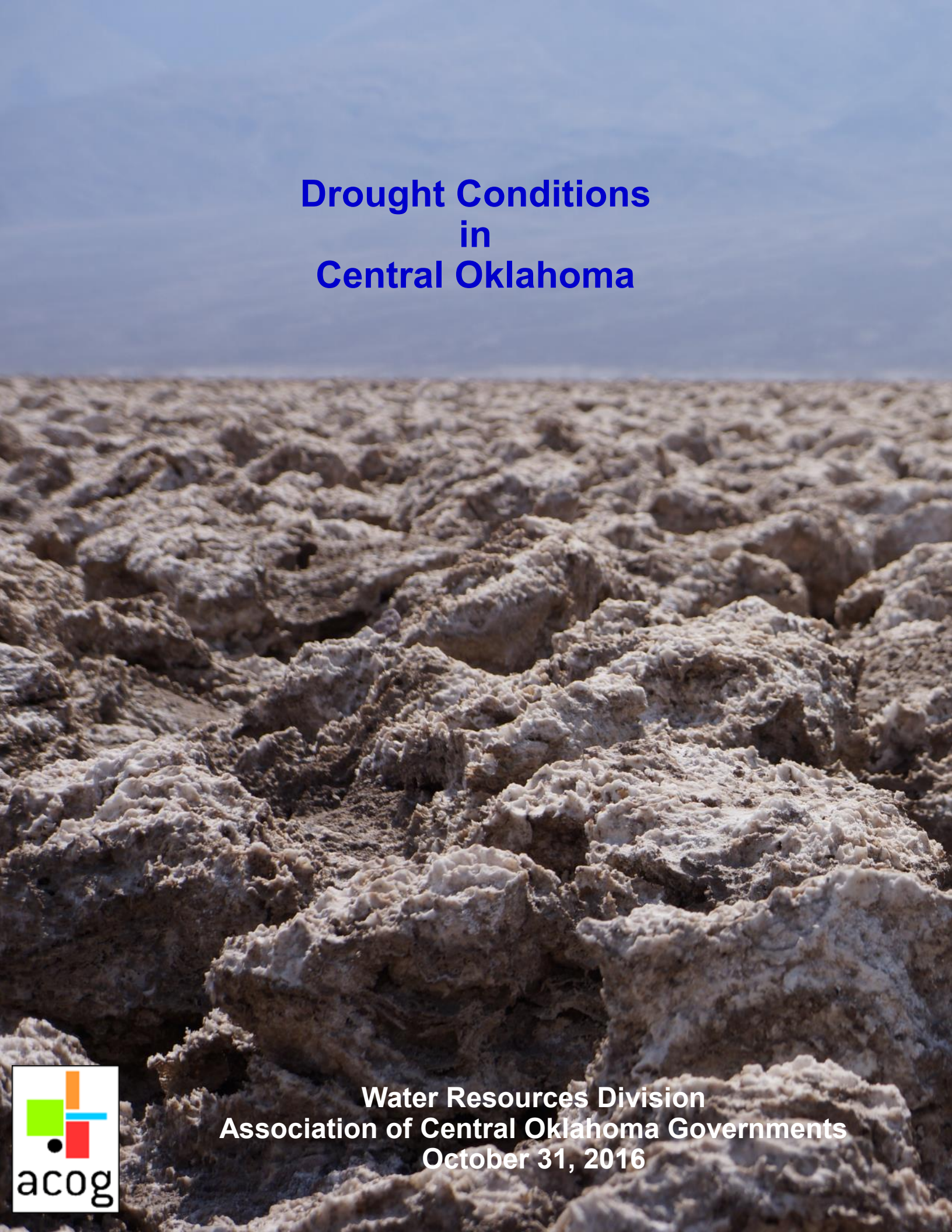
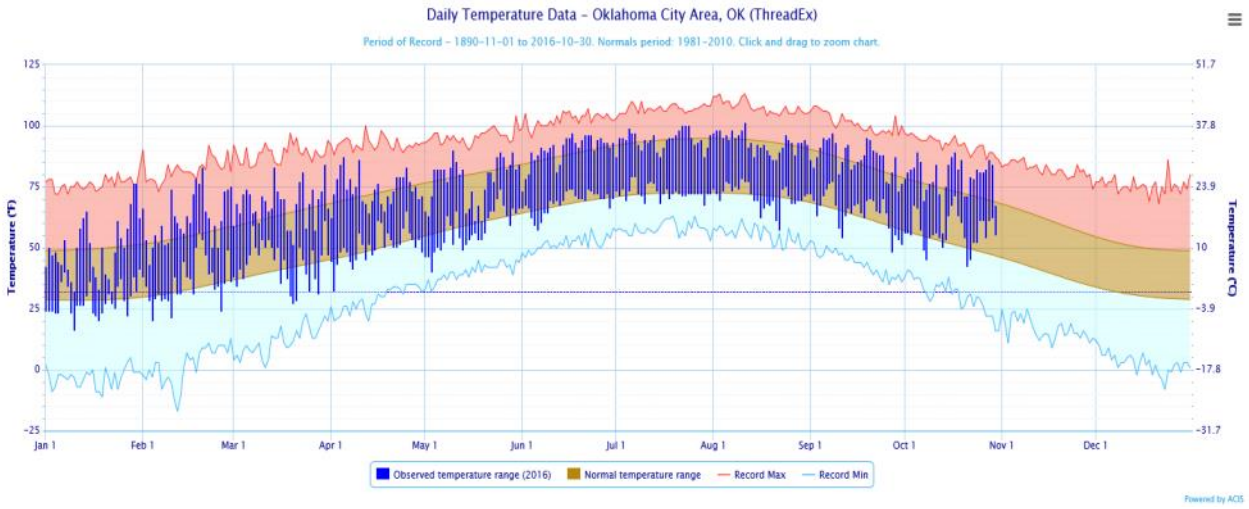
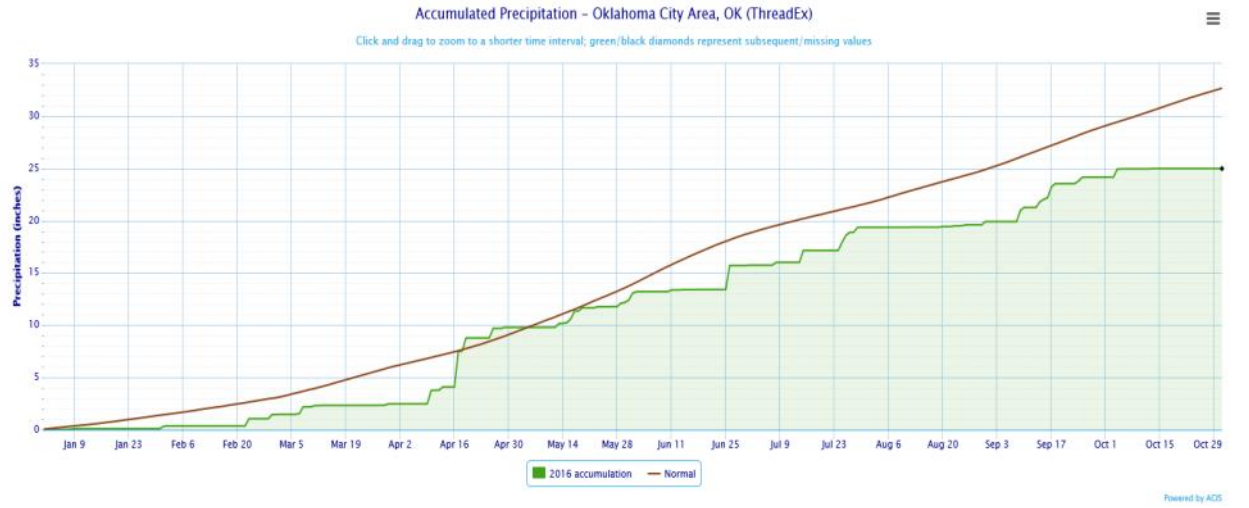


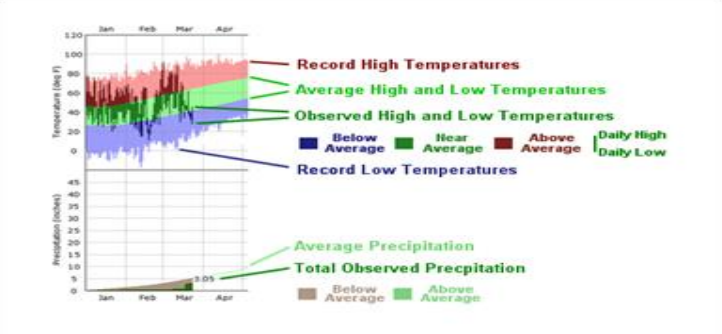
Drought Conditions in Central Oklahoma

Water Resources Division
Association of Central Oklahoma Governments
October 31, 2016

