

NWS FORM E-5 (11-88) (PRES. by NWS Instruction 10-924)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA) Tulsa, Oklahoma (TSA)
	MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS	
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		REPORT FOR: MONTH January YEAR 2009 SIGNATURE Steven F. Piltz (Meteorologist-in-Charge) DATE February 2, 2009

When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts, and hydrologic products issued (NWS Instruction 10-924)

X No flood stages were reached in this HSA during the month above.

January is climatologically the driest month of the year. This held true for much of January 2009 until a major winter weather event and ice storm affected the Tulsa HSA January 26-27. Normal precipitation for January ranges from 1.2 inches in Pawnee county to 2.2 inches in Haskell county. In the Ozark region of northwest Arkansas, precipitation averages 2.2 inches for the month.

The first precipitation of 2009 primarily affected southeast OK and west central AR, southeast of a McAlester, OK to Huntsville, AR line on January 5th. The precipitation fell as light rain with periods of light freezing rain. The highest rainfall totals were around half an inch across the southeast portions of Choctaw and Pushmataha Counties. However, the majority of the area received around one tenth of an inch or less, though some areas did see closer to one quarter of an inch of rain. While no significant ice accumulations occurred, the freezing rain did lead to some slick streets, causing several accidents. Another round of rain affected primarily northwest AR and far eastern OK on January 9th, bringing around one tenth of an inch or less of precipitation.

The northwest portion of the HSA, including Tulsa and Bartlesville had not received any more than a trace of rain for nearly a month, from December 28, 2008 through January 25, 2009. This dry spell ended on January 26th as a winter storm developed across the area. A stationary front located south of the HSA allowed for overrunning of moist, warm air into eastern OK and western AR, leading to widespread freezing rain on the 26th. As the night continued, a second round of precipitation developed across the region. Sleet was the primarily precipitation type north of I-44, with widespread freezing rain across the remainder of the area. The exception was across far southeast OK and west central AR, where temperatures hovered just above freezing into the 27th (see Fig 1a). As of 11 am on January 27th, one half to around 1 inch of ice had been reported on elevated surfaces, including power lines and trees, across east central OK and northwest AR, and 1-3 inches of sleet had affected large portions of Okfuskee, Okmulgee, Creek, Tulsa, and Wagoner counties (see Fig. 3). Freezing rain and sleet continued during the day on the 27th, affecting a large area of the U.S. from the Texas panhandle into the Ohio Valley (see Fig. 4). Isolated thunderstorm activity lead to rapid ice and sleet accumulation in several areas. Ice accumulations continued to increase during the day on the 27th across east central OK and northwest AR, where storm total ice accumulations were 1 to 2 inches in the hardest hit areas (see Fig. 3c). These high ice accumulations lead to power outages affecting hundreds of thousands of people. As the cold air deepened over the region, the freezing rain turned to sleet and eventually snow toward the end of the event. Over an inch of sleet and snow affected a large part of northeast OK and northwest AR, with a swath of 2 to 3.5 inches of sleet reported from Okfuskee County to Wagoner County in OK and more of a snow/sleet mix further north in Ottawa and Delaware Counties (see Fig. 3d). The highest accumulations occurred in western Muskogee County, where 5 inches of snow/sleet was reported. Storm total snow/sleet and ice can be seen in Fig. 3c and 3d. As of one week after the storm, power was still out in many areas.

Liquid equivalent precipitation based on RFC estimates using radar and raingage information shows widespread amounts of 1.5 to over 3 inches across east central OK and northwest AR (see Fig. 1b). By the time the storm system exited the region, all of the HSA had received some precipitation, with 2 to 5 inches of precipitation falling across east central OK and northwest AR, Fig. 2.

The subfreezing temperatures and freezing rain caused many of the river gages across the HSA to freeze up and reporting ceased starting late on the 26th. However, river flooding was not a concern during this time, and all of the gages began operating again within a couple of days. The melting of the snow and ice did not lead to any river flooding.

