

<b>NWS FORM E-5</b> (11-88) (PRES. by NWS Instruction 10-924)	<b>U.S. DEPARTMENT OF COMMERCE</b> NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE	HYDROLOGIC SERVICE AREA (HSA)	
		<b>Tulsa, Oklahoma (TSA)</b>	
<b>MONTHLY REPORT OF RIVER AND FLOOD CONDITIONS</b>		REPORT FOR:	
		MONTH <b>January</b>	YEAR <b>2014</b>
TO: Hydrometeorological Information Center, W/OH2 NOAA / National Weather Service 1325 East West Highway, Room 7230 Silver Spring, MD 20910-3283		SIGNATURE <b>Steven F. Piltz</b> (Meteorologist-in-Charge)	
		DATE <b>February 3, 2014</b>	

*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)*

An "X" in the box indicates no flood stages were reached in this Hydrologic Service Area (HSA) during the month above.

Despite some wintery precipitation at the beginning of the month, January 2014 was very dry across eastern OK and northwest AR. 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.

### Monthly Summary

Using the radar-derived estimated observed precipitation from the RFCs (Fig. 1a), rainfall totals for January 2014 ranged from less than 0.10" in portions of Creek and Okfuskee Counties in northeast OK to around mealy 2" in Washington County in northwest AR. This resulted in below normal precipitation for the entire area for January. The most severe deficits occurred along and northwest of an Okemah to Wagoner to Vinita line in eastern OK. This area received less than 25% of the normal January rainfall, with southwest Creek and western Okfuskee County receiving less than 5% of the January normal (Fig. 1b). The remainder of eastern OK and much of west central AR received 10%-50% of the normal rainfall this month, while northwest AR generally had 25%-75% of the January normal.

Tulsa, OK (TSA): January, 2014 Monthly Observed Precipitation  
 Valid at 2/1/2014 1200 UTC- Created 2/3/14 15:34 UTC

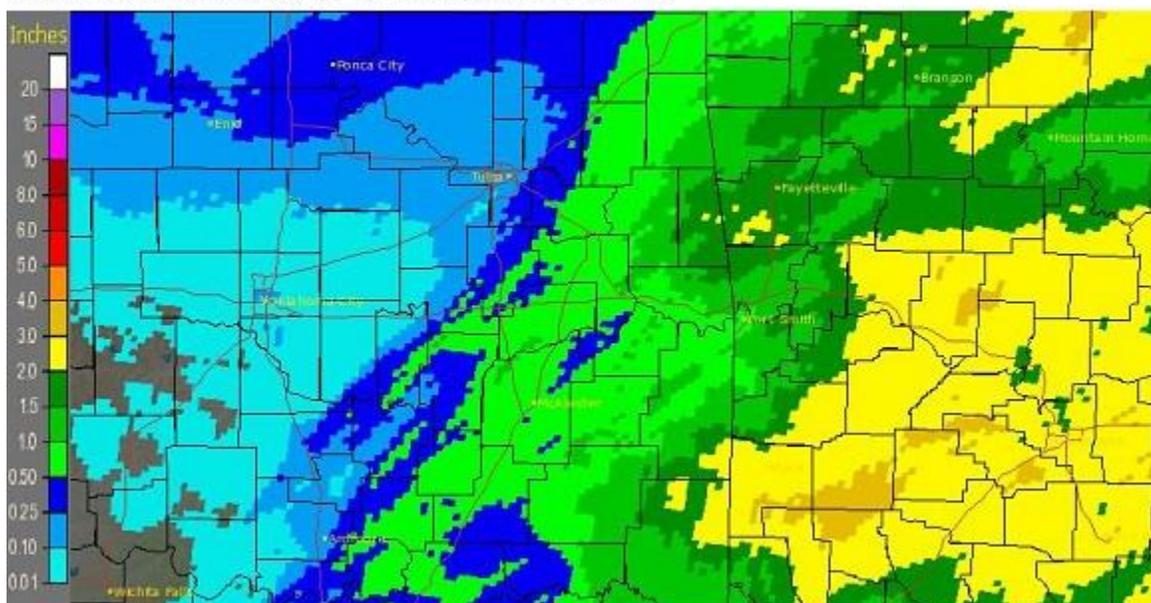


Fig. 1a. Estimated Observed Rainfall for January 2014

Tulsa, OK (TSA): January, 2014 Monthly Percent of Normal Precipitation  
 Valid at 2/1/2014 1200 UTC- Created 2/3/14 15:36 UTC

