

# Oklahoma Water Resources Bulletin & Summary of Current Conditions

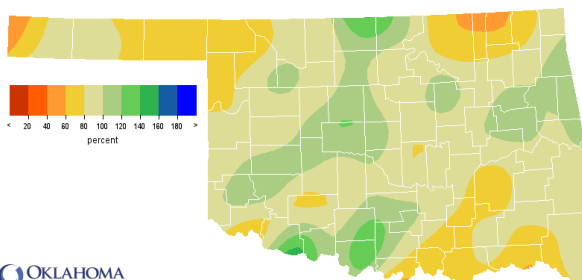


December 1, 2011

## PRECIPITATION

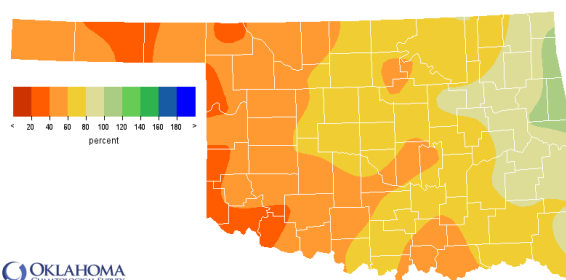
### Statewide Precipitation

CLIMATE DIVISION	Cool Growing Season September 1 – November 27, 2011				Last 365 Days November 28, 2010 – November 27, 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	3.00"	-1.33"	69%	28th driest	8.43"	-12.67"	40%	1st driest
North Central	7.04"	-0.62"	92%	43rd wettest	18.18"	-13.47"	57%	5th driest
Northeast	9.89"	-1.77"	85%	44th driest	33.47"	-8.50"	80%	21st driest
West Central	6.60"	-0.54"	92%	40th wettest	13.80"	-15.29"	47%	2nd driest
Central	9.57"	-0.73"	93%	38th wettest	24.08"	-13.91"	63%	5th driest
East Central	12.41"	-0.69"	95%	37th wettest	39.40"	-6.69"	85%	24th driest
Southwest	7.84"	-0.09"	99%	39th wettest	14.48"	-16.32"	47%	1st driest
South Central	10.26"	-1.12"	90%	41st wettest	24.28"	-16.68"	59%	3rd driest
Southeast	11.96"	-2.13"	85%	43rd wettest	39.25"	-11.69"	77%	10th driest
<b>Statewide</b>	<b>8.72"</b>	<b>-1.00"</b>	<b>90%</b>	<b>43rd wettest</b>	<b>23.88"</b>	<b>-12.81"</b>	<b>65%</b>	<b>6th driest</b>



OKLAHOMA CLIMATOLOGICAL SURVEY  
Percentage of Normal Rainfall  
Cool Growing Season

Sep 1, 2011 through Nov 27, 2011  
Created 5:43:06 AM November 28, 2011 CST. Copyright © 2011

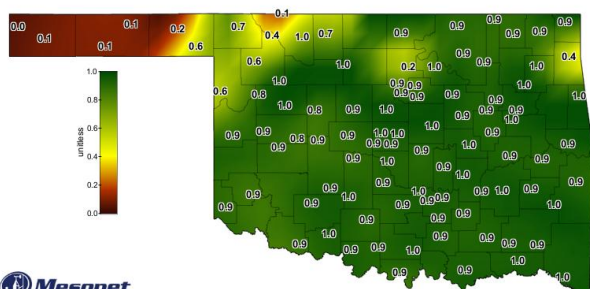


OKLAHOMA CLIMATOLOGICAL SURVEY  
Percentage of Normal Rainfall  
Last 365 Days

Nov 28, 2010 through Nov 27, 2011  
Created 5:30:21 AM November 28, 2011 CST. Copyright © 2011