Temperature and Precipitation Plot for Oklahoma City, Oklahoma for 2016







http://xmacis.rcc-acis.org/

Rainfall Summaries by Oklahoma Climate Division

Calendar Year 01-Jan-2016 though 30-Oct-2016

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	27.31"	+1.70"	107%	23rd wettest	11.03" (2011)	39.94" (1941)
Central	28.57"	-4.57"	86%	35th driest	17.02" (1956)	50.84" (2007)
S. Central	34.22"	-0.97"	97%	38th wettest	16.11" (1963)	55.78" (2015)
Statewide	29.63"	-2.18"	93%	45th driest	16.93" (1956)	43.58" (1957)

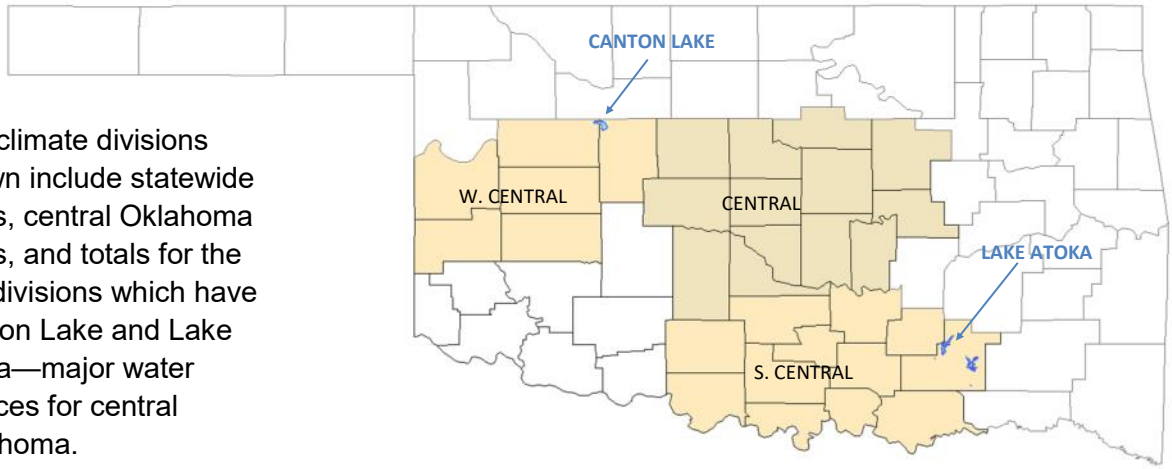
Water Year: 01-Oct-2016 through 30-Oct-2016

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	0.79"	-1.96"	29%	20th driest	0.00" (1952)	8.86" (1923)
Central	1.41"	-2.21"	39%	25th driest	0.03" (1952)	12.66" (1941)
S. Central	2.11"	-2.06"	51%	37th driest	0.05" (1921)	14.88" (1981)
Statewide	1.85"	-1.57"	54%	33rd driest	0.13" (1952)	10.36" (1941)

Autumn: 01-Sep-2016 through 30-Oct-2016

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Rank since 1921 (88 periods)	Driest on Record	Wettest on Record
W. Central	5.75"	+0.20"	104%	31st wettest	0.26" (1952)	17.16" (1923)
Central	4.69"	-2.77"	63%	27th driest	0.57" (1952)	19.10" (1923)
S. Central	6.03"	-2.11"	74%	38th driest	0.59" (1952)	17.21" (1981)
Statewide	5.00"	-1.96"	72%	30th driest	0.82" (1952)	15.72" (1923)

The climate divisions shown include statewide totals, central Oklahoma totals, and totals for the two divisions which have Canton Lake and Lake Atoka—major water sources for central Oklahoma.

