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Serving Those Who Serve Others: The OK-First Program

James Hocker, OK-First Program Manager

As the days continue to accumulate an extra minute or two of sunshine each day and warmer weather becomes frequent, Mother Nature continues to drop subtle hints that springtime is not far away. This particularly unsettled season brings with it an eclectic mix of weather hazards to the South Central United States that very few parts of the world can compete with - hail storms, flooding, tornadoes, wildfires, drought, and even late winter storms. And while we may not think of these hazards very much from day to day, did you know that one profession - emergency management - is there to plan for, manage, and help communities recover from these types of hazards (and many more!) not just during our frenetic springtime, but every single day of the year?

Emergency managers rely heavily upon high quality information and communications in order to support their responsibilities in creating plans, managing high-impact events (both weather and non-weather related), and coordinating the recovery process following a disaster. While information flow and communications methods are prolific today, that has not always been the case. A series of national reports in the 1960s, 1970s, 1980s, and 1990s repeatedly cited critical information and communications gaps affecting the emergency management community - the "link between meteorological service and the users of weather information was markedly deficient" (National Research Council 1980). And this issue was not isolated to a specific type of event but spanned a variety of hazards including floods, tornadoes, and severe heat.

Following the commissioning of the Oklahoma Mesonet in 1994 - Oklahoma's state-wide automated weather monitoring network - scientists at the Oklahoma Climatological Survey set out to bridge the gap plaguing the weather enterprise and the emergency management community. Not only was there a lack of a system to disseminate high quality weather information specifically to local officials, but appropriate meteorological training for emergency managers was essentially non-existent as well. To address this information and training gap, the Oklahoma Climatological Survey - thanks to a grant awarded by the U.S. Department of Commerce - created a weather education and data program called "OK-First" in 1996. The concept of OK-First was simple, yet novel - to provide free, high-quality weather and radar training to emergency managers and secure, password-protected tools (as well as a new computer!) in which to view them. The concept was an immediate success with demand for classes greatly exceeding capacity. Numerous early success stories, including a number of life-saving decisions made during

Figure 1. Original OK-First Program Manager Dale Morris leads a session on radar at an August 1999 OK-First class at the University of Oklahoma.

the May 3, 1999 tornado outbreak, solidified the importance of the program and resulted in the program becoming permanently funded by the State of Oklahoma following the completion of the grant.

Over the years, there has been a natural expansion of the community of users who participate in OK-First. While emergency managers formed the initial cadre of trained OK-First users, interest quickly spread to other weather-impacted officials including fire officials, law enforcement, city and county management, and tribal officials. Over the last 10 years, the list of participating groups has continued to grow and diversify and now includes health officials, school officials, military officials, voluntary organizations active in disasters, and state and federal agencies. Taken together, the trained user base of OK-First is no longer solely emergency managers, but more appropriately "public safety officials," since it involves a variety of professions that share the common goal of ensuring public safety.

Likewise, much as the participants in the program have evolved so too have the tools that OK-First provides. Early OK-First tools employed the use of cutting edge visualization software embedded into web browsers (called a "plug-in") to provide dynamic, zoomable weather and radar maps. More recently, as browser plug-in support has faded away, the OK-First weather data website has been re-invented using new cutting edge technologies to provide users with the same dynamic map experience, yet in a customizable interface to support a myriad of users with different data needs. In addition to decades of data delivery via a password-protected website, OK-First staff also designed and maintains a stand-alone radar application available on Windows computers called "RadarFirst." Launched in 2009, RadarFirst provides access to live radar data, lightning data, National Weather Service warnings, and spotter locations via a 1- and 2-panel display. OK-First users provide feedback on the software with their requests being added to the software through periodic updates.

