

TENNESSEE

Severe Weather

AWARENESS WEEK



Morgan County November 10th, 2002



Chattanooga Flooding May 2003

February 18th - 24th 2004

Are You Prepared? Do You Know What to Do?



**WEATHER FORECAST
OFFICE
MORRISTOWN, TENNESSEE**



TENNESSEE SEVERE WEATHER AWARENESS WEEK

February 22 - 28, 2004

Governor Phil Bredesen has proclaimed **February 22 - 28, 2004** as "**SEVERE WEATHER AWARENESS WEEK**" in Tennessee. The National Weather Service, Tennessee Emergency Management Agency, and other supporting organizations ask your help in providing the public with information about severe weather safety. Advanced planning and increased awareness will help Tennesseans survive these deadly storms.

Throughout the week, the National Weather Service, Tennessee Emergency Management Agency and other supporting groups will conduct educational activities and drills to help people prevent injuries and deaths from tornadoes, damaging winds, flash floods, lightning, and hail. Each day of the week focuses on a specific type of severe weather or on the warning and drill system.

Monday, February 23, begins the work week with a look at **Severe Thunderstorms**. Damaging winds from severe thunderstorms are much more frequent than tornadoes in the Southeast U.S. These straight line winds can reach well over 100 miles an hour and can be devastating.

Tuesday, February 24, will focus on **lightning**, one of the underrated killers. All thunderstorms have lightning and this hazard can be deceptively deadly.

Wednesday, February 25, will emphasize **Tornado Safety**. Over and over again, people survive tornadic weather by knowing weather safety rules and taking appropriate and timely actions. **A state-wide tornado drill** will be conducted on this day. Schools and state, county, and other interested agencies are encouraged to participate and help everyone learn life saving rules. Friday will be the alternate drill day if adverse weather is expected on Wednesday.

Thursday, February 26, draws attention to hazards of **Flooding and Flash Floods**. Flooding is the number one weather killer in the United States. Flash Floods are most prevalent in the east half of Tennessee while River Flooding is more common in the western sections.

Friday, February 27, will be the **NOAA Weather Radio and Emergency Alert System Day**.

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Saturday, February 28, will highlight **SKYWARN** (Amateur Radio Volunteers) and the **Emergency Managers Weather Information System (EMWIN)**.

Please contact one of the National Weather Service Offices listed below if you need more information.

Memphis.....	Scott Cordero.....	(901) 544-0411
Memphis.....	James Duke.....	(901) 544-0407
Nashville.....	Jerry Orchanian.....	(615) 754-4634
Nashville.....	Larry Vannozzi.....	(615) 754-4634
Morristown.....	Howard Waldron.....	(423) 586-8706
Morristown.....	Jerry McDuffie.....	(423) 586-6429



StormReady

StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather...from tornadoes to tsunamis. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear cut guidelines on how to improve their hazardous weather operations.

To be officially StormReady, a community must:

- *Establish a 24 hour warning point and emergency operations center.
- *Have more than one way to receive severe weather warnings and forecasts to alert the public.
- *Create a system that monitors weather locally.
- *Promote the importance of public readiness through community seminars.
- *Develop a formal hazardous weather plan, which includes training severe weather spotters, and holding emergency exercises.

For more information on what is required for your community contact Howard Waldron at the National Weather Service Forecast Office in Morristown at (423)-586-8706 or Jerry McDuffie at

(423)-586-6429.

StormReady information is available on the Internet website: www.nws.noaa.gov/stormready/ .

Severe Thunderstorm Day

Monday, February 23, 2004

Severe thunderstorms can strike any time of the year. Severe thunderstorms and tornadoes, are more frequent in the spring months of March, April and May. Tennessee also has a "secondary" severe weather season in November and December. Severe thunderstorms can, and do, occur anytime of the day and night and during any month of the year.

Damaging thunderstorm winds are much more common in Tennessee than tornadoes.

The National Weather Service defines a thunderstorm as “**severe**” when wind speeds reach **58 mph (50 kts)** or stronger and/or 3/4 in hail (or larger) falls from the storm. Winds from severe thunderstorms can well exceed 100 mph, overturning trailers, unroofing homes, and toppling trees and power lines. Most of the storm damage in the Southeast U.S. is caused by “straight line winds” from thunderstorm downbursts. Severe Thunderstorm wind speeds may exceed the wind speeds of a weak tornadoes. All thunderstorms are capable of producing deadly lightning.