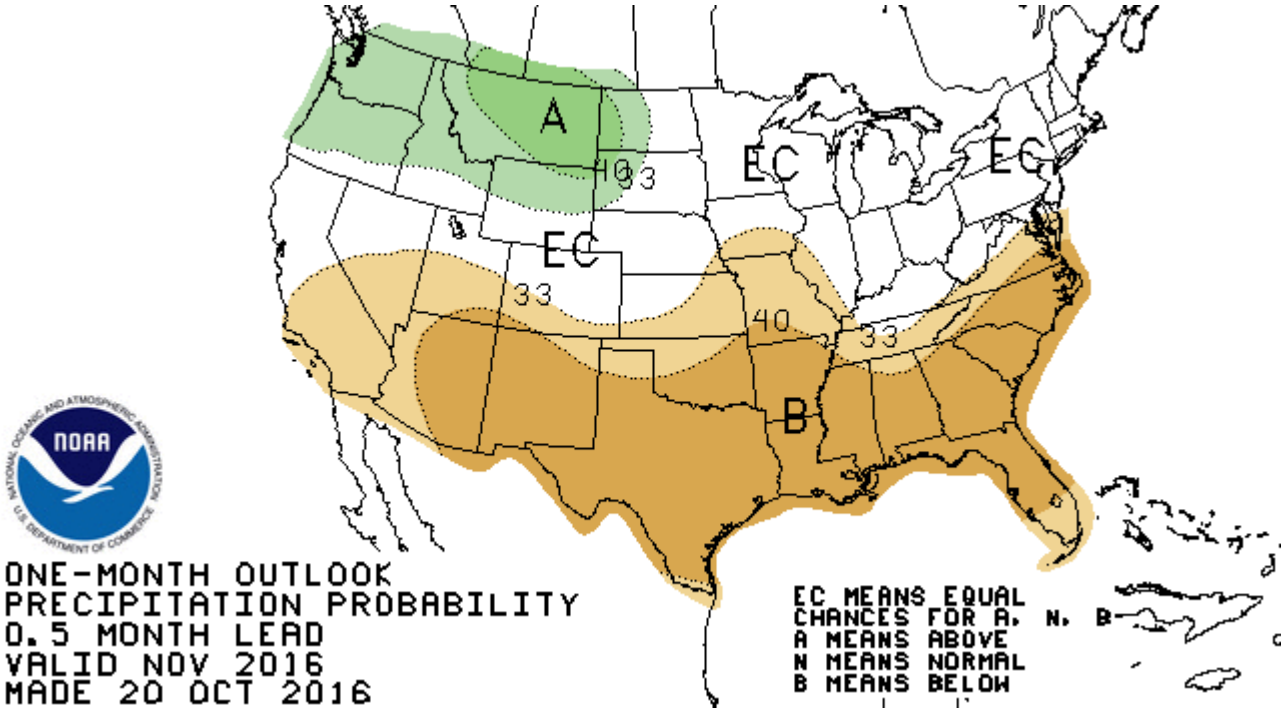


http://climate.ok.gov/index.php/drought/last_30_days/

OKLAHOMA CLIMATOLOGICAL SURVEY

acog

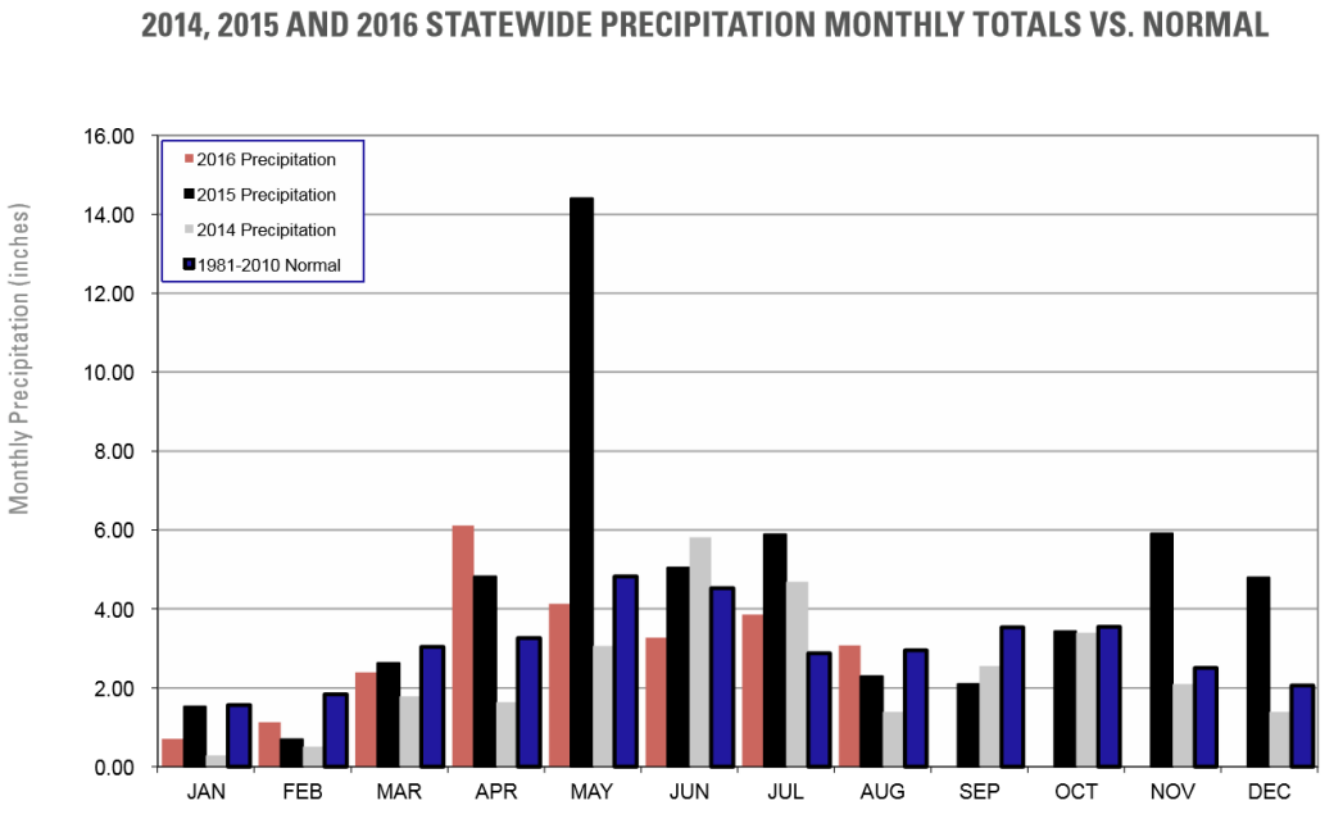
NOAA One-Month Outlook



http://www.cpc.ncep.noaa.gov/products/predictions/30-day/

White areas are shown as EC (Equal Chance) on these maps represent areas where there are no strong climate signals from the climate tools to have skill in preferring one category over another. That doesn't mean that there are equal chances of each of the categories occurring – it means that currently there is no skill in identifying the most likely category. In these areas, it is best to be prepared for all possibilities.