Tulsa, OK (TSA): 1/27/2009 1-Day Observed Precipitation
Valid at 1/27/2009 1200 UTC- Created 1/27/09 17:41 UTC

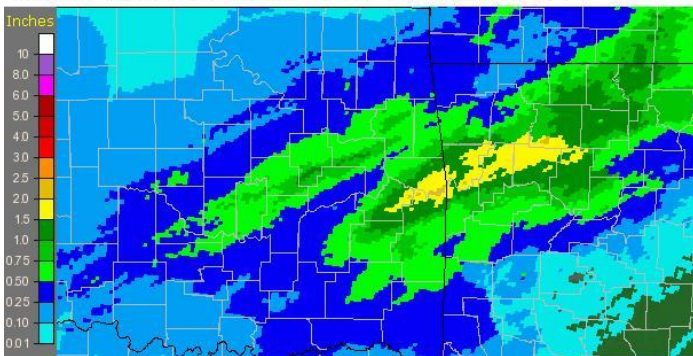
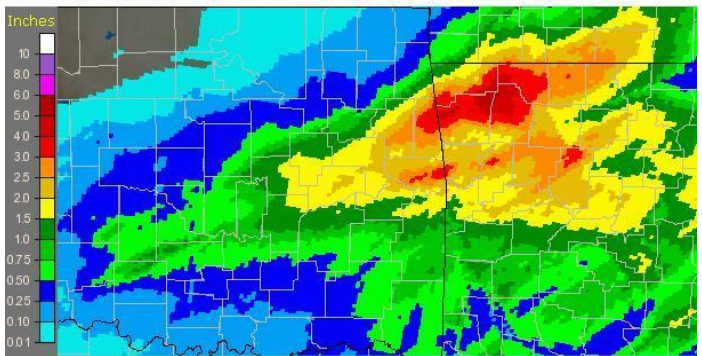


Fig. 1a. Liquid equivalent estimates from the RFCs from 6 am 01/26 through 6 am 1/27.

Tulsa, OK (TSA): Current 1-Day Observed Precipitation
Valid at 1/28/2009 1200 UTC- Created 1/28/09 15:41 UTC



1b. Liquid equivalent estimates from the RFCs from 6am 01/27 through 6 am 01/28.

Tulsa, OK (TSA): Current 7-Day Observed Precipitation
Valid at 1/28/2009 1200 UTC- Created 1/28/09 16:00 UTC

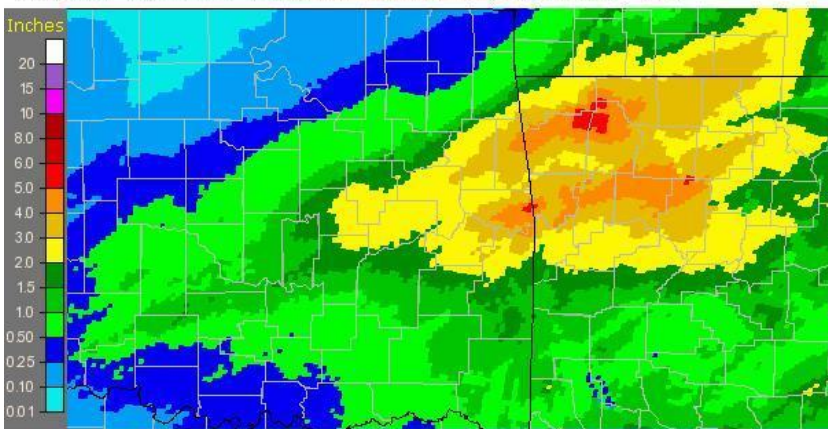


Fig. 2. Storm total liquid equivalent precipitation for January 26-27, 2008 (estimates from the RFCs; image is of 7-day precipitation, however no precipitation occurred in the days prior to the winter weather event)