PLEASE NOTE:
Severe thunderstorms can produce

tornadoes with little or no warning!!

Severe Thunderstorm Safety Rules

FIND SHELTER IMMEDIATELY. Go to a sturdy building that will withstand high winds. Avoid electrical appliances, metal pipes and corded telephones.

When a **Severe Thunderstorm Warning** is issued for your location, treat it the same as you would a **Tornado Warning**.

Remember that severe thunderstorms can produce damaging winds, large hail and deadly lightning.

Hail Size Estimates (Diameter in inches)

Pea..... 1/4 inch	Golfball..... 1 3/4 inch
Penny..... 3/4 inch	Tennis Ball... 2 1/2 inch
Quarter..... 1 inch	Baseball..... 2 3/4 inch
Half Dollar.. 1 1/4 inch	Grapefruit... 4 inch

Wind Speed Estimates

Speed (MPH)	Effects
25-31	Large branches in motion; whistling in telephone wires
32-38	Whole trees in motion
39-54	Twigs Break off of trees; wind impedes walking
55-72	Damage to chimneys and TV antennas; pushes over shallow rooted trees
73-112	Peels surface off roofs; windows broken; trailer homes overturned large trees uprooted.

Lightning

The Underrated Killer

Tuesday February 24, 2004

EVERY THUNDERSTORM CONTAINS LIGHTNING.

What is Lightning?

The action of rising and descending air within a thunderstorm separates positive and negative electrical charges. Lightning results from the buildup and discharge of electrical energy between these positively and negatively charged areas. Lightning charges may reach as high as 100 million volts. This electrical charge is always searching for the path of least resistance to complete the circuit. Lightning will normally strike the tallest object in the area of the potential discharge. Tall trees, light poles and telephone lines are frequent

targets for lightning strikes. Lightning is always a potential killer. Whether the storm is a large spring-time severe storm or the more common afternoon variety, it contains this deadly killer. It may strike an isolated tree or an object out in the open, **or it may strike you**. Keep in mind that you do not have to be standing directly beneath a cloud to be hit. Lightning may strike many miles from the parent storm. **In an average year lightning will claim more victims than tornadoes or hurricanes!**

LIGHTNING SAFETY RULES OUTDOORS

Seek shelter inside a house, large building or an all metal vehicle with the windows rolled up (avoid convertibles).

If your hair stands on end and your skin tingles... lightning is about to strike. Take cover immediately.

If you can't find appropriate shelter, get down to avoid being the highest point for a lightning discharge. When caught in the open, seek shelter in a low area. Crouch down and cover your head with your hands. If you are with a group of people, everyone should scatter out before crouching.

If caught in a wooded area seek out the area with the smallest trees. Stand at least five feet from the trunk of the nearest tree to avoid flying bark, should the tree be hit by

lightning.

When boating, head for shore and get into a shelter, or vehicle. If caught in a boat, lie down in the boat with cushions between you and the boat's side and bottom.

AVOID

Large trees, hilltops and other high places. Chain link fences and any other metal fences like those around ball parks and play grounds.

Motorcycles, scooters, golf carts, small metal sheds, bicycles, tractors and farm equipment that does not have an enclosed metal cab.

Do you know what group of people are most likely to get struck by lightning? It is farmers, followed then by golfers.

LIGHTNING SAFETY RULES INDOORS



Stay away from windows.

Avoid telephones and electrical appliances (wires connecting to these devices

run outside of the home and act as lightning rods). Don't wash dishes or take a shower. The pipes will conduct electricity.

Unplug computers and other sensitive electrical devices (time permitting) since surge suppressors may not protect these items if lightning hits close to the home.

Remember, there is no truth to the old myth that "lightning never strikes twice."

