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In This Issue:

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Providing Disaster Information to Oklahomans

Putnam E. Reiter, EOC Manager, Oklahoma Department of Emergency Management

A devastating ice storm impacted Oklahoma in January 2010. The most significant damage was felt across southwest and south-central Oklahoma, where 1-3 inches of ice developed on power lines and other exposed objects. The result was loss of power and other essential services for several days. Persons in the impact area had little access to disaster information, as spotty cell phone coverage was their primary information lifeline during the storm.

Oklahoma Representative Joe Dorman proposed developing a mobile app to act as an emergency information portal. The app would have a companion website, allowing access from traditional computers. In 2013, he proposed House Bill 2231 (HB2231), which instructs the Oklahoma Department of Emergency Management (OEM) and Oklahoma Office for Enterprise and Management Services (OMES) to collaborate on developing and deploying an emergency mobile app. HB2231 was signed into law by Governor Fallin in May 2013, with an effective date of November 2013.

Solving a Problem

Information during disasters is vital. Loss of major lifelines limits access to quality information. Providing an emergency information portal was essential. Handling loss of power and internet access was more complex. The app had to be designed to work when the device is disconnected from the internet. Many apps will not function beyond displaying a splash page if there is no internet access. To solve this issue, the app was designed with basic emergency information encoded into it. Since very little is expected to change, the app will provide basic emergency information. Once reconnected to the Internet, the app will synchronize and display the latest information.

Developing the App - OKEmergency

OEM staff started app development in 2013. We listed several features we thought were most important for the app: news, damage photo upload, map, preparedness guides for developing a safety kit, and push notifications. All of these components have complex intricacies to them.

The news function was designed around Yahoo Pipes and Google. Google was used to display the latest news from Yahoo Pipes, a news aggregator. OEM chose this since the app needed to be a portal for state emergency information.

Users may upload damage photos with GPS coordinates or mapping information, along with photo details. These photos are stored in a cloud server and are available to OEM staff. OEM can then provide the photographs to local emergency managers. These photographs remain on the server, providing a history of disaster recovery. A GIS map was built into the app to provide visual information on shelters, damage locations, weather alerts, and earthquakes. The map is remotely configurable and updates on the user's device when connected.

The preparedness guides and safety plan allow users to input their details into the app. This information is then stored in the app and available to the user. Restoring the device from

backup also retrieves this information, which allows the users to update their plan or kit as necessary. If the user does not backup their device, then the information will be lost. Finally, the app has the ability to send push notifications to the devices. These notifications can be customized by location, providing disaster specification information on links for updates.

The layout of the app was considered an important development step. The app needed to be simple for users to reach common areas. OEM staff looked at similar apps for guidance and worked to build on the best practices. The simple four button display with news below it was the outcome. The app was not meant to be flashy, functionality was our primary interest. Our initial feedback has been positive, but we know more work is needed. The next phase is being developed and we plan to publish an update later this year.

Future Development

The app has been available for over a year, and user requested features have provided us guidance for developing the next version. Several concepts are being discussed for this next version, but a few leading ideas are a native Spanish language version, modifying the damage photo upload, and redeveloping the integrated news feed. OEM is considering changing the look of the app but may wait another development cycle. I'll briefly discuss the three features listed above.

The last two weeks of May 2013 was an active severe weather period. In addition to tornadoes, damaging winds and hail, flooding also occurred. May 31, 2013, was a particularly significant flooding event for central Oklahoma. Consequently, tornadoes were also forecasted that day. Several people died due to flooding,