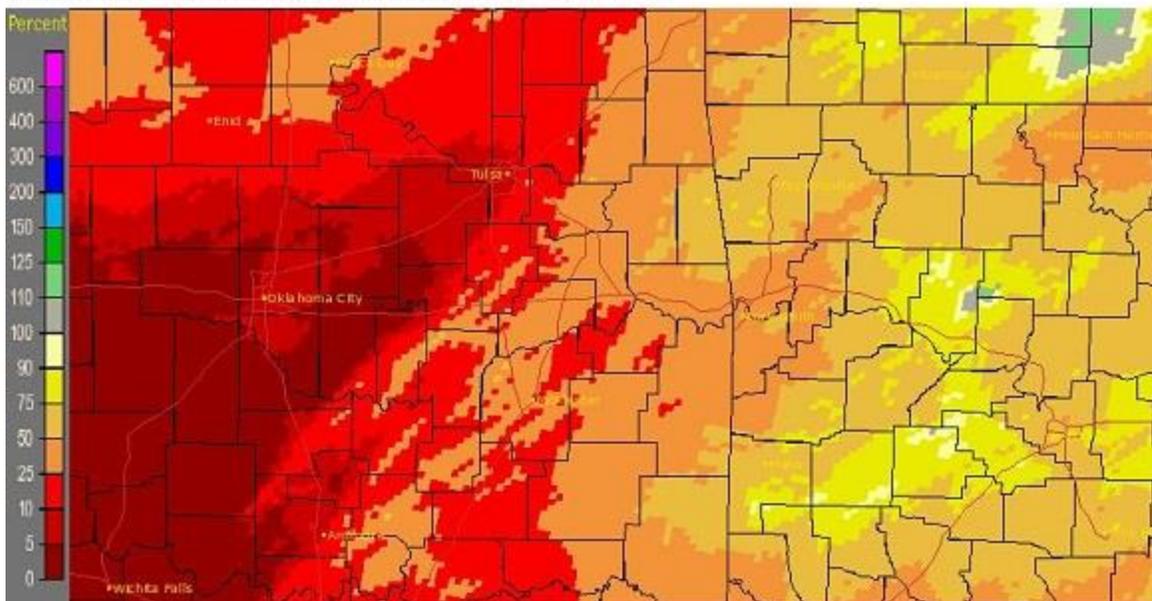


Fig. 1b. Estimated % of Normal Rainfall for January 2014

In Tulsa, OK, January 2014 ranked as the 39<sup>th</sup> coldest January (35.8°F, tied 1920; since records began in 1905), the 4<sup>th</sup> driest January (0.13"; since records began in 1888), and the 49<sup>th</sup> least snowy January (1.1", tied 1964, 1945; since records began in 1900). Fort Smith, AR was the 38<sup>th</sup> coldest January (37.2°F; since records began in 1883), the 20<sup>th</sup> driest January (0.79", tied 1887, 1948; since records began in 1883), and the 29<sup>th</sup> least snowy January (Trace, tied with several other years; since records began in 1884). Fayetteville, AR was the 9<sup>th</sup> coldest (31.5°F), the 24<sup>th</sup> driest (1.64"), and the 27<sup>th</sup> snowiest (1.9") January since records began in 1950.

Some of the larger precipitation reports (in inches) for January 2014 included:

Winslow, AR (coop)	2.03	St. Paul, AR (coop)	1.94	Ozark, AR (coop)	1.86
Hindsville 10NNE, AR (coop)	1.70	Fayetteville, AR (ASOS)	1.64	Westville, OK (meso)	1.50
NW AR Regional Airport (ASOS)	1.35	Mountainburg 2NE, AR (coop)	1.32	Kingston 2S, AR (coop)	1.31

Some of the lowest precipitation reports (in inches) for January 2014 included:

