

# Oklahoma Water Resources Bulletin & Summary of Current Conditions

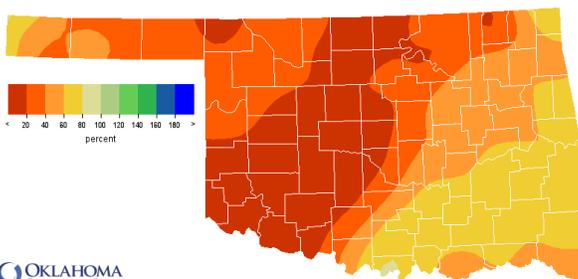


February 24, 2011

## PRECIPITATION

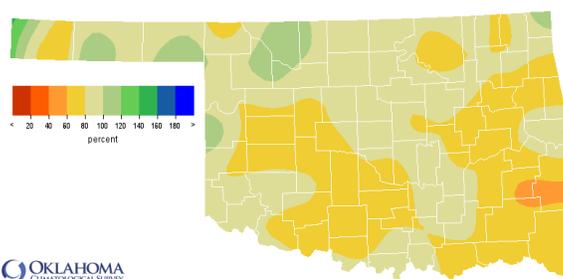
### Statewide Precipitation

CLIMATE DIVISION	Last 90 Days November 24, 2010 – February 21, 2011				Last 365 Days February 22, 2010 – February 21, 2011			
	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	RANK SINCE 1921	TOTAL RAINFALL (INCHES)	DEPARTURE FROM NORMAL (INCHES)	PERCENT OF NORMAL	RANK SINCE 1921
Panhandle	0.60"	-1.35"	31%	8th driest	19.37"	-1.73"	92%	41st driest
North Central	0.68"	-2.95"	19%	3rd driest	28.10"	-3.55"	89%	41st driest
Northeast	2.73"	-3.45"	44%	4th driest	35.15"	-6.82"	84%	23rd driest
West Central	0.50"	-2.78"	15%	1st driest	22.11"	-6.98"	76%	16th driest
Central	1.26"	-4.17"	23%	2nd driest	30.40"	-7.59"	80%	19th driest
East Central	4.60"	-3.34"	58%	19th driest	35.95"	-10.14"	78%	19th driest
Southwest	0.31"	-3.53"	8%	1st driest	24.54"	-6.26"	80%	25th driest
South Central	4.17"	-2.64"	61%	19th driest	32.32"	-8.64"	79%	22nd driest
Southeast	6.35"	-4.06"	61%	13th driest	33.40"	-17.54"	66%	4th driest
<b>Statewide</b>	<b>2.30"</b>	<b>-3.15"</b>	<b>42%</b>	<b>2nd driest</b>	<b>29.22"</b>	<b>-7.47"</b>	<b>80%</b>	<b>17th driest</b>



OKLAHOMA CLIMATOLOGICAL SURVEY  
Percentage of Normal Rainfall  
Last 90 Days

Nov 24, 2010 through Feb 21, 2011  
Created 2011-02-22 10:00:29 UTC. Copyright © 2011



OKLAHOMA CLIMATOLOGICAL SURVEY  
Percentage of Normal Rainfall  
Last 365 Days

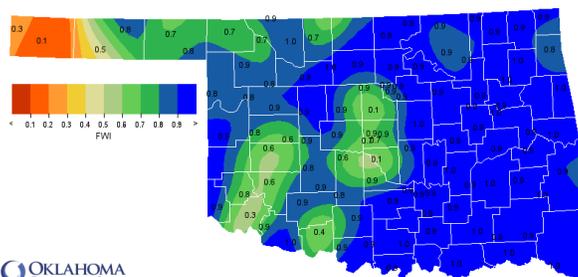
Feb 22, 2010 through Feb 21, 2011  
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## SOIL MOISTURE