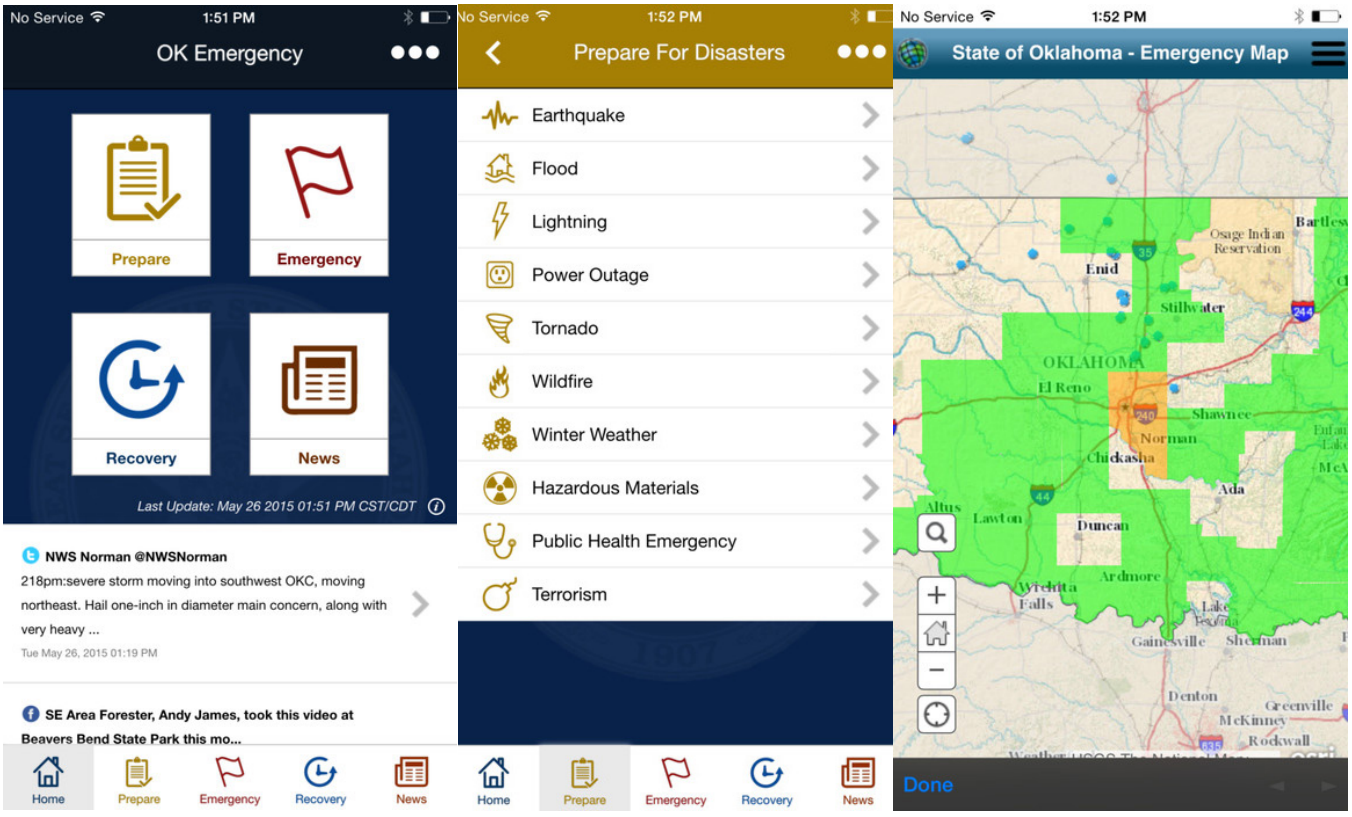

Figure 1. Images of the OK Emergency App for iphone. App is also available for anyone with an Android or Blackberrry device.

several of those non-English speaking. To address language barriers in emergency information, the app will be enhanced to add a native Spanish component.

Damage photographs are an important source of information for emergency managers. A feature was built into the original app to allow users to upload photographs. These photos are immediately stored on a central server, which OEM staff can access. Since the original implementation, OEM has obtained additional software specifically designed for damage assessment. As such, the app will be redesigned to work with this software. Once complete, any emergency manager with access will be able to instantly view damage photographs.

The original news feed was a combination of Yahoo Pipes and Google services. The Yahoo Pipes service was a news aggregator; which worked well for the app. Shortly after the app was deployed, Yahoo discontinued this service. OEM is working on a substitution plan, which will provide more robust news information for users. Retaining a central repository for official Oklahoma government information is vital.

Conclusion

OKEmergency provides a central repository of disaster information. This app is available to anyone with an iPhone, Android or Blackberry device. Additionally, there is a companion website, emergency.ok.gov, which mirrors the app. Users have the ability to track disaster news, develop a preparedness plan, build a safety kit or upload damage photos. By bringing important disaster information into a single app, users do not have to search the Internet.

