



Oak Alley Plantation - Louisiana

SOUTHERN CLIMATE *MONITOR*

SEPTEMBER 2012 | VOLUME 2, ISSUE 9

IN THIS ISSUE:

Page 2 to 3 - Hurricanes and Decision-Making

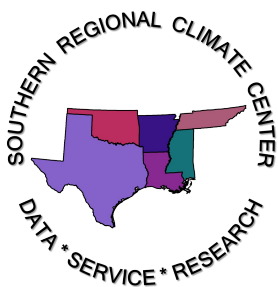
Page 4 - Drought Update

Page 5 - Southern U.S. Temperature Summary for September

Page 6 - Southern U.S. Precipitation Summary for September

Page 7 - Late Season Hurricanes

Page 8 - Climate Perspective and Station Summaries Across the South



LSU



SCIPP

Southern Climate Impacts Planning Program



RUNNING HEAD: HURRICANES AND DECISION-MAKING

Renee Edwards, Louisiana State University

On the eve of Hurricane Rita's landfall, mere weeks after Hurricane Katrina devastated the Gulf Coast in 2005, Governor Blanco (D-La.) sent a loud and clear message to residents who refused to evacuate: if you stay, write your social security number on your arm with indelible ink so rescuers can identify your body.

Gov. Blanco said she hoped to scare residents into evacuating, piling on the fear and stress to drive vulnerable populations out of hazard zones. One of the reasons it worked may be because anxiety influences decision making during hurricanes more than any other emotion, a new study finds.

Researchers at Louisiana State University (LSU) conducted more than 500 phone interviews with residents of nine La. parishes to examine the roles of emotion, knowledge and past experience in preparing, evacuating and relocating as a result of hurricanes. These are decisions and strategies for coping with hurricanes, which are referred to as "hazard adjustments."

"Hurricanes and Decision-Making," currently under peer review, examines in depth the relationships between emotion, knowledge and past experience in hazard adjustment.

Authors Edwards, Miller, Grey and Brown determined that the single most influential factor when making decisions regarding hurricanes is the intensity, or strength, of the storm. The higher the category, the more likely residents are to evacuate.

But risk communication has many parts, and the authors set out to find how people made decisions influenced by anxiety, past experience, confidence in hurricane protection systems, hurricane literacy, knowledge of state programs and place

attachment.

What they found was that the more anxious a person is about a storm, the more likely they are to evacuate or relocate.

Anxiety, defined as high uncertainty over an outcome and low control over a situation, causes cognitive overload, resulting in poor decision making, meaning people may not make the smartest decisions under stress. But anxiety can also reduce risk-taking, inspiring a "better safe than sorry" approach to hazard mitigation.

Knowledge of state programs and past evacuation experience also significantly influenced decision making. Those who had evacuated before were more likely to evacuate again or relocate in the future.

But not all of the factors had positive effects on a person's decision regarding hazard adjustment.

Place attachment, the idea that people will not plan for, evacuate or relocate despite warnings because of emotional or sympathetic bonds with their home or community, was not found to influence hazard adjustment.

The authors also found that the more confidence a person has in local, state and federal protection systems, such as levees, pumps, etc., the less likely they are to evacuate or relocate. This was especially true for Category 1 and 3 storms.

Literacy also decreased the likelihood of evacuation while not significantly increasing preparation. For example, respondents said they were less likely to evacuate if their home was not listed in a flood zone.

Overall, the authors noticed significant gaps in knowledge about hurricanes and a looming need for additional resources in risk communication.

One such initiative is “Get a Game Plan,” a state-wide campaign to educate Louisiana residents about hurricane preparedness through its website, television ads and more. To visit the website, go to <http://www.getagameplan.org/>.

Texas created a similar campaign called “Ready or not? Have a plan.” Housed at www.texasprepares.org, the website helps users develop plans for extreme weather, including instructions on building kits, information on evacuation routes, sheltering in place, first aid, traveling with children and pets, and more.

The website provides information about hurricanes, wildfires, floods, tornadoes, droughts, extreme heat, influenza pandemic, and winter storms. The website also has information about what to do in a terrorist attack or hazardous material incident.

Florida’s recently launched website, www.Floridadisaster.org, also provides information on preparation, response and recovery for a variety of disasters, including hurricanes.

