MISSISSIPPI FALL SEVERE WEATHER PREPAREDNESS WEEK

October 18-22, 2021

Mississippi Fall Severe Weather Preparedness Week | October 18-22, 2021

Overview

Residents of Mississippi are no strangers to the many different forms of hazardous weather. Tornadoes, damaging winds, large hail, lightning, flooding, and even winter weather are all common weather phenomena that occur in Mississippi. When looking at statistics for the number of tornadoes, and tornado fatalities, Mississippi ranks near or at the top in every category. These statistics show a long history of tornado impacts across the state.

This presents a preparedness challenge to the residents of Mississippi. Unlike the traditional tornado alley of the Great Plains, tornadoes are difficult to spot in Mississippi. Some of the reasons for this are poor visibility in the form of numerous trees in the state, the fact that many tornadoes in Mississippi are rain-wrapped, and that many Mississippi tornadoes occur at night. In addition, many homes and other structures are not built as strong as buildings in other parts of the country.

All of these factors make it very important for residents of the Magnolia State to have multiple ways of receiving weather warnings, have a shelter plan in place ahead of time, and take outlooks, watches and warnings seriously. These actions contribute to reducing injuries and fatalities. Situational awareness and proper planning are essential to safety. In this brochure, there will be safety tips for each type of hazardous weather phenomenon we encounter in Mississippi during the fall and winter months.

Mississippi Fall Severe Weather Preparedness Week Events
October 18 - October 22, 2021

Throughout the week, the National Weather Service, Mississippi Emergency Management Agency, and local emergency managers will present educational material via each office's webpage and social media outlets. A tornado drill will be conducted to help people prepare and protect themselves from tornadoes, damaging winds, hail, lightning, and flash floods. Each day of the week focuses on a specific type of severe weather, or on the warning and drill system.

- **Monday, October 18** will discuss various ways to receive hazardous weather advisories, watches, and warnings.

- **Tuesday, October 19** will discuss severe thunderstorms. Lightning, large hail, and damaging winds from severe thunderstorms are much more frequent than tornadoes in the South.

- **Wednesday, October 20** will emphasize tornado safety. Repeatedly, people survive tornadoes by knowing weather safety rules and by taking appropriate and timely action. A statewide tornado drill will be conducted at **9:15 AM CDT**. Schools, businesses and other agencies are encouraged to participate with the goal of helping everyone learn life saving rules. Thursday will be the alternate drill day if adverse weather is expected on Wednesday.

- **Thursday, October 21** will draw attention to hazards of flooding and flash floods. Flooding is the number two cause of weather-related fatalities behind heat. Remember…Turn Around, Don't Drown!

- **Friday, October 22** will focus on winter precipitation, extreme cold, and wind chill as winter events can affect the Magnolia state before winter officially begins in late December. Know what they are and how to prepare and protect yourself and your home.

Cover photos courtesy of:
- *February 19, 2019 Lightning at Lake Caroline in Madison County: @MadisonSports1*
- *February 24, 2019 Flooding on the Tennessee-Tombigbee Waterway in Lowndes County: NWS Jackson, MS*
- *December 9, 2018 Snow-covered University of Mississippi campus: University of Mississippi Police Dept*

NOAA Weather Radio / Emergency Alert System / Wireless Emergency Alerts
Monday, October 18, 2021

The National Weather Service (NWS) utilizes NOAA Weather Radio All-Hazards to broadcast continuous weather information 24 hours a day, every day of the year. This is your direct link in receiving watches and warnings from the NWS. When properly programmed, with options for single or multiple counties, the NOAA weather radio will alert you of a warning for your area, day or night. With battery back-up, the radio will still be able to deliver life-saving information even if the power goes out due to the storms. The state of Mississippi is served by 16 NOAA Weather Radio (NWR) transmitters with several more surrounding transmitters in neighboring states covering additional counties. Approximately 95 percent of the people in Mississippi are within range of a NWR transmitter (see list of NWR transmitter locations and frequencies in table below).

While routine programming offers the latest forecasts, hazardous weather outlooks, current weather conditions, and official climate data, the broadcast cycle is automatically updated and at times interrupted whenever a specific weather watch, warning, or advisory is issued by an NWS Forecast Office. Watches, warnings, advisories and special weather statements are given the highest priority on NWR and are frequently updated with critical weather information.

In an emergency, each station will transmit a warning alarm tone in addition to the SAME (Specific Area Message Encoding) tone. Information on the emergency situation then follows. These alert tones, especially the SAME, are capable of activating specially-designed receivers by producing a visual and/or audible alarm. For the deaf and hard of hearing, special equipment is available to purchase for NOAA Weather Radio, such as strobe lights and bed shakers. Not all weather band receivers have this capability, but all radios that receive the NWR transmission can receive the emergency broadcasts. The warning alarms and SAME tones are **tested each Wednesday, typically between 11AM and noon, weather permitting**.

Commercial radio and television stations, as well as cable television companies, are encouraged to use NOAA Weather Radio in order to rebroadcast pertinent weather information to the general public. NWR is also a major part of the Emergency Alert System (EAS), which efficiently disseminates critical weather warning information through commercial broadcast outlets in order to save your life.

Wireless Emergency Alerts (WEA) are another avenue for government agencies to send urgent messages directly to cell phones in an area of interest. Applications or additional software are not needed, and the messages will look similar to text messages when they arrive on your phone. Additional information on WEA can be found at:
www.nws.noaa.gov/com/weatherreadynation/wea.html
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Locations and Frequencies of NOAA Weather Radio Stations Serving Mississippi