Project Members

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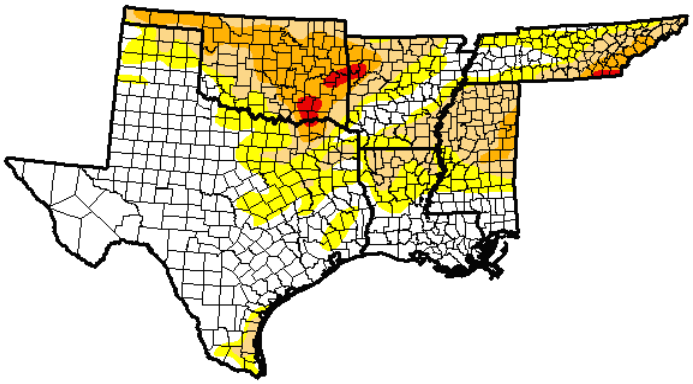
Drought Update

Luigi Romolo,
Southern Regional Climate Center

Drought conditions over the month of December improved dramatically in the eastern states of Tennessee, Mississippi, Louisiana and Arkansas, while in Oklahoma, conditions worsened from the previous month. At the end of November, approximately half of the Southern Region was experiencing some type of drought, with much of Mississippi and Tennessee categorized under extreme drought. As of January 3, 2017, only 27 percent of the Southern Region was experiencing drought, with little to no extreme drought remaining. Much of the drought along the Gulf coast was also eradicated. Though precipitation totals in the eastern parts of the region were not high, they were much higher than in previous months. Due to below normal precipitation in Oklahoma, drought conditions deteriorated slightly with more counties now falling under severe drought.

A tornado on December 5, 2016 in Ascension Parish caused some damage. The twister was rated EF1 with winds estimated to be 90 mph (145 kph). There were no reports of injuries or fatalities.

On December 13, 2016, a tornado in Harrison County, Mississippi caused some damage along Bell Creek Road near the Harrison/Hancock County line. Although some structural damage was reported, much of the damage appears to be limited to trees. There were no reports of injuries or fatalities.



Released Thursday, January 12, 2017
David Miskus, NOAA/NWS/NCEP/CPC

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	50.41	49.59	28.62	11.00	1.17	0.00
Last Week *1/3/2017*	53.95	46.05	27.69	11.09	1.11	0.00
3 Months Ago *10/11/2016*	55.34	44.66	17.37	4.47	0.60	0.14
Start of Calendar Year *1/3/2017*	53.95	46.05	27.69	11.09	1.11	0.00
Start of Water Year *9/27/2016*	76.89	23.11	6.74	1.89	0.28	0.11
One Year Ago *1/12/2016*	99.14	0.86	0.00	0.00	0.00	0.00

Intensity:

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

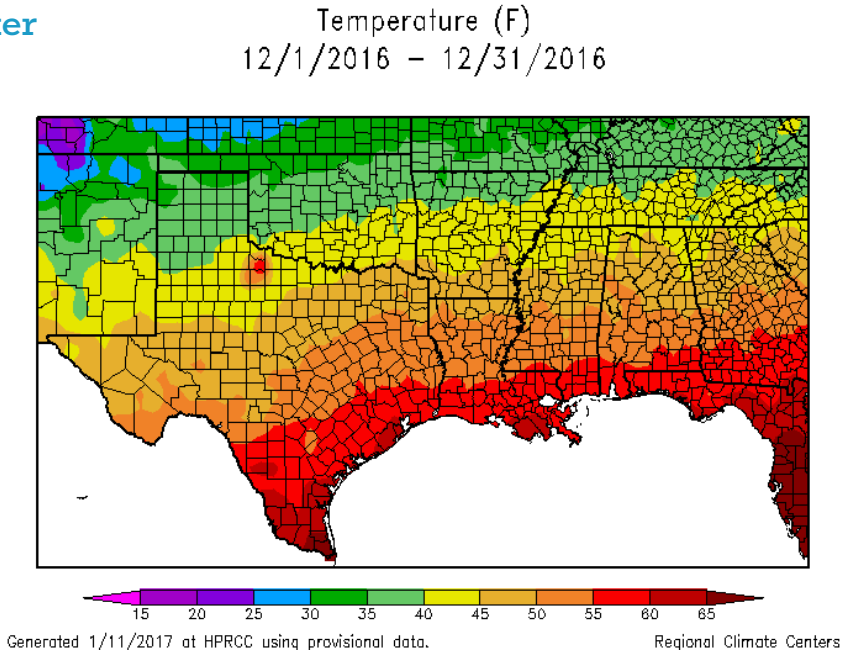
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Above: Drought conditions in the Southern Region. Map is valid for January 10, 2017. Image is courtesy of National Drought Mitigation Center.