Wynona, OK (meso)	0.09	Jenks Riverside Arpt, OK (ASOS)	0.10	Pawnee, OK (meso)	0.11
Okemah, OK (meso)	0.12	Bristow, OK (meso)	0.12	Tulsa, OK (ASOS)	0.13
Copan, OK (meso)	0.13	Foraker, OK (meso)	0.13	Nowata, OK (meso)	0.13
Tulsa, OK (meso)	0.13				

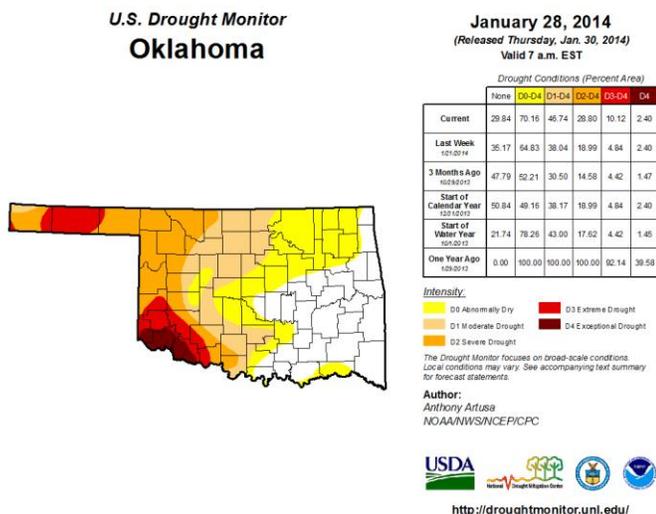


Fig. 2. Drought Monitor for Oklahoma

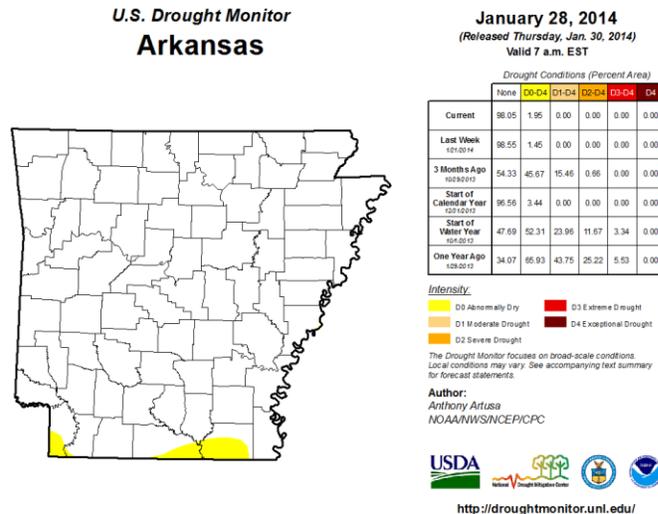


Fig. 3. Drought Monitor for Arkansas

According to the [U.S. Drought Monitor](#) (USDM) from January 28, 2014 (Figs 2, 3), Abnormally Dry (D0), but not experiencing drought, conditions remained in Choctaw County and expanded into Osage, Pawnee, Washington, Creek, Tulsa, Rogers, Nowata, Craig, Mayes, and northern Wagoner Counties in eastern OK.

According to the USACE, most of the major reservoirs in the HSA were operating within  $\pm 3\%$  of the top of their conservation pools as of 1/31/2014. A few of lakes were below normal: Skiatook Lake 74%, Heyburn Lake 78%, and Birch Lake 94%.

According to statistics from the [Oklahoma Climatological Survey](#) (OCS):

Rank since 1921	Last 30 Days (Jan 1- Jan 30)	Winter-to-Date (Dec 1 – Jan 30)	Last 90 Days (Nov 2 – Jan 30)	Water Year-to-Date (Oct 1 – Jan 30)	Cool Growing Season (Sep 1 – Jan 30)	Last 180 Days (Aug 4 – Jan 30)	Last 365 Days (Jan 31, 2013 – Jan 30, 2014)
Northeast OK	9 <sup>th</sup> driest	11 <sup>th</sup> driest	12 <sup>th</sup> driest	31 <sup>st</sup> driest	26 <sup>th</sup> driest	32 <sup>nd</sup> driest	41 <sup>st</sup> wettest
East Central OK	18 <sup>th</sup> driest	35 <sup>th</sup> driest	31 <sup>st</sup> driest	45 <sup>th</sup> driest	31 <sup>st</sup> driest	38 <sup>th</sup> driest	41 <sup>st</sup> wettest
Southeast OK	17 <sup>th</sup> driest	27 <sup>th</sup> driest	34 <sup>th</sup> driest	45 <sup>th</sup> wettest	44 <sup>th</sup> driest	36 <sup>th</sup> driest	46 <sup>th</sup> wettest
Statewide	7 <sup>th</sup> driest	18 <sup>th</sup> driest	23 <sup>rd</sup> driest	23 <sup>rd</sup> driest	23 <sup>rd</sup> driest	27 <sup>th</sup> driest	46 <sup>th</sup> driest

