top. They are also found in the southwest quadrant of the storm. In some cases, mesocyclones can overshoot the top of the storm and form a cloud dome (Figure 5). About half of all mesocyclones spawn tornadoes. When a tornado occurs, the mesocyclone lengthens vertically, constricts, and spirals down to the ground surface. Scientists speculate that mesocyclones form when strong horizontal upper air winds interact with normally occurring updrafts. The shearing effect of this interaction forces the horizontal wind to flow upward intensifying the updraft.

Tornadoes

A sequence of images showing the birth of a tornado.

First, the rotating cloud base lowers. This lowering becomes a funnel, which continues descending while winds build near the surface, kicking up dust and other debris. Finally, the visible funnel extends to the ground, and the tornado begins causing major damage. This tornado, near Dimmitt, Texas, was one of the best-observed violent tornadoes in history.



Notes and Important Phone Numbers:

Your Council Office: Northeast Illinois Council (00129) Telephone: 1(847) 433-1813
2745 Skokie Valley Road
Highland Park, IL

Program Director James Neubaum 847-748-9154 James.Neubaum@scouting.org

Your District Executive:	District	Name	Direct Number
	Aptakisic District		847-748-9168
	Director	Tiffany Bumgardner	847-748-9157
	District Executive	Anna Knepler	847-748-9149
	North Star District		
	Director	James Westfall	847-748-9158
	Executive	Erin Buhrmester	847-748-9152
	Potawatomi District		
	Director	Carl Bobis	847-748-9148
	Executive	Kofi Anaman	847-748-9156

Your Unit Charter Representative: _____ Telephone: 1()

Your Unit Committee Chair: _____ Telephone: 1()

Centers for Disease Control and Prevention (CDC): 800-CDC-INFO
(800-232-4636)
TTY: (888) 232-6348
24 Hours/Every Day

Illinois State Patrol: Use 911 to get local assistance

Wisconsin State Patrol: Use 911 to get local assistance

**Scouter's Guide
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Camping and Other Outdoor Activities