Take time this week to learn or refresh your memory on lightning safety rules. That quick dash out in the open when a thunderstorm is in progress may unnecessarily expose you to the possibility of being struck. It is not worth the risk. **If a person is struck by lightning, there is no residual charge left on the body. The quick application of CPR may maintain vital body functions until medical help can be obtained.**

Large Hail - An Added Hazard

The strong rising currents of air within a storm, called updrafts, carry water droplets to a height where freezing occurs. Ice particles grow in size and become too heavy to be supported by the updraft and then fall to the ground as hail. Large hailstones may fall at speeds faster than 100 mph. Light reflecting from the large hail high up in the storm often gives the storm an eerie yellow

green color. This is an indication that this storm may be strong.

Hail rarely causes deaths, but injuries do occur. If you are outside, move inside a

building or car with a hard top. Make sure that outdoor pets and other animals have access to shelter.

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TORNADO AWARENESS AND DRILL DAY WEDNESDAY FEBRUARY 25, 2004

TORNADOES...WHAT ARE THEY?

NATURE'S MOST VIOLENT STORMS!

A **TORNADO** is a violently rotating column of air extending from the base of the thunderstorm and in contact with the ground (when it is not in contact with the ground, it is called a **FUNNEL CLOUD**). Tornado winds average 100 mph, but can exceed 300 mph. The strongest tornadoes develop from severe thunderstorms in atmospheric conditions with a wind profile that varies with height. Severe thunderstorms and tornadoes occur most often in the Mid-South in the months of March, April, and May. A secondary season occurs in the Fall, typically November and December. Most tornadoes occur in the afternoon and evening. However, tornadoes have occurred in every hour of the day and night and every month of the year. No location, time of day, or time of year is immune to tornado occurrences.



Your Safety will improve if you stay alert to the risk of tornadoes from thunderstorms that approach. This is especially true if a **TORNADO WATCH** is in effect. Conditions should be carefully monitored when severe thunderstorms are occurring, or are expected to occur.

Severe Thunderstorms can produce tornadoes with little or no warning.

A **TORNADO WATCH** means tornadoes may develop, so keep an eye to the sky for thunderstorms and the dangers they pose. Listen to NOAA Weather Radio, commercial radio, or TV for weather statements or warnings. A **WATCH** allows time to plan what to do if a tornado approaches. A watch usually spans several thousand square miles, and can cover parts of more than one state.

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Know the difference between a

**TORNADO WATCH
and a
TORNADO WARNING.**

A **TORNADO WARNING** means a tornado has been sighted, or is indicated on weather radar. Persons in the path of the tornado should seek shelter immediately.

Drill Day
WEDNESDAY, FEBRUARY 25, 2004
9:00 - 9:30 LOCAL TIME

A TORNADO DRILL will be conducted Wednesday morning, February 25, 2004, between 9:00 AM and 9:30 AM **Local Time**, weather permitting, as part of SEVERE WEATHER AWARENESS WEEK in Tennessee. If Wednesday's weather is inclement, the test will be Thursday, February 26, 2004 (same times).

Sometime during this hour, each National Weather Service office in the state will issue a drill message. These messages will be sent under the following NWS communication headers: **MEMTORMEM, MEMTORBNA and MEMTORMRX**. **Media outlets with automated systems that relay these headers may want to take special actions to optimize relay of these tests to meet their special needs on Drill Day.**