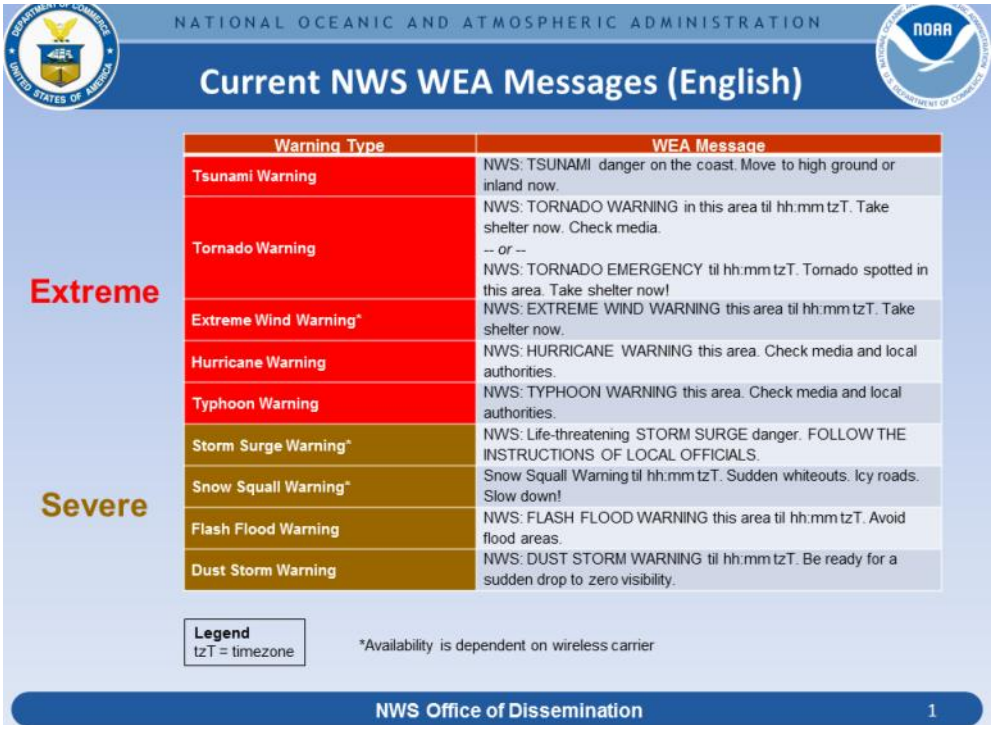
Leakesville, MS	162.425
Gulfport, MS	162.400
Oxford, MS	162.550
Inverness, MS	162.425
Ackerman, MS	162.475
Booneville, MS	162.400
Rose Hill, MS	162.550
Jackson, MS	162.400
Melba, MS	162.475
Bude, MS	162.550
Carthage, MS	162.500
Aberdeen, MS	162.450

Magee, MS	162.525
Baton Rouge, LA	162.400
Memphis, TN	162.475
Fountain Hill, AR	162.475
Marvell, AR	162.525
Bogalusa, LA	162.525
Alexandria, LA	162.475
Florence, AL	162.475
Winfield, AL	162.525
Mobile, AL	162.550
Demopolis, AL	162.475
New Orleans, LA	162.550

Wireless Emergency Alerts Expands Warning Information
Monday, October 18, 2021

Wireless Emergency Alerts (WEA) is a public safety system that allows customers who own certain wireless phones and other enabled mobile devices, to receive geographically-targeted text-like messages alerting them of imminent threats to safety in their area. WEA enables government officials to target emergency alerts to specific geographic areas through cell towers that broadcast the emergency alerts for reception by WEA-enabled mobile devices. Wireless companies volunteer to participate in WEA, which is the result of a unique public/private partnership between the FCC, FEMA and the wireless industry to enhance public safety. Once a warning is issued from your local National Weather Service office for your geographic location, an alert tone and text message displays on your phone. There are a few types of warnings that will alert through WEA. The table displays these types of alerts and the types of messages you would see on your phone. We strongly encourage you NOT to disable any alerts as these can be life saving during times of hazardous weather!

An example of a WEA message.



Current WEA Messages originating from the NWS.

The most common WEA weather messages users will receive is that of a tornado warning. Any tornado warning that is issued will activate the WEA. In addition, new WEA weather messages will occur for certain levels of Flash Flood and Severe Thunderstorm Warnings. Wireless Emergency Alerts will occur for Flash Flood Warnings that have a Considerable or Catastrophic Tag in the warning. This means that alerts will not occur for ALL Flash Flood Warnings anymore, but for those that are a little more rare but the flooding impacts are far greater and more severe.

New in 2021, Wireless Emergency Alerts now occur for high end Severe Thunderstorm Warnings. These warnings indicate a potentially destructive severe thunderstorm that contains damaging winds of 80 mph or higher and/or baseball size hail or larger (2.75 inches or larger). This was designed to grab your attention to the extremely dangerous severe thunderstorms and prompt immediate action to protect life and property.

For many WEA messages, the character limit as also increased to provide more information for users. Spanish WEA messages are also available. In addition to weather messages, the WEA is used to presidential alerts, Amber alerts and Blue alerts. For more information on Wireless Emergency Alerts, please visit: https://www.weather.gov/wrn/wea.

Severe Thunderstorms
Tuesday, October 19, 2021

Shelf-cloud approaching Starkville in Oktibbeha County. Photo by *Stan Dorroh*

What is a Severe Thunderstorm?

A severe thunderstorm is a thunderstorm that produces one or more of the following: hail that has a diameter of one inch (quarter size) or larger, winds greater than or equal to 58 mph, and tornadoes. About 10% of all thunderstorms in the United States meet severe criteria.

Severe thunderstorms can occur at any time of the year, although the most common time of occurrence is during the spring months of March, April, and May. In addition, pulse-type thunderstorms that occur during the summer months can produce high winds, frequent lightning, and torrential downpours.

A secondary season of organized severe weather occurs during the fall in November and early December.

What is the Difference between a Watch and a Warning?

A severe thunderstorm/tornado watch means that **conditions are favorable for severe thunderstorms/tornadoes to develop**. These are issued by the Storm Prediction Center in Norman, OK, typically before severe weather develops. Watches tend to last several hours and cover many counties.

A severe thunderstorm/tornado warning means that a **severe thunderstorm/tornado has either been indicated on radar or witnessed by storm spotters**. Your local NWS Forecast Office issues severe thunderstorm warnings when severe weather is developing or occurring. Warnings tend to be less than an hour and cover a smaller area than a watch (i.e. 1-2 counties or less).