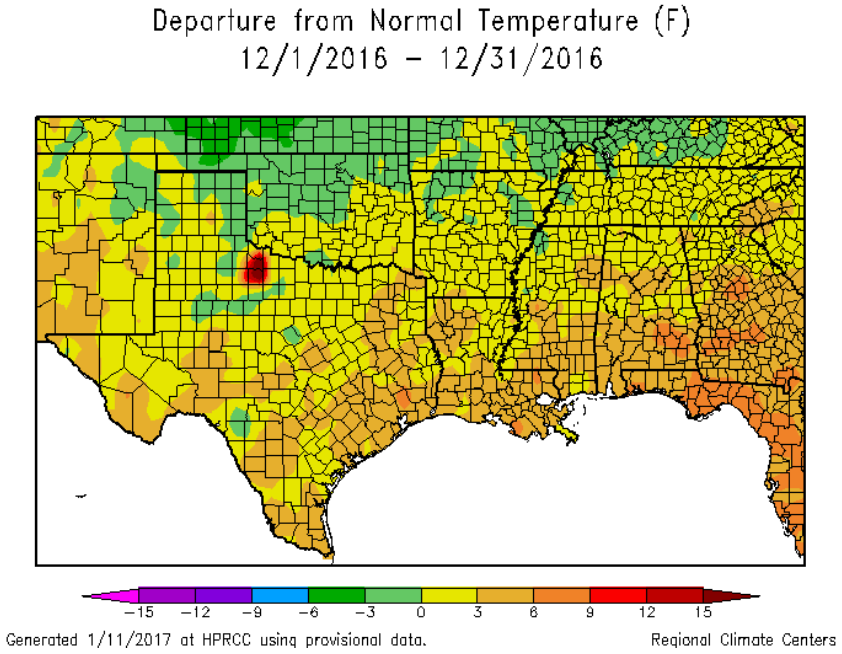
Temperature Summary

Luigi Romolo,
Southern Regional Climate Center

With the exception of north and central Oklahoma, December was the fourth consecutive warmer than normal month for the Southern Region. In fact, all states except for Oklahoma this past month, experienced a warmer than normal month from September through December. Temperature anomalies did vary spatially across the region in December, with the southern half of the region averaging between 2-4 degrees F (1.11-2.22 degrees C), and the northern half of the region averaging between normal and 2 degrees F (0 and 1.11 degrees C) above normal. The statewide monthly average temperatures were as follows: Arkansas reporting 42.30 degrees F (5.72 degrees C), Louisiana reporting 54.70 degrees F (12.61 degrees C), Mississippi reporting 49.80 degrees F (9.89 degrees C), Oklahoma reporting 38.60 degrees F (3.67 degrees C), Tennessee reporting 40.90 degrees F (4.94 degrees C), and Texas reporting 49.60 degrees F (9.78 degrees C). The state-wide temperature rankings for May are as follows: fiftieth warmest for Arkansas, nineteenth warmest for Louisiana, thirtieth warmest for Mississippi, fifty-second coldest for Oklahoma, forty-second warmest for Tennessee, and twentieth warmest for Texas. All state rankings and records are based on the period spanning 1895-2016.



