MISSISSIPPI SPRING SEVERE WEATHER PREPAREDNESS WEEK February 14-19, 2022











Mississippi Severe Weather Preparedness Week Events February 14 - February 19, 2022

Throughout the week, the National Weather Service, MEMA, 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, February 14th will discuss severe thunderstorms. Lightning, large hail, and damaging winds from severe thunderstorms are much more frequent than tornadoes in the South.
- **Tuesday, February 15th** will draw attention to hazards of flooding and flash floods. Flooding is the number one cause of weather-related fatalities behind heat. Remember...Turn Around, Don't Drown!.
- Wednesday, February 16th 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 CST. 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, February 17th** will focus on lightning, often called the underrated killer. All thunderstorms have lightning and this hazard can be deceptively deadly.
- Friday, February 18th will discuss ways to receive hazardous weather advisories, watches, and warnings.
- **Saturday, February 19th** will discuss the higher vulnerability of residents who live in mobile homes when it comes to severe weather and tornadoes.

Cover photos courtesy of:

- Radar image of Easter Sunday's, April 12, 2020, strong and violent tornadoes across Southeast Mississippi.
- Lightning at the Marion County Courthouse in Columbia, MS on August 19, 2020: Will Jordan
- Flooding in Sebastopol, Scott County, on May 11, 2020: Thomas Howard

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.
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Severe Thunderstorms Monday, February 14, 2022



A shelf-cloud moving over the Mississippi River toward Vicksburg, Warren Co. - August 13, 2020 - Paul Ingram

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 <u>conditions</u> <u>are favorable for severe thunderstorms/tornadoes to devel-</u> <u>op</u>. 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 <u>severe</u> 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).



Straight-line winds in excess of 60 mph downed trees along a road near Raymond in Hinds County on June 17, 2019. Photo by *Jacob Lanier*

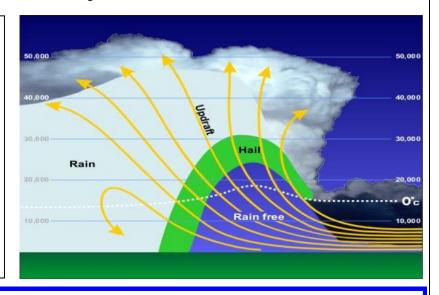
Safety Tips

- 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 <u>www.weather.gov</u> 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 Monday, February 14, 2022

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.



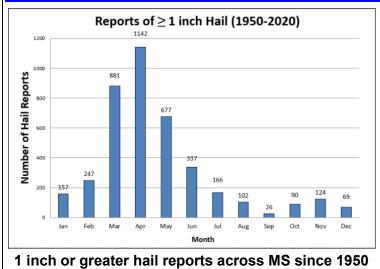
Measuring Hail

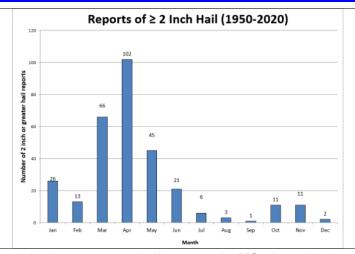
It's often difficult to get an accurate measurement of hail diameter, especially when it's falling. The table below helps observers estimate the size of hail based on the average diameter of common items. When in doubt, play it safe and wait until the thunderstorm has moved away before going outside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



Golf ball sized hail in Lexington, Holmes County, on April 7, 2019 Photo by *Logan Ledbetter*

Hail Size Estimates





2 inch or greater hail reports in MS since 1950

Flooding and Flash Flooding are the top weather related killers! Tuesday, February 15, 2022



Did you know that flash flooding is the second leading cause of weather related fatalities, based on a thirty year average? In 2017, flood fatalities accounted for twice as many fatalities as lightning, tornado and hurricanes combined!

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 at a car dealership in Greenville, Washington Co, on May 9, 2019. Photo by *Robert Vest*

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 to 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



The aftermath of river flooding along Black Creek at Hwy 589 in Lamar County, from March 8-13, 2016. Photo by *Lamar EOC*

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.

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 warping is issued or flooding is observed.