Hurricane preparedness programs specifically designed for non-English speaking populations, like the Baldwin County, Alabama Hispanic Hurricane Outreach Initiative, help emergency managers bridge language barriers and reach vulnerable parts of the community through publications, television commercials and radio ads.

Mississippi currently has no website or resource center in place to address these issues.

Lead author Renee Edwards serves as co-principal investigator with the Southern Climate Impacts Planning Program (SCIPP), a NOAA-funded RISA addressing extreme weather and climate change.

DROUGHT CONDITIONS

Luigi Romolo, Southern Regional Climate Center

Heavy rainfall amounts in the Southern Region have led to some improvements to drought conditions. In Arkansas, the northeastern counties have been improved from extreme and exceptional drought to severe drought conditions. Conditions are also improved for much of western Tennessee. Moderate to severe drought conditions were also scaled back in northern Louisiana and southern Arkansas. Elsewhere, drought conditions did not significantly change. Much of Oklahoma and southern Texas remain in extreme drought or worse, while moderate drought conditions are still prevalent in central and western Texas.

Texas rainfall has helped mitigate many of the short-term drought effects, as seen in central Texas, where cotton farmers are expecting a 75% higher yield than last year and ranchers were provided relief as livestock overhead has been increasing due to rising feed prices. Hydrological improvements of these rains are limited, however; while San Angelo is expected 50,000+ acre-feet to be recovered to O. H. Ivie Reservoir, Jonestown's lake and reservoir levels are still so low that their revenues from water-sport related purchases are

down and have been put in a budget crunch to the tune of \$363,000. Jonestown has had to remove its head librarian and police chief positions and repurpose them to city administrators. Ecological impacts are also still being felt, as Longview's forestry service has gone far above budget removing trees killed by lasting drought conditions. The service has already spent nearly \$90,000 on tree removal, with an estimated 301 million dead trees still requiring removal (Information Provided by the Texas State Climate Office).

Corpus Christi, already in a large rainfall deficit, saw soil shrinkage damaging building foundations as unseasonably high temperatures evaporated soil moisture. Old building infrastructure in Abilene has been having problems mitigating heat. Outdoorsmen in west Texas suffered heat exhaustion during the warmest days of the month, and wildfires as a result of drying grasses in southeast Texas broke out. By the end of the month, however, temperatures dropped for much of the state, and impacts associated with the heat have slightly subsided (Information Provided by the Texas State Climate Office).

To the Right: Drought conditions in the Southern Region. Map is valid for September 2012. Image courtesy of the National Drought Mitigation Center.

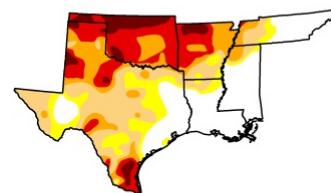
U.S. Drought Monitor South

October 2, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.17	71.83	60.13	38.85	23.18	6.27
Last Week (09/25/2012 map)	24.13	75.87	66.61	51.50	29.86	9.11
3 Months Ago (07/03/2012 map)	8.29	91.71	68.39	36.08	9.80	0.00
Start of Calendar Year (12/21/2011 map)	26.47	73.53	69.01	54.81	39.11	17.15
Start of Water Year (09/25/2012 map)	24.13	75.87	66.61	51.50	29.86	9.11
One Year Ago (09/27/2011 map)	18.34	81.66	76.26	70.61	63.67	53.77

Intensity:

D0 Abnormally Dry
D1 Drought - Moderate
D2 Drought - Severe
D3 Drought - Extreme
D4 Drought - Exceptional



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, October 4, 2012
Anthony Artusa, NOAA/NWS/NCEP/CPC