Trees snapped by a microburst in rural Grenada County. Photo by *NWS Jackson, MS*

Safety Tips

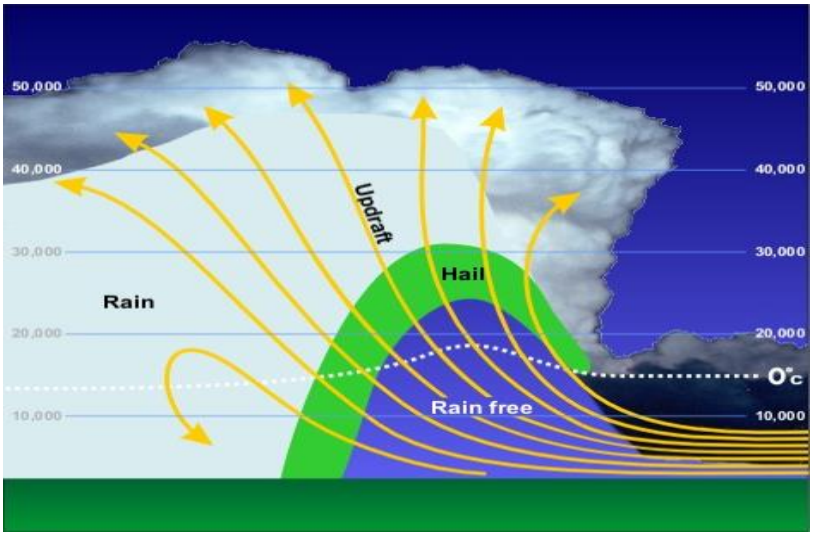
- **Have a plan.** Prepare ahead of time so you and your family know what actions to take when severe weather occurs.
- **Get indoors!** There is no safe place outdoors during a thunderstorm.
- **Stay informed**! When severe weather threatens, stay tuned to NOAA Weather Radio, local television and radio stations, or the NWS homepage online at www.weather.gov for up to date information on the weather situation. Click on the office that serves your area.
- **Know what county you are in.** When a warning is issued, the threatened area will be identified by the counties that contain the warned thunderstorm.
- **Have a NOAA Weather Radio.** This is the best way to receive the latest and most up to date weather information from the National Weather Service.

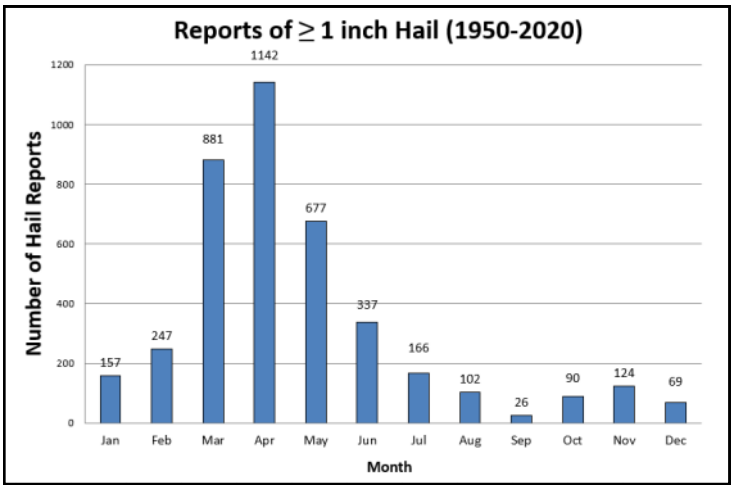
Severe Thunderstorms—Hail

Tuesday, October 19, 2021

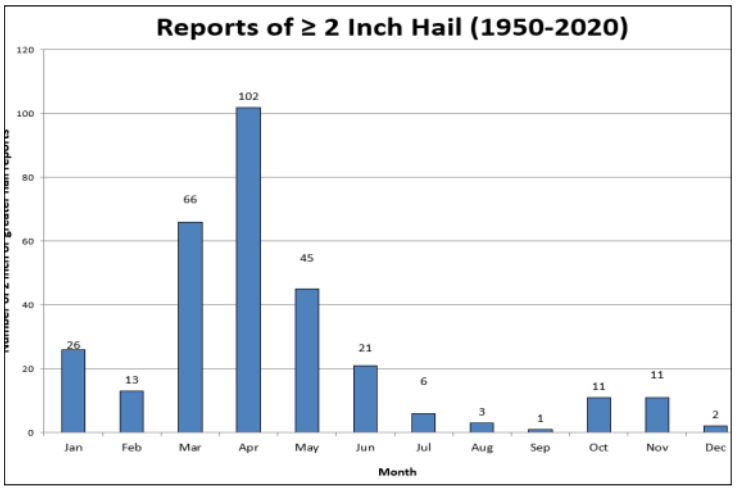
How Does Hail Form?

Hail forms when water droplets are drawn into an area of strong upward moving air, known as an updraft, of a storm. Once the water droplets are transported above the freezing level, they combine with tiny airborne particles, such as dirt, salt, volcanic ash, etc., and freeze on contact, forming tiny ice particles. These ice particles are light enough that they remain suspended in the cloud, where they undergo processes that allow them to combine with other super-cooled water droplets and grow into hail stones. Once the hail stones are heavy enough to overcome the upward force of the updraft, they fall out of the cloud and can inflict significant damage to automobiles, buildings, crops, and even people.





1 inch or greater hail reports across MS since 1950



2 inch or greater hail reports in MS since 1950

Measuring Hail

It's often difficult to get an accurate measurement of hail diameter, especially when it's falling. The table below helps observers estimate the size of hail based on the average diameter of common items. When in doubt, play it safe and wait until the thunderstorm has moved away before going outside to measure the hail size.

Ping pong to golf ball size hail in Clinton, MS on March 18, 2013. - Photo by Michael Norcom

Hail Size Estimates

Pea	1/4 inch
Penny	3/4 inch
Nickle	7/8 inch
Quarter	1 inch
Half Dollar	1 1/4 inches
Ping Pong Ball	1 1/2 inches
Golf Ball	1 3/4 inches
Tennis Ball	2 1/2 inches
Baseball	2 3/4 inches
Grapefruit	4 inches
Softball	4 1/2 inches

Lightning

The Underrated Killer

Tuesday, October 19, 2021

Lightning in Starkville in Oktibbeha County. Photo by: *Marti Calhoun*

EVERY THUNDERSTORM CONTAINS LIGHTNING.