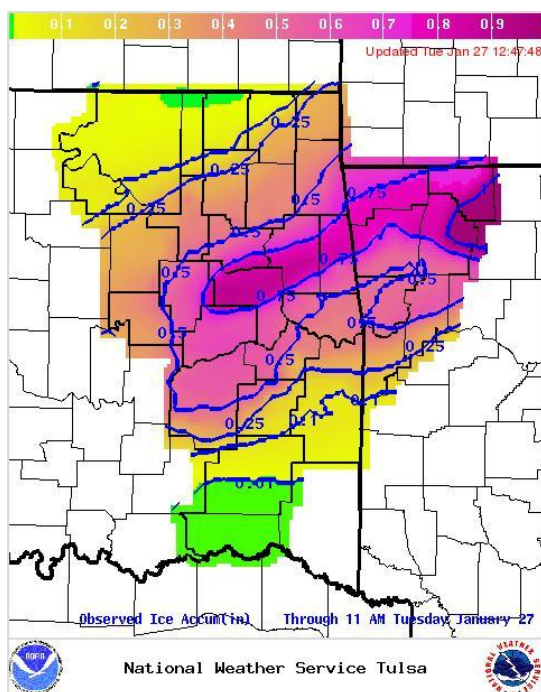
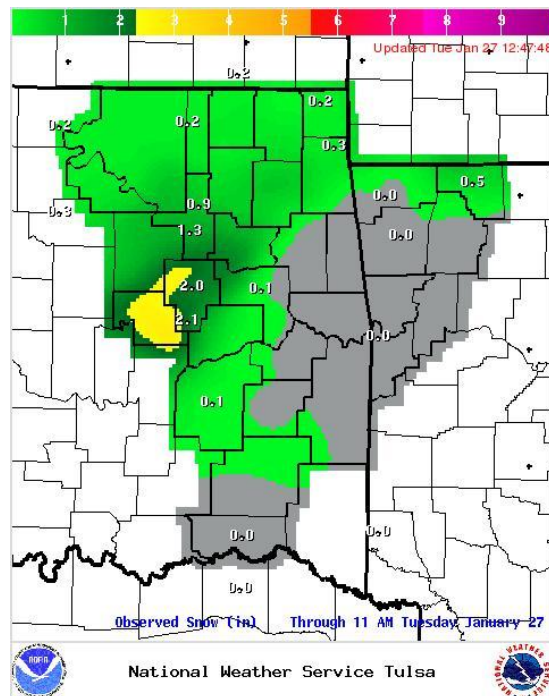


Fig. 3a. Ice accumulation as of 11 am 01/27.



3b. Snow/sleet accumulation as of 11 am 01/27.

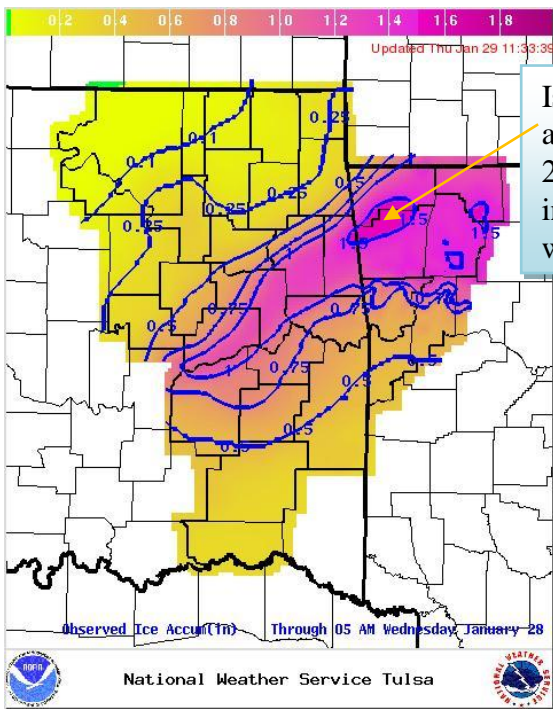
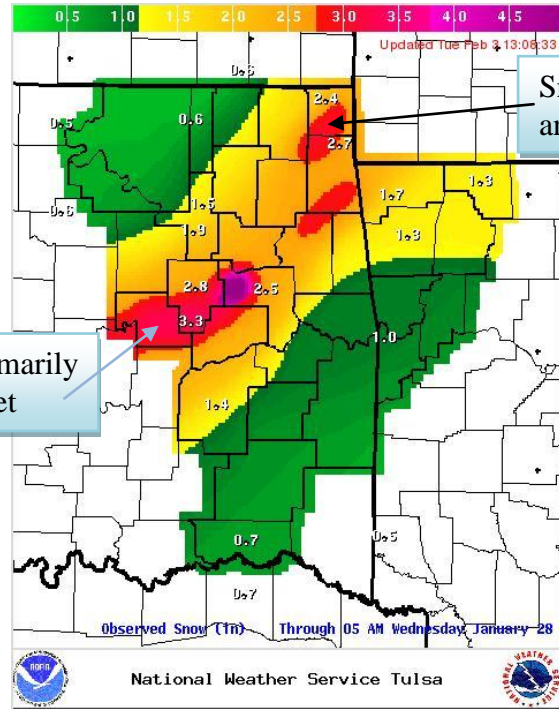


Fig. 3c. Storm total ice accumulation.



3d. Storm total snow/sleet accumulation.

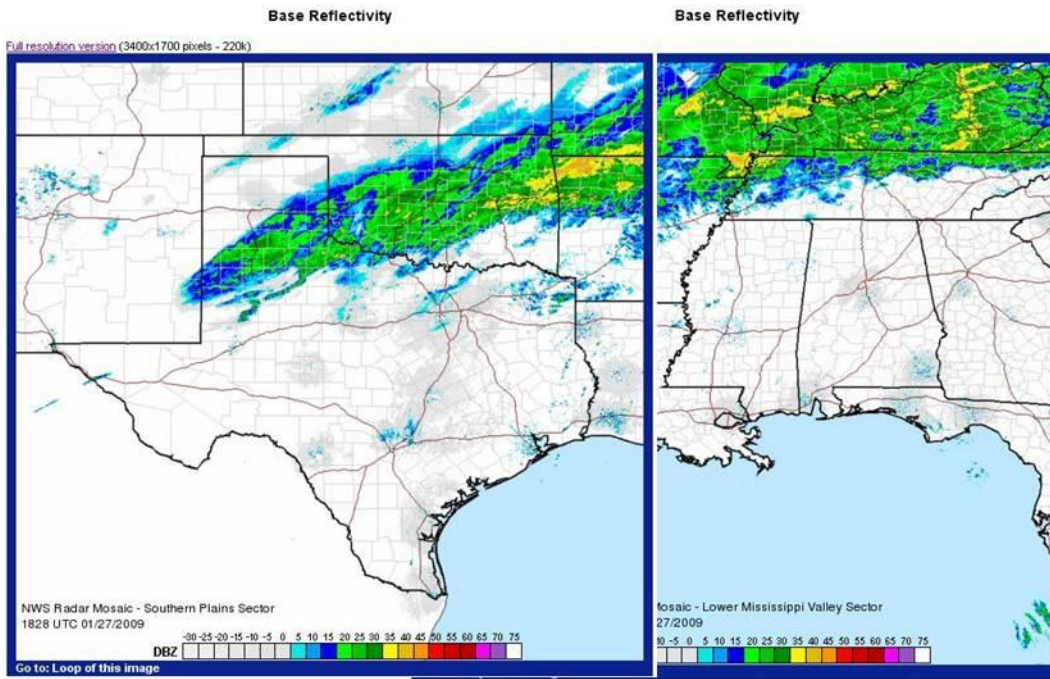


Fig. 4. NWS Radar Mosaic at 1828UTC on 01/27.

Using the radar-derived precipitation departure-from-normal graphics from the RFCs (Fig. 5b.), precipitation was above normal this January along the I-40 corridor in east central OK and west central AR, with around 200% of normal across portions of northwest AR. Most of this precipitation occurred during the winter storm of January 26-27 (compare Figs. 2 and 5a). Much of northeast and southeast OK received less than 1 inch of precipitation (Fig. 5a.), which is less than 50% of normal. Locations northwest of I-44 were the driest this January, receiving only 10-25% of normal precipitation for the month. With most of January 2009 being dry, numerous wildfires affected the region. During this month, 15 counties across eastern OK and northwest AR had burn bans in effect at some point, many lasting for several weeks.

Tulsa, OK (TSA): January, 2009 Monthly Observed Precipitation
Valid at 2/1/2009 1200 UTC- Created 2/1/09 22:42 UTC

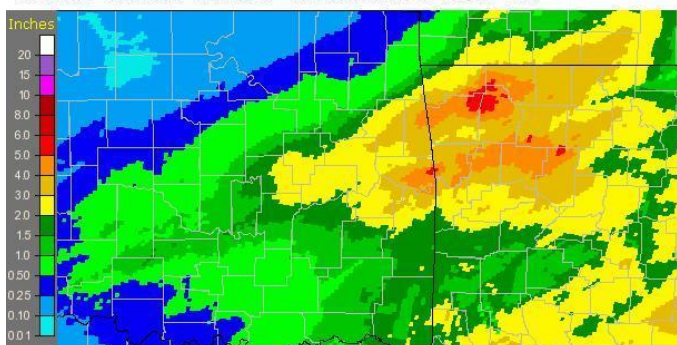
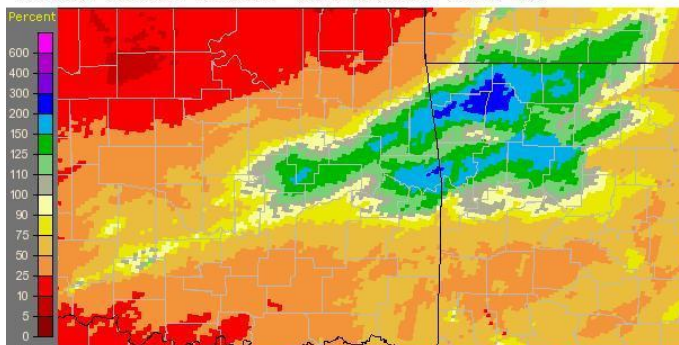


Fig. 5a. Observed Precipitation for Jan. 2009

Tulsa, OK (TSA): January, 2009 Monthly Percent of Normal Precipitation
Valid at 2/1/2009 1200 UTC- Created 2/1/09 22:46 UTC



5b. Departure from Normal Precipitation for Jan. 2009

Some of the larger precipitation reports for January included:

Natural Dam AR (coop)	4.44	Mountainburg 2NE AR (coop)	4.23	Ozark AR (coop)	3.82
Sallisaw OK (meso)	3.61	Fort Smith AR (ASOS)	3.50	Cookson OK (meso)	3.24
Odell AR (coop)	3.10	Muskogee OK (ASOS)	2.78	Westville OK (meso)	2.76

According to statistics from the Oklahoma Climatological Survey (OCS), northeast OK ranked as the 9th driest January since records began in 1921, receiving only 35% of its normal rainfall. However, due to the wet period during the first half of 2008, the past 12 months rank as the 4th wettest for northeast OK. East central OK was the 41st wettest January on record thanks to the winter storm, ending the month with normal precipitation, and ranked as the 14th wettest for the past 12 months. Finally, southeast OK was the 18th driest January, receiving 50% of normal rainfall, and is 22nd wettest for the past 12 month period.

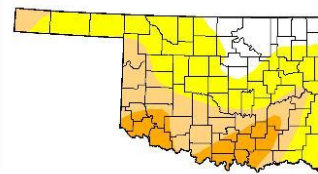
According to the U.S. Drought Monitor (USDM) issued January 27 (Fig. 6), severe drought (D2) conditions existed in southwest Pittsburg County, with moderate drought conditions (D1) affecting McIntosh, Muskogee, Haskell, Latimer, Pushmataha, and Choctaw Counties. Abnormally dry (D0) conditions were also occurring across eastern OK south of I-44 and just across the state line into the first tier of counties of northwest AR.

The major reservoirs in the HSA were around 100% of their conservation pools by the end of January, with the exception of Keystone Lake which was at 73% of its normal pool.

U.S. Drought Monitor Oklahoma

January 27, 2009
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D1	D1-D2	D2-D3	D3-D4	D4
Current	13.8	86.2	38.8	12.4	0.0	0.0
Last Week (11/25/2008 map)	29.3	70.7	27.7	4.5	0.0	0.0
3 Months Ago (11/04/2008 map)	45.1	54.9	9.7	0.0	0.0	0.0
Start of Calendar Year (10/01/2008 map)	41.6	58.4	12.0	3.4	0.0	0.0
Start of Water Year (10/01/2008 map)	84.4	15.6	5.0	3.5	0.0	0.0
One Year Ago (10/29/2008 map)	48.5	51.5	8.5	0.0	0.0	0.0



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, January 29, 2009
Author: Eric Luebbehusen, U.S. Department of Agriculture

Fig. 6. USDM

The Climate Prediction Center (CPC) outlook for February 2009 (issued January 31, 2009) indicates a slightly enhanced chance for above normal precipitation for far northeast OK and northwest AR and an enhance chance for above normal temperatures across the entire HSA. For the 3-month period Feb-Mar-Apr 2009, CPC is outlooking an enhanced chance for above normal temperatures across the region, and an equal chance for above, near, and below normal precipitation (outlook issued January 15, 2009). La Niña is ongoing, though conditions are expected to return to neutral conditions during the upcoming spring. CPC used the La Niña and Madden-Julian Oscillation expected conditions, as well as 10-15 year trends, to develop these outlooks.

Products issued:

- 0 River Flood Warnings
- 0 River Flood Statements
- 0 River Statements
- 0 Hydrologic Outlooks
- 2 Drought Information Statements

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