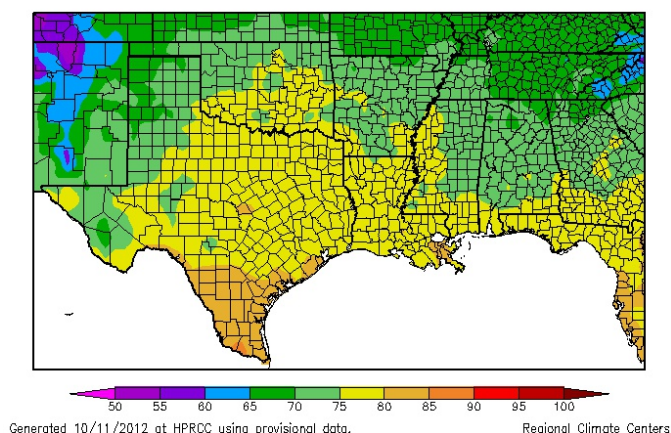
TEMPERATURE SUMMARY

Luigi Romolo, Southern Regional Climate Center

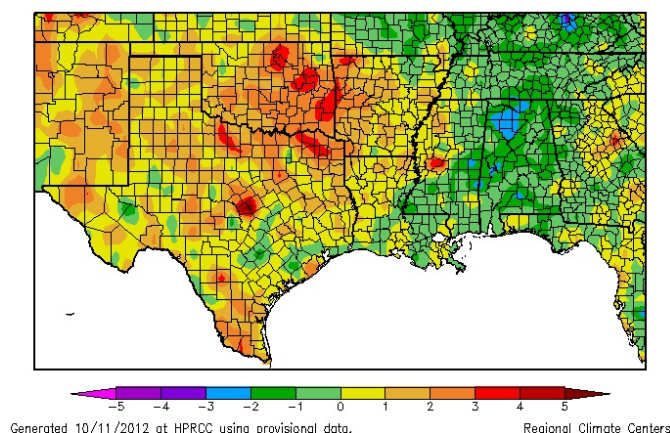
September temperatures in the Southern Region were generally at or above normal. In Tennessee and Mississippi, temperatures averaged near normal, with Tennessee averaging 69.00 degrees F (20.56 degrees C) for the month, while Mississippi reported an average temperature of 74.20 degrees F (23.44 degrees C). Elsewhere, temperatures averaged higher than normal, with the warmest areas occurring in Oklahoma and northern Texas. Temperatures in that region ranged from 2 to 4 degrees F (1.11 to 2.22 degrees C) above normal. Texas averaged 76.70 degrees F (24.83 degrees C) for the month. Other state average temperatures include Louisiana with 77.20 degrees F (25.11 degrees C), Oklahoma with 74.10 degrees F (23.39 degrees C), and Arkansas with 73.10 degrees F (22.83 degrees C). Though all state averages rank within the

middle two quartiles, Oklahoma and Louisiana are on pace to having one of the warmest years on record. In the case of Oklahoma, the year to date (January to September) average temperature there is 66.89 degrees F (19.38 degrees C). This is their warmest January to September period on record (1895-2012). For Louisiana, it is their second warmest year to date on record (1895-2012). The January to September average for the Louisiana is 71.74 degrees F (22.08 degrees C), second only to the value of 72.11 degrees F (22.28 degrees C), which occurred in 1911. The Southern Region as a whole is also on pace for its warmest year on record. The January to September average for the region is 69.14 degrees F (20.63 degrees C), and it is the warmest January to September period on record (1895-2012).

Temperature (F)
9/1/2012 – 9/30/2012



Departure from Normal Temperature (F)
9/1/2012 – 9/30/2012



Average temperatures (left) and departures from 1971-2000 normal average temperatures (right) for September 2012, across the South.

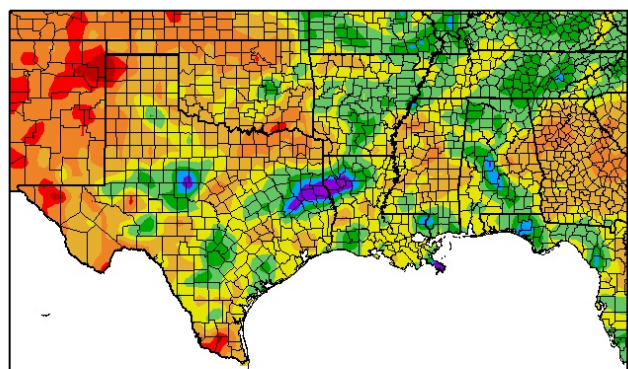
PRECIPITATION SUMMARY

Luigi Romolo, Southern Regional Climate Center

September precipitation in the Southern region varied spatially. Most regions received either anomalously high or anomalously low amounts of precipitation. In Oklahoma, for example, conditions were quite dry in the northeast and in the southeast, with most stations reporting less than half the expected precipitation for the month. This was also the case for the southern tip of Texas and in northwestern Arkansas. Conversely, many areas reported over 150 percent of normal precipitation. This includes most of eastern Tennessee, northern Louisiana, central Texas, and eastern Arkansas. The wettest areas of the region occurred in central Texas and in northwestern Louisiana, where stations reported over twice the normal allotment. In the case of Texas, it was their wettest month in two years. The state reported an average precipitation total of 4.01 inches (101.85 mm), which makes it the twenty-seventh wettest