Lightning is an incredibly powerful electrical discharge, containing up to 100 million volts of electrical charge and capable of reaching 50,000 degrees Fahrenheit. Cloud to ground lightning is the result of incredible differences in electrical charge which forms within thunderstorms as well as between thunderstorms and the earth's surface. Recent science suggests that ice in thunderstorms is key to creating the massive charge differences which lead to lightning. Thunderstorm updrafts and downdrafts work to separate smaller ice particles from larger hail stones within the storm. As this happens, many of the ice pieces collide resulting in a separation of electrical charge. The higher part of the storm contains primarily positively charged small ice crystals, with negatively charged larger chunks of ice down low. As the storm moves across the earth a pool of positively charged particles gathers near the ground. Eventually a brief electrical circuit is created as a negatively charged "step leader" descends from the storm toward the ground and eventually connects to the positive charge on the ground. The extreme heating of the air with lightning causes a rapid expansion of the air around it, leading to thunder. The sound of thunder will travel away from lightning at a speed of around 1 mile every 5 seconds. If you can see lightning and hear thunder at your location you are not safe. If you hear thunder within 30 seconds after seeing lightning your life is in immediate danger.

Lightning Safety Rules - Outdoors

- **Seek shelter** inside a house, large building or an all metal vehicle with the windows rolled up (avoid convertibles or open top cars). It is the metal frame that protects from lightning, not the tires.
- **If your hair stands on end and your skin tingles, lightning is about to strike. Take cover immediately!**
- When boating, or in the water, head for shore and get into a shelter or vehicle.
- Once you hear thunder, stop your outside activity immediately and head for safe shelter!

AVOID

- Large trees, hilltops and other high places. Don't be the tallest object!
- Chain link fences and any other metal fences like those around ball parks and play grounds.
- Sports dugouts and open park pavilions.
- Motorcycles, scooters, golf carts, small metal sheds, bicycles, tractors and farm equipment that does not have an enclosed metal cab.

A lightning strike caused extensive damage to this driveway in Magee, MS. Photo by: *Chris Curlee*

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 the same place twice."**
- **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.**

WHEN THUNDER ROARS, GO INDOORS!

Tornadoes
Wednesday, October 20, 2021

EF2 tornado in Burnsville, MS in Tishomingo County on February 23, 2019.
Photo by *Alan Matthew*

What is a Tornado?

A tornado is a violently rotating column of air that extends from the base of a storm cloud to the ground. Conditions that are conducive for tornado formation include:

- warm, moist, unstable air,
- strong atmospheric winds that increase in speed and change direction with height (this is called wind shear),
- a forcing mechanism to lift the air, such as a front, or some kind of weather disturbance.

When a combination of these factors comes together, tornadoes form. The most common time of year for tornado formation in Mississippi is during the spring months of March, April, and May, with a secondary tornado season in November and December. Tornadoes can occur at any time of day and at any point during the year given the right environment. Many tornadoes occur at night in Mississippi, especially during the fall and winter months.

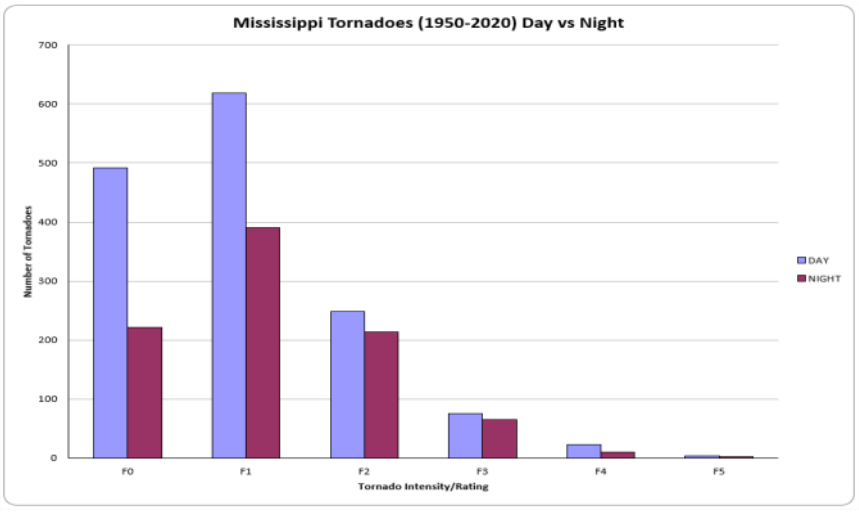
Enhanced Fujita Scale (EF Scale)

Meteorologists rate tornado intensity based on the damage they create. The scale they use to rate them is called, the Enhanced Fujita Scale.

EF Rating	Wind Speeds	Potential Damage Threats
EF 0 (weak)	65-85 mph	Light damage, shallow rooted trees pushed over, some damage to gutters or siding.
EF 1 (weak)	86-110 mph	Moderate damage, mobile homes overturned, roof surfaces peeled off.
EF 2 (strong)	111-135 mph	Considerable damage, large trees uprooted or snapped, mobile homes destroyed.
EF 3 (strong)	136-165 mph	Severe damage, trains overturned, well built homes lose roofs and walls.
EF 4 (violent)	166-200 mph	Devastating damage, well built homes leveled, cars thrown.
EF 5 (extreme)	Over 200 mph	Incredible damage, well built homes disintegrated, automobile-sized objects thrown >300ft.

Nocturnal Tornadoes Pose Greater Danger

Nocturnal tornadoes pose a greater danger than those that occur during the daylight because once most people go to bed, they are no longer connected to the watches or warnings issued by the NWS. Visibility is reduced at night, making observation of a tornado more difficult. Research by Gagan et al. 2010 compared tornado statistics from the Great Plains in the classic “Tornado Alley” to tornadoes in the Deep South or “Dixie Alley”, and found that Dixie Alley had far greater amounts of killer strong/violent tornadoes between 9pm-9am timeframe. Dixie Alley had nearly twice the number of strong/violent tornadoes from midnight-noon timeframe than Tornado Alley from 1950-2007.