Average December 2016 Temperature across the South

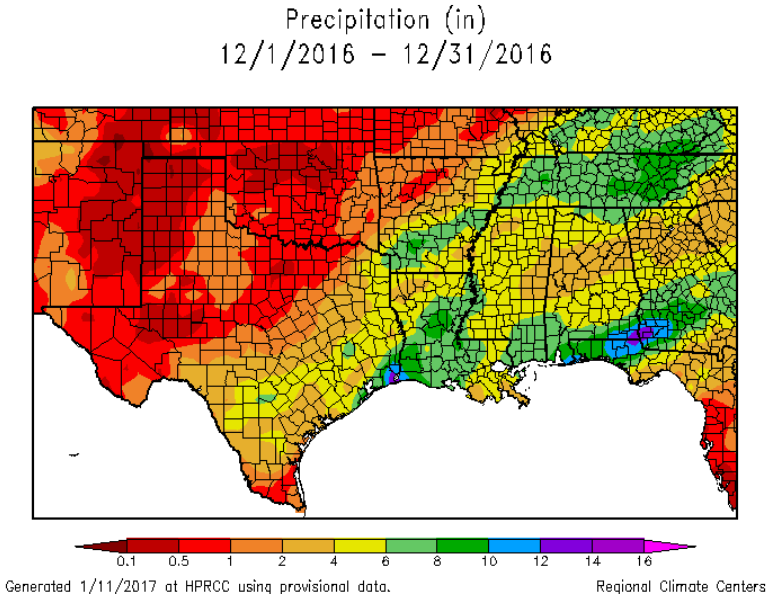


Average Temperature Departures from 1971-2000 for December 2016 across the South

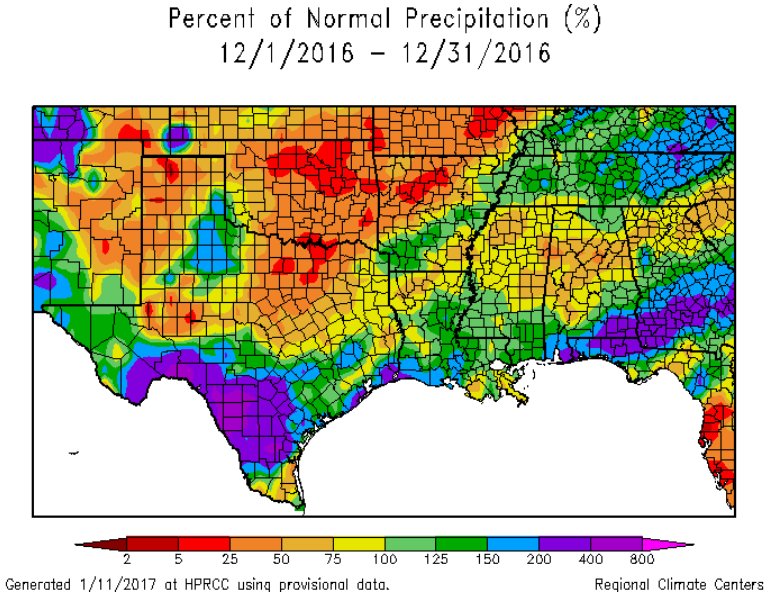
Precipitation Summary

Luigi Romolo,
Southern Regional Climate Center

December precipitation totals in the Southern Region varied spatially bringing with them a mixed bag of wetter than normal conditions in some counties, and drier than normal conditions in other counties. Along the southwestern Texas coast, precipitation totals varied between 150 to 200 percent of normal. To the north in central Texas and in Oklahoma, precipitation was scarce, with most stations only reporting between 5 to 50 percent of normal precipitation. This was also the case throughout most of northwestern Arkansas. Although precipitation was slightly below normal in the northern half of the state of Mississippi, the amount of precipitation was enough to help alleviate drought conditions. Near normal precipitation in western and central Tennessee, combined with above normal precipitation in eastern Tennessee also helped alleviate drought. The state-wide precipitation totals for the month are as follows: Arkansas reporting 3.58 inches (90.93 mm), Louisiana reporting 6.01 inches (152.65 mm), Mississippi reporting 4.93 inches (125.22 mm), Oklahoma reporting 0.75 inches (19.75 mm), Tennessee reporting 6.79 inches (172.47 mm), and Texas reporting 2.05 inches (52.07 mm). The state precipitation rankings for the month are as follows: for Arkansas it was the forty-sixth driest, for Louisiana it was the thirty-fifth wettest, for Mississippi it was the fifty-seventh driest, for Oklahoma it was the twentieth driest, for Tennessee it was the twenty-third wettest, and for Texas it was the forty-second wettest. All state rankings are based on the period spanning 1895-2016.