And while changes in technology and

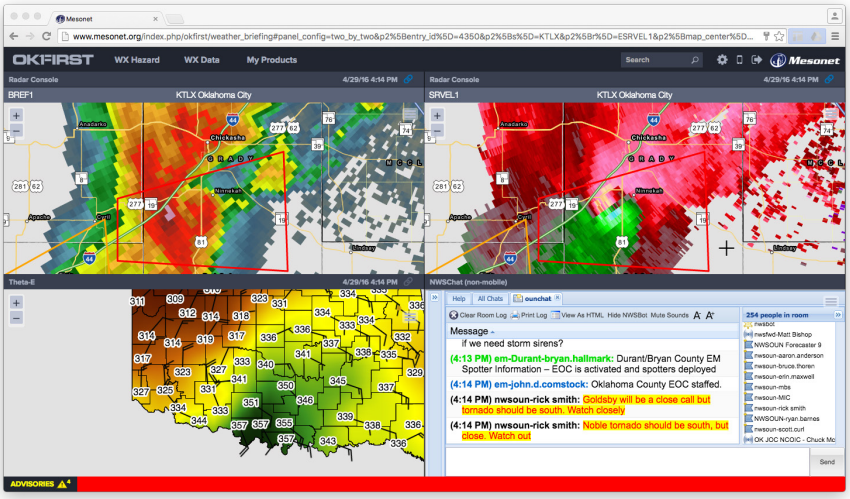


Figure 2. The OK-First Weather Briefing page during a tornado event on April 29, 2016.

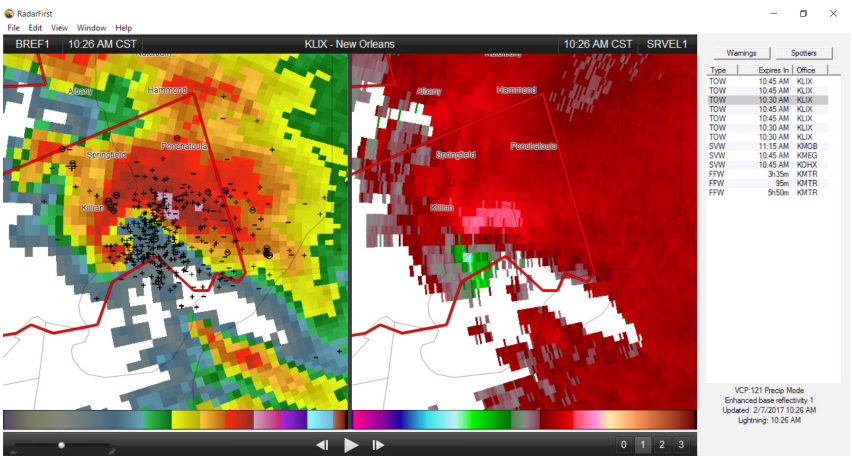


Figure 3. The OK-First RadarFirst software displaying radar reflectivity (left panel) and storm-relative velocity (right panel), warnings, and lightning data on February 7, 2017. Data shown in this example are taught extensively in OK-First classes.

participants have occurred throughout the program, the bedrock from the very beginning of OK-First has always been education and training. Initial OK-First Certification is an intensive 4-day weather crash course that includes a variety of topics such as how to read weather maps, radar interpretation, National Weather Service products, severe storms, flooding, fire weather, and winter weather. The classes are taught by degreed meteorologists, are held several times a year, and are free of charge to eligible participants. An additional shorter version of OK-First training is offered via a 2-day Assistant Certification class to offices that need members of their staff to receive the radar and severe storm portion of the training.

Unlike some outreach programs that offer a "one and done" approach to training, OK-First established a different approach from the very beginning whereby users were required to attend re-certification training at defined intervals in order to retain their Certification and data access. That requirement has resulted in long-term relationships between the staff at the Oklahoma Climatological Survey and the community of OK-First users. The premise behind the continual training approach is similar to that of recurring weapons training for officers - we all need some time at "the range" to practice and refine our skills. This "learn through repetition" approach has proven very successful, if not crucial, as it has provided an avenue for updating the community of users as software/tools change, new datasets become available (e.g., dual-pol radar), and new topics are introduced in classes. The required training has also proven to be an invaluable method for continually obtaining crucial feedback on the website, software, and training topics, which has allowed OK-First to stay true to its users and their changing needs over the years.

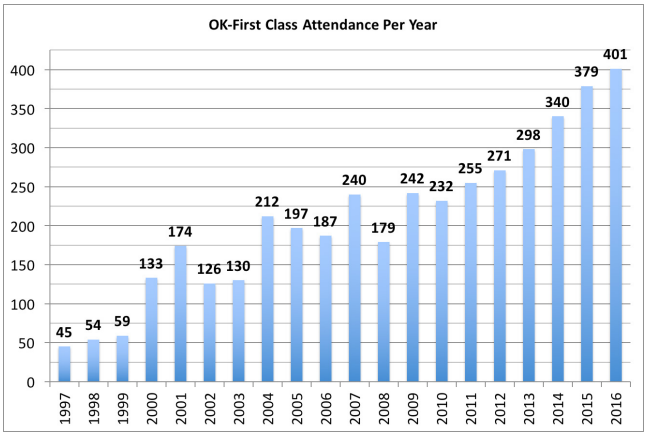


Figure 4. OK-First class attendance totals throughout the duration of the program (as of 2016).