### Fractional Water Index<sup>1</sup>

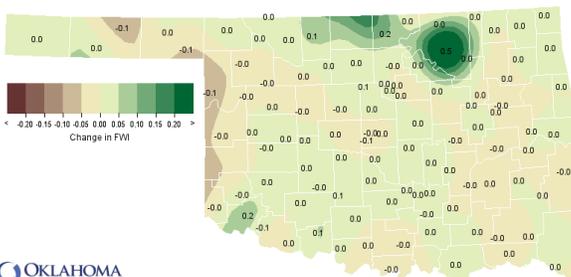
February 21, 2011

25 CM (~10 INCHES)



OKLAHOMA CLIMATOLOGICAL SURVEY  
25-cm Fractional Water Index

Feb 21, 2011  
Created 2011-02-22 10:00:29 UTC. Copyright © 2011



OKLAHOMA CLIMATOLOGICAL SURVEY  
7-Day Change in 25-cm Fractional Water Index

Feb 21, 2011  
Created 2011-02-22 10:00:29 UTC. Copyright © 2011

<sup>1</sup> The Fractional Water Index ranges from very dry soil having a value of 0 to soil at field capacity illustrated by a value of 1. Specifically, 1.0 to 0.8 equals Enhanced Growth, 0.8 to 0.5 equals Limited Growth, 0.5 to 0.3 equals Plants Wilted, 0.3 to 0.1 equals Plants Dying, and less than 0.1 equals Barren Soil.

## DROUGHT INDICES

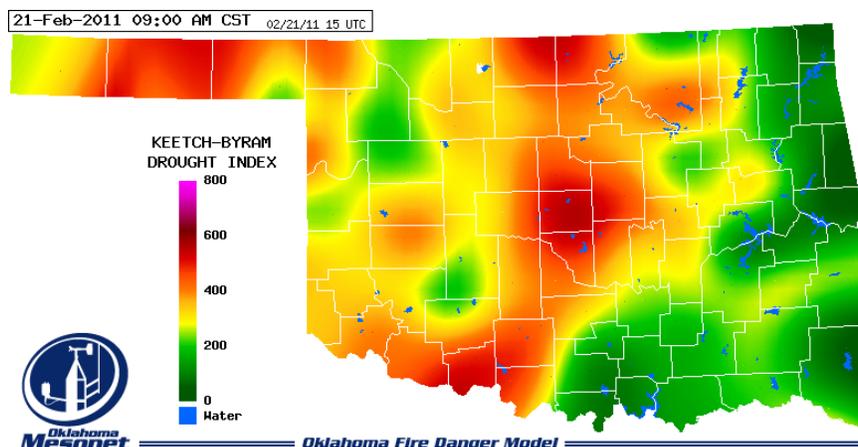
Palmer Drought Severity Index <sup>1</sup>					Standardized Precipitation Index <sup>2</sup> Through January 2010			
CLIMATE DIVISION	CURRENT STATUS 2/19/2011	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		2/19	1/22					
Northwest	NEAR NORMAL	0.37	0.45	-0.08	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
North Central	NEAR NORMAL	0.09	0.37	-0.28	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Northeast	MILD DROUGHT	-1.31	-1.15	-0.16	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
West Central	INCIPIENT DROUGHT	-0.53	-0.43	-0.10	NEAR NORMAL	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Central	MILD DROUGHT	-1.34	-1.29	-0.05	VERY DRY	VERY DRY	NEAR NORMAL	NEAR NORMAL
East Central	INCIPIENT DROUGHT	-0.85	-0.71	-0.14	MODERATELY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
Southwest	INCIPIENT DROUGHT	-0.91	-0.75	-0.16	VERY DRY	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL
South Central	INCIPIENT DROUGHT	-0.57	-0.46	-0.11	MODERATELY DRY	NEAR NORMAL	NEAR NORMAL	NEAR NORMAL
Southeast	MODERATE DROUGHT	-2.13	-2.16	0.03	VERY DRY	VERY DRY	VERY DRY	VERY DRY

- Three climate divisions are currently experiencing drought conditions, according to the PDSI. Four additional regions are considered in "incipient" drought.
- Eight climate divisions have undergone PDSI moisture decreases since January 22.
- Seven climate divisions are experiencing near long-term dry conditions, according to the SPI.