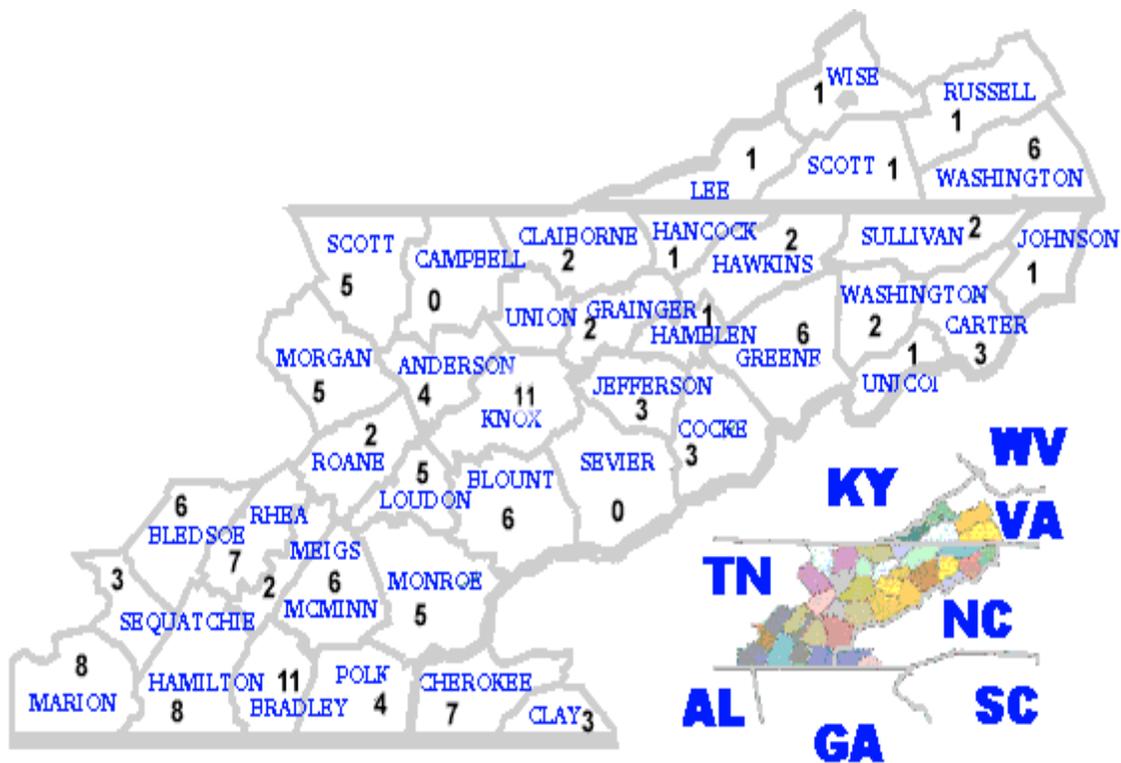
The test message will be broadcast on all NOAA Weather Radio Transmitters across Tennessee and those transmitters in North Mississippi that cover Tennessee counties.

We ask television and radio stations to relay the drill message to the public in the same manner as you would relay an actual tornado warning. This will allow the complete "Warning System" to be tested. We ask local emergency management agencies to activate their warning system (radio alerting devices, outdoor sirens, etc.) to make sure they work as expected.

A Drill such as this gives schools, churches, business offices and plant safety managers across the state a chance to check the readiness of their Severe Weather Safety plans. If your office has a plan already in place, test it to make sure your employees know how to respond properly. If your employees know how the safety procedures work, they can carry them out effectively when the time comes.

IF YOUR WORK PLACE, SCHOOL OR CHURCH DOES NOT HAVE A SAFETY PLAN, NOW IS THE TIME TO START ONE!! Developing a safety plan is not difficult. If a plan is easy to operate, it is more likely to be successful when needed. Countless lives are saved each year by planning, preparedness and proper education. The U.S. population has grown in recent years, yet the number of tornado deaths has diminished. This is due to agencies and individuals developing Weather Safety Plans and to people reacting in a prudent manner when severe weather threatens their areas.

**YOUR SAFETY AND THAT OF YOUR FAMILY, FRIENDS & CO-WORKERS
DEPENDS ON YOU!!**



Tornadoes for East Tennessee, Southwest North Carolina and Southwest Virginia 1950-2003

Our peak season for tornadoes is during March, April and May, and are most likely to occur between 3 PM and 9 PM. A secondary maximum of tornadoes will occur in November and December, of which we have had a sad reminder on November 10, 2002.

In 2003, Tennessee experienced 46 tornadoes, resulting in 12 deaths, numerous injuries, and millions of dollars in damages. The dollar estimate in May 2003 in the U.S. alone due to tornadoes and hail was 3.2 billion dollars according to insurance industry statistics. On a side note, Hurricane Isabel in September, 2003 did 1.7 billion dollars worth of damage to the Mid-Atlantic states. East Tennessee experienced 2 of these tornadoes in Knox County in May.

Meteorologists rate the intensity of a tornado on the **Fujita** or **F** scale. This scale was developed in the early 1970s by Dr. Theodore Fujita. There are six levels of intensity starting with F0 being the weakest and F5 being the strongest. The wind speeds in a tornado can range as low as 40 mph (F0) and as high as 318 mph (F5).