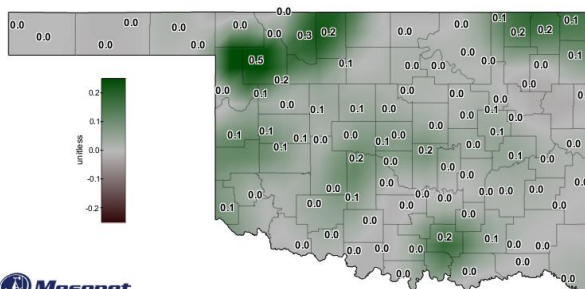
## SOIL MOISTURE

### Fractional Water Index<sup>1</sup> November 28, 2011



Mesonet  
Daily Averaged Fractional Water Index at 10 inches

November 28, 2011  
Created 9:43:06 AM November 28, 2011 CST. Copyright © 2011



Mesonet  
7-Day Change in Fractional Water Index at 10 inches

November 28, 2011  
Created 5:30:21 AM November 28, 2011 CST. 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. [1.0-0.8 = Enhanced Growth; 0.8-0.5 = Limited Growth; 0.5-0.3 = Plants Wilting; 0.3-0.1 = Plants Dying; <0.1 = Barren Soil.]

## DROUGHT INDICES

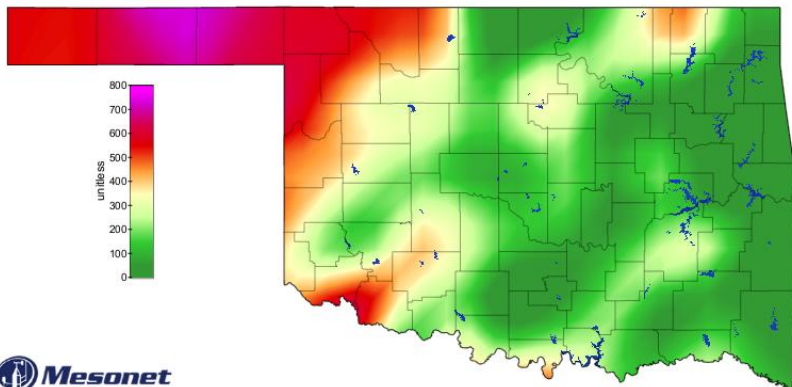
Palmer Drought Severity Index <sup>1</sup>					Standardized Precipitation Index <sup>2</sup> Through October 2011			
CLIMATE DIVISION	CURRENT STATUS 11/26/2011	VALUE		CHANGE IN VALUE	3-MONTH	6-MONTH	9-MONTH	12-MONTH
		11/26	10/22					
Northwest	SEVERE DROUGHT	-3.95	-5.07	<b>1.12</b>	MODERATELY DRY	EXTREMELY DRY	EXTREMELY DRY	EXTREMELY DRY
North Central	MILD DROUGHT	-1.42	-3.28	<b>1.86</b>	NEAR NORMAL	VERY DRY	VERY DRY	VERY DRY
Northeast	NEAR NORMAL	-0.39	-2.36	<b>1.97</b>	NEAR NORMAL	VERY DRY	MODERATELY DRY	MODERATELY DRY
West Central	MODERATE DROUGHT	-2.73	-4.91	<b>2.18</b>	NEAR NORMAL	VERY DRY	EXTREMELY DRY	EXTREMELY DRY
Central	MODERATE DROUGHT	-2.10	-4.39	<b>2.29</b>	NEAR NORMAL	MODERATELY DRY	VERY DRY	VERY DRY
East Central	NEAR NORMAL	0.15	-2.47	<b>2.62</b>	NEAR NORMAL	VERY DRY	VERY DRY	VERY DRY
Southwest	MODERATE DROUGHT	-2.95	-5.29	<b>2.34</b>	MODERATELY DRY	EXTREMELY DRY	EXTREMELY DRY	EXTREMELY DRY
South Central	MODERATE DROUGHT	-2.82	-5.05	<b>2.23</b>	VERY DRY	EXTREMELY DRY	EXTREMELY DRY	EXTREMELY DRY
Southeast	INCIPIENT DROUGHT	-0.65	-4.00	<b>3.35</b>	MODERATELY DRY	VERY DRY	VERY DRY	VERY DRY

- Seven climate divisions are currently experiencing drought conditions, according to the PDSI. However, none are now classified in extreme drought and only one is in severe drought. All climate divisions have undergone PDSI moisture increases since October 22.
- Every climate division is experiencing near long-term dry conditions, according to the SPI.