Statewide Precipitation Monthly Totals vs. Normal

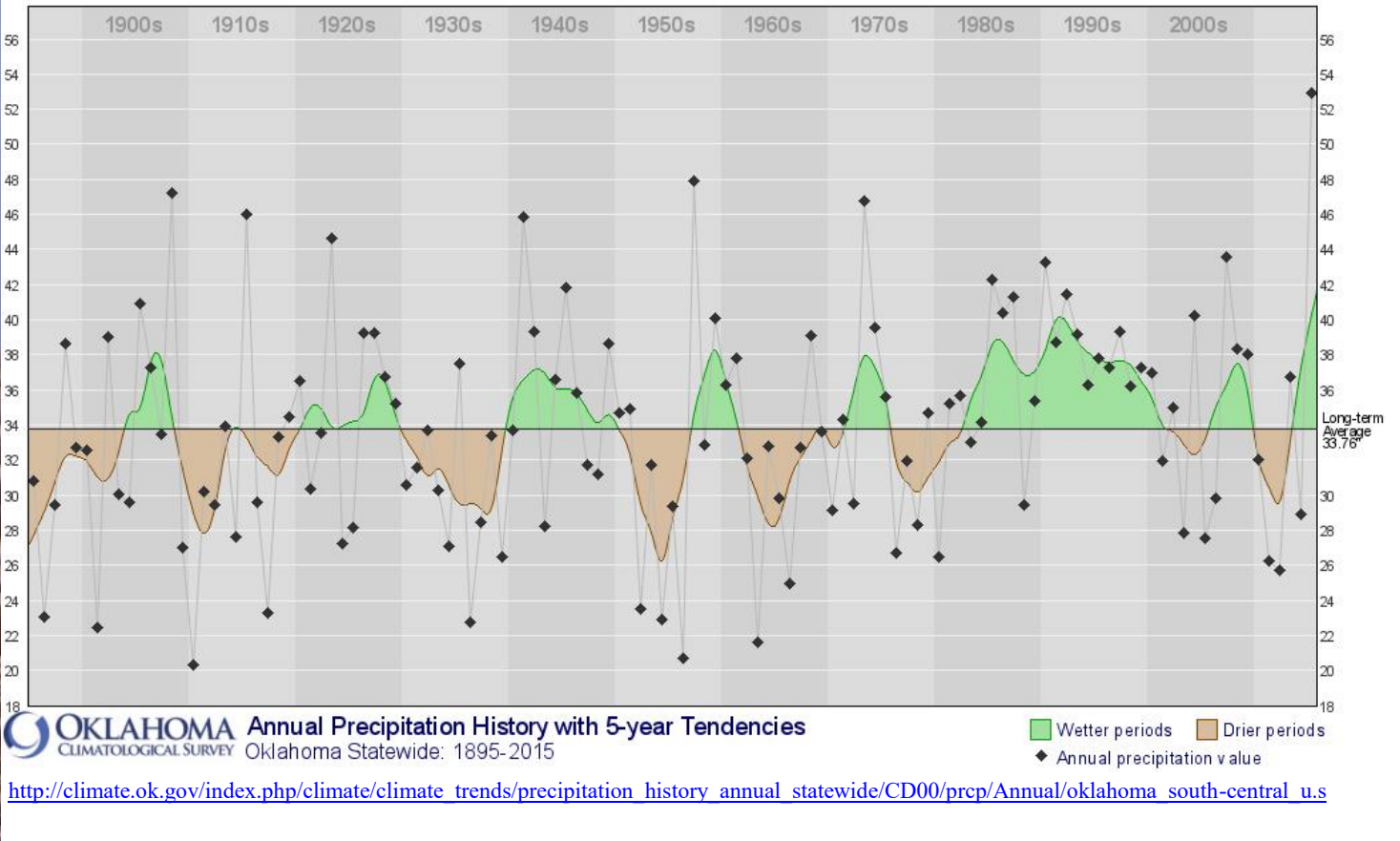


http://climate.ok.gov/index.php/climate/summary/reports_summaries

OKLAHOMA CLIMATOLOGICAL SURVEY

acog

Annual Precipitation History with 5-Year Tendencies

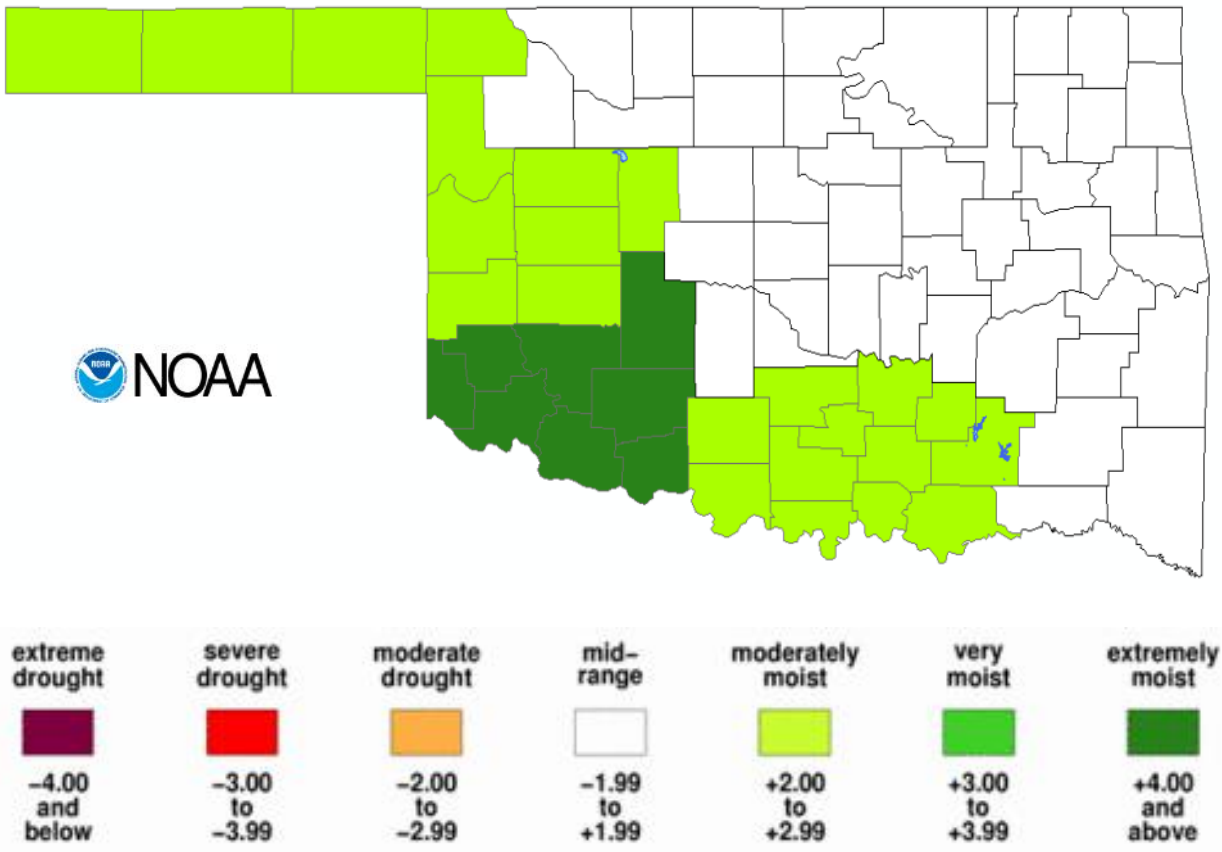


http://climate.ok.gov/index.php/climate/climate_trends/precipitation_history_annual_statewide/CD00/prcp/Annual/oklahoma_south-central_u.s

This graph shows the cyclical nature of wet and drought periods in Oklahoma. The black dots represent the annual precipitation for that particular year. The line represents the annual precipitation data smoothed over five years. This smoothed line shows well the wet periods (shaded green) and the drought periods (shaded brown). The drought cycles appear to average about five to eight years in length.

Drought Severity Index by Climate Division

Palmer Weekly Value for Period SEP 2016



https://www.drought.gov/drought/data-maps-tools/current-conditions

The Palmer Drought Index (PDI) maps show long-term (cumulative) meteorological drought and wet conditions. The maps show how the geographical pattern of the long-term (meteorological) moisture conditions has changed over the last 12 months. On these maps, the red shading denotes drought conditions while the green shading indicates wet conditions.

For an animated gif of the long term PDI see http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/pdiimage.html.

U.S. Drought Monitor

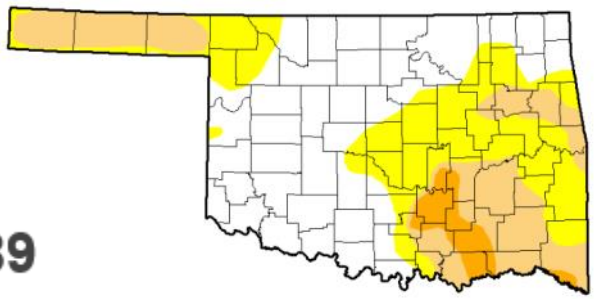
Regional Map Week of 29 SEP 2016

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current 2016-10-25	47.43	52.57	25.04	4.26	0.00	0.00
Last Week 2016-10-18	48.58	51.42	18.43	3.21	0.00	0.00
3 Months Ago 2016-07-26	61.25	38.75	10.00	0.53	0.00	0.00
Start of Calendar Year 2015-12-29	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 2016-09-27	57.82	42.18	19.04	3.05	0.00	0.00
One Year Ago 2015-10-27	33.36	66.64	17.68	2.79	0.00	0.00

U.S. Drought Monitor

Oklahoma

Estimated Population in Drought Areas: **577,089**

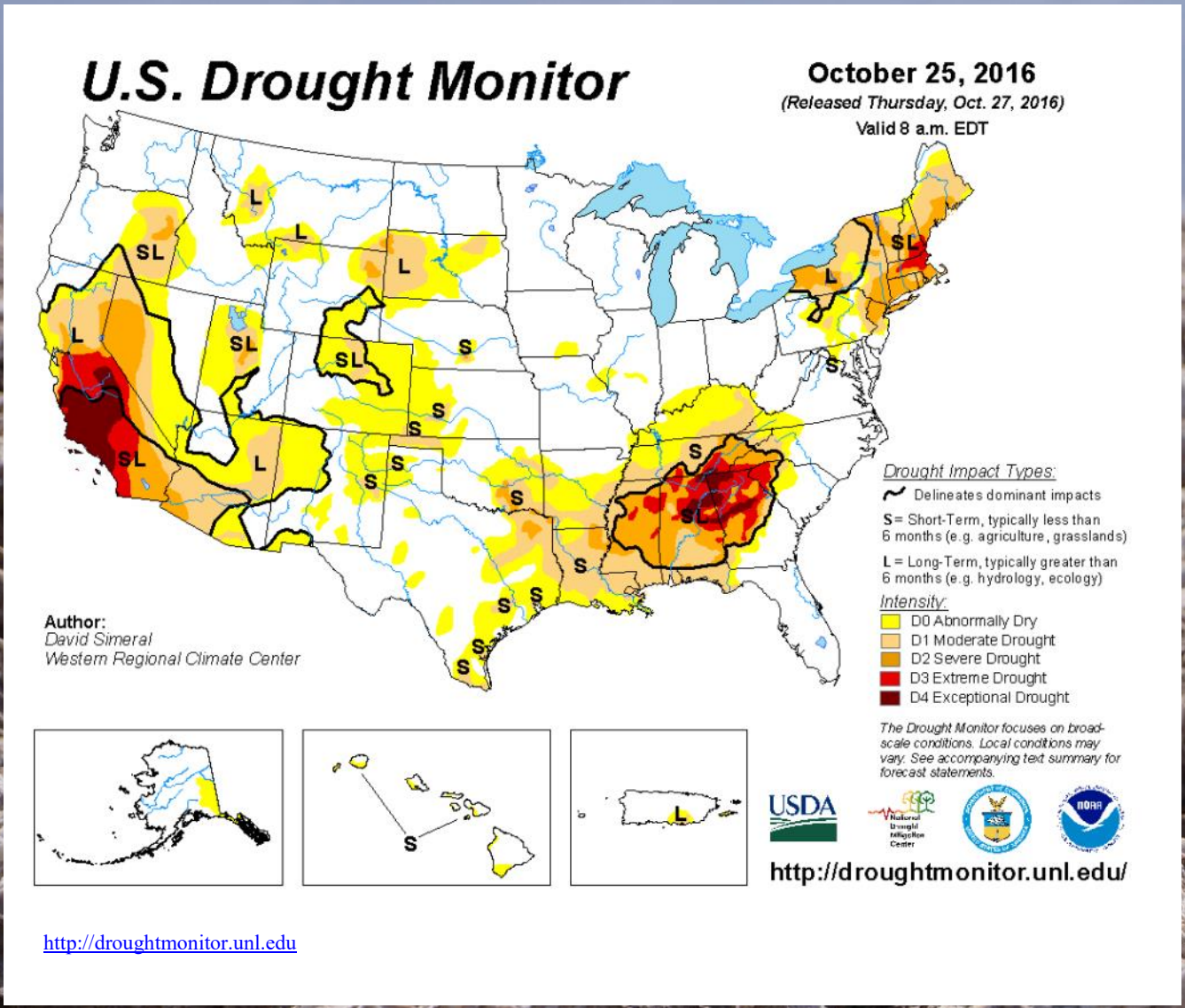


Intensity:

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

http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?OK

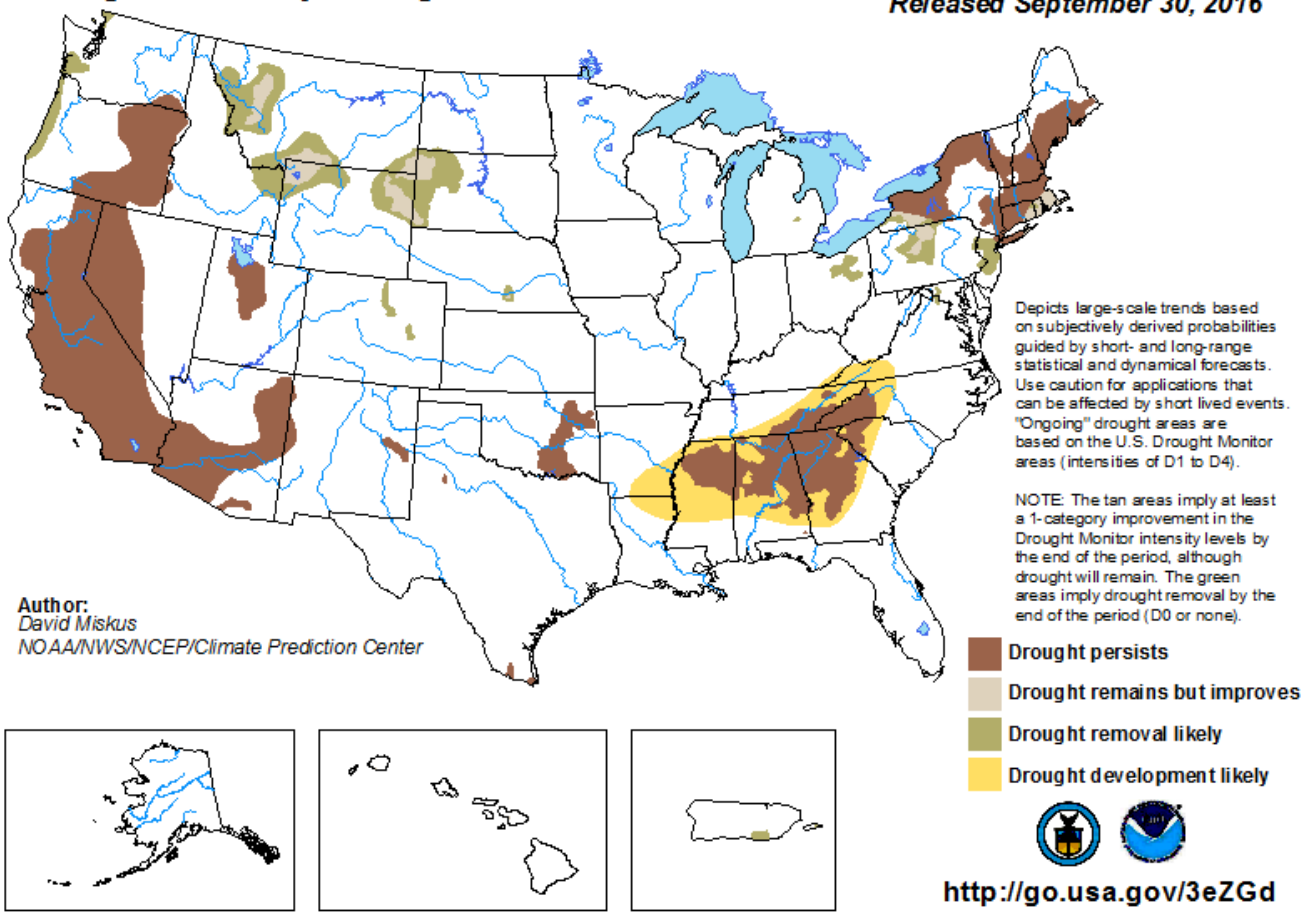
U.S. Drought Monitor Nationwide Map



http://droughtmonitor.unl.edu

U.S. Drought Monitor

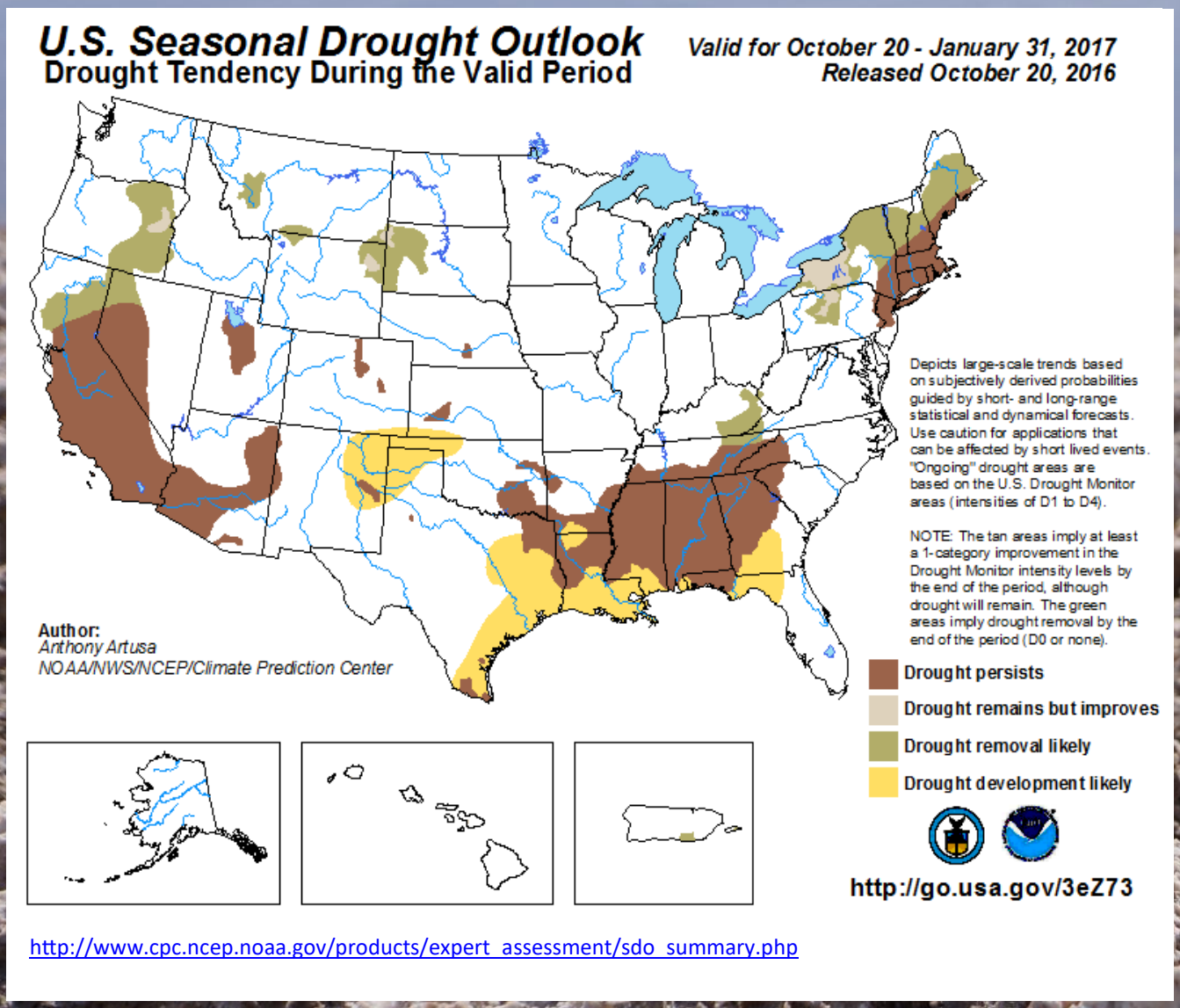
Monthly Drought Outlook Map



http://www.cpc.ncep.noaa.gov/products/expert_assessment/mdo_summary.php

U.S. Drought Monitor

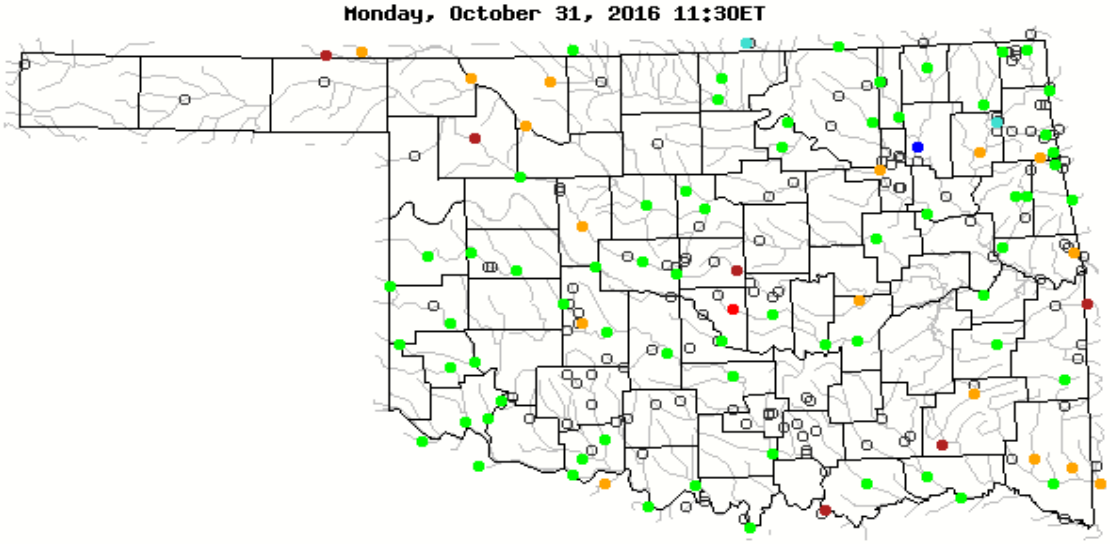
Seasonal Drought Outlook Map