### Keetch-Byram Drought Fire Index<sup>3</sup>

MESONET STATION	COUNTY	CLIMATE DIVISION	CURRENT VALUE 2/21/2011
OKC East	Oklahoma	Central	572
OKC North	Oklahoma	Central	569
Wynona	Osage	Northeast	554

- Stations currently at or above 600 (February 21) = 0
- Stations above 600 on January 24 = 0



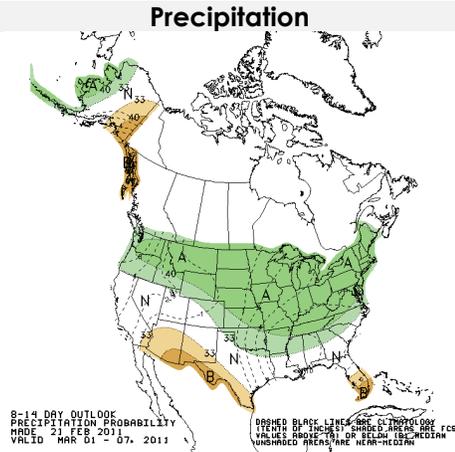
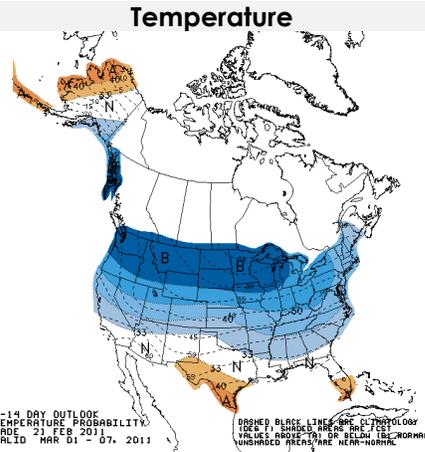
<sup>1</sup> The Palmer Drought Severity Index, the first comprehensive drought index developed in the United States, is calculated based on precipitation, temperature, and soil moisture. Though widely used by government agencies and states to trigger drought relief programs, the PDSI may underestimate or overestimate the severity of ongoing dry periods.

<sup>2</sup> The Standardized Precipitation Index, more sensitive than the PDSI, provides a comparison of precipitation over a specified period with precipitation totals from that same period for all years included in the historical record. The 3-month SPI provides a seasonal estimation of precipitation while the 6-month SPI can be very effective in showing precipitation over distinct seasons.

<sup>3</sup> The Keetch-Byram Drought Index measures the state of near-surface soil moisture (within the uppermost eight inches of soil) as well as the amount of fuel available for fires. KBDI values of 600 and above are often associated with more severe drought and increased wildfire occurrence.

# WEATHER/DROUGHT FORECAST

8- to 14-Day Outlook  
March 1 – 7, 2011



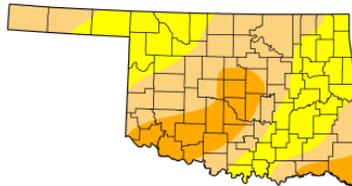
## Regional Drought Summary & Outlook

### U.S. Drought Monitor

February 22, 2011  
Valid 7 a.m. EST

#### Oklahoma

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.02	99.98	63.04	18.15	0.00	0.00
Last Week (02/15/2011 map)	0.08	99.92	61.06	5.55	0.00	0.00
3 Months Ago (11/23/2010 map)	47.49	52.52	3.13	0.00	0.00	0.00
Start of Calendar Year (12/28/2010 map)	13.82	86.18	47.90	1.50	0.00	0.00
Start of Water Year (09/28/2010 map)	66.28	33.72	4.21	0.00	0.00	0.00
One Year Ago (02/16/2010 map)	100.00	0.00	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>