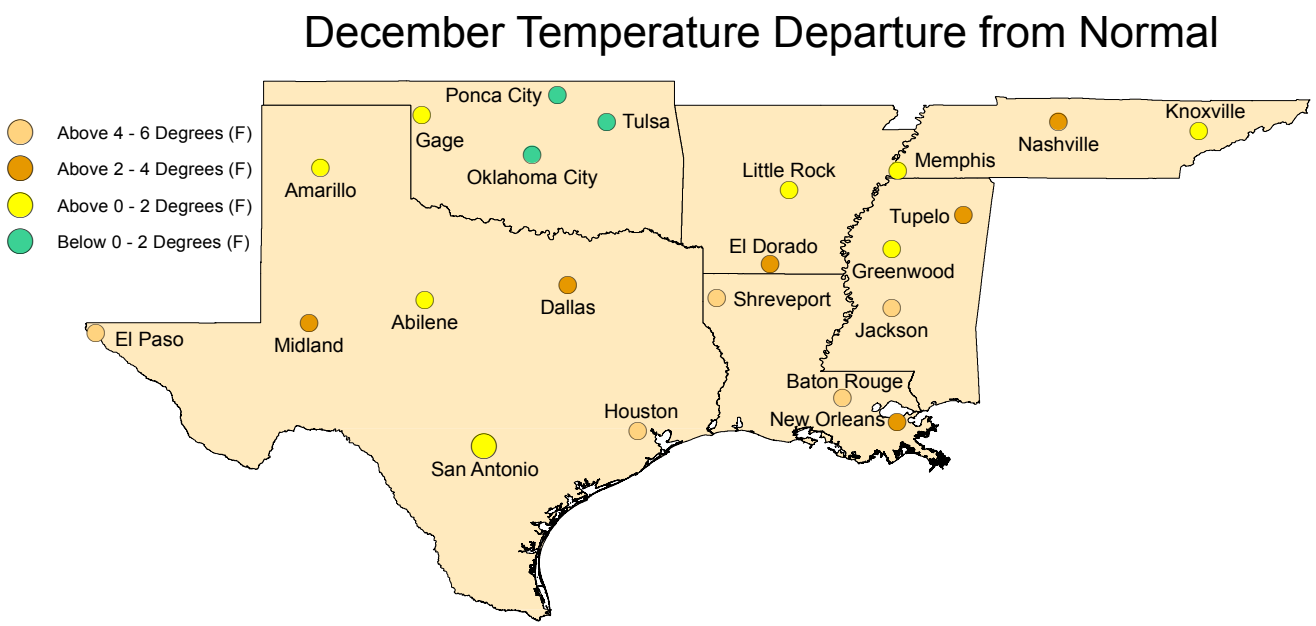


December 2016 Total Precipitation across the South

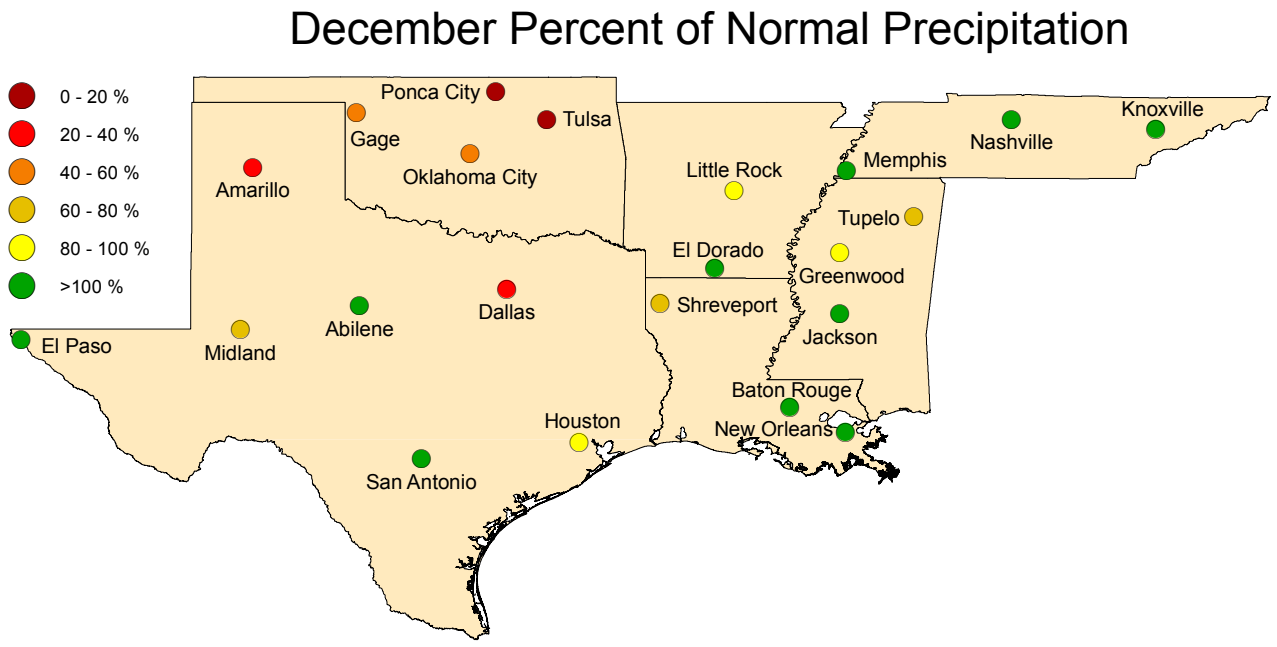


Percent of 1971-2000 normal precipitation totals for December 2016 across the South

Regional Climate Perspective in Pictures



December 2016 Temperature Departure from Normal from 1971-2000 for SCIPP Regional Cities



December 2016 Percent of 1971-2000 Normal Precipitation Totals for SCIPP Regional Cities

Climate Perspective

State	Temperature	Rank (1895-2011)	Precipitation	Rank (1895-2011)
Arkansas	42.30	50th Warmest	3.58	46th Driest
Louisiana	54.70	19th Warmest	6.01	35th Wettest
Mississippi	49.80	30th Warmest	4.93	57th Driest
Oklahoma	38.60	52nd Coldest	0.75	20th Driest
Tennessee	40.90	42nd Warmest	6.79	23rd Wettest
Texas	49.60	20th Warmest	2.05	42nd Wettest

State temperature and precipitation values and rankings for December 2016. 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 Summaries Across the South

Station Name	Temperatures								Precipitation (inches)		
	Averages				Extremes				Totals		
	Max	Min	Mean	Depart	High	Date	Low	Date	Obs	Depart	%Norm
El Dorado, AR	57.8	39.1	48.4	2.9	79	12/26	19	12/19	6.29	1.11	121
Little Rock, AR	52.4	34.2	43.3	0.3	77	12/17	12	12/19	4.39	-0.58	88
Baton Rouge, LA	67.7	48.5	58.1	4.7	82	12/27+	30	12/20+	9.71	4.11	173
New Orleans, LA	67.1	51.9	59.5	3.9	82	12/12	36	12/19	7.86	2.62	150
Shreveport, LA	61.5	43.9	52.7	4.6	83	12/26	23	12/19	3.14	-1.63	66