http://www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php

USGS Streamflow Data

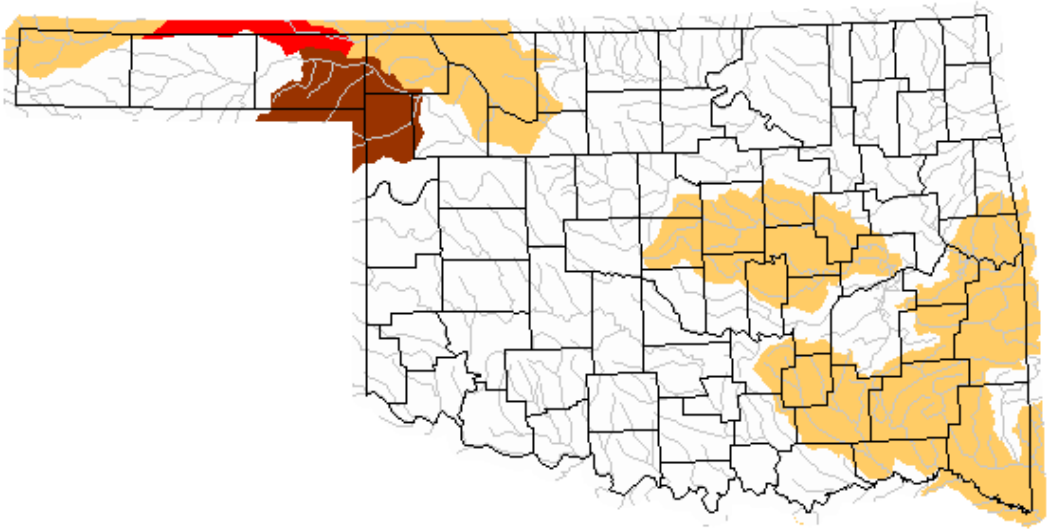
Monday, October 31, 2016 11:30ET



USGS

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

Sunday, October 30, 2016



USGS

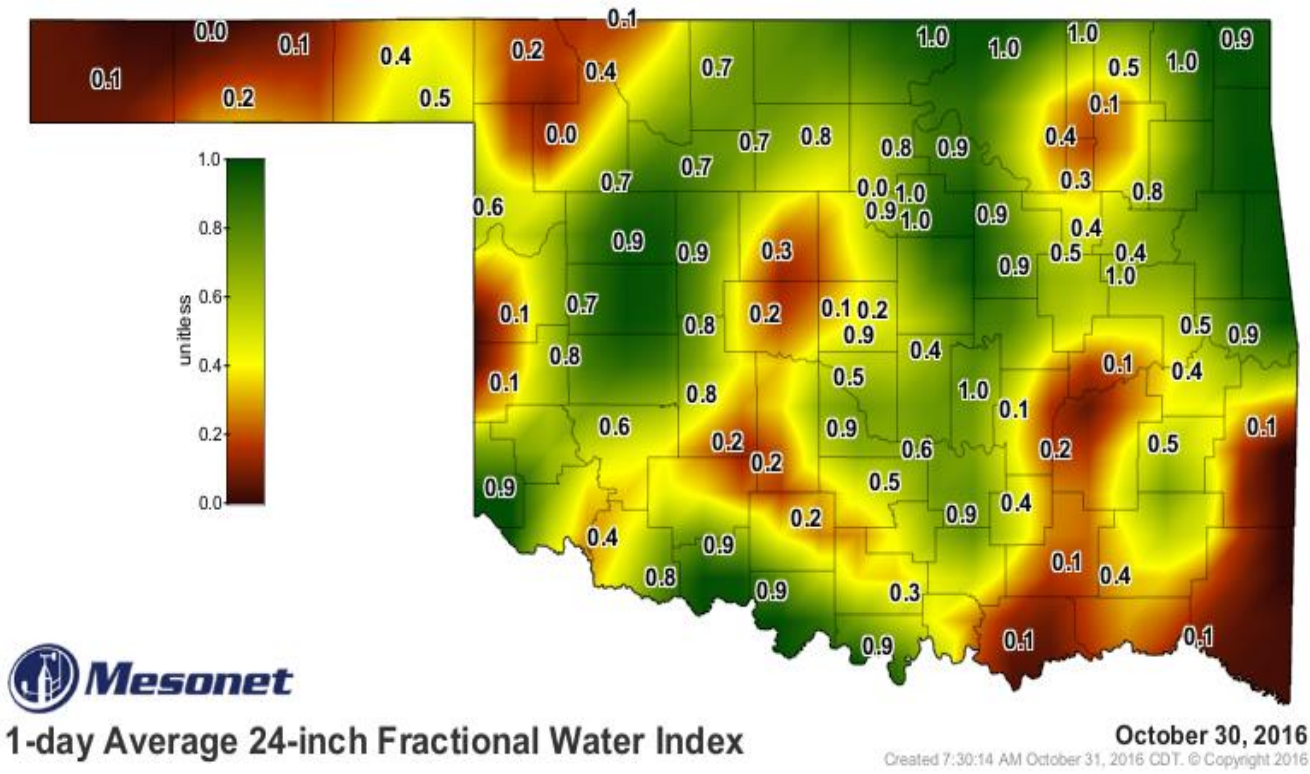
Below normal 28-day average streamflow

Explanation - Percentile classes				
Low	<=5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

http://waterwatch.usgs.gov/new/?m=real&r=ok&w=map

http://waterwatch.usgs.gov/index.php?