September there on record (1895-2012). It also marks the first time since September of 2010, that the state reported an average precipitation value that was equal to or greater than 4 inches (101.60 mm). Tennessee reported its twelfth wettest September on record with an average precipitation total of 6.02 inches (152.91 mm). Both Louisiana and Arkansas reported their twenty-first wettest September on record (1895-2012), with Louisiana averaging 6.01 inches (152.65 mm), and Arkansas averaging 5.19 inches (131.83 mm). Other state average precipitation totals include Oklahoma with 2.90 inches (73.66 mm), and Mississippi with 4.15 inches (105.41 mm). Over the past three months (July to September), Mississippi has accumulated 19.76 inches (501.90 mm), making it the wettest July to September there on record (1895-2012).

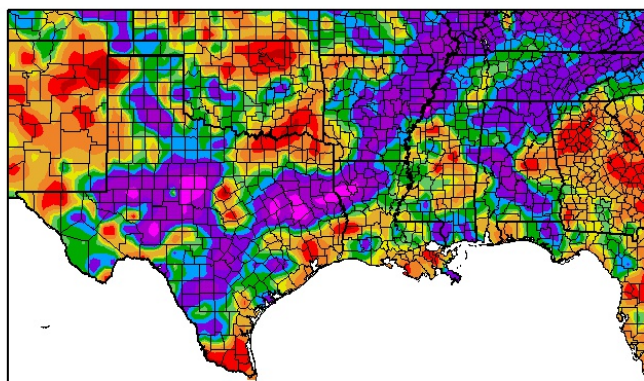
Precipitation (in)
9/1/2012 – 9/30/2012



Generated 10/11/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
9/1/2012 – 9/30/2012



Generated 10/11/2012 at HPRCC using provisional data.

Regional Climate Centers

Total precipitation values (left) and The percent of 1971-2000 normal precipitation totals (right) for September 2012.

HURRICANES CAN STILL HIT LOUISIANA IN OCTOBER

Barry D. Keim, Louisiana State Climatologist

Hurricanes in October? Looking at the archives, there were several storms that hit Bayou Country in the month of October, including Hurricane Hilda in 1964, Hurricane Juan in 1985, Hurricane Lili in 2002, and more recently Tropical Storm Mathew in 2004. Hilda was the most damaging, as it was a Category 4 hurricane in the Gulf on 2 October, and made landfall as a Category 3 storm late on 3 October. Examples of the heavy rainfall are shown for Hilda and Juan below in Figure 1, both of which had peak rainfall totals over 17 inches in Louisiana. Although Hilda was quite significant, October storms still don't have the same ring as late August and September storms, which include

the household names of Camille, Katrina, and Betsy. As the month of October progresses, the probability of seeing a hurricane lessens with each passing day, as sea surface temperatures in the breeding grounds continue to cool. Note however, that Hurricane Juan did a series of loops along the Louisiana coast over the last 3 days of October (29th – 31st), which serves as an example that hurricanes can hit the State quite late into the season. Don't pack away the hurricane supplies quite yet. If you have any questions, feel free to contact me at keim@lsu.edu.