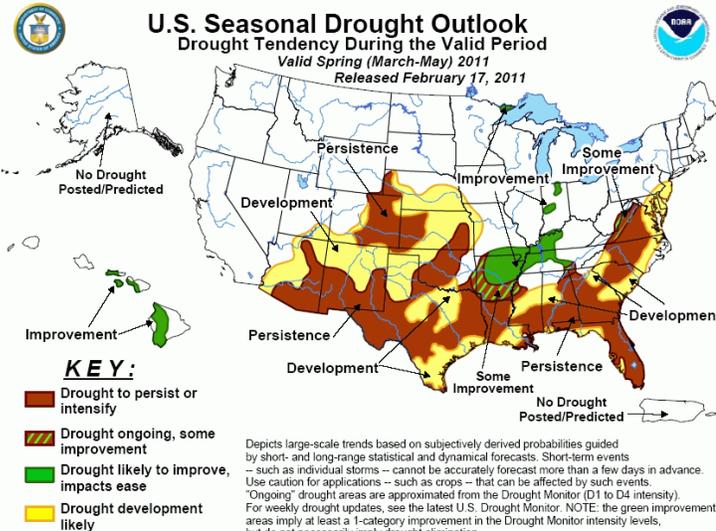


Released Thursday, February 24, 2011  
B. Rippey, U.S. Dept of Agriculture

February 22 – The latest U.S. Drought Monitor reports that the drought situation worsened from the central and southern Plains into the southeast. Warm, windy weather contributed to a sharp increase in wildfire activity across the south and east. In mid-February, warm, dry weather replaced cold conditions across the south. Agricultural concerns were mounting due to short-term precipitation shortages superimposed on longer-term deficits. Stream flows remained extremely low for this time of year throughout the south. Extreme weather conditions persisted on the central and southern Plains, where drought continued to gradually expand and intensify. At the height of the warm spell, several brush and grass fires—including a 16,000-acre complex in Lipscomb County, Texas—affected the southern Plains. On February 20, the U.S. Department of Agriculture rated 60% of Texas' winter wheat crop in very poor to poor condition, along with 63% of the state's oats and 55% of the pasture and rangeland.

### U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period  
Valid Spring (March-May) 2011  
Released February 17, 2011



According to the latest Drought Outlook (February 17), the outlook for Spring (March–May) 2011 was based largely upon climate anomalies associated with an ongoing, mature La Niña that has begun to weaken, with ENSO-neutral or La Niña conditions equally likely by May-June. The CPC monthly and seasonal outlooks indicate enhanced odds for below median precipitation and above median temperatures across the southern tier of the Nation and in the central Plains which favors drought persistence from southern Arizona eastward into the southern and central Plains, along the Gulf Coast States, and northward into the Carolina Piedmont. Similarly, drought development is forecast across much of the rest of the southern U.S., from southwestern Arizona eastward into the southern and central Plains, northern and southeastern Texas, and along parts of the Gulf and southern and middle Atlantic Coasts.

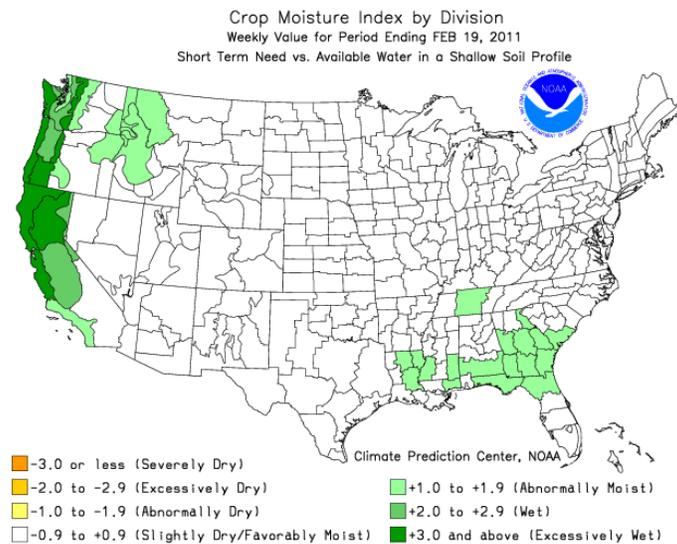
## CROP REPORT

January 31, 2011 – January proved to be even drier than the month before, even after a few bouts of freezing rain and snow. The period from January 1st to January 30th was the sixth driest such period since 1921 with only 0.24 of an inch of precipitation for the state. Overall, every agricultural district is far below normal precipitation for the cool season and this is affecting the availability of small grains and grasses for grazing. Pond levels are also low, causing concern for livestock operators. Temperatures averaged in the 30s for the month, but both extreme cold and unseasonable warmth were experienced. A low of -8 degrees was recorded in the Panhandle the second week of January while temperatures as high as 78 degrees were felt in multiple locations the last weekend of the month. Both topsoil and subsoil moisture conditions continued to decline over the past month with 88 percent of topsoil and 83 percent of subsoil rated short to very short.

Conditions for wheat and oats were rated mostly in the fair to poor range with 40 percent of wheat and 46 percent of oats rated poor to very poor. Rye was rated mostly in the good to fair range with 24 percent rated poor to very poor. Wheat grazed was at 36 percent, nine points behind the previous year and equal to the five-year average. Rye grazed was at 64 percent, ten points behind last year. Oats grazed was at 16 percent.

Pasture and range conditions continue to decline due to the lack of moisture. Conditions were rated mostly in the fair to poor range, with 43 percent rated poor to very poor. Despite the lack of available grazing, hay supplies for the rest of the season are reported to be adequate in most areas. Only 12 percent of the state rated hay supplies as above average, while 66 percent were rated as average and 22 percent below average.

Conditions were rated mostly in the good to fair range with ten percent rated poor to very poor. The lack of precipitation has greatly affected the available grazing and forage as well as pond levels. Some producers are choosing to sell cattle early to reduce costs..



## RESERVOIR STORAGE

- 24 reservoirs are currently operating at less than full capacity (compared to 26 four weeks ago).
- 8 reservoirs have experienced lake level decreases.

Storage in Selected Oklahoma Lakes & Reservoirs					
February 22, 2011					
Lake or Reservoir	Normal Pool Elevation  (feet)	Previous Elevation 1/25/2011  (feet)	Current Elevation 2/22/2011  (feet)	Change in Elevation  (feet)	Current Flood Control Storage  (acre-feet)
<b>North Central</b>					
Fort Supply	2004.00	2004.42	2004.47	0.05	882
Great Salt Plains	1125.00	1125.36	1125.45	0.09	3,776
Kaw*	1009.60	1013.04	1010.73	(2.31)	19,330
<b>Northeast</b>					
Birch	750.50	748.20	748.26	0.06	(2,474)
Copan	710.00	708.58	708.69	0.11	(5,039)
Fort Gibson	554.00	552.45	555.18	2.73	22,900
Grand*	742.00	742.03	742.25	0.22	11,000
Hudson	619.00	619.52	620.51	0.99	16,859
Hulah	733.00	731.97	732.21	0.24	(2,392)
Keystone*	723.00	719.52	720.54	1.02	(40,642)
Oologah*	638.00	636.52	637.18	0.66	(24,768)
Skiatook	714.00	709.21	709.03	(0.18)	(49,478)
<b>West Central</b>					
Canton	1615.40	1613.81	1614.46	0.65	(7,303)
Foss	1642.00	1640.54	1640.72	0.18	(8,495)
<b>Central</b>					
Arcadia	1006.00	1005.50	1005.89	0.39	(196)
Heyburn	761.50	760.39	761.13	0.74	(232)
Thunderbird	1039.00	1036.31	1036.40	0.09	(15,100)
<b>East Central</b>					
Eufaula*	585.00	580.82	580.68	(0.14)	(379,617)
Tenkiller	632.00	624.95	624.70	(0.25)	(89,180)
<b>Southwest</b>					
Fort Cobb	1342.00	1341.46	1341.79	0.33	(781)
Lugert-Altus	1559.00	1543.09	1544.21	1.12	(73,083)
Tom Steed	1411.00	1408.94	1408.76	(0.18)	(13,543)
<b>South Central</b>					
Arbuckle	872.00	871.03	871.23	0.20	(1,786)
McGee Creek**	175.90	175.38	175.44	0.06	(5,577)
Texoma*	615.00	615.35	614.38	(0.97)	(42,565)
Waurika*	951.40	950.50	950.58	0.08	(8,128)
<b>Southeast</b>					
Broken Bow*	599.50	590.50	589.33	(1.17)	(137,369)
Hugo*	404.50	402.70	404.12	1.42	(7,031)
Pine Creek*	433.00	433.19	432.75	(0.44)	(683)
Sardis	599.00	597.27	597.43	0.16	(20,769)
Wister	478.00	477.63	479.91	2.28	12,636

\* indicates seasonal pool operation

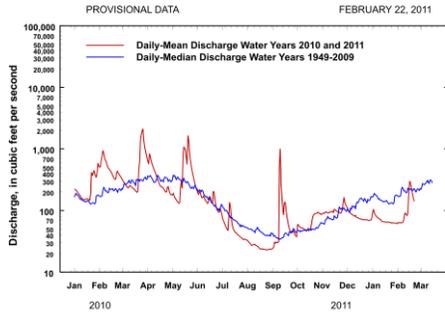
\*\* elevation in meters

negative numbers in red, parentheses

# STREAMFLOW CONDITIONS

## Baron Fork at Eldon

Baron Fork at Eldon, Oklahoma  
 Station No. 07197000 Northeast Oklahoma  
 Drainage Area 307 square miles