Now more than two decades, 250+ classes, and 1300+ people trained later OK-First continues to serve Oklahoma officials as it did when it started - by providing free weather training, data, and tools to its users. Considering the proliferation of weather information and the variety of methods for receiving that information today it just goes to show how important relationships, training, and high quality tools and software are. We consider it our service to those who serve others, and we look forward to continuing to do so for many years to come.

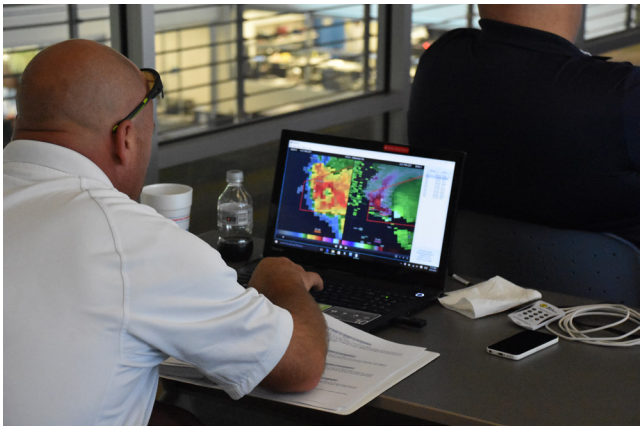


Figure 6. OK-First Certification student working on a severe thunderstorm lab exercise in the RadarFirst software on August 31, 2016.

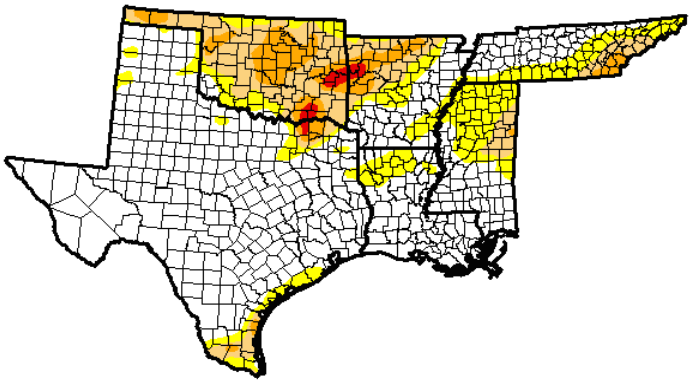
Drought Update

Luigi Romolo,
Southern Regional Climate Center

Over the month of January 2017, drought conditions improved in some areas, but worsened in others. In Mississippi, anomalously high precipitation totals helped eradicate drought in most of the northern counties. This was also the case in northern Louisiana. Elsewhere, drought conditions did not change significantly.

On January 20, 2017, four tornadoes touched down in southern Mississippi. Four fatalities and fifty-six injuries were reported in Lamar County. One other person was injured in Perry County. Extensive damage was reported in Forrest County and in Perry County.

On January 21, 2017, more tornadoes were reported as part of an outbreak in which dozens of twisters touched down from Texas across the southern states into Georgia and South Carolina. In Louisiana, three people were injured. One injury was reported in Bossier Parish, another in Natchitoches Parish and the third in Grant Parish. In Bossier Parish, structural damage was reported as multiple mobile homes were rolled and destroyed. This was the result of an EF2 tornado. Another EF2 was also reported near Natchitoches Parish. In Texas, damage was mostly restricted to trees and power lines. In Mississippi, one person was reported injured in Lauderdale County from an EF2 tornado that tracked 7.3 miles (11.75 kilometers) and was estimated to be approximately 550 yards (502.92 meters) wide.