No place is immune to tornadoes. Tornadoes have been known to occur at all hours of the day or night and at any time of the year.

Every state, in the United States, has reported a tornado. Even Yellowstone National Park had a tornado at an altitude of 10,000 feet on July 21, 1987. This F4 tornado had a path length of 24 miles and a path width of 1.4 miles. 15,000 acres of trees were downed.

The average tornado moves from southwest to northeast, but tornadoes have been known to move in any direction. The average forward speed is 30 mph, but vary from nearly stationary to 70 mph.

The “Tri-state Tornado” on March 18, 1925 was one of the worst tornadoes on record. This F5 tornado had a path length of 219 miles, had an average forward speed of 62 mph and was on the ground for about 3 1/2 hours. The tornado started in southeast Missouri, roared through southern Illinois and ended in southwest Indiana. There were 695 deaths. 234 deaths occurred in Murphysboro, IL, which made it the largest death toll within a single city, in U.S. history.

A listing of tornadoes, by state, can be found at the website of the National Climatic Data Center at www.ncdc.noaa.gov/.

Fujita Intensity Scale (F Scale)

This scale is named after Dr. T. Fujita, the noted meteorologist who has studied tornadoes extensively and classified the damage created by these storms.

F Scale	Speed	Damage Threat
F0 (weak).....	40-72 mph	Light damage...shallow rooted trees pushed over.
F1 (weak).....	73-112 mph	Moderate damage...mobile homes overturned; roof surfaces peeled off.
F2 (strong).....	113-157 mph	Considerable damage...large trees uprooted...mobile homes destroyed
F3 (strong).....	158-206 mph	Severe damage..trains overturned; well built homes lose roofs and walls
F4 (violent).....	207-260 mph	Devastating damage...well built homes leveled; cars tossed about
F5 (violent)..... than 300 feet	261-318 mph	Incredible damage...well built homes disintegrate; cars thrown more

Flood Safety and Products



Would YOU want to drive around this road block?

What is flash flooding?

Flash flooding occurs so quickly, you may not get a warning of it. It can occur anytime, anywhere. It happens within hours or minutes of heavy rain, and may happen downstream or downhill from where the heavy rain fell. Flash floods can be 30 feet deep, and move so fast that they roll boulders, cars, and buildings with them. They tear out trees, bridges, and roads, and scour out new channels. They can also trigger catastrophic mud and rock slides.



What is river flooding?

Flooding along mainstem rivers is a natural part of life. Some rivers flood seasonally, such as when winter or spring rains fill river channels with too much water to quickly. Dying hurricanes and tropical storms can also cause river flooding. Major and record river flooding has occurred in every month of the year.



What is urban and small stream flooding?

Because urbanized areas are heavily developed and paved over, water cannot get into the ground as quickly and must run off. In fact, run off can be two to six times more than a similar natural area. Too much rain cannot get into storm drains, or piles up in parking lots, intersections, and drainage ditches. Basements can fill with water, making them a bad place to hide from floods. Normally, urban flooding is not life threatening, but can become so if you drive into flooded areas.

Small stream flooding means that ditches and narrow channels fill quickly up and may overflow their banks. Larger rivers do not flood. People have died while walking along small streams in flood, and the bank gave way, plunging them into the creek.



Flood Safety Rules

- + During heavy rain, stay away from streams, ditches, and tiles.
- + NEVER drive your car into water, when you aren't absolutely sure of its depth. Flooding kills more people every year than any other weather event, and more die in flooding in their cars, than any other way. A foot or two of rushing water can sweep away cars and even large trucks. **Turn around! Don't drown!**
- + If flooding threatens you, move to higher ground immediately. If you live or work in a flood prone area, know in advance where to go, and be prepared to move NOW, if heavy rain occurs.
- + If roads are closed or flooded, stay out of the area. If authorities ask you to evacuate, obey their directions. A little inconvenience now may save you and your family later.
- + Keep children away from storm drains, ditches, and gutters during heavy rain. It's fun to play in the rushing water, but many have been carried away. Only a few inches of rushing water can carry away a small child.
- + Be especially careful at night, when you might not see a flooded road until it's too late.
- + If your vehicle stalls, abandon it and immediately seek higher ground. Many cars have become tombs when swept away by flood waters.