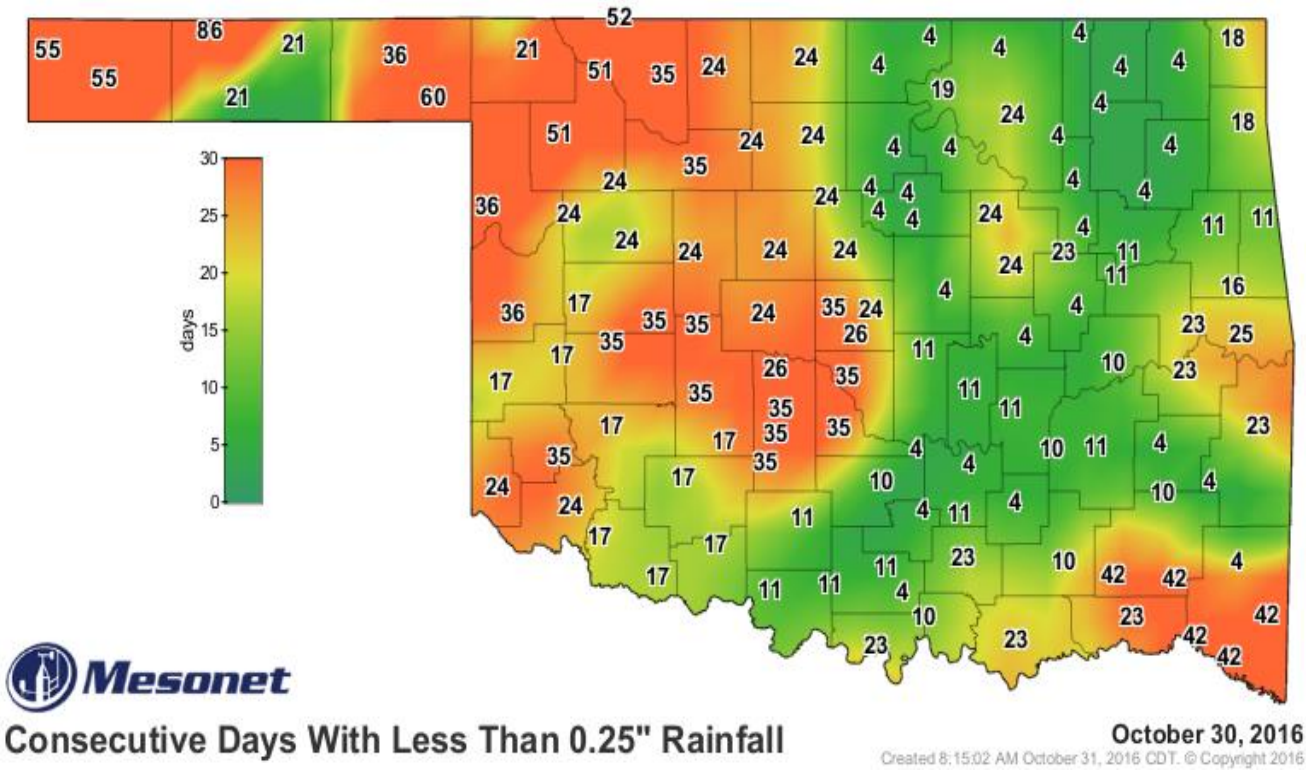
SOIL MOISTURE MAP



- 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

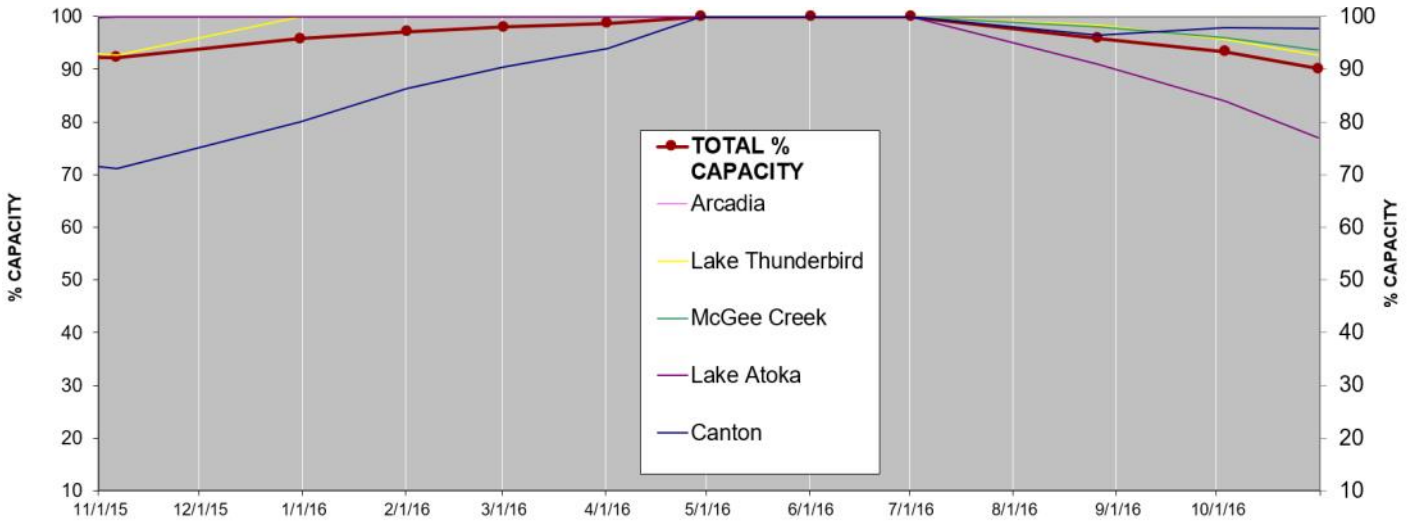
http://www.mesonet.org/index.php/weather/map/24-inch_fractional_water_index/soil_moisture

CONSECUTIVE DAYS WITHOUT RAINFALL MAP



http://www.mesonet.org/index.php/weather/map/consecutive_days_with_less_than_0.25_inches_Rainfall/rainfall

Percent of Surface Water Conservation Storage
Central OK Reservoirs



Lake Hefner and Lake Overholser are terminal storage for Canton Lake. Lake Draper is terminal storage for McGee Creek and Atoka Lakes.

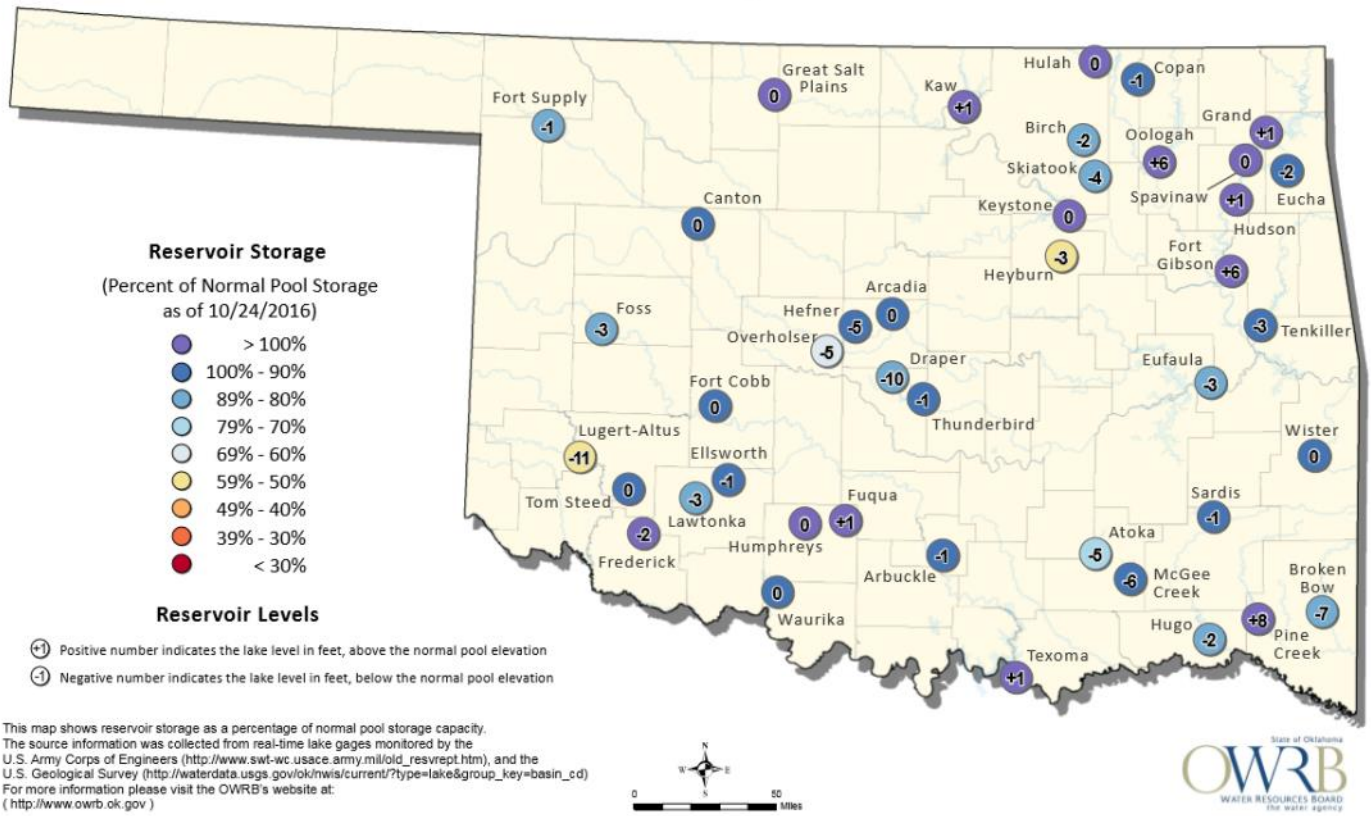
LAKE	% CAPACITY	% CHANGE FROM 10/3/2016
Canton	97.7	-0.2
Arcadia	98.1	-1.9
Lake Thunderbird	92.7	-2.9
McGee Creek	93.6	-2.4
Lake Atoka	77.0	-7.0
TOTAL % CAPACITY	90.1	-3.3

http://www.swt-wc.usace.army.mil/old_resvrept.htm http://waterdata.usgs.gov/ok/nwis/dv/?site_no=07333010&agency_cd=USGS&referred_module=sw

The graph is the amount of water stored in five major lakes that supply water to central Oklahoma as a percent of capacity over the past year.