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

MESONET STATION	CLIMATE DIVISION	CURRENT VALUE 11/28/2011
Hooker	Panhandle	731
Beaver	Panhandle	670
Goodwell	Panhandle	627

- Stations currently at or above 600 (November 28) = 4
- Stations above 600 on October 24 = 25



**Mesonet**  
Keetch-Byram Drought Index

8:00 AM November 28, 2011 CST  
Created 9:14:04 AM November 28, 2011 CST. © Copyright 2011

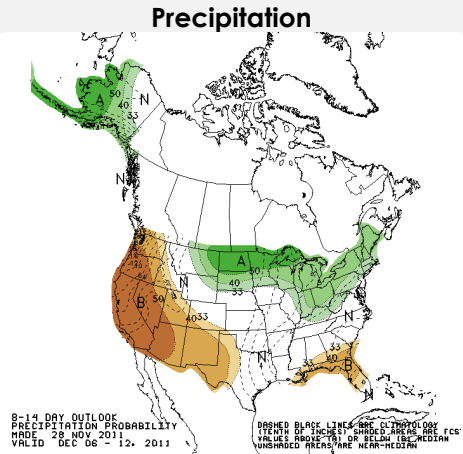
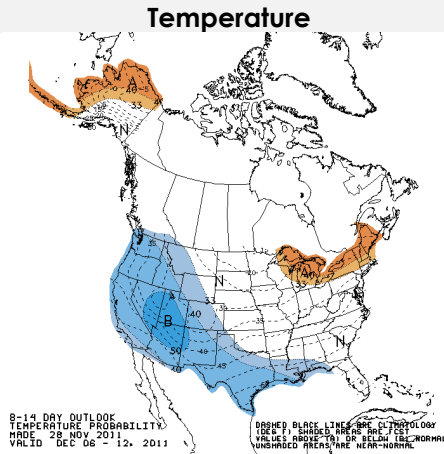
<sup>1</sup> The Palmer Drought Severity Index, the first comprehensive drought index developed in the United States, is calculated based on precipitation, temperature, and soil moisture. Though widely used by government agencies and states to trigger drought relief programs, the PDSI may underestimate 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 December 6-12, 2011

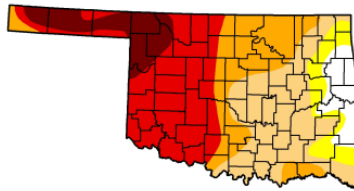


## Regional Drought Summary & Outlook

### U.S. Drought Monitor Oklahoma

November 29, 2011  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	7.33	92.67	85.70	59.58	39.92	10.27
Last Week (11/22/2011 map)	5.10	94.90	88.74	63.43	42.33	14.43
3 Months Ago (08/30/2011 map)	0.00	100.00	100.00	96.64	85.37	69.15
Start of Calendar Year (12/28/2010 map)	13.82	86.18	47.90	1.50	0.00	0.00
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	100.00	78.97	66.42
One Year Ago (11/23/2010 map)	47.48	52.52	3.13	0.00	0.00	0.00



**Intensity:**

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

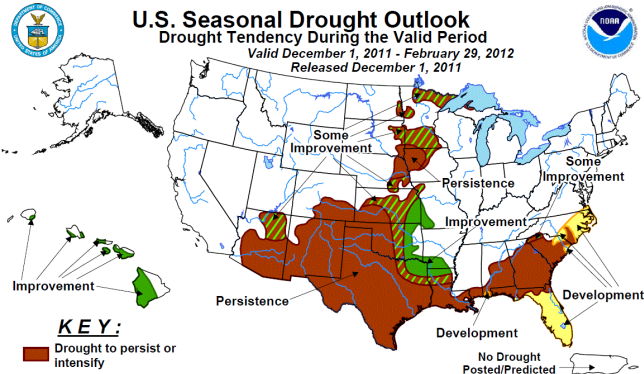
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, December 1, 2011  
David Miskus, NOAA/NWS/NCEP/Climate Prediction Center