Released Thursday, February 9, 2017
David Simeral, Western Regional Climate Center

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	66.81	33.19	17.89	6.72	0.84	0.00
Last Week *1/31/2017*	68.68	31.32	17.70	6.40	0.73	0.00
3 Months Ago *11/8/2016*	39.48	60.52	43.05	18.21	3.61	0.76
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 *2/9/2016*	93.94	6.06	0.00	0.00	0.00	0.00

Intensity:

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

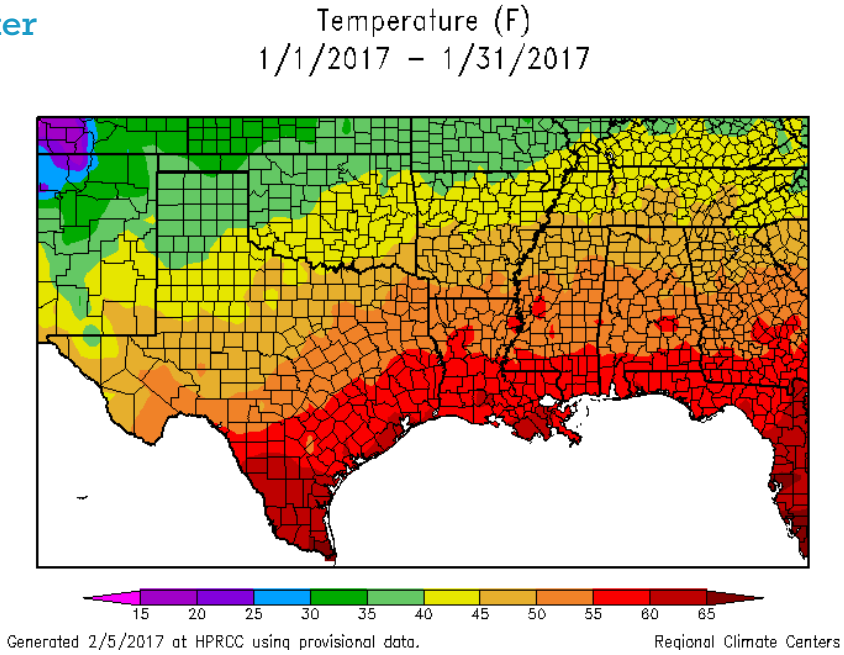
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Above: Drought conditions in the Southern Region. Map is valid for February 7, 2017. Image is courtesy of National Drought Mitigation Center.