## **Outlooks**

The [Climate Prediction Center](#) (CPC) outlook for February 2014 (issued January 31, 2013) indicates a slightly enhanced chance for below normal temperatures across all but southeast OK, where there are equal chances for above, near, and below temperatures. This outlook also indicates equal chances for above, near, and below median precipitation across all of eastern OK and northwest AR. This outlook is based primarily on short term forecasts of expected weather conditions during the first half of the month, especially the first week of February, as well as longer term climate anomalies.

For the 3-month period Feb-Mar-Apr 2014, CPC is forecasting a slightly enhanced chance for above normal temperatures and equal chances for above, near, and below median rainfall across all of eastern OK and northwest AR (outlook issued January 16, 2013). According to CPC, ENSO neutral conditions remained through January. ENSO neutral conditions are expected to continue into Summer 2014. Therefore, this outlook is based on both statistical and dynamical forecast tools.

## **Summary of Precipitation Events**

### **January 1-15**

The new year began with a snowy start for portions of northeast OK and far northwest AR. A strong mid-level wave interacted with a cold front moving across the HSA, bringing snow during the evening hours of the 1<sup>st</sup> through the very early morning hours of the 2<sup>nd</sup>. Minor snow accumulations of around 0.50" to around 1" occurred over northeast OK and far northwest AR (see Fig. 4). Liquid equivalent amounts from this snow were less than 0.10".

An upper-level wave brought widespread light to moderate snow to a large portion of the HSA starting during the early morning hours of the 5<sup>th</sup> and coming to an end later that afternoon. The highest sleet/snow totals occurred across northeast OK and northwest AR, with 1"-5" reported along and north of Hwy 412. A trace to 1" generally occurred further south, with no snow reported across far southeast OK (see Figs. 5, 6). The highest reported totals were 5" in Dewey and Bartlesville (Washington County, OK) and Bella Vista (Benton County, AR). Rainfall/liquid equivalent totals ranged from a few hundredths to around 0.75", with the highest amounts across Washington, Madison, and Carroll Counties in northwest Arkansas.

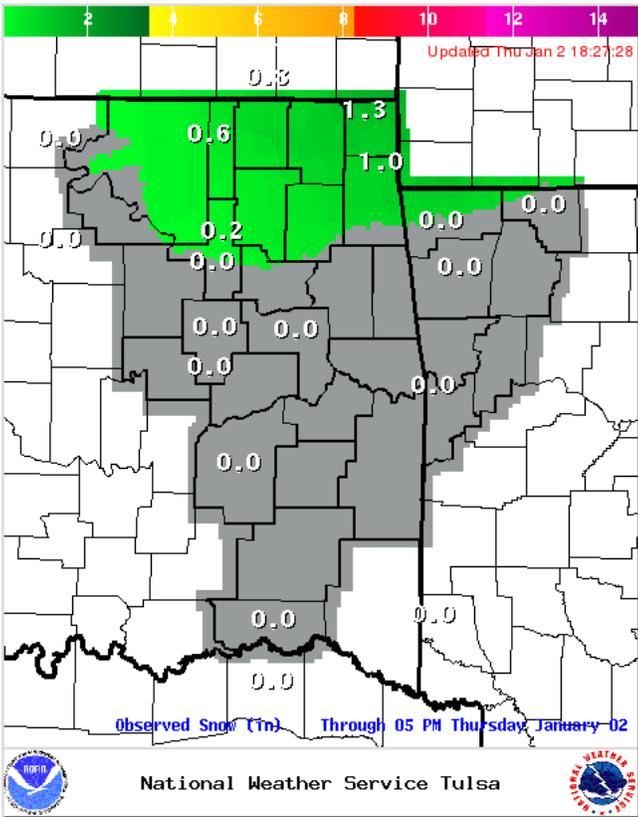


Fig. 4. Snowfall estimate for Jan. 1-2, 2013.