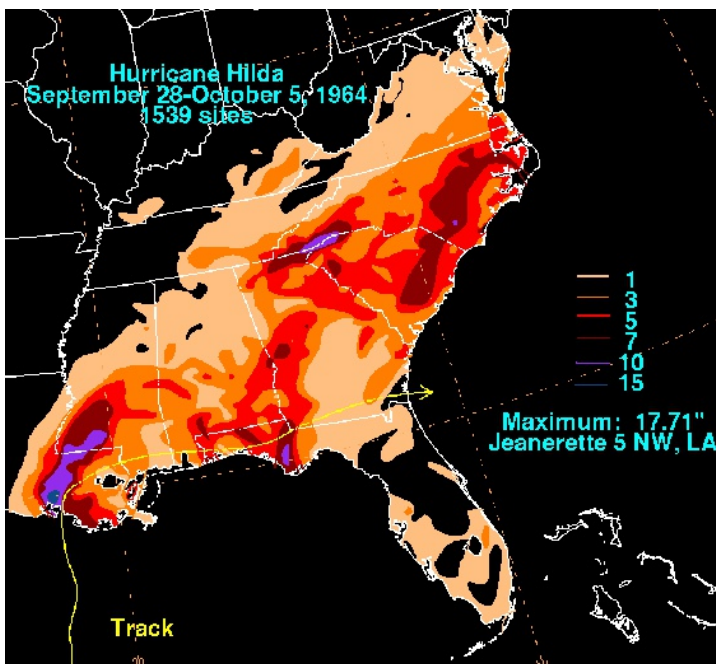
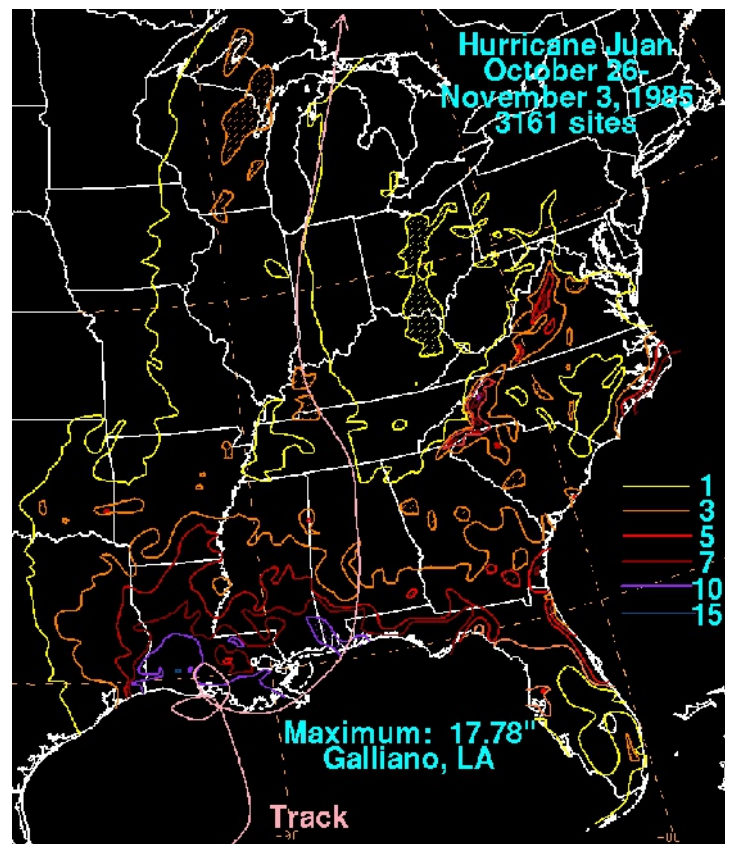


Figure 1: Rainfall pattern for Hurricanes Hilda (1964) and Juan (1985). Graphics are in the public domain and were produced by David Roth at the Hydrometeorological Prediction Center found at the following two websites:
<http://www.hpc.ncep.noaa.gov/tropical/rain/hilda1964filedrainblk.gif>
<http://www.hpc.ncep.noaa.gov/tropical/rain/juan1985rain.gif>.



CLIMATE PERSPECTIVE

State	Temperature	Rank	Precipitation	Rank
Arkansas	73.1	54 th Warmest	5.19	21 st Wettest
Louisiana	77.2	57 th Warmest	6.01	21 st Wettest
Mississippi	74.2	50 th Coldest	4.15	34 th Wettest
Oklahoma	74.1	36 th Warmest	2.90	54 th Driest
Tennessee	69.0	43 rd Coldest	6.02	12 th Wettest
Texas	76.7	40 th Warmest	4.01	27 th Wettest

State temperature and precipitation values and rankings for September 2012. Ranks are based on the National Climatic Data Center's Statewide, Regional and National Dataset over the period 1895-2011.