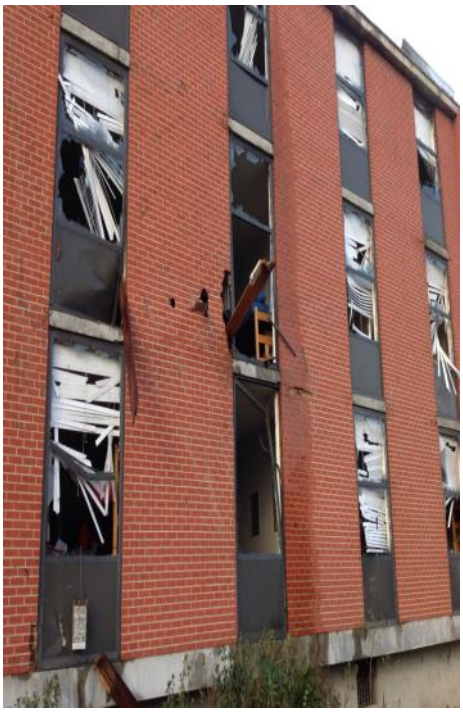
Having a properly programmed **All Hazards NOAA Weather Radio** with S.A.M.E. county coding technology will alarm individuals any time of day when a severe thunderstorm warning or tornado warning is issued for their county. This device has been credited for saving numerous lives during nocturnal tornado events. Even better is to have MULTIPLE ways to get warning information for when or if any form of technology fails.

Tornado Safety Tips

When a tornado warning is issued:

- Get inside a sturdy, well built structure.
- Get on the lowest floor and in an interior room such as a hall, closet or bathroom. Get in a room that does not have any windows.
- Use something to protect your head such as a helmet, blankets, mattresses, pillows, cushions. Use something that will provide more protection than just your hands.
- Take shelter wearing shoes. If your building should be hit by a tornado, there will be a lot of debris that you likely don't want to step on afterward.
- Another good item to have in your safe shelter is a flashlight, whistle or something that can help alert first responders to your location should you get trapped.
- If you are in a car: do not try to outrun a tornado. Take shelter in a sturdy building nearby. If none is available, get out of the car and get into the lowest part of the ground such as a ditch.
- Never take shelter under highway overpasses. Many are not constructed properly to provide adequate shelter, especially as the wind speeds increase as the tornado passes over.
- Mobile homes are not safe shelters. Plan to take shelter in a more sturdy building nearby or if no other shelter is available, get low to the ground in a ditch.
- For those in schools, nursing homes, hospitals, airports and shopping centers: take shelter in the designated shelter area. Stay away from large windows or glassed areas. Stay away from large rooms like dining halls, gymnasiums or warehouses because they have weakly supported roofs.

Develop a tornado safety plan **ahead of time**! Do not wait until the tornado is on your doorstep to figure out where to go, or what to do. Tornadoes form very quickly and may occur with little advance warning. You may only have a few seconds to find shelter, so it is important to know where to go and move quickly.



Outside walls of a home in Panola County, collapsed after being struck by an EF3 tornado. Interior walls remain standing (above). Two large wooden boards pierced brick walls of a building on the campus of William Cary University near Hattiesburg, MS. (left). Both of these photos reiterate why being in the interior portion of a home/ building is important, and why wearing a helmet is a good idea!

DRILL DAY
Wednesday, October 20, 2021
9:15 AM CDT

A STATEWIDE TORNADO DRILL will be conducted **Wednesday, October 20, 2021, at 9:15 AM CDT**, weather permitting, as part of FALL SEVERE WEATHER PREPAREDNESS WEEK in Mississippi. *If Wednesday's weather is inclement, the test will be conducted Thursday, October 21, 2021 at 9:15 AM CDT*.

The message will be sent under the Routine Weekly Test Product (RWT) disseminated by NOAA Weather Radio only. This will be broadcast on all NOAA weather radio transmitters across Mississippi. Many weather radios will alert for this test but some models will just flash a light. If your weather radio does not give an audible alert at 9:15 AM, proceed with your drill anyway.

A drill such as this gives schools, churches, businesses, hospitals, 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.

For information on preparing your organization :
Preparedness Information

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

Flooding and Flash Flooding are the top weather related killers!

Thursday, October 21, 2021

FLASH FLOODING: Flash floods can occur within a few minutes or up to six hours after excessive rainfall, with a dam or levee failure, or with a sudden release of water held by an ice jam or mud slide. Flash floods can wash out roads and destroy buildings and bridges. Because flash floods happen in a short period of time (less than six hours after the causative event) they are more life threatening than other types of flooding. Areas most susceptible to flash flooding are mountainous streams and rivers, urban areas, low-lying areas, storm drains, and culverts.

A Flash Flood Warning is issued when flash flooding has been reported or is imminent. It focuses on specific communities, creeks or streams, or other geographic areas where flooding is imminent or occurring.

Flooding on Caledonia Road near the Lowndes/Monroe county line on February 22, 2018.
Photo by: *Alan Gurley*

A **FLASH FLOOD EMERGENCY** is issued when there is confirmation of an immediate threat to life and property, many times in the form of water rescues or evacuations, due to rapidly rising water levels from either extremely heavy rainfall over an area or a dam failure.

RIVER FLOODING: This type of flooding is caused by an increased water level in established watercourses such as rivers, creeks, or streams. River flooding is slower to develop than flash flooding (more than six hours after the causative event); however, some smaller creeks and streams have a short lag time between the runoff from heavy rain and the onset of flooding. On the other hand, it may take several days for a flood crest to pass downstream points on major rivers such as the Pearl and Mississippi rivers. The NWS issues river flood warnings when rivers are expected to rise above flood stage. Persons in the warned area are advised to take necessary precautions immediately. River stages and crest forecasts are given for selected forecast points along with known flood stages for each forecast point. While there is usually more advanced warning time with river floods than with flash floods, persons should be familiar with the flood prone areas they live and work in, and must know what action to take and where to go if a flood occurs. Advance planning and preparation is essential.

