



SOUTHERN CLIMATE *MONITOR*

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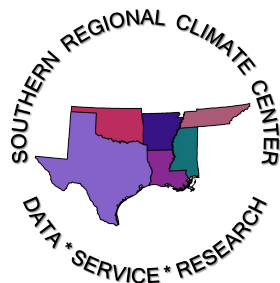
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IMPACTS OF FEBRUARY SNOWSTORMS ACROSS THE SCIPP REGION

Rachel Riley, Southern Climate Impacts Planning Program

Winter Storms: January 31st – February 4th

The winter of 2010/2011 was fairly quiet across most of the SCIPP region until the last day of January, when the first of three major snowstorms began to impact the area. This was a shock to many people as warm temperatures had dominated the southern U. S. the previous couple of days. In fact, some areas of Oklahoma recorded high temperatures in the 70s on January 28th and 29th which broke several records. However, temperatures dropped 30-40 degrees F on January 30th, and below 0 degrees F thereafter as extremely cold arctic air poured into the region.

The first of three winter storms brought thunder-sleet, freezing rain, and heavy snow to Oklahoma and north Texas on January 31st. Winds gusted to 35-45 mph, making travel treacherous for many people across the region. Blizzard conditions continued for many parts of Oklahoma on February 1st, and a State of Emergency was declared (ODEM 2011). Federal disaster aid was sent to Oklahoma to supplement State and local response efforts. Almost two feet of snow fell in northeast Oklahoma (Figure 1). On February 2nd, Dallas/Ft. Worth, TX broke its record low maximum temperature, as it only warmed to 20 degrees F. The previous record low maximum temperature for February 2nd was 21 degrees F, set in 1905. Rolling blackouts were also reported across Texas because of the high electricity demand (Texas OSC 2011).

As the first storm moved east, heavy snow and ice continued to fall in Arkansas and Louisiana, and another storm system tracked across the Texas panhandle. This second storm brought more snow, sleet, and ice to the southern plains (Figure 2). Some areas were still digging out from the storm that hit a few days prior, so this one came as a bit of a surprise to some. In Louisiana, several highways and overpasses were closed



Figure 1: Shoveled sidewalk after 21 inches of snow fell in Owasso, OK. (Courtesy of Karen Hatfield, NWS Tulsa)

due to ice, and drivers had to scrape away ice from their vehicles (Figure 3). Schools were closed across the entire state, and power outages were reported in several parishes due to ice on trees and power lines. Three people died in far northeast Oklahoma when their car went off a bridge, and one person died in a sledding accident (ODEM 2011b). Over 500

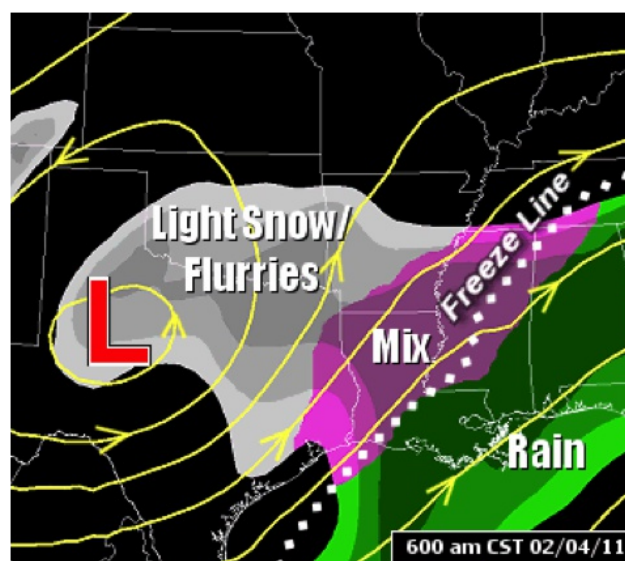


Figure 2: On February 4th, a second storm system ("L") aloft was in Texas. A variety of precipitation broke out east of the system at 600 am CST. (Courtesy of NWS Little Rock)

storm-related injuries were also reported in Oklahoma, and at least 98,000 Texans were without power at one point during/after the storm (TDPS 2011). Overall the storm produced as much as 21 inches of snow across the region and almost 1 inch of ice (Table 1).