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

Tornadoes Wednesday, February 16, 2022



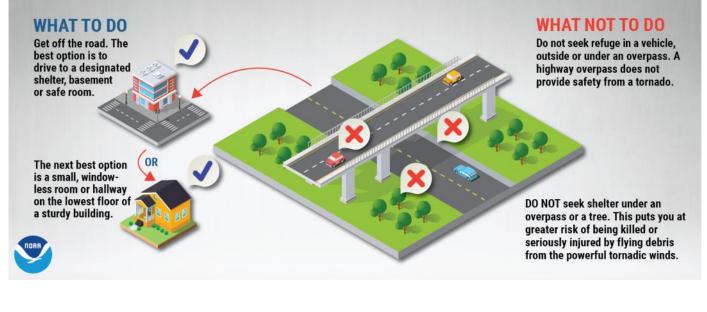
What is a Tornado? A tornado is a violently rotating column of air that extends from the base of a storm cloud to the ground. Some conditions that are conducive for tornado formation include warm, moist, unstable air, strong atmospheric winds that increase in speed and change direction with height, and a forcing mechanism to lift the air. When a combination of these factors comes together just right, 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. Tornadoes can occur at any time of day and at any point during the year given the right environment.

Tornadoes and Car Safety

Being prepared for severe weather and tornadoes is important no matter your location, but this is especially critical if you are in a car when a tornado approaches. The winds from a tornado are strong enough to lift a car and toss it a far distance. If traveling, make sure to adhere to the following safety tips regarding being on the road during severe weather:

- Always plan ahead. Check the weather forecast and if severe weather is expected in your path of travel, consider delaying your trip or altering your times of travel.
- Listen to live, local radio as a way to get warning information. Many radio stations will broadcast warnings within their listening area. Otherwise, consider bringing a portable weather radio and ensure that the WEA alerts are activated on your phone.
- Be aware of your surroundings and make note of any potential shelters along your route.
- Never take shelter under highway overpasses and bridges!

TORNADOES AND ROAD SAFETY





Tornadoes Safety Tips Wednesday, February 16, 2022



When a tornado warning is issued:

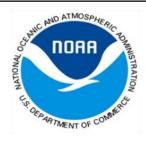
- Get inside a sturdy, well built structure.
- Get on the lowest floor and in an interior room such as a hall, closet or bathroom. Get in a room that does not have any windows.
- Use something to protect your head such as a helmet, blankets, mattresses, pillows, and cushions. Use something that will provide more protection than just your hands.
- Be sure to wear shoes to avoid having to walk through any possible debris barefoot. It's also a
 good idea to have a whistle in your emergency kit to alert emergency officials of your location, if
 you become trapped by debris.
- If you are in a car: do not try to outrun a tornado. Take shelter in a sturdy building nearby. Never take shelter under highway overpasses.
- Mobile homes are not safe shelters. Plan to take shelter in a more sturdy building nearby.
- 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 <u>ahead of time</u>! 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.





All that remains of this home is a saferoom, after an EF4 tornado struck Moss, MS. *Photo by Andrew Phillips* (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 show why being in the interior portion of a home/ building is important, and why wearing a helmet is a good idea!



Tornadoes Shelter Guidelines

Wednesday, February 16, 2022





Tornado Sheltering Guidelines

Seek the best available refuge area immediately when a Tornado Warning is issued. Your chance of surviving a tornado is excellent if you follow these guidelines.

WORST OPTIONS

BAD OPTIONS

GOOD OPTIONS

Mobile homes

Vehicles

Underneath a highway overpass

PHOTO: U.S. Air Force -Tech. Sgt. Bradley C. Church

Large open rooms like gymnasiums

Manufactured housing

Find another option

Interior room of a well-constructed home or building

Basement

Above or below ground Tornado Storm Shelter (NSSA/ICC 500 compliant)*

BEST OPTIONS

Specifically-designed FEMA Safe Room*

Stay in place until all clear

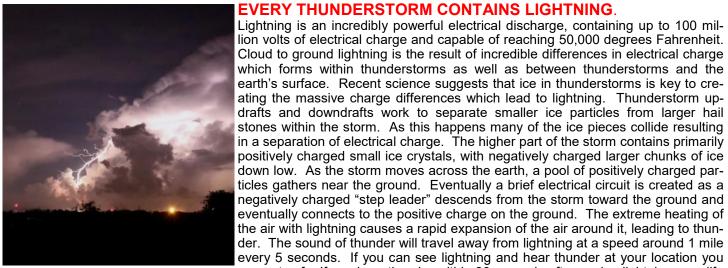
*Recommended by FEMA

TTTT

Lightning The Underrated Killer Thursday, February 17, 2022

EVERY THUNDERSTORM CONTAINS LIGHTNING.

are not safe. If you hear thunder within 30 seconds after seeing lightning your life



Lightning in Starkville, Oktibbeha Co. Photo by Trevor Birchett

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.

is in immediate danger.

- 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.

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!