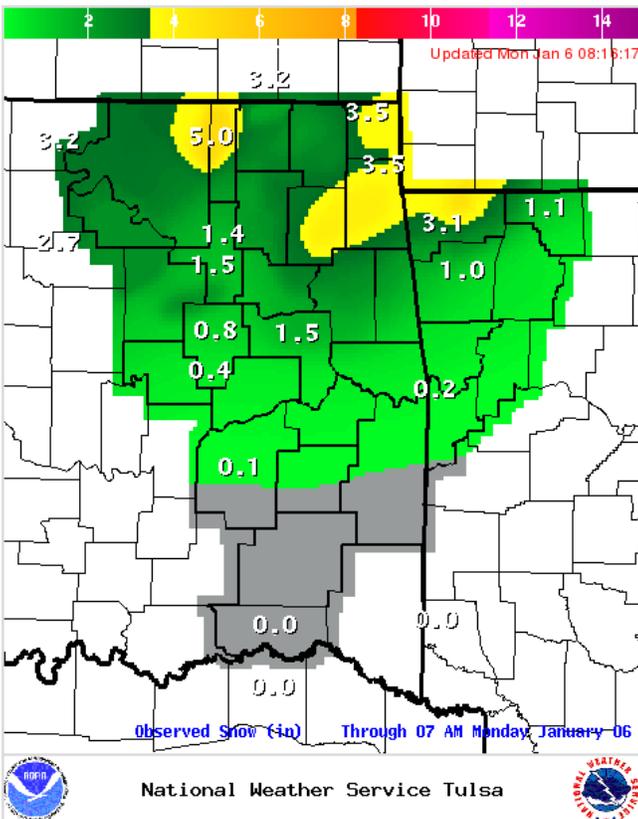


Fig. 5. Snowfall estimate for Jan. 5, 2013.

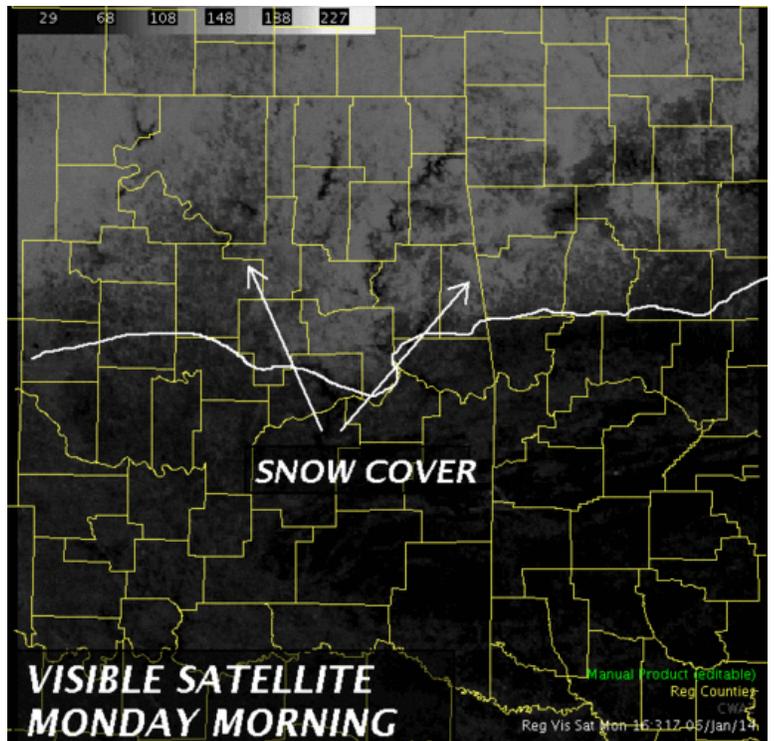


Fig. 6. Visible satellite image of snow cover at 10:30am CDT 01/06/2013

A weak upper-level wave brought light precipitation to the area on the 8<sup>th</sup> and into the early morning of the 9<sup>th</sup>. Temperatures hovered right around the freezing mark, especially across far east central OK and west central AR, causing freezing rain/freezing drizzle. This led to very hazardous road conditions across the terrain of

west central AR, including I-40. 15 students had to spend the night at their school in Alma because they were unable to make it home due to the icy roads. Ice accumulation was generally 0.10"-0.20" across the affected portion of the HSA (see Fig. 7). Rainfall/liquid equivalent amounts across far eastern OK and northwest AR were around 0.10" to near 0.30".

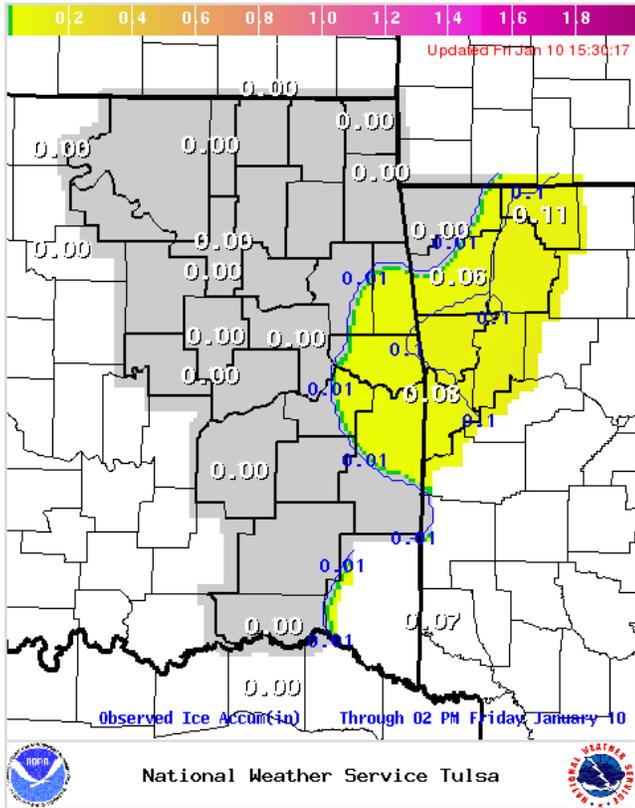


Fig. 7. Ice accumulation estimate for Jan. 8, 2013.

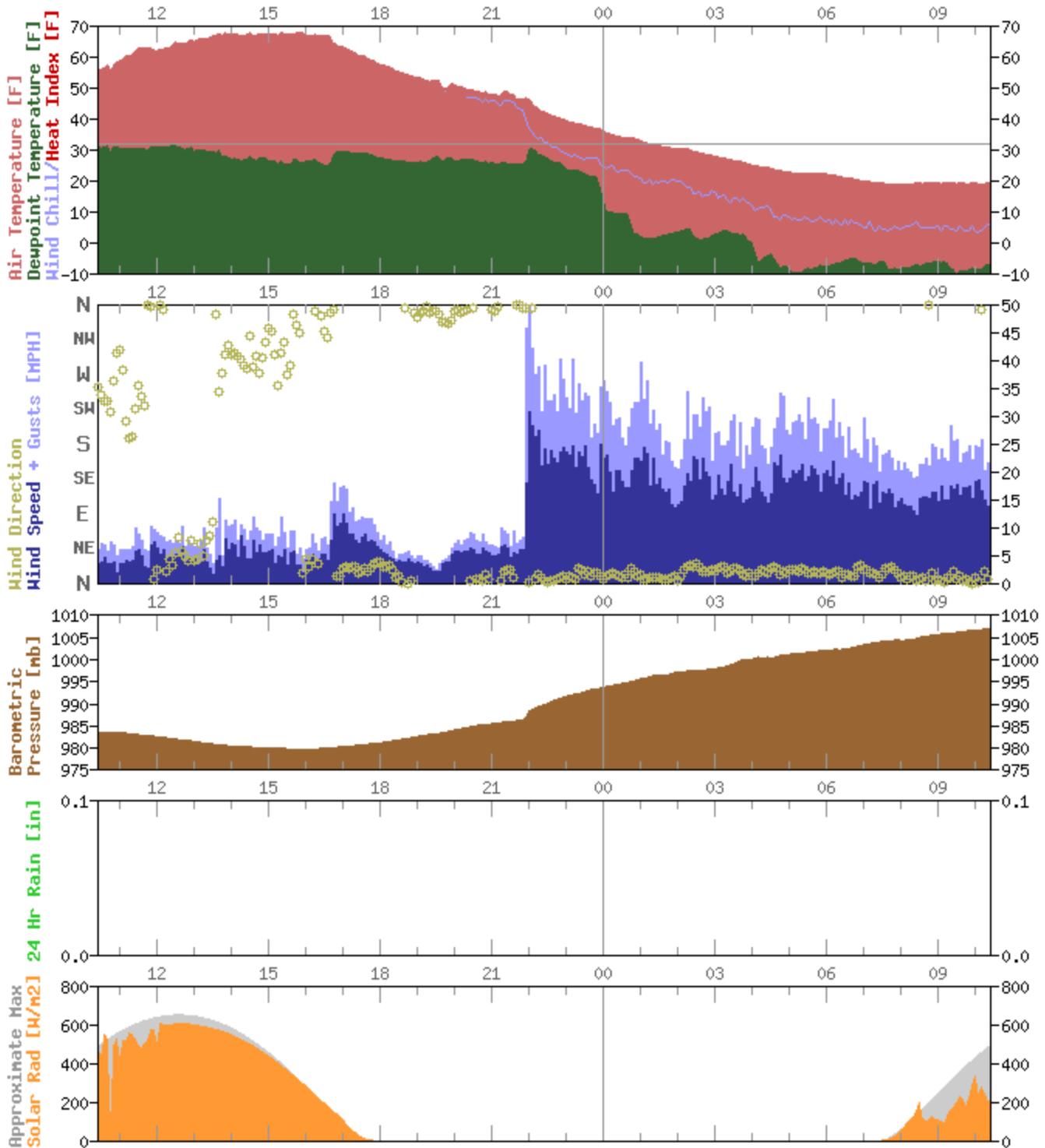
Moisture then increased rapidly across the HSA on the 9<sup>th</sup> as an upper-level trough approached the region. Isentropic lift within the warm conveyor over the area kept temperatures above freezing and allowed for widespread showers and isolated thunderstorms to develop over eastern OK and northwest AR, mainly southeast of I-44, during the morning and afternoon hours of the 10<sup>th</sup>. Additional activity developed along a cold front just southeast of I-44 during the late afternoon and evening hours. Rainfall totals ranged from 0.10"-1.5" across eastern OK and western AR, along and southeast of a line from Okemah to east Tulsa to Vinita.

### **January 16-31**

The last 2/3s of January were dry, despite several cold front passages (Fig. 9). One of these cold fronts moved through during the evening of the 26<sup>th</sup>, bringing a rapid change in wind speed behind the front. It was like a wall of wind hit, with sudden gusts of 40-55 mph across a large portion of the HSA. Fig. 10 shows the meteogram from the Oklahoma Mesonet site in Tulsa. Notice the sharp change in the wind (blue graph) when the front hit at ~10pm. The winds went from 5-10mph to 50mph within 5 minutes!

The lack of rainfall led to an increase in fire danger across the area. Dry, windy conditions, interspersed with warm days between cold fronts, led to many wildfires, some as large as 100-200 acres. Numerous county declared bun bans were in affect by the end of the month, including Rogers, Creek, Okfuskee, McIntosh, Pittsburg, Haskell, Latimer, and LeFlore Counties in eastern OK and Benton, Carroll, Washington, Madison, Crawford, Franklin, and Sebastian Counties in northwest AR.

Tulsa 24-Hour Mesonet Meteogram  
 10:25 am (Jan 26, 2014) through 10:20 am (Jan 27, 2014)



Copyright (c) 2014 The Oklahoma Mesonet. <http://www.mesonet.org> Image created Mon Jan 27 16:25:26 2014 UTC.  
 Fig. 10. 24-hr Oklahoma Mesonet observations for Tulsa, OK ending at 10:20am CST 1/27/2014.