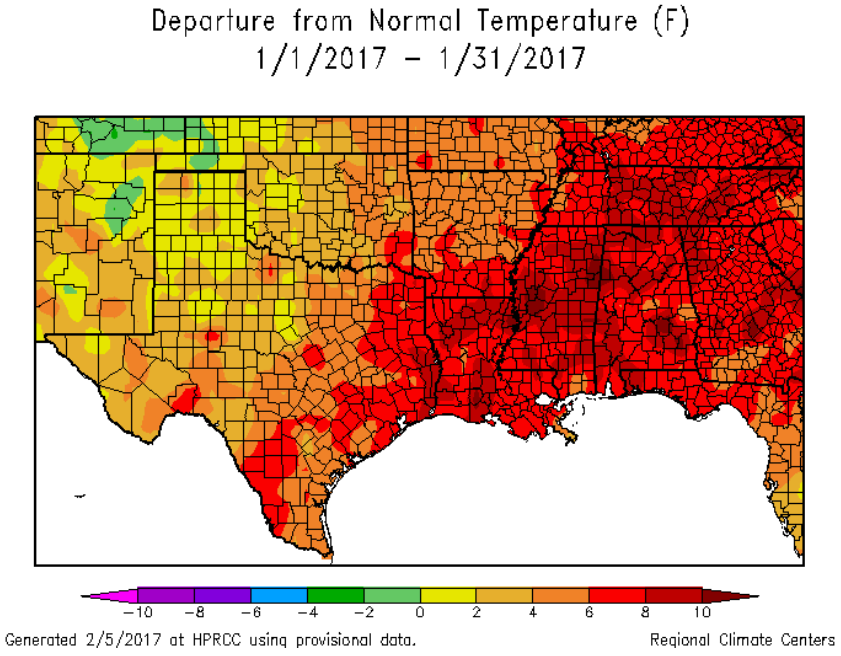
Temperature Summary

Luigi Romolo,
Southern Regional Climate Center

January was a warmer than normal month for all six states in the Southern Region. In fact, the temperature rankings for each state were all in the top ten, with the exception of Oklahoma. For the region as a whole, it was the eighth warmest January on record. Temperatures generally averaged between 6 to 8 degrees F (3.33 to 4. 44 degrees C) above normal in Louisiana, Mississippi and Tennessee. Elsewhere, temperatures ranged between 2 to 4 degrees F (1.11 to 2.22 degrees C) above the monthly normal. The statewide monthly average temperatures were as follows: Arkansas reporting 45.30 degrees F (7.39 degrees C), Louisiana reporting 57.00 degrees F (13.89 degrees C), Mississippi reporting 52.90 degrees F (11.61 degrees C), Oklahoma reporting 40.80 degrees F (4.89 degrees C), Tennessee reporting 45.00 degrees F (7.22 degrees C), and Texas reporting 50.80 degrees F (10.44 degrees C). The state-wide temperature rankings for January are as follows: Arkansas (tenth warmest), Louisiana (fifth warmest), Mississippi (fifth warmest), Oklahoma (sixteenth warmest), Tennessee (sixth warmest), and Texas (ninth warmest). All state rankings are based on the period spanning 1895-2017.



Average January 2017 Temperature across the South

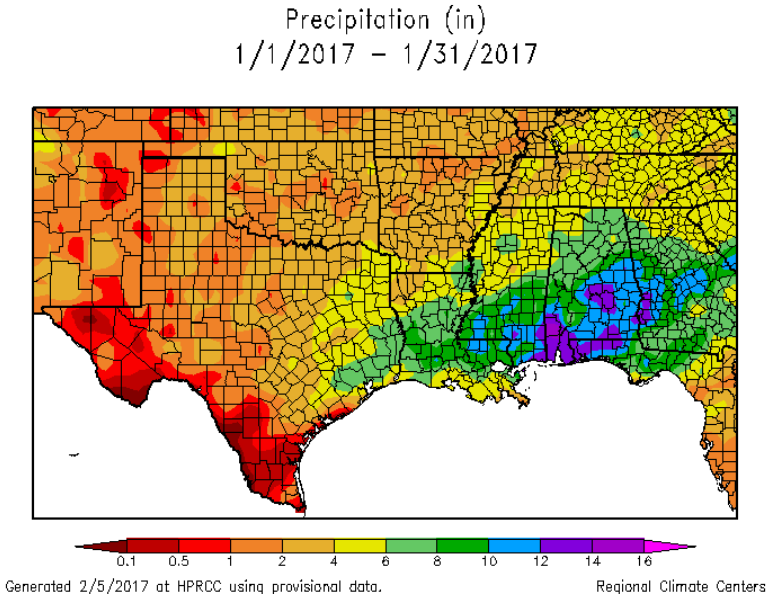


Average Temperature Departures from 1971-2000 for January 2017 across the South

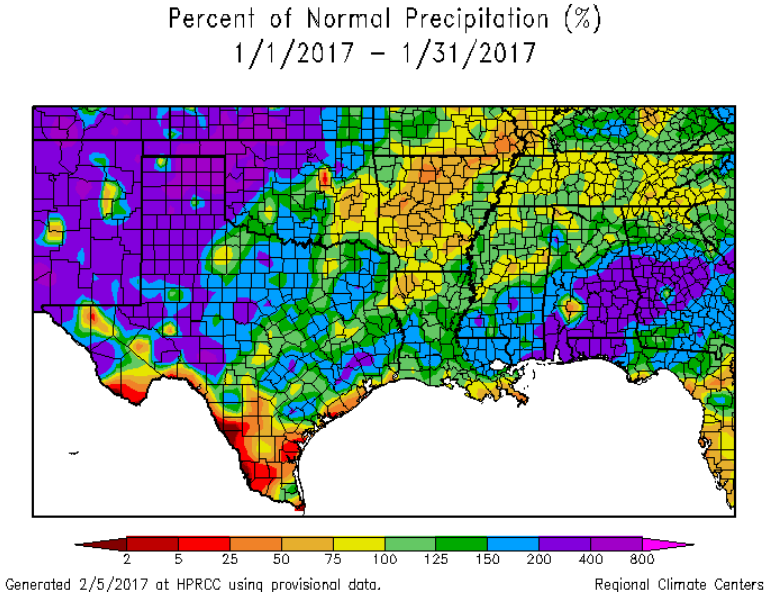
Precipitation Summary

Luigi Romolo,
Southern Regional Climate Center

Precipitation values for the month of January varied spatially across the Southern Region. Precipitation totals in western Texas and western Oklahoma ranged between 130 to over 200 percent of normal. By contrast, conditions were quite dry across much of eastern Oklahoma and Arkansas, with most stations reporting between 25 to 70 percent of normal. Along the gulf coasts of Louisiana and eastern Texas, precipitation values were as expected for the month, ranging between 90 to 110 percent of normal. This was also the case in eastern Tennessee. The state-wide precipitation totals for the month are as follows: Arkansas reporting 3.03 inches (76.96 mm), Louisiana reporting 6.41 inches (162.81 mm), Mississippi reporting 7.06 inches (179.32 mm), Oklahoma reporting 2.58 inches (65.53 mm), Tennessee reporting 4.22 inches (107.19 mm), and Texas reporting 2.31 inches (58.67 mm). The state precipitation rankings for the month are as follows: Arkansas (forty-ninth driest), Louisiana (twenty-eighth wettest), Mississippi (twenty-first wettest), Oklahoma (eleventh wettest), Tennessee (fifty-eighth driest), and Texas (twenty-fifth wettest). All state rankings are based on the period spanning 1895-2017.