Flash flooding in Sebastopol, on the Leake & Scott county line. Photo by: Thomas Howard

FLOOD WATCHES: The NWS issues a Flood Watch when conditions are anticipated that could result in either flooding or flash flooding within a designated area. Persons in the watch area are advised to check flood action plans, keep informed, and be ready to take action if a warning is issued or flooding is observed.

FLOOD SAFETY RULES: Follow these tips to stay safe during flood conditions…When a warning is issued get out of areas subject to flooding. These may include dips, low spots, stream beds, drainage ditches and culverts. If caught in low areas during flooding, go to high ground immediately.

Avoid already flooded and high velocity flow areas. A rapidly flowing stream or ditch can sweep you off your feet or even carry your car or truck downstream.

Never drive through a flooded area as the road bed may be washed away. Play it safe! If you encounter a flooded road - **TURN AROUND, DON'T DROWN!**

Be especially cautious at night when it is harder to recognize flood conditions, and never drive around a barricaded road.

Most flood deaths occur at night and when people become trapped in automobiles that stall in areas that are flooded. If your vehicle stalls, abandon it immediately and seek higher ground. The rising water may engulf the vehicle and the occupants inside. Do not camp or park your vehicle along streams or creeks during threatening conditions.

When a FLOOD WARNING is issued for your area, act quickly to save yourself. You may only have seconds!

Snow and Ice
Friday, October 21, 2021

NOT JUST A WINTER THREAT

An often overlooked hazard during the fall season is, surprisingly, a winter storm. While typically confined to the latter end of the season, significant snow and ice events have occurred across Mississippi in early December. These snow and ice events have paralyzed affected portions of the state by stranding motorists, closing airports, stopping the flow of supplies, and disrupting emergency and medical services. Snow and ice accumulation can cause roofs to collapse, trees and limbs to break, topple utility poles and communication towers, and bring down power lines, all resulting in the disruption of both power and communications. This can leave residents in the affected area isolated for days. The cost of both snow and ice removal, repairing damages, and the loss of business can have severe economic impacts on the affected cities and towns.

Icicles hang from bushes in Gulfport, MS on January 29, 2014. Photo by *David Lee*

BE PREPARED - At Home and Work

The **primary concerns** are the loss of heat and communication services, and a shortage of supplies if winter weather conditions persist for more than one day.

- **Have a flashlight and extra batteries.**
- Battery-powered NOAA Weather Radio and portable radio to receive emergency information. These may be your ONLY link to the outside.
- **Extra food and water.** Store high energy food such as dried fruit, nuts, granola bars, and other foods that do not require cooking or refrigeration.
- **Keep extra medicine and baby items.**
- **First-aid supplies.**
- **Have an emergency heat source** such as a fireplace**,** wood stove, or some type of space or gas heater (i.e. propane or kerosene heater). Use these properly to prevent a fire and remember to ventilate properly.
- **Heating Fuel.** Remember to refuel before you're empty. Fuel carriers may not be able to reach you for days after the winter storm.
- Test smoke alarms and fire extinguishers once a month to ensure they work properly.
- Make sure pets have shelter and plenty of food and water.

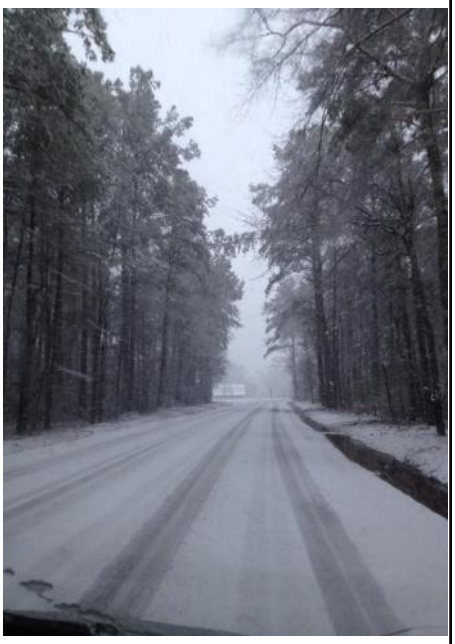
BE PREPARED - In Vehicles

Check the latest weather reports and plan your travel accordingly to avoid the storm!

- **Carry a Winter Storm survival kit equipped with some of the following items:** mobile phone, charger, and extra battery, blankets and sleeping bag, flashlight and extra batteries, first-aid kit, high-calorie non-perishable food, extra clothing to keep dry, small can and waterproof matches to melt snow for drinking water, sack of sand or cat litter for tire traction, windshield scraper, tool kit, and jumper cables.
- **Keep** your gas tank near full to avoid ice in the tank and fuel lines.
- **Avoid** traveling alone and let someone know your timetable and primary/alternate routes.

<u>If you get stuck on the road in a winter storm, keep these tips in mind:</u>

- **Run** the motor about 10 minutes every hour for heat.
- **Open** the window a little for fresh air to avoid carbon monoxide poisoning.
- **Make** sure the exhaust pipe is not blocked.
- **Be visible to rescuers.**
- **Turn** the dome light on at night when running the engine.
- **Tie** a colored cloth, preferably red, to your antenna or car door.
- **After** snow stops falling, raise the hood to indicated you need help.
- **From time to time** move arms, legs, fingers, toes vigorously to keep blood circulating and to keep warm.