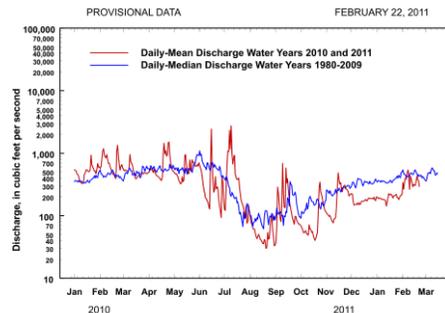


Comparison of daily discharges for water year 2010 and 2011 and period of record

Data from U.S. Geological Survey

## Canadian River at Purcell

Canadian River at Purcell, Oklahoma  
 Station No. 07229200 Central Oklahoma  
 Drainage Area 25,939 square miles

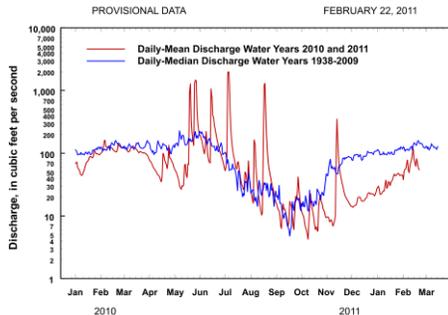


Comparison of daily discharges for water years 2010 and 2011 and period of record

Data from U.S. Geological Survey

## Cimarron River near Waynoka

Cimarron River near Waynoka, Oklahoma  
 Station No. 07158000 Northwest Oklahoma  
 Drainage Area 13,334 square miles

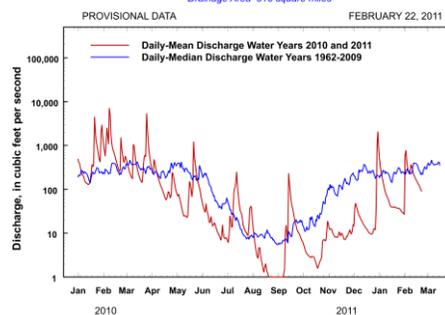


Comparison of daily discharges for water years 2010 and 2011 and period of record

Data from U.S. Geological Survey

## Glover River near Glover

Glover River near Glover, Oklahoma  
 Station No. 07337900 Southeast Oklahoma  
 Drainage Area 315 square miles

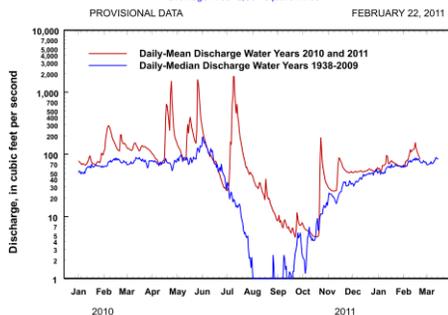


Comparison of daily discharges for water years 2010 and 2011 and period of record

Data from U.S. Geological Survey

## North Fork of the Red River near Carter

North Fork of the Red River near Carter, Oklahoma  
 Station No. 07301500 Southwest Oklahoma  
 Drainage Area 2,337 square miles

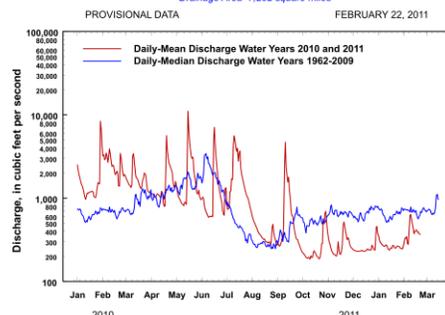


Comparison of daily discharges for water years 2010 and 2011 and period of record

Data from U.S. Geological Survey

## Washita River near Dickson

Washita River near Dickson, Oklahoma  
 Station No. 07331000 South-Central Oklahoma  
 Drainage Area 7,202 square miles



Comparison of daily discharges for water years 2010 and 2011 and period of record

Data from U.S. Geological Survey



Water Bulletin information/data courtesy of National Weather Service, Climate Prediction Center, Oklahoma Climatological Survey, State Department of Agriculture, Food, and Forestry, Agricultural Statistics Service, U.S. Army Corps of Engineers, U.S. Department of Agriculture/Forest Service, U.S. Geological Survey, Western Drought Coordination Council, and National Drought Mitigation Center. For more information, visit [www.owrb.ok.gov](http://www.owrb.ok.gov) and [www.mesonet.org](http://www.mesonet.org).