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

NOAA Weather Radio / Emergency Alert System / Wireless Emergency Alerts Friday, February 18, 2022

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 home to 13 NOAA Weather Radio (NWR) transmitters, with some surrounding transmitters in neighboring states covering additional Mississippi 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 (<u>Specific Area Message Encoding</u>) 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.weather.gov/wrn/wea

Tennessee

				KIH53 Booneville
Leakesville, MS	162.425	Magee, MS	162.525	Arkansas
Gulfport, MS	162.400	Baton Rouge, LA	162.400	KUT404
Oxford, MS	162.550	Memphis, TN	162.475	
Inverness, MS	162.425	Fountain Hill, AR	162.475	Ackerman Ackerman
Ackerman, MS	162.475	Marvell, AR	162.525	Kjy83 Carthage
Booneville, MS	162.400	Bogalusa, LA	162.525	KIH38 Jackson Meridian
Rose Hill, MS	162.550	Alexandria, LA	162.475	WZ2546 Magee WWF55
Jackson, MS	162.400	Florence, AL	162.475	KiH47Jačkson
Melba, MS	162.475	Winfield, AL	162.525	Louisiana Bude
Bude, MS	162.550	Mobile, AL	162.550	WNG521 Bogalusa
Carthage, MS	162.500	Demopolis, AL	162.475	Baton Rouge
Aberdeen, MS	162.450	New Orleans, LA	162.550	T LALAN

Locations and Frequencies of NOAA Weather Radio Stations Serving Mississippi

Wireless Emergency Alerts Expands Warning Information Friday, February 18, 2022

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!

What Kind of Alerts?

WEA are sent only during an emergency. They are sent by government alerting authorities through your mobile carrier.

Types of alerts include:

- Extreme weather warnings
- Local emergencies requiring evacuation or immediate action
- AMBER Alerts
- Presidential Alerts during a national emergency

The National Weather Services sends WEA messages for:

- Dust Storm Warnings
- Extreme Wind Warnings
- Flash Flood Warnings*
- Hurricane/Typhoon Warnings
- Severe Thunderstorm Warnings*
- Snow Squall Warnings
- Storm Surge Warnings
- Tornado Warnings
- Tsunami Warnings

* High-damage threat Warnings only

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.



An example of a WEA message.

Mobile/Manufactured Home Safety Saturday, February 19, 2022

Mobile homes are not a safe shelter when tornadoes threaten. NOAA and FEMA recommend that mobile and manufactured home residents flee their homes for sturdier shelter before storms with tornadoes hit.

On average, a total of 72% of all tornado-related fatalities are in homes and 54% of those fatalities are in mobile homes. When you are in a mobile home, you are 15 to 20 times more likely to be killed in comparison to when you are in a permanent home. EF-1 tornadoes and high end severe thunderstorm winds can completely destroy mobile and manufactured homes. Regardless of how well built a mobile or manufactured home is built, anchor system failures are the primary cause of the majority of fatalities. Even well-built manufactured homes can be destroyed if they become airborne.

If residing in a mobile or manufactured home, please follow this three step plan before a tornado strikes:

- Monitor NWS forecasts and make a tornado sheltering plan or review your current plan. Know you evacuation route from your home, and how long it takes to evacuate to a safer place.
- When tornadoes are in the forecast, coordinate with family and friends to spend time at their home when the storms threaten or identify a community place to go to.
- When a <u>Tornado Watch</u> is issued, that is the time to be ready to evacuate to your safe place. When a <u>Tornado</u> <u>Warning</u> is issued, it may be too dangerous to take your evacuation route. Thus, you may need to evacuate your mobile or manufactured home even before warnings are issued and storms strike.



For Your Information

This booklet contains materials useful for 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	Joanne Culin	(601) 939-2786 (901) 544-0411		
Memphis, IN	Michael Hill			
New Orleans, LA	Lauren Nash	(985) 649-0357		
Mobile, AL	Jason Beaman	(251) 633-6443		
Mississippi Emergency Management Agency				

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

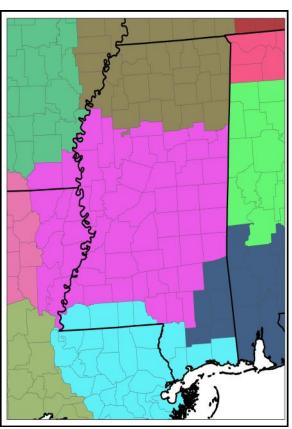
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Jackson, MS | Memphis, TN| New Orleans, LA| Mobile, AL

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