### U.S. Seasonal Drought Outlook Drought Tendency During the Valid Period Valid December 1, 2011 - February 29, 2012 Released December 1, 2011



**KEY:**

- Drought to persist or intensify
- Drought ongoing, some improvement
- Drought likely to improve, impacts ease
- Drought development likely
- No Drought Posted/Predicted

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Short-term events – such as individual storms – cannot be accurately forecast more than a few days in advance. Use caution for applications – such as crops – that can be affected by such events. “Ongoing” drought areas are approximated from the Drought Monitor (D1 to D4 intensity). For weekly drought updates, see the latest U.S. Drought Monitor. NOTE: The green improvement areas imply at least a 1-category improvement in the Drought Monitor intensity levels, but do not necessarily imply drought elimination.

November 29—The latest U.S. Drought Monitor reports that another round of light to moderate precipitation fell on most of the southern and central Plains, continuing a recent pattern of near to above normal precipitation. This was good news after Oklahoma recorded the second driest October-September period (12-months) on record (since 1895) in 2010-2011. Along the Kansas/Oklahoma border, 0.5 to 1.5 inches of precipitation occurred while 0.3 to one inch was measured in the rest of Oklahoma and central and eastern Kansas. Also due to lower temperatures and declining evapotranspiration rates, some 1-category improvements were made in eastern Oklahoma, and along the Kansas-Oklahoma border. Runoff from recent rains has filled Lakes Hugo, Broken Bow, and Wister. USGS stream flows bordering Arkansas are averaging 80 percent of normal or better. In contrast, lake levels remained unchanged from last week elsewhere. Major soil moisture issues below the topsoil remained in west central and northwestern areas. Lakes Great Salt Plains, Fort Supply, Canton, Lugert-Altus, Tom Steed, and Skiatook are down 40-80 percent with almost no recharge in the past month. Therefore, D3 and D4 remained in western and central Oklahoma.

According to the latest Drought Outlook (December 1), La Niña conditions developed during the fall season in the northern hemisphere for the second year in a row. During the previous two weeks, widespread rainfall further eased lingering drought conditions across the lower Mississippi Valley and southeastern Plains in a continuation of a wet autumn pattern. Short-term forecasts indicate new rounds of heavy rainfall in early December, which will likely bring additional improvement from southeastern Kansas through northern Louisiana. An early December winter storm might also bring some early mountain snowfall to the Southwest, though overall below median precipitation is expected during the winter season. However, ongoing drought conditions elsewhere across the southern tier of U.S. states are expected to persist or worsen.

## CROP REPORT

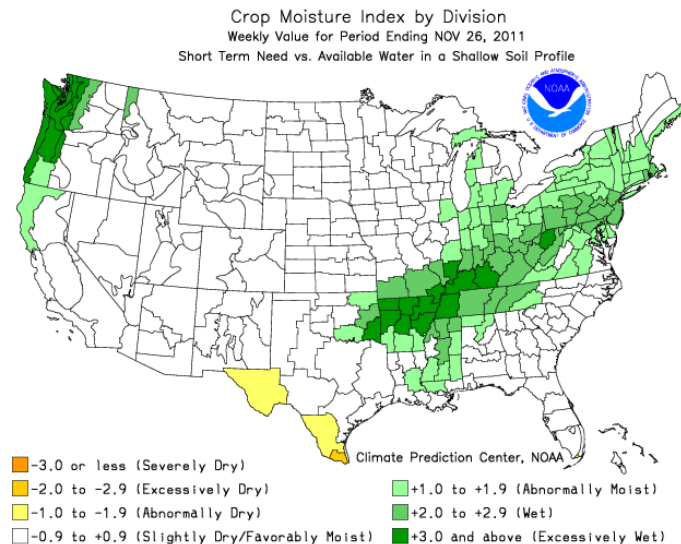
November 28, 2011 – A significant rainfall event Monday brought a good soaking rain, especially in southeast Oklahoma. Recent rains were reflected in improvements to the November 22 Drought Monitor although 63 percent of the state is still in a severe to exceptional drought, down from 85 percent the week before. The additional moisture helped small grain conditions and improved the availability of wheat grazing this fall. However, recent rains could not mitigate all the negative effects of the drought, as the lack of hay and pasture were still problems for livestock producers. Topsoil moisture conditions improved and are now rated mostly adequate. Subsoil moisture conditions also improved, though 47 percent are still rated very short, down from 56 percent the week prior. There were 4.6 days suitable for field work due to the multiple showers throughout the week.

Canola and small grain conditions continued to be rated mostly good to fair. Wheat grazing prospects improved, with additional moisture still required to make it through the winter months. Wheat emerged reached 97 percent complete. Seedbed preparation for oat ground was 85 percent complete, oat planting reached 64 percent complete, and 63 percent had emerged, even with the five-year average.

The fall harvest began to wind down and was more than three-quarters complete for all row crops. The sorghum harvest was 85 percent complete, slightly behind the five-year average. Soybeans harvested reached 83 percent complete by Sunday, 11 points behind normal. Peanuts combined reached 95 percent complete by Sunday. The cotton harvest was 77 percent complete by week's end, eight points ahead of the five-year average.

Recent rainfall events were too late in the season to benefit hay production, as very little hay was cut last week. Hay supplies for the season were rated below average for 87 percent of the state. Third cuttings of alfalfa were 76 percent complete, and 23 percent of the state had completed a fourth cutting. A second cutting of other hay was 61 percent complete by Sunday, 33 points behind normal.

Half of the pasture and range in the state was rated in very poor condition. The availability of grass continued to be of great concern to livestock producers as continued growth of cool season grasses is limited. Livestock conditions continued to be rated mostly good to fair, unchanged from last week. Many livestock ponds were replenished with the rains last week, especially in the southeast. However, some areas have still not received large enough rain amounts to produce the runoff needed for ponds.



## RESERVOIR STORAGE

- 21 major reservoirs are currently operating at less than full capacity (compared to 30 five weeks ago).
- 6 reservoirs have experienced lake level decreases.

Storage in Selected Oklahoma Lakes & Reservoirs					
November 28, 2011					
Lake or Reservoir	Normal Pool Elevation  (feet)	Previous Elevation 10/24/2011  (feet)	Current Elevation 11/28/2011  (feet)	Change in Elevation  (feet)	Current Flood Control Storage  (acre-feet)
<b>North Central</b>					
Fort Supply	2004.00	2001.00	2000.98	(0.02)	(4,708)
Great Salt Plains	1125.00	1123.21	1123.44	0.23	(10,240)
Kaw*	1010.00	1008.23	1009.72	1.49	(4,530)
<b>Northeast</b>					
Birch	750.50	742.85	742.33	(0.52)	(8,129)
Copan	710.00	708.64	709.56	0.92	(1,716)
Fort Gibson	554.00	552.96	554.67	1.71	12,931
Grand*	742.00	741.13	742.02	0.89	881
Hudson	619.00	619.12	620.33	1.21	14,809
Hulah	733.00	730.79	731.49	0.70	(4,448)
Keystone	723.00	720.23	723.47	3.24	7,944
Oologah	638.00	635.41	635.98	0.57	(56,352)
Skiatook	714.00	701.96	701.67	(0.29)	(110,817)
<b>West Central</b>					
Canton	1615.40	1605.80	1603.69	(2.11)	(70,136)
Foss	1642.00	1636.22	1635.83	(0.39)	(38,386)
<b>Central</b>					
Arcadia	1006.00	1005.14	1006.35	1.21	675
Heyburn	761.50	759.34	761.48	2.14	(13)
Thunderbird	1039.00	1033.99	1034.13	0.14	(27,193)
<b>East Central</b>					
Eufaula	585.00	580.95	582.69	1.74	(208,660)
Tenkiller	632.00	627.15	633.17	6.02	15,327
<b>Southwest</b>					
Fort Cobb	1342.00	1337.76	1338.22	0.46	(13,245)
Lugert-Altus	1559.00	1531.20	1532.02	0.82	(109,697)
Tom Steed	1411.00	1403.42	1404.55	1.13	(35,808)
<b>South Central</b>					
Arbuckle	872.00	865.46	867.74	2.28	(9,556)
McGee Creek**	175.90	174.06	174.20	0.14	(19,896)
Texoma*	618.50	609.98	612.18	2.20	(460,295)
Waurika	951.40	946.46	945.99	(0.47)	(49,121)
<b>Southeast</b>					
Broken Bow*	599.50	590.26	600.53	10.27	14,680
Hugo*	406.00	401.30	412.06	10.76	96,841
Pine Creek	433.00	423.91	441.66	17.75	32,036
Sardis	599.00	596.48	597.89	1.41	(14,736)
Wister	478.00	475.73	492.38	16.65	148,105