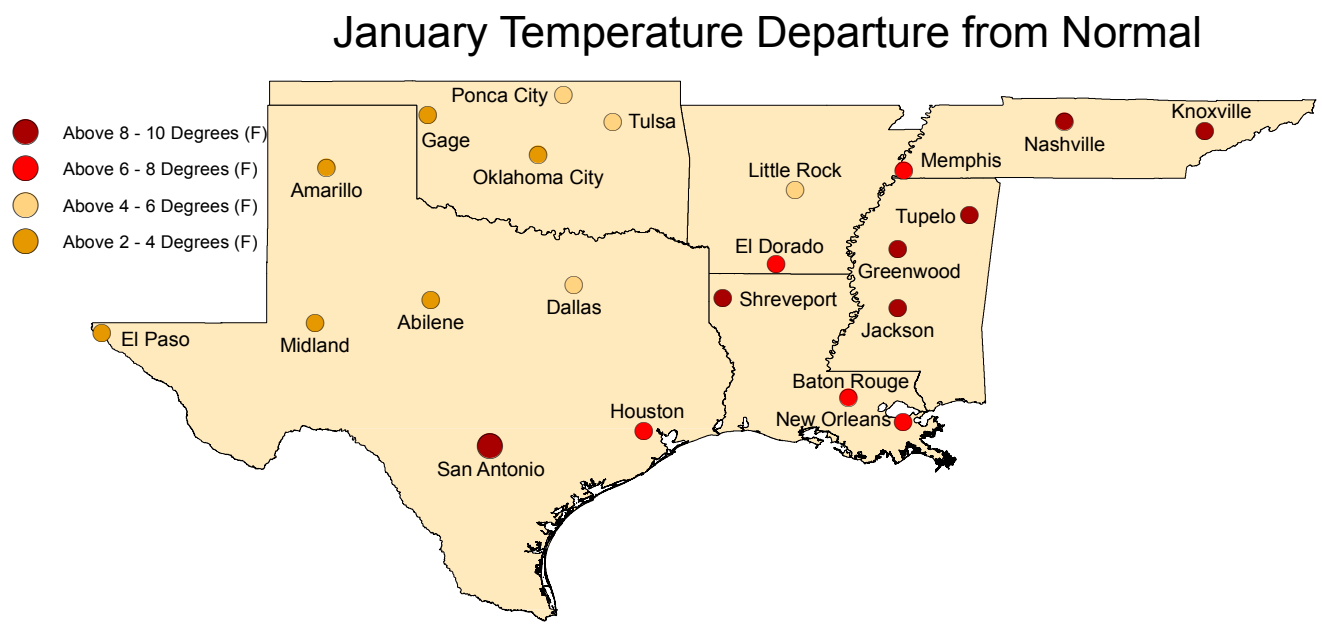


January 2017 Total Precipitation across the South

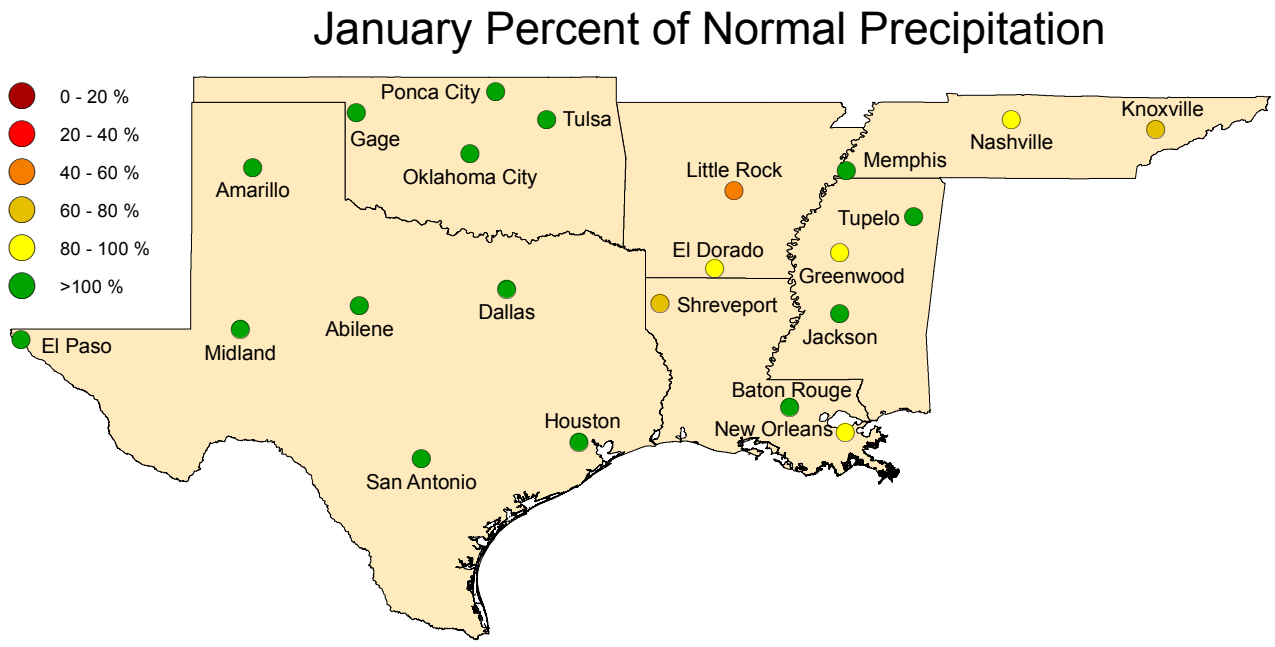


Percent of 1971-2000 normal precipitation totals for January 2017 across the South

Regional Climate Perspective in Pictures



January 2017 Temperature Departure from Normal from 1971-2000 for SCIPP Regional Cities



January 2017 Percent of 1971-2000 Normal Precipitation Totals for SCIPP Regional Cities

Climate Perspective

State	Temperature	Rank (1895-2011)	Precipitation	Rank (1895-2011)
Arkansas	45.30	10th Warmest	3.03	49th Driest
Louisiana	57.00	5th Warmest	6.41	28th Wettest
Mississippi	52.90	5th Warmest	7.06	21st Wettest
Oklahoma	40.80	16th Warmest	2.58	11th Wettest
Tennessee	45.00	6th Warmest	4.22	58th Driest
Texas	50.80	9th Warmest	2.31	25th Wettest