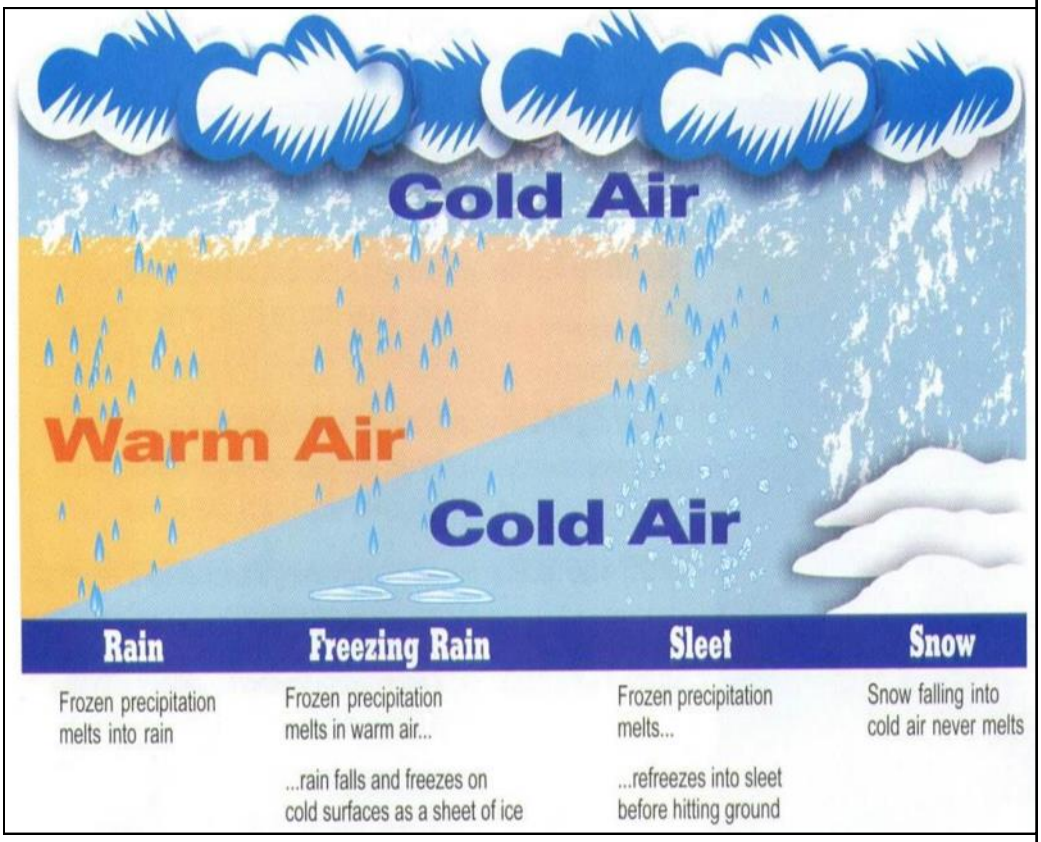
Snow-covered road in Caledonia, MS in Lowndes County on February 2, 2015.
Photo by: Carla McGarity Lowery

Determining Winter Precipitation

Friday, October 22, 2021

Winter precipitation is one of the hardest weather phenomena for meteorologists to predict in the South, and Mississippi winters are no exception. The state sees its share of rain, snow, sleet and freezing rain. Quite often, it can be a degree or two difference at either the surface, or just above it, that can determine whether a location observes frozen or liquid precipitation.

So, how do meteorologists determine what may fall? It can be very complicated as only slight temperature variations both at the surface and higher up in the atmosphere can mean the difference between snow, sleet, freezing rain, or simply rain. The diagram to the right helps illustrate this process.



A snow-covered downtown Jackson, MS on December 8, 2017. Photo by: *Zander Williamson*

When moisture in the upper atmosphere begins to fall, if the temperature is below freezing throughout the entire air column, the moisture will fall as snow. However, if there is any area along the moisture's decent to the ground, where the temperature is near or warmer than freezing, the moisture will fall as ice, as it will incur some melting along the way. The question for meteorologists then becomes, how much melting occurs and how close to the surface will it occur?

A "sleet-man" in Collinsville in Lauderdale County on January 6, 2017. Photo by : *Deanna Harris Cornish*

A key role in how much melting occurs as precipitation falls to the ground, is the depth of the atmospheric layer in which temperatures are above the freezing mark. If frozen precipitation melts, and then encounters below freezing temperatures a second time before reaching the ground, the precipitation will fall as sleet, which are small ice pellets. However, if frozen precipitation completely melts while falling, but it falls on a surface that is at or below 32 degrees, it is considered freezing rain. Many times it can be only a matter of miles between locations that receive frozen precipitation or none at all. All of this is a great challenge to meteorologists during the winter.

Extreme Cold and Wind Chill

Friday, October 22, 2021

Exposure to extreme cold can cause frostbite or hypothermia and can become life-threatening. While we are all at risk if exposed, infants and elderly people are most susceptible. Here in the South, extreme cold is synonymous with a hard freeze. A hard freeze is generally when the temperature falls below freezing, often below the upper 20s, and does not rise above freezing for several hours. This type of freeze can cause pipes to burst if not properly insulated. When pipe bursting weather is expected, be sure to properly insulate pipes and leave cabinet doors open to ensure they receive warmth. It is also advised to let your faucets drip to prevent water from freezing and causing pipes to burst. Don't forget about providing adequate shelter for pets. Stock flashlights and batteries and avoid candles as they can be a fire hazard. Learn to use any emergency heating sources properly to prevent fires.

WIND CHILL: The wind chill is not the actual temperature, but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, thus causing body temperatures to drop. Most animals are also affected by wind chill; however, cats, plants, and other objects are not.

NWS Windchill Chart

Temperature (°F)

Wind (mph)	Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5		36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10		34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15		32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20		30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25		29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30		28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35		28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40		27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45		26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50		26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55		25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60		25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes | 10 minutes | 5 minutes

$$\text{Wind Chill (°F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

Where, T= Air Temperature (°F) V= Wind Speed (mph)

Effective 11/01/01

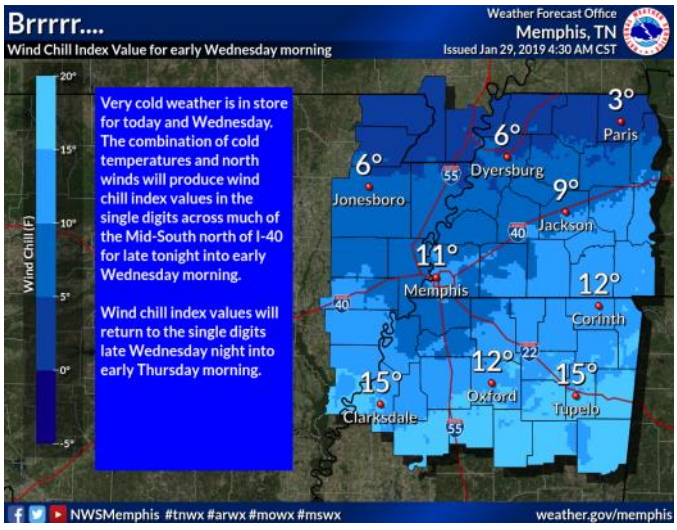
FROSTBITE: Frostbite is damage to body tissue caused by extreme cold. A wind chill of -20°F will cause frostbite in just 30 minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes, or the tip of the nose. If symptoms are detected, get medical attention immediately! If you must wait for help, slowly rewarm affected areas. However, if the person is also showing signs of hypothermia, warm the body core before the extremities.