Figure 3: Picture of the Ice Accumulations in the Natchitoches, LA area. (Courtesy of the Emergency Manager in Natchitoches via NWS Shreveport)

Snowstorm and Record Cold: February 8th – 11th

January 31st - February 4th Winter Storms		
Sate	City	Snow/Ice Totals (in.)
Oklahoma	Owasso	21.0
Texas	Willis Point	8.5
Arkansas	Sulphur Springs	14.0
Louisiana	Jena	.90 (ice)
Tennessee	Memphis	0.1
Mississippi	Jackson	Trace

Table 1: Maximum snowfall/ice accumulation for a single location in each of the six states in the SCIPP region between January 31st and February 4th. All reports indicate snow amounts except for Jena, LA which was ice.

Although southerners may have thought they had seen all the snow that would fall this season, they were wrong. More snow began to fall across Oklahoma and Texas on February 8th. The storm continued to track through Texas on February 9th (Figure 4), impacting much of the SCIPP region. Four inches to 1 foot of snow were common across Oklahoma and Arkansas, with as much

February 8th - 11th Winter Storms		
State	City	Snow Total (in.)
Oklahoma	Spavinaw	27.0
Texas	Canadian	12.0
Arkansas	Siloam Springs	24.5
Louisiana	Shreveport	Trace
Tennessee	Germantown	6.0
Mississippi	Tunica	5.5

Table 2: Maximum snow accumulation at a single point in each state of the SCIPP region during the February 8th – 11th snowstorm.

as two feet falling in northeast Oklahoma and northwest Arkansas (Table 2). In fact, the 27 inches of snow that fell in Spavinaw, OK broke the all-time State record for snow in a 24-hour period. Areas of Tennessee and Mississippi also saw anywhere from one to six inches of snow. High winds accompanied this storm as well, although blizzard criteria were not met.

Following the heavy snowfall, record cold air settled into the area. Winds gusted up to 50 miles per hour in western Oklahoma, which dropped wind chills below 0 degrees F. Nowata, Oklahoma also claimed the new, all-time state

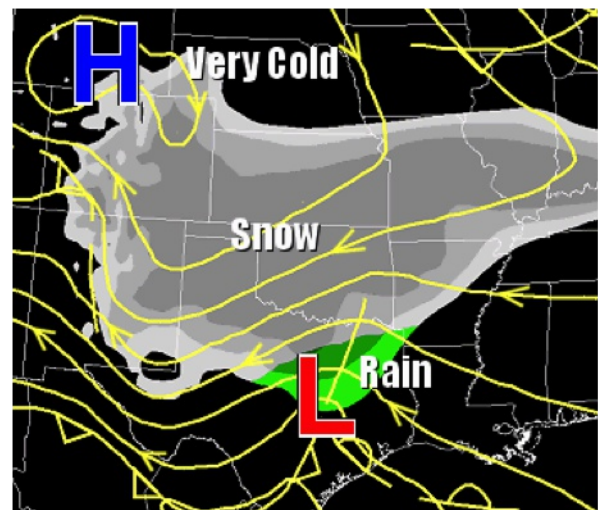


Figure 4: The storm system ("L") continued to track through Texas on February 9th. The system was followed by arctic high pressure ("H") and much colder air. (Courtesy of NWS Little Rock)

record low for Oklahoma by reaching a temperature of -31 degree F on the morning of February 10, 2011. Temperatures also dropped well below zero in Arkansas that morning. Record temperatures were also observed in parts of Mississippi as temperatures dropped into the teens. Unfortunately, the storm did not depart without leaving its mark on people across the region. Two fatalities and 240 injuries were

reported in Oklahoma (ODEM 2011b). Another person died in Texas, and at least 83,000 Texans were without power at one point during the storm (TDPS 2011).

Footnote: All meteorological data was retrieved from the local National Weather Service Forecast Offices, unless otherwise noted.

References:

ODEM (Oklahoma Department of Emergency Management) 2011a:
http://www.ok.gov/OEM/News/2011_News/White_House_approves_Gov._Fallins_request_for_storm_aid_.html

ODEM (Oklahoma Department of Emergency Management) 2011b:
http://www.ok.gov/OEM/Emergencies_&_Disasters/2011/Winter_Weather_Event_20110208/2011_Winter_Storm_II_-_Update_5.html

TDPS (Texas Department of Public Safety) 2011:
<http://www.txdps.state.tx.us/dem/sitrepindex.htm>

Texas OSC (Texas Office of the State Climatologist) 2011: Societal Impacts of Climate on Texas: February 2011 Report
<http://atmo.tamu.edu/osc/socimpacts/socfeb11.htm>