State temperature and precipitation values and rankings for January 2017. 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	60.9	41.2	50.8	6.9	78	01/12	14	01/07+	3.95	-0.35	92
Little Rock, AR	55.1	37.3	46.2	5.4	75	01/31+	12	01/07	1.47	-2.08	41
Baton Rouge, LA	69.7	48.9	59.3	7.6	82	01/18+	21	01/08	9.68	3.96	169
New Orleans, LA	69.0	51.3	60.1	6.7	80	01/20	27	01/07	4.90	-0.25	95
Shreveport, LA	65.0	45.5	55.3	8.5	81	01/12	18	01/08	2.56	-1.64	61
Greenwood, MS	61.6	42.4	52.0	8.6	77	01/12	12	01/08	4.23	-0.29	94
Jackson, MS	65.6	44.7	55.2	9.5	80	01/17	17	01/08+	7.90	2.93	159
Tupelo, MS	59.6	41.9	50.8	9.1	77	01/14	12	01/08	5.77	1.29	129
Gage, OK	52.0	24.4	38.7	4.0	76	01/30	-3	01/07+	2.70	2.14	482
Oklahoma City, OK	54.3	28.7	41.5	2.3	79	01/11	-3	01/07	1.57	0.18	113
Ponca City, OK	51.3	27.8	39.5	4.6	73	01/30+	3	01/07	2.62	1.62	262
Tulsa, OK	53.5	30.5	42.0	4.3	78	01/11	7	01/07	3.42	1.76	206
Knoxville, TN	54.9	39.5	47.2	9.0	68	01/25+	7	01/08	3.37	-0.95	78
Memphis, TN	56.4	40.6	48.5	7.3	76	01/12	13	01/08+	4.26	0.28	107
Nashville, TN	55.0	39.1	47.0	9.3	72	01/16	8	01/08	3.34	-0.41	89
Abilene, TX	59.1	35.4	47.2	2.3	81	01/11	9	01/07	1.93	0.91	189
Amarillo, TX	52.4	26.4	39.4	2.4	78	01/09	-3	01/07	3.17	2.45	440
El Paso, TX	59.6	37.9	48.8	3.7	72	01/11+	26	01/07	1.05	0.65	262
Dallas, TX	62.0	40.4	51.2	5.3	80	01/31+	14	01/07	4.39	2.26	206
Houston, TX	69.4	50.4	59.9	6.8	81	01/12	21	01/07	6.09	2.71	180
Midland, TX	60.5	35.0	47.8	3.9	83	01/11	11	01/07	1.12	0.56	200
San Antonio, TX	69.6	45.5	57.5	5.7	83	01/21	19	01/08	2.72	0.96	155

Summary of temperature and precipitation information from around the region for January 2017. 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.

Punxsutawney Phil's Fearless Forecast

Barry Keim, Louisiana State Climatologist, Louisiana State University

On 2 February 2017, Punxsutawney Phil awoke from his slumber, ventured out from his burrow in Gobbler's Knob, and saw his shadow. This, of course, means that we can expect 6 more weeks of winter. What I find most "interesting" about Groundhog Day, is that this is the ONLY weather/climate holiday on most calendars around the world. This fact was pointed out to me by my colleague, Alan Black, while we were headed to a meeting in North Carolina last week. This got me to thinking.....which can be a very dangerous thing! Here we are working in the weather world, where there have been some really great meteorologists - Edward Lorenz, the MIT professor who discovered Chaos Theory, Jacob Bjerknes who developed the concept of a cyclone model with warm and cold fronts, and Gabriel Fahrenheit, who invented the thermometer and Fahrenheit scale - and the only weather holiday is named for an amateur furry rodent. I guess I'm a little troubled by this thought - Furry Rodent Forecasting is held in higher regard than these meteorological/climatological greats. I guess this is just another example of how life is not always fair! As for Punxsutawney Phil's Fearless Forecast, you can bank on it! OR can you? Did you know that Punxsutawney Phil now has some regional groundhog competition? For example, General Beauregard Lee in Lilburn, Georgia awoke on 2 February 2017 and did NOT see his shadow, thus predicting the early arrival of spring to the Southeast. Staten Island Chuck in New York also did not see how shadow, nor did Sir Walter Wally of Raleigh, NC. Meanwhile, over at Audubon Zoo, T-Boy the climate-predicting nutria also predicted an early Spring, but Pierre C. Shadeaux over in New Iberia also did not see his shadow, and the interpretation is such that we can expect the continuation of spring, and less summer heat. And if you want to know what the climate scientists say, the Climate Prediction Center is still forecasting warm weather for February across nearly the entire lower 48 States (except New England), and for the entire Southeast for the next three months. However, with seasonal forecasting, furry rodents really aren't that much worse at long term weather prediction than the weather and climate scientists. E-mail me with questions or feedback at keim@lsu.edu.

Figure 1. An awakened Punxsutawney Phil on Groundhog Day at Gobbler's Knob, Pennsylvania. Image was taken by Anthony Quintano and is available at https://commons.wikimedia.org/wiki/File:Groundhog_Day,_Punxsutawney,_2013-2.jpg.

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