\* indicates seasonal pool operation

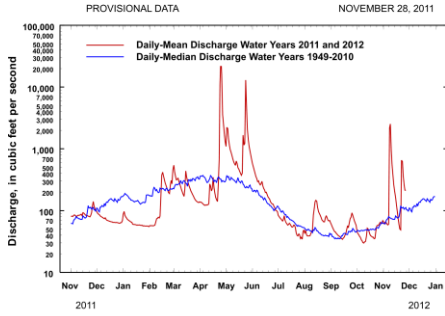
\*\* elevation in meters

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

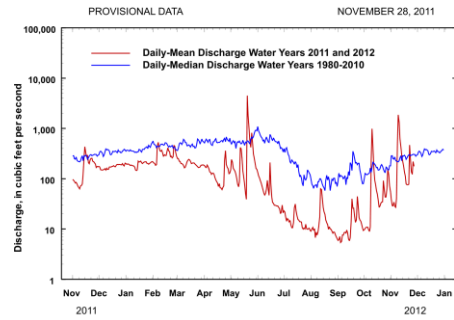


Comparison of daily discharges for water years 2011 and 2012 and period of record

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

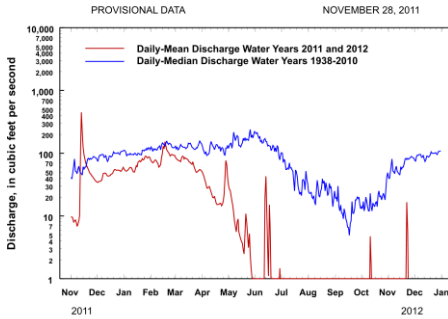


Comparison of daily discharges for water years 2011 and 2012 and period of record

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

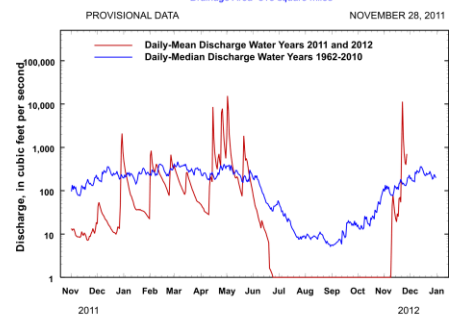


Comparison of daily discharges for water years 2011 and 2012 and period of record

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

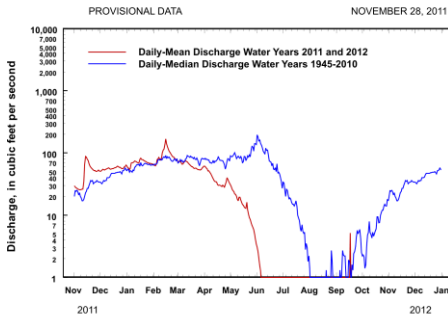


Comparison of daily discharges for water years 2011 and 2012 and period of record

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

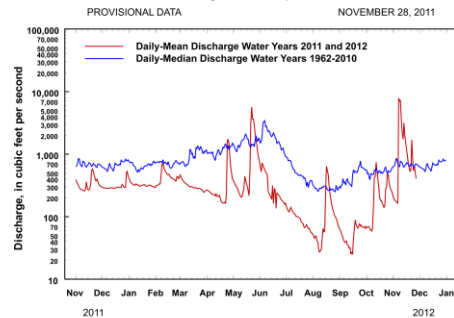


Comparison of daily discharges for water years 2011 and 2012 and period of record

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 2011 and 2012 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).