Types of flood products the National Weather Service Issues

Flood Watches are issued when conditions are favorable for flooding. If flash flooding is the major concern, information about this immediate threat will be contained in the watch.

Flood Warnings are issued when a river is flooding or is expected to flood. **Flood Warnings** can also be issued when general flooding is expected, but is not expected to be flashy, usually after a prolonged rainy period.

Flash Flood Warnings are issued when immediate action is required. Flash flooding is

occurring or is expected within a short time.

Flood Statements are issued to followup with additional information about current conditions, or if the flooding is not expected to be life threatening, as in *Urban/Small Stream Flood Advisories*.

Be Prepared in Advance!

Before the Flood:

-Develop a family disaster plan...

Know where your own flood hazards are.

Meet with your family to create a plan.

Implement your plan.

Practice and maintain your plan periodically.

Talk to your insurance agent-do you need a flood insurance rider?

Know where you can go if you have to evacuate, know the routes.

WHEN FLOODING STRIKES, BE READY TO LEAVE YOUR HOME FOR AS MUCH AS 72 HOURS!

Your Family's 72 Hour Kit:

1. Water- one gallon per person per day. For example: **4 people** x 1 gallon/person/day x **three days** = **12 gallons** Store in plastic bottles for safety, take some bleach for purification. Replace every three months.
2. Food- nonperishable, canned, dry mixes or freeze dried. Foods **you like** that require no refrigeration, cooking, or preparation. High energy, high protein snack foods as well. **DON'T FORGET THE MANUAL CAN OPENER!**
3. Small first aid kit - easy to store, for small cuts and abrasions, etc.
4. Clothing and bedding - **Appropriate** to the season and an ample supply.
5. Tools- such as battery operated NOAA Weather Radio or portable radio, flashlight, length of line, extra batteries, etc. Keep in **waterproof** bags or containers.
6. Emergencies supplies and special items- medication, diapers, baby food, a special toy or blankie for small children, crosswords, etc for older children and adults.

Know your community plan! Ask your county emergency office if there is a plan. If not, work with them and other local entities to develop one. A church, PTA, or neighborhood association can be a good place to start. Once you get a plan, practice it periodically.

****What to Listen For****

TORNADO WATCH:

Tornadoes are possible in the designated WATCH area. Remain alert for approaching storms. Keep track of the latest forecasts and be ready to take cover if severe weather threatens.

TORNADO WARNING:

A tornado has been sighted or indicated by Doppler Weather Radar. Warnings mean that severe weather is occurring!! **TAKE COVER IMMEDIATELY!!**

SEVERE THUNDERSTORM WATCH:

Severe Thunderstorms are possible in the designated WATCH area.

SEVERE THUNDERSTORM WARNING:

Severe Thunderstorms are occurring. Move to your planned place of safety. **Remember, Severe Thunderstorms occasionally produce tornadoes with little or no warning!!**

FLASH FLOOD or FLOOD WATCH:

Flash flooding or flooding is possible in the designated WATCH area. Be alert.

FLASH FLOOD or FLOOD WARNING:

Flash flooding or flooding has been reported or is imminent. Take necessary precautions at once.

URBAN and SMALL STREAM FLOOD ADVISORY:

Flooding of small streams, streets, and low-lying areas such as underpasses and urban storm drains is occurring.

NOAA Weather Radio is the most reliable and fastest way to obtain your Watches and Warnings 24 hours a day!



Saturday, February 28, 2004

SKYWARN IN TENNESSEE

The Eyes and Ears of National Weather Service in the field

SKYWARN is the program developed by the National Weather Service to recruit and train storm spotters. SKYWARN spotters enhance the National Weather Service's storm detection capabilities by identifying and reporting potentially dangerous weather conditions. The SKYWARN program has become an invaluable link in the NWS warning process.