CLIMATE PERSPECTIVE

State	Temperature	Rank	Precipitation	Rank
Arkansas	43.8	55 th Warmest	4.17	39 th Wettest
Louisiana	52.4	55 th Coldest	2.04	8 th Driest
Mississippi	49.3	48 th Warmest	2.14	4 th Driest
Oklahoma	40.2	49 th Coldest	1.35	53 rd Driest
Tennessee	43.3	33 rd Warmest	3.66	44 th Driest
Texas	49.2	50 th Coldest	0.66	17 th Driest

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

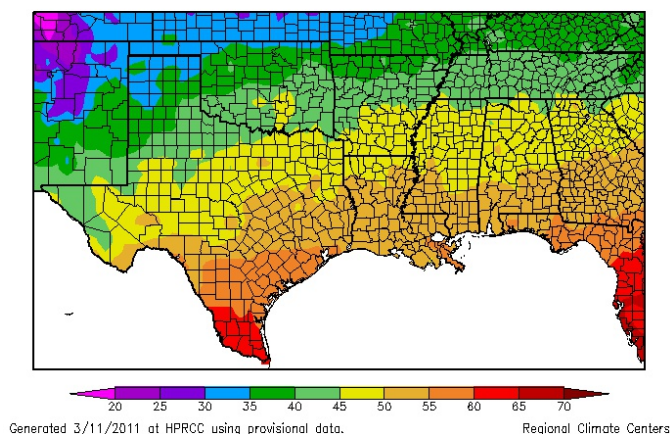
TEMPERATURE SUMMARY

Luigi Romolo, Southern Regional Climate Center

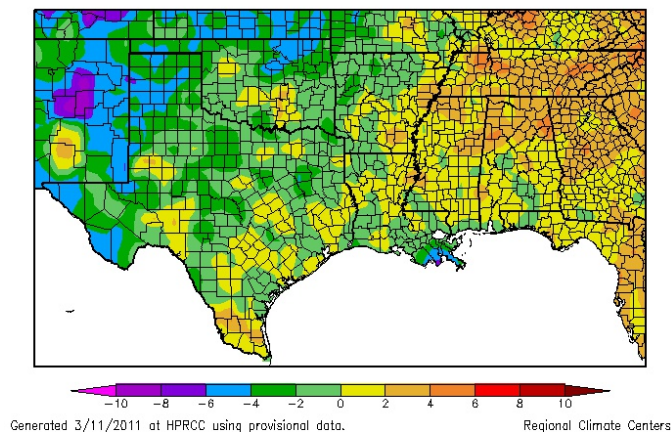
February average temperatures in the SCIPP Region varied spatially from west to east. In the north western areas of the region, temperatures were generally 2 to 6 degrees F (1.11 to 3.33 degrees C) below the monthly normal. In Tennessee and in Mississippi, however; temperatures averaged between 2 to 6 degrees F (1.11 to 3.33 degrees C) above the monthly normal. Elsewhere, temperatures remained within approximately 2 degrees F (1.11 degrees C) of the monthly expected values.

The state average temperatures in the region were: 43.80 degrees F (6.56 degrees C) in Arkansas, 52.40 degrees F (11.33 degrees C) in Louisiana, 49.30 degrees F (9.61 degrees C) in Mississippi, 40.20 degrees F (4.56 degrees C) in Oklahoma, 43.30 degrees F (6.28 degrees C) in Tennessee and 49.20 degrees F (9.56 degrees C) in Texas. All state value temperature rankings fell within the two middle quartiles of the normal distribution as based on the 1895-2011 period of record.

Temperature (F)
2/1/2011 – 2/28/2011



Departure from Normal Temperature (F)
2/1/2011 – 2/28/2011



Average temperatures (left) and departures from 1971-2000 normal average temperatures (right) for February 2011, across the South.

PRECIPITATION SUMMARY

Luigi Romolo, Southern Regional Climate Center

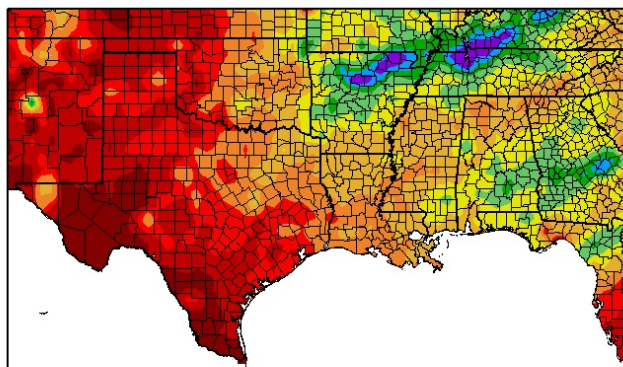
With the exception of central and northern Arkansas, northern Tennessee and north eastern Oklahoma, the month of February was a dry month for the Southern Region. The driest areas of the region included much of southern and south western Texas, where most stations received less than a quarter of the monthly normal precipitation total. In central Louisiana and southern Mississippi, the majority of stations reported precipitation totals that ranged between 25 and 50 percent of normal. Similar conditions were also observed throughout parts of central

Texas and north western Oklahoma. The wettest area of the region included much of north central Arkansas where stations reported between 150 and 400 percent of normal precipitation. On February 9-10, 2011, many areas of Oklahoma received heavy snowfall accumulations. Accumulations varied from few a few inches to over two feet in the north eastern portions of the state. For instance, the station at Spavinaw, Oklahoma received 27 inches (685.80 mm) of snowfall in a 24-hour period.

The state-wide average precipitation totals for the month were as follows: 4.17 inches (105.92 mm) in Arkansas, 2.04 inches (51.82 mm) in Louisiana, 2.14 inches (54.36 mm) in Mississippi, 1.35 inches (34.29 mm) in Oklahoma, 3.66 inches (92.96 mm) in Tennessee and 0.66 inches (16.76 mm) in Texas. For Louisiana, it was the eighth driest

February on record (1895-2011), while for Mississippi, it was the fourth driest on record (1895-2011). Another rank worth mentioning was in Texas, which experienced its seventeenth driest February on record (1895-2011).

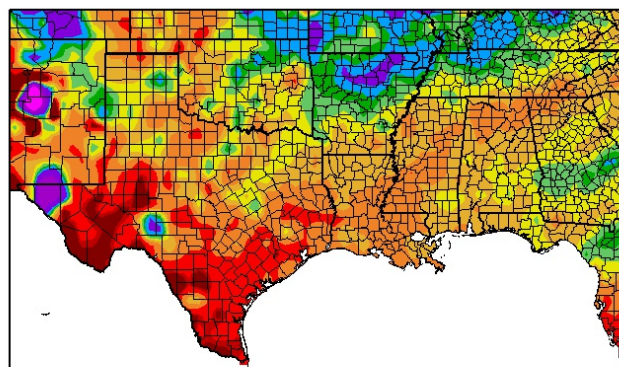
Precipitation (in)
2/1/2011 – 2/28/2011



Generated 3/11/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
2/1/2011 – 2/28/2011



Generated 3/11/2011 at HPRCC using provisional data.

Regional Climate Centers

Total precipitation values (left) and the percent of 1971-2000 normal precipitation totals (right) for February 2011.

DROUGHT CONDITIONS

Luigi Romolo, Southern Regional Climate Center

Drier than normal conditions throughout most of the Southern Region has led to an expansion of drought in many areas. Most notably, there was an increase of extreme drought in central and northern Louisiana and in eastern Texas. Southwestern Texas also experienced a slight growth of extreme drought. On February 1, 2011, only 6.59 percent of the Southern Region was experiencing extreme drought. One month later, on March 1, 2011, that number has increased to 10.76 percent. In Mississippi, the entire state is now classified in moderate drought or worse. In fact, almost three quarters of the Southern Region is now in moderate drought or worse, compared to 58.97 percent of the region the previous month.

U.S. Drought Monitor

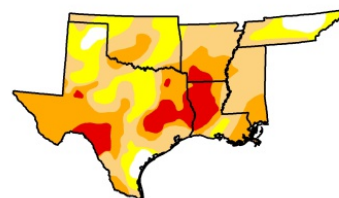
South

March 1, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	4.74	95.26	74.28	38.60	10.76	0.00
Last Week (02/22/2011 map)	4.04	95.96	74.59	38.29	10.03	0.00
3 Months Ago (11/30/2010 map)	26.30	73.70	41.16	19.29	2.68	0.00
Start of Calendar Year (12/28/2010 map)	8.86	91.14	67.65	35.21	10.17	0.00
Start of Water Year (09/26/2010 map)	54.23	45.78	20.04	6.79	0.83	0.00
One Year Ago (02/23/2010 map)	96.77	3.23	0.00	0.00	0.00	0.00

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://drought.unl.edu/dm>



Released Thursday, March 3, 2011
L. Edwards, Western Regional Climate Center

Drought conditions in the Southern Region. Map is valid for February 2011. Image courtesy of the National Drought Mitigation Center.

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	59.3	35.9	47.6	-0.7	81.0	2/27	15.0	2/2	2.3	-1.9	55
Little Rock, AR	57.0	35.2	46.1	0.9	77.0	2/27	10.0	2/11	4.0	0.7	121
Baton Rouge, LA	66.1	41.8	54.0	0.5	87.0	2/28	24.0	2/11	1.9	-3.2	37
New Orleans, LA	66.4	46.9	56.7	0.9	84.0	2/28	29.0	2/12	1.7	-3.8	30
Shreveport, LA	61.8	39.2	50.5	-0.7	81.0	2/24	16.0	2/2	2.8	-1.4	67
Greenwood, MS	60.3	36.5	48.4	0.0	83.0	2/27+	8.0	2/11	2.4	-1.9	56
Jackson, MS	62.9	38.5	50.7	1.5	83.0	2/27	18.0	2/11	1.9	-2.6	42
Tupelo, MS	58.5	35.4	46.9	2.2	78.0	2/27+	14.0	2/11	2.6	-2.1	55
Oklahoma City, OK	53.8	28.9	41.3	-0.9	80.0	2/27+	-5.0	2/10	2.1	0.5	134
Ponca City, OK	49.9	21.3	35.6	-4.1	82.0	2/17	-25.0	2/10	0.5	-0.9	36
Tulsa, OK	50.0	27.1	38.6	-3.4	79.0	2/17	-12.0	2/10	2.6	0.6	132
Knoxville, TN	57.3	35.1	46.2	4.4	73.0	2/17	20.0	2/11	4.1	0.1	102
Memphis, TN	56.9	37.4	47.1	2.2	77.0	2/24+	11.0	2/11	3.4	-1.0	78
Nashville, TN	54.1	33.2	43.7	2.4	75.0	2/27	7.0	2/11	5.5	1.9	150
Amarillo, TX	52.2	20.2	36.2	-4.4	81.0	2/16	-6.0	2/10+	0.4	-0.1	78
El Paso, TX	60.6	29.7	45.1	-5.4	80.0	2/16	1.0	2/3	0.1	-0.3	28
Dallas, TX	60.9	38.1	49.5	0.1	82.0	2/24+	13.0	2/2	0.9	-1.5	39
Houston, TX	66.5	43.5	55.0	-0.4	83.0	2/27	21.0	2/2	0.7	-2.3	23
San Antonio, TX	68.2	42.6	55.4	0.7	88.0	2/27	19.0	2/2	0.5	-1.3	28

Summary of temperature and precipitation information from around the region for February 2011. 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.

SEVERE WEATHER

Luigi Romolo, Southern Regional Climate Center

On the first day of the month, two tornadoes were reported. One occurred in Rusk County, Texas where two homes were damaged. The other occurred in Sabine Parish, Louisiana. Minor home damage was indicated.

On February 24th, several tornadoes were reported over an area that includes western Tennessee, northern Mississippi, central Arkansas, eastern Arkansas and northern Louisiana. In Lonoke County, Arkansas, a large metal building had two doors blown in. There was also widespread damage reported to trees and power lines. A mobile home was destroyed, and grain bins were pulled off the concrete in Decatur

County, Tennessee. In Davidson County, Tennessee, substantial structural damage was reported to homes in the Percy Priest Lake Area. Strong winds in Webster Parish, Louisiana led to one reported injury. The injury was the result of a tree falling on a truck.

On the 28th, more tornadoes were reported across south central Tennessee and central Mississippi. In Moore County, Tennessee, one person was killed and four others were injured. In Franklin County, Tennessee, one tornado-related death was reported. Strong winds in Polk County, Tennessee caused one fatality when a tree fell on a mobile home.

SOUTHERN CLIMATE 101

Have a question about Southern U.S. climate? Let us know and we may feature the answer in a future issue of the Monitor!

In future issues of the Monitor, we will select a user submitted climate question and provide a reply, to appear in this spot on the back page of the Monitor. Though any aspect of climate is fair game, we will give greatest consideration to questions pertaining to extreme weather & climate events, recent conditions, and climate-related issues relevant to the South Central U.S. - specifically the states of Oklahoma, Texas, Arkansas, Louisiana, Tennessee, and Mississippi. For instance, perhaps you recently experienced a significant winter storm and you were curious how rare it was from a historical perspective. Contact us at **monitor@southernclimate.org** and we will consider your question among all the others we receive. In the subject line of your message, please use "Southern Climate 101." We look forward to your submissions!

Have a climate question, but do not want it to be answered in a public forum? No problem! Feel free to contact us at one of the options listed below, and we will do our best to address your question.

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 405-325-7809 or 225-578-8374.

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