Greenwood, MS	58.9	37.0	48.0	2.0	81	12/26	20	12/20+	4.69	-0.96	83
Jackson, MS	63.0	42.4	52.7	4.9	81	12/26+	25	12/20	5.74	0.59	111
Tupelo, MS	56.5	36.3	46.4	2.3	79	12/26	20	12/10	4.90	-1.38	78
Gage, OK	49.8	20.7	35.2	0.1	77	12/16	-6	12/18	0.37	-0.52	42
Oklahoma City, OK	50.6	28.4	39.5	-1.1	73	12/25	4	12/18	0.79	-1.09	42
Ponca City, OK	47.8	22.4	35.1	-1.5	71	12/25	-3	12/18	0.28	-1.14	20
Tulsa, OK	50.7	28.1	39.4	-0.1	71	12/25	3	12/18	0.44	-2.05	18
Knoxville, TN	51.3	34.3	42.8	2.0	70	12/25+	19	12/10	6.96	2.46	155
Memphis, TN	52.9	36.2	44.5	0.9	77	12/26	15	12/19	7.33	1.59	128
Nashville, TN	52.1	33.5	42.8	2.4	76	12/25	17	12/20	6.94	2.70	164
Abilene, TX	57.4	35.7	46.5	1.2	78	12/28	10	12/18	1.39	0.16	113
Amarillo, TX	52.5	23.6	38.1	1.2	74	12/16	-3	12/18	0.27	-0.44	38
El Paso, TX	60.3	38.3	49.3	4.5	76	12/16	27	12/01	0.86	0.08	110
Dallas, TX	59.0	40.4	49.7	2.6	83	12/28	16	12/19	0.60	-1.98	23
Houston, TX	66.6	50.5	58.6	4.2	84	12/26	30	12/19	3.56	-0.18	95
Midland, TX	59.8	35.3	47.5	3.1	82	12/16	16	12/18	0.41	-0.19	68
San Antonio, TX	63.8	47.8	55.8	2.9	83	12/26	25	12/19	6.22	4.31	326

Summary of temperature and precipitation information from around the region for December 2016. 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. Blueshaded boxes represent cooler than normal temperatures; redshaded boxes denote warmer than normal temperatures; tan shades represent drier than normal conditions; and green shades denote wetter than normal conditions.