HYPOTHERMIA: Hypothermia is a condition brought on when the body's temperature drops below 95°F. This condition can be fatal. For those who are fortunate to survive, they are likely to experience lasting kidney, liver, and pancreas problems. Warning signs on hypothermia include uncontrollable shivering, memory loss, disorientation, slurred speech, drowsiness, and apparent exhaustion. Take the person's temperature. If below 95°F, seek medical care immediately!

IF MEDICAL CARE IS NOT AVAILABLE, warm the person slowly, beginning with the body's core. **DO NOT** warm the arms and legs first, as this will drive cold blood toward the heart, leading to heart failure. If necessary, use your body heat to aid in the warming process. Get the person into dry clothing and wrap in a warm blanket covering the head and neck. **DO NOT** give the person alcohol, drugs, coffee, or any other hot beverage or food. Warm broth is a more sufficient first food to offer.

DRESSING FOR THE COLD: Here are some easy, but effective, preparedness tips for dressing for cold weather.

- Wear loose-fitting lightweight clothing in several layers.
- Remove layers to avoid perspiration and subsequent chill.
- Outer garments should be tightly woven, water repellent, and hooded.
- Wear a hat! Half of your body heat loss can be from you head.
- Cover your mouth to protect your lungs from extreme cold.
- Mittens, snug at the wrist, are better than gloves.
- Try to stay dry.



A graphic from *NWS Memphis* explaining the threat of low windchills across the Mid-South region, including North Mississippi.

Tips from *MEMA* to Help Weather the Weather

To make sure you are prepared before, during and after severe weather, be sure to have an emergency disaster kit like this one recommended by MEMA:

- Flashlights with extra batteries. Use flashlights instead of candles when the power goes out.
- Portable radio with extra batteries.
- NOAA Weather Radio.
- Non-perishable food for at least 3 days.
- Bottled water (1 gallon per person per day).
- First Aid Kit with prescription medications.
- Bedding and clothing for each family member.
- Blankets and towels.
- Plastic dishes/eating utensils.
- Baby supplies (food, diapers, medication).
- Pet supplies (food, leash & carrier, vaccination records).
- Toothbrush, toothpaste, soap, shampoo, towelettes, other toiletries.
- Copies of important documents such as driver's license, SS card, insurance policies, birth and marriage certificates.
- Cash, enough to fill up your vehicle with gas and travelers checks.
- Helmet (bicycle, football, etc.) to protect your head during a tornado.

For Your Information

This booklet contains materials useful for Fall Severe Weather Preparedness Week and other times. You're invited to contact your National Weather Service Office, state and county emergency management agency for interviews and answers to your questions. National Weather Service personnel and local emergency management are available for weather awareness programs to civic and industrial organizations, schools, hospitals, and others interested in weather safety. Each county in Mississippi is served by a designated National Weather Service office as identified below:

Please contact one of the offices listed below if you need more information.

Jackson, MS	Bill Parker	(601) 936-2189
Memphis, TN	Gary Woodall	(901) 544-0411
Memphis, TN	Jim Belles	(901) 544-0411
New Orleans, LA	Lauren Nash	(985) 649-0357
New Orleans, LA	Ben Schott	(985) 649-0357
Mobile, AL	Jeff Medlin	(251) 633-6443
Mobile, AL	Jason Beaman	(251) 633-6443
Mississippi Emergency Management Agency		(866) 519-6362

Information Resources on the World Wide Web

For additional resources, the following web sites are available:

NWS Jackson: www.weather.gov/jan
NWS Memphis: www.weather.gov/meg
NWS New Orleans: www.weather.gov/lix
NWS Mobile: www.weather.gov/mob

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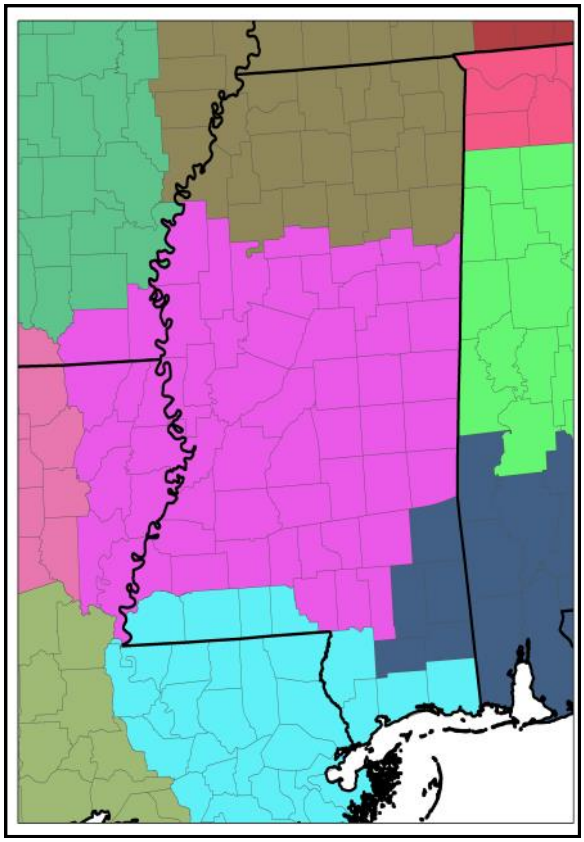

Jackson, MS | Memphis, TN| New Orleans, LA| Mobile, AL

All NWS Offices:
http://www.weather.gov