Despite all of the sophisticated technology used in a modern NWS office, forecasters still rely on storm spotters. Doppler radar may indicate that a storm may be producing large hail, damaging winds or even a tornado, but it cannot tell exactly what's happening on the ground underneath the storm. Storm spotters, trained by NWS meteorologists, act as the eyes and ears of the NWS. Their reports, radar data and other information result in the most timely and accurate warnings possible.

SKYWARN spotters in Tennessee come from all walks of life - law enforcement, fire or emergency management agencies and citizens interested in helping their communities. A large number of storm spotters are amateur radio operators, who volunteer their time and equipment to help the NWS detect and track severe storms. Amateur radio operators, or "hams", will frequently man radio equipment at the local NWS office, gathering reports from spotters in the field and relaying the data directly to NWS forecasters. SKYWARN spotters are volunteers - they receive no compensation for their hard work. They do, however, have the satisfaction of knowing that their reports result in better warnings which save lives. For more information on SKYWARN, or to schedule a storm spotter class in your area,

contact the nearest office of the National Weather Service.

When severe weather threat is imminent, the NWS needs accurate local weather reports from trained observers to identify and report hazardous weather conditions in their area. Amateur radio is ideally suited to make these reports. The Morristown NWS office and local amateur radio groups utilize a number of local and regional amateur radio repeaters to bring this vital information into the warning process. In order for us to best provide data, we ask that ham radio spotters only report severe weather conditions to their local SKYWARN spotter group net control or appointed liaison unless otherwise requested by the net control station.

The most important requirements of weather reporting are accuracy and speed. Ground truth reports from trained spotters are needed to correlate with observations from scientific information gathering tools such as the WSR-88d doppler radar. Official spotters attend a spotter training session conducted by the NWS at least every 3 years. Accuracy helps guarantee warnings are issued for severe weather, while keeping false alarms to a minimum. Speed is needed to give as much warning as possible to areas in the path of severe weather. **Lives can be saved by early warning!**

Give your location and report as briefly as possible. Weather in specific areas will be requested by the meteorologists when conditions indicate. Please confine your reports to the criteria and direct the reports to your local spotter group net control or liaison unless otherwise requested by net control to

avoid tying up radio frequencies with unnecessary traffic.

Reports not conforming to proper criteria consume valuable resources of air time and do not benefit our mission. Therefore any

reports such as "It's sunny at my location" or, "We have a lot of lightning here", or "It's really windy" are strongly discouraged. We are striving to maintain net discipline and request everyone's cooperation so we may provide the best possible service to the NWS.

Internet Information from the National Weather Service

There is a vast amount of weather information on the internet. Watches, warnings, forecasts, radar, satellite, aviation, fire weather, hydrology, spotter classes, climate information, storm summaries, tornado database, and links to all NWS offices are available on the NWS National web page at:

weather.gov

Or the local NWS offices in

Morristown: www.srh.noaa.gov/mrx

Memphis: www.srh.noaa.gov/meg

Nashville www.srh.noaa.gov/bna

Interested in Getting Additional Weather Data?

Emergency Managers Weather Informaiton Network (EMWIN)

The National Weather Service has a method of distributing weather information on a national basis. EMWIN information is distributed as a data signal relayed through the weather satellites. Software allows your personal computer to display weather information 24 hours a day.

The main purpose of the EMWIN is to provide timely warnings of approaching severe weather. EMWIN prioritizes the data with warnings and severe weather summaries transmitted first. Routine weather, satellite images and weather graphics are also transmitted. The service is public information and is free - there are no monthly fees to receive the data. The only cost is for the receiving equipment and inexpensive commercial software.

The software to display the EMWIN data runs under Windows 95 or Windows 98 and takes about 20MB of hard disk space. Several companies provide reasonably priced (\$600-\$1,000) satellite receivers to capture the EMWIN signal. Efforts are being made to receive the EMWIN satellite data and retransmit it on a UHF/VHF frequency. This would allow anyone with a computer and a radio receiver to get EMWIN data for a one-time cost of around \$200. Check your closest National Weather Service Office home page for more information as these systems become operational.

EMWIN data is not intended to replace any existing weather disseminations systems. EMWIN will be a cost effective system for supplementing NOAA Weather Radio Data and other systems where a full suite of data is not needed. Call your local National Weather Service office for EMWIN activities in your area