STATION SUMMARIES ACROSS THE SOUTH

Station Name	Temperatures (degrees F)								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	%Norm
El Dorado, AR	84.7	63.4	74.0	-1.0	100.0	9/6	49.0	9/19	7.43	4.14	226
Little Rock, AR	84.7	65.2	75.0	0.5	100.0	9/5	51.0	9/19	5.41	1.70	146
Baton Rouge, LA	88.1	68.4	78.2	0.7	96.0	9/6	57.0	9/20	5.41	0.57	112
New Orleans, LA	87.8	73.3	80.5	1.6	94.0	9/8	67.0	9/19+	3.03	-2.52	55
Shreveport, LA	88.9	66.2	77.5	0.5	103.0	9/6	54.0	9/20+	7.36	4.15	229
Greenwood, MS	86.4	62.1	74.2	-1.5	98.0	9/5+	45.0	9/19	6.84	3.59	210
Jackson, MS	86.4	65.2	75.8	0.3	96.0	9/6+	50.0	9/20	4.12	0.89	128
Tupelo, MS	83.9	61.7	72.8	-0.5	94.0	9/3	47.0	9/24	7.71	4.36	230
Oklahoma City, OK	88.0	63.5	75.7	2.5	105.0	9/7	50.0	9/9	3.57	-0.41	90
Ponca City, OK	87.7	61.7	74.7	1.7	108.0	9/3	49.0	9/18+	1.01	-2.66	28
Tulsa, OK	87.6	64.3	75.9	2.4	104.0	9/4+	52.0	9/18	1.78	-2.98	37
Knoxville, TN	80.9	60.2	70.5	-0.3	92.0	9/2	43.0	9/24	7.64	4.60	251
Memphis, TN	84.7	65.9	75.3	0.5	99.0	9/5	53.0	9/24+	7.01	3.70	212
Nashville, TN	81.6	60.3	70.9	-0.4	92.0	9/7	42.0	9/24	5.64	2.05	157
Amarillo, TX	85.5	57.1	71.3	2.2	100.0	9/4	45.0	9/16	3.25	1.37	173
El Paso, TX	87.9	63.7	75.8	0.4	99.0	9/3	49.0	9/15	1.41	-0.20	88
Dallas, TX	91.0	69.0	80.0	2.5	104.0	9/7+	57.0	9/9	1.75	-0.67	72
Houston, TX	89.7	69.7	79.7	0.8	98.0	9/5	59.0	9/21+	2.02	-2.31	47
San Antonio, TX	90.4	68.8	79.6	0.2	99.0	9/7+	59.0	9/10	7.31	4.31	244

Summary of temperature and precipitation information from around the region for September 2012. Data provided by the Applied Climate Information System. On this chart, "depart" is the average's departure from the normal average, and "% norm" is the percentage of rainfall received compared with normal amounts of rainfall. Plus signs in the dates column denote that the extremes were reached on multiple days. Blue-shaded boxes represent cooler than normal temperatures; red-shaded boxes denote warmer than normal temperatures; tan shades represent drier than normal conditions; and green shades denote wetter than normal conditions.

Disclaimer: This is an experimental climate outreach and engagement product. While we make every attempt to verify this information, we do not warrant the accuracy of any of these materials. The user assumes the entire risk related to the use of these data. This publication was prepared by SRCC/SCIPP with support in part from the U.S. Department of Commerce/NOAA. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of NOAA

SOUTHERN CLIMATE MONITOR TEAM:

Luigi Romolo, Regional Climatologist
Southern Regional Climate Center (LSU)

Charlotte Lunday, Student Assistant
Southern Climate Impacts Planning Program (OU)

Lynne Carter, Program Manager
Southern Climate Impacts Planning Program (LSU)

Margret Boone, Program Manager
Southern Climate Impacts Planning Program (OU)

Rachel Riley, Associate Program Manager
Southern Climate Impacts Planning Program (OU)

Hal Needham, Research Associate
Southern Climate Impacts Planning Program (LSU)

Barry Keim, State Climatologist for Louisiana
Co-PI, Southern Climate Impacts Planning Program (LSU)

Mark Shafer, Principal Investigator
Southern Climate Impacts Planning Program (OU)

Gary McManus, Associate State Climatologist for
Oklahoma
Southern Climate Impacts Planning Program (OU)

Kevin Robbins, Director
Southern Regional Climate Center (LSU)

CONTACT US

The *Monitor* is an experimental climate outreach and engagement product of the Southern Regional Climate Center and Southern Climate Impacts Planning Program. To provide feedback or suggestions to improve the content provided in the *Monitor*, please contact us at monitor@southernclimate.org. We look forward to hearing from you and tailoring the *Monitor* to better serve you. You can also find us online at www.srcc.lsu.edu and www.southernclimate.org.

For any questions pertaining to historical climate data across the states of Oklahoma, Texas, Arkansas, Louisiana, Mississippi, or Tennessee, please contact the Southern Regional Climate Center at 225-578-502. For questions or inquiries regarding research, experimental tool development, and engagement activities at the Southern Climate Impacts Planning Program, please contact us at 405-325-7809 or 225-578-8374.