How Much Heat is Lost Through Your Head?

Barry Keim, Louisiana State Climatologist, Louisiana State University

Now that we're in the dead of winter - we are in winter, right? - I thought it time to address how to keep warm. I was certainly thinking about warmth during the Arctic Outbreak in early January, but that seems like a season ago! However, we're still in winter, and some of the coldest temperatures ever recorded in Louisiana were measured in February. My point is that there is still a lot of winter out in front of us, so don't put away your winter gear, OR HAT, just yet! The question I now pose is how much heat is lost through your head? I seem to remember percentages thrown at me throughout my childhood that were in the realm of 90 percent. While our collective parents may or may not have actually believed this, this line was probably used to encourage us all to wear hats during particularly cold weather.

Growing up, however, I was always suspicious of this number, simply because it didn't seem to make sense. How could wearing a hat (and I mean only a hat) be THAT much more important than wearing shoes/socks, pants, and a coat? Why would the hat be 9 times more effective at conserving your total body heat when compared to all of these other garments combined? Well, the reality is that it's not.

The thinking is that this myth may have gotten started based on some experiments conducted by the military, in a survival manual, which noted that 40-45 percent of a person's heat is lost through your head. And since 40-45 percent is nearly the same as 90 percent, the exaggeration continued and was then perpetuated across all segments of society. The reality is that your head makes up between 7 to 10 percent of the total surface of your body. And guess what? It loses heat at approximately the same rate of any other part of your body. So if you were in a state of undress, you would lose heat almost equally from every square inch of exposed skin surface. So...not wearing a hat is no different from not wearing gloves, wearing a short-sleeved shirt and exposing your arms, or wearing shorts. Exposed hands, chest, legs, or whatever, loses heat at roughly the same rate per square inch as your exposed noggin, and your head would account for about 7-10 percent of your heat loss. Now having said that, we do lose more heat from our heads when we go outside, fully dressed, with coat, but with nothing covering our heads. The point is that there is nothing special about the surface of your head that makes it lose heat more quickly than any other body part. So if your rosy cheeks are exposed, it makes no difference if we're talking about the cheeks on your face or the cheeks on your bum...at least as it relates to heat loss! E-mail me with questions or feedback at keim@lsu.edu.

Figure 1. Women in winter hat. Image is in the public domain and can be accessed at http://www.publicdomainpictures.net/view-image.php?image=29944.

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Contact Us

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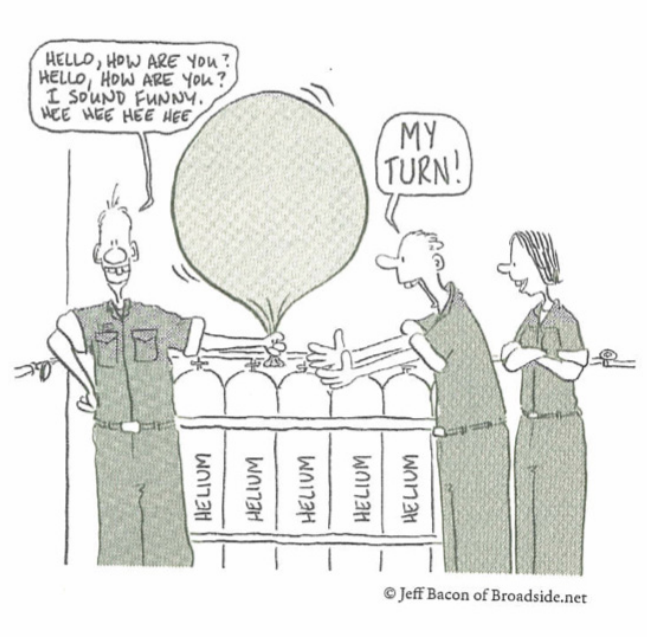
For any questions pertaining to historical climate data across the states of Oklahoma, Texas, Arkansas, Louisiana, Mississippi, or Tennessee, please contact the Southern Regional Climate Center at 225-578-5021.

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.

Monthly Comic Relief



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