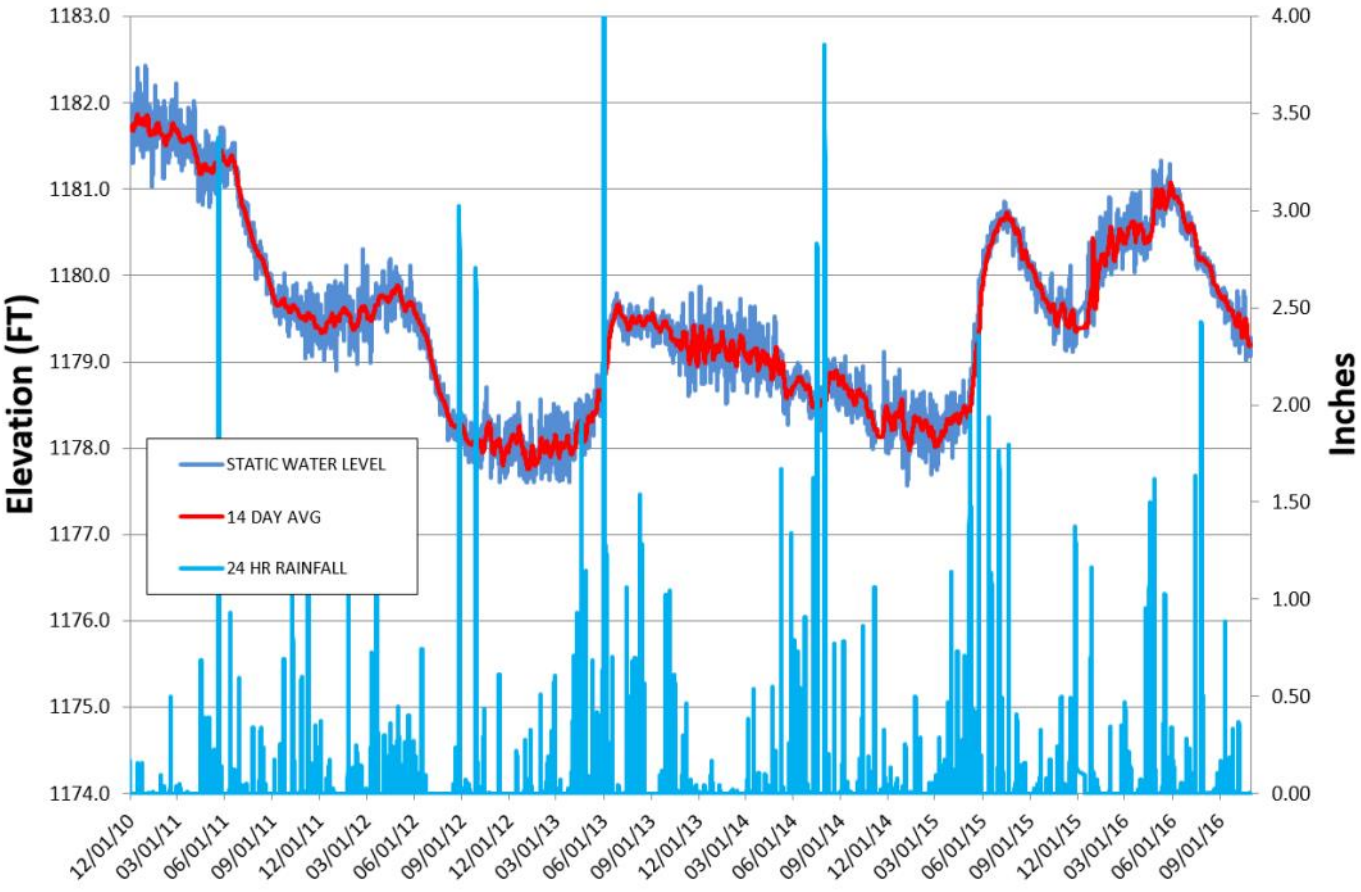
Oklahoma Surface Water Resources

Reservoir Levels and Storage as of 10/24/2016



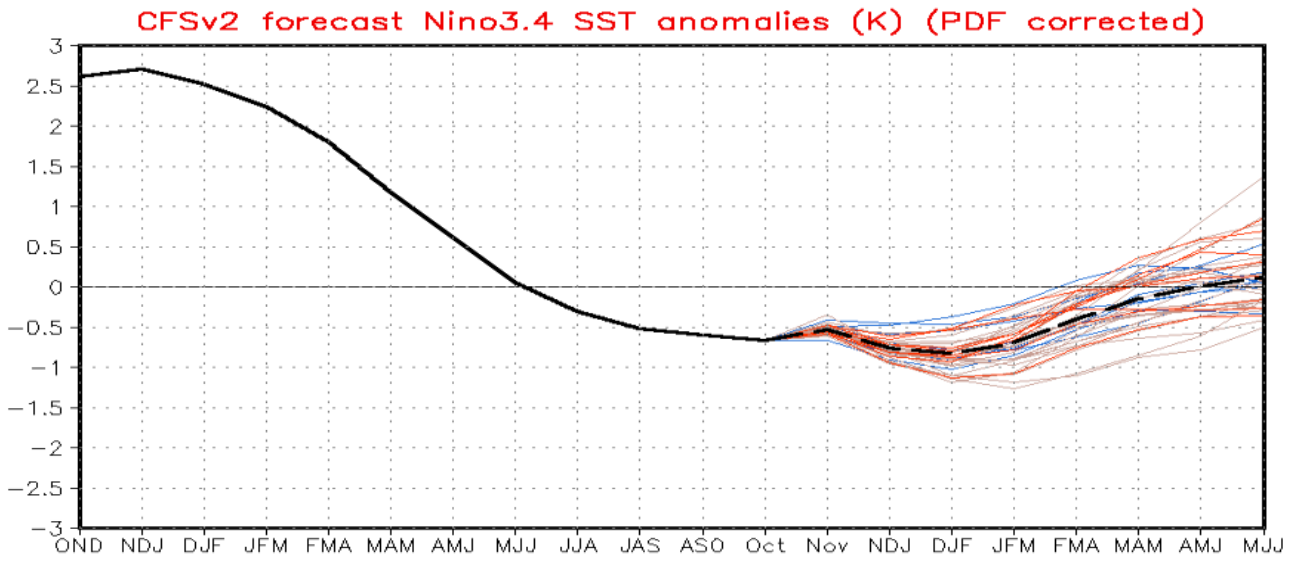
http://www.owrb.ok.gov/maps/pdf_map/Monthly%20Reservoir%20Storage.pdf

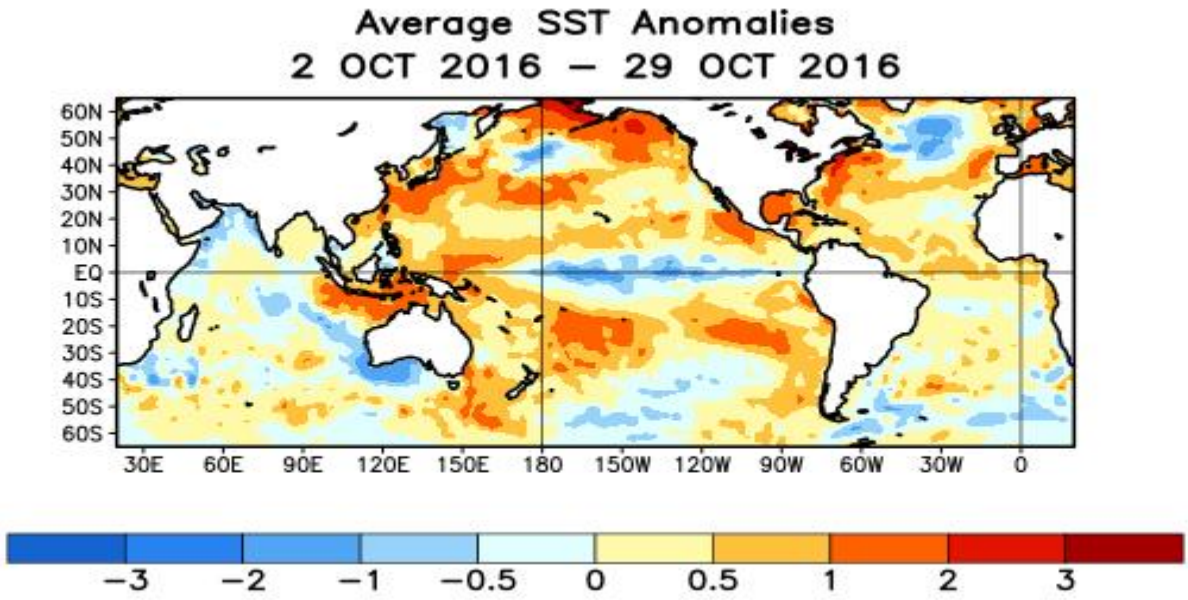
Groundwater Levels
Spencer Mesonet Station



http://www.mesonet.org/index.php/weather/groundwater

ENSO Cycle
Recent Evolution, Current Status and Predictions





Summary

ENSO Alert System Status: La Niña Watch

- ENSO-neutral conditions are present.
- Equatorial sea surface temperatures (SST) are below average in the central and east-central Pacific Ocean.
- La Niña is favored to develop (~70% chance) during the Northern Hemisphere fall 2016 and slightly favored to persist (~55% chance) during winter 2016-17.

http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf