

# Blackfoot Water Supply Report

## June 8, 2018

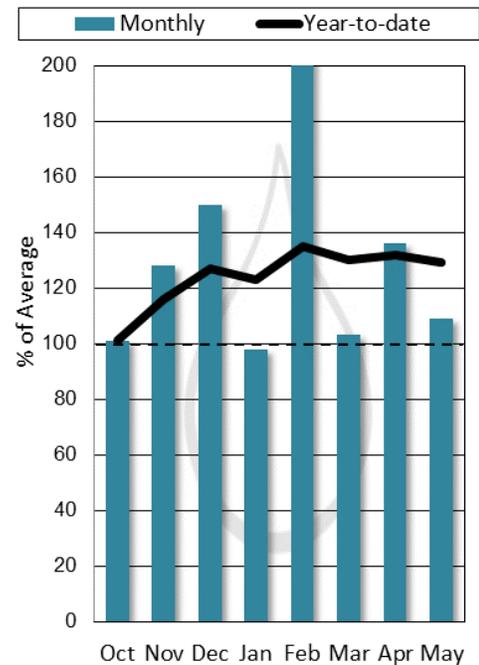
Montana Water Supply Report as of June 1<sup>st</sup>, 2018 (from NRCS):  
<https://www.nrcs.usda.gov/wps/portal/nrcs/mt/snow/waterproducts/basin/>

### Overview

In contrast to the winter weather patterns this year when cold temperatures and above normal precipitation was the normal, the month of May yielded well above average daily temperatures and abundant sunshine. The snowpack that was well above normal to record-setting for May 1st moved quickly into the river systems across the state resulting in snowpack totals for June 1st that are near to slightly above normal in some basins, and below normal in other basins. Low-elevation snow measurement locations melted rapidly during the first half of the month, and there is no snow remaining. Mid-elevations also saw significant melt rates through the month and have generally melted out. The snow that currently remains in most river basins is at the higher elevations, where 40 to 70% of this year's peak snow water remains to enter the river systems. The high elevations typically sustain the flows in the rivers and streams through late spring and summer but are melting quickly due to the persistent sunny weather with above average temperatures.

The promise of a record-setting snowpack delivering abundant water supply through the summer could easily turn into record-setting flows for a few months, and water shortages later in the summer when irrigation demand is high. If rapid snowmelt persists, the need for summer precipitation will become increasingly important for those water users that are not along a reservoir controlled system. It has been highlighted throughout the winter that there was record-setting snowpack available for runoff this spring, but few anticipated the rate at which it would enter the rivers over the last month. Many stream gages set new records for total monthly flow (total amount of water to pass by a stream gage) for the month May. The Clark Fork above Missoula, which has been of concern throughout the month, had a total of 1,424 KAF (thousands of acre-feet) of water pass through the river from May 1st – May 31st. To put that in context, the average for the April 1st – September 30th period is 1,420 KAF. That is the most water that has passed through the river during May on record (90 years), and more water passed through Missoula than a typical runoff *SEASON* (April1-Sept30). Total monthly flows (not peak daily flow) were the highest on record for 52 stream gages in the state, and second highest at an additional 12 locations. At this point, snowmelt-driven peaks have already occurred on most river systems. The reduction in snowpack over the month has resulted in streamflow forecasts which have dropped from May 1st for the June 1st – September 30th period.

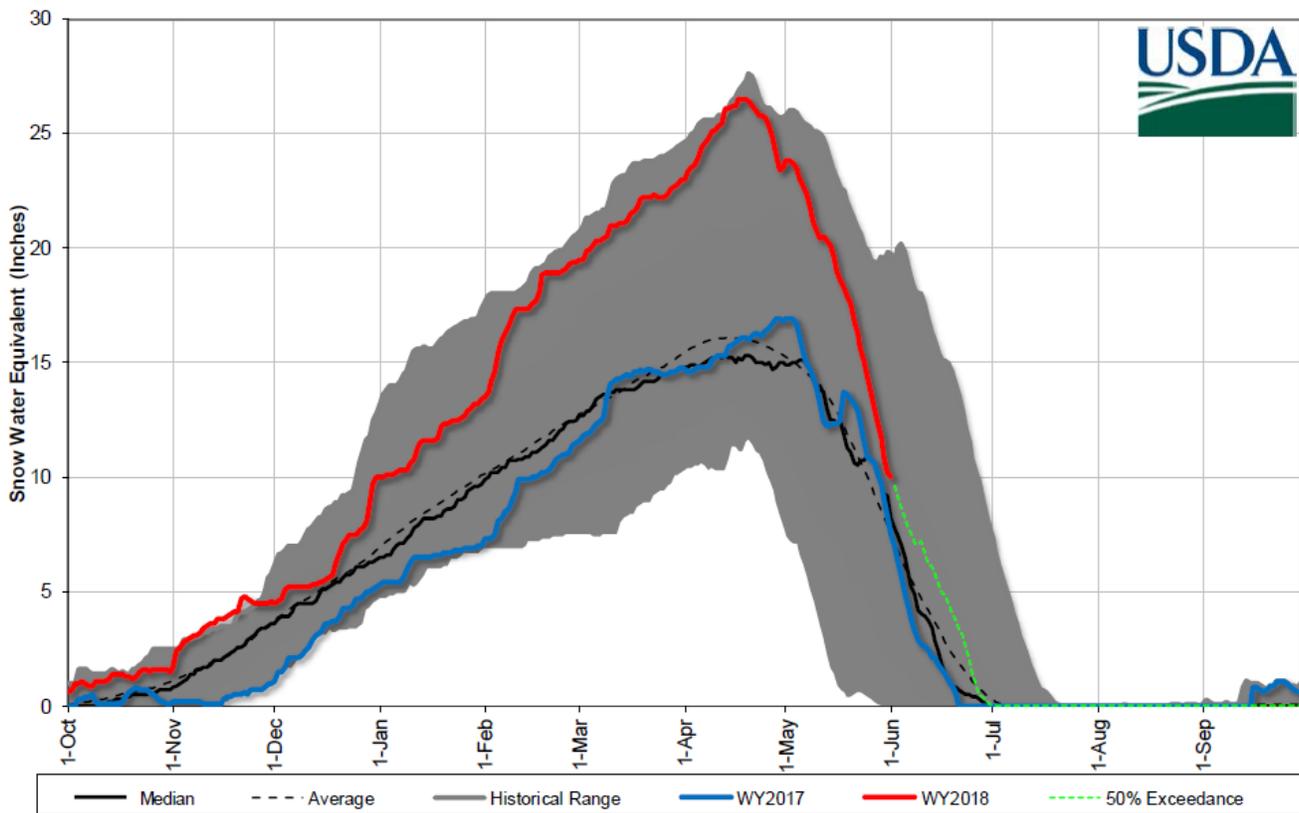
Upper Clark Fork Basin  
Mountain and Valley  
Precipitation



## Upper Clark Fork River Basin Overview

After receiving an astonishing amount of snow this winter, the last thing the Upper Clark Fork River basin needed in May was more precipitation. Precipitation fell as rain at all elevations at the end of the first week of May, which added water to the rivers which were already swelling with snowmelt. However, this was a short lived event, and it should be noted that the primary driver of the massive amount of snowmelt that occurred in May was the anomalous well above average temperatures and abundant sunshine during late April and May. Melt rates exceeded 1.5 inches per day, which drove the Upper Clark Fork and its tributaries to record breaking levels. At this point the low and mid-elevation snowpack is currently melted out and upper elevation snow has only 30% to 50% remaining. The bulk of the snowpack has entered the river systems by June 1st, and it did so at a rapid rate in May. Streamflow forecasts for the June 1st – September 30th period remain above average for most streams in the basin, but have dropped substantially from May 1st due to the quick melting of the record snowpack.

Upper Clark Fork River Basin Snowpack with Non-Exceedence Projections  
Based on provisional SNOTEL daily data as of 5/1/2018



## Upper Clark Fork River Basin Data Summary

<b>Snowpack</b>	<b>Percent of 1981-2010 Normal (Median)</b>	<b>Last Year Percentage of Normal (Median)</b>
CLARK FORK ab FLINT CREEK	131%	96%
FLINT CREEK	0%	473%
ROCK CREEK	62%	99%
CLARK FORK ab BLACKFOOT	117%	106%
BLACKFOOT	171%	122%
<b>Basin-Wide</b>	<b>141%</b>	<b>111%</b>

<b>Precipitation</b>	<b>Monthly Percentage of Average</b>	<b>WYTD Percentage of 1981-2010 Average*</b>	<b>WYTD Last Year Percentage of Average</b>
Mountain Precipitation	107%	128%	110%
Valley Precipitation	130%	150%	126%
<b>Basin-Wide Precipitation</b>	<b>109%</b>	<b>129%</b>	<b>111%</b>

\*Water Year-to-Date (WYTD) Precipitation is October 1st - Current

<b>Reservoir Storage</b>	<b>Percentage of Average</b>	<b>Percentage of Capacity (Total)</b>	<b>Last Year Percentage of Average</b>
<b>Basin-Wide Storage</b>	<b>118%</b>	<b>101%</b>	<b>107%</b>

\*See Reservoir Storage Table for storage in individual reservoirs

### Reservoir Storage End of May, 2018

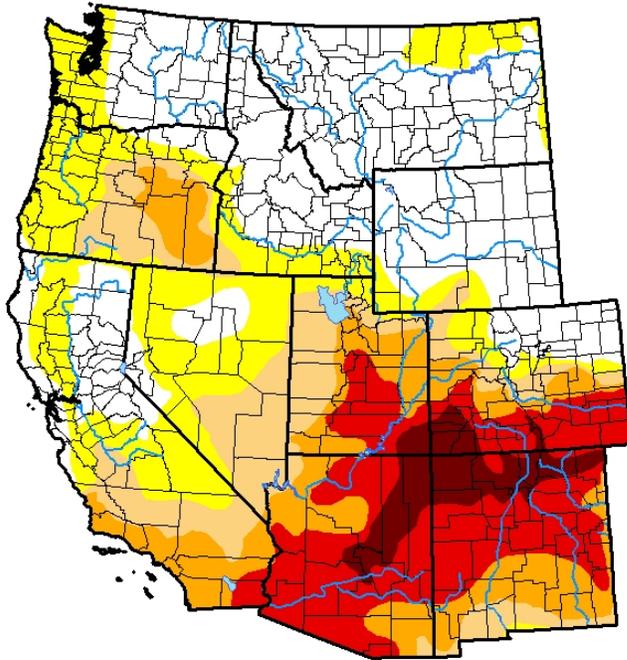
	<b>Current (KAF)</b>	<b>Last Year (KAF)</b>	<b>Average (KAF)</b>	<b>Capacity (KAF)</b>	<b>% Average</b>	<b>% Capacity</b>
East Fork Rock Creek Res	16	12	11	16	152%	152%
Georgetown Lake	32	30	29	31	110%	110%
Lower Willow Creek Reservoir			5	5		
Nevada Creek Res	12	11	11	13	106%	106%

**Montana Drought Monitor – June 5, 2018**

**U.S. Drought Monitor  
West**

**June 5, 2018**

(Released Thursday, Jun. 7, 2018)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	35.78	64.22	44.02	31.42	18.87	4.34
<b>Last Week</b> 05-29-2018	39.22	60.78	44.05	31.50	18.83	4.35
<b>3 Months Ago</b> 03-06-2018	28.06	71.94	45.57	27.54	6.03	0.00
<b>Start of Calendar Year</b> 01-02-2018	48.76	51.24	29.03	8.60	1.52	0.00
<b>Start of Water Year</b> 09-26-2017	55.72	44.28	21.01	8.72	5.30	2.17
<b>One Year Ago</b> 06-06-2017	82.02	17.98	6.50	0.16	0.00	0.00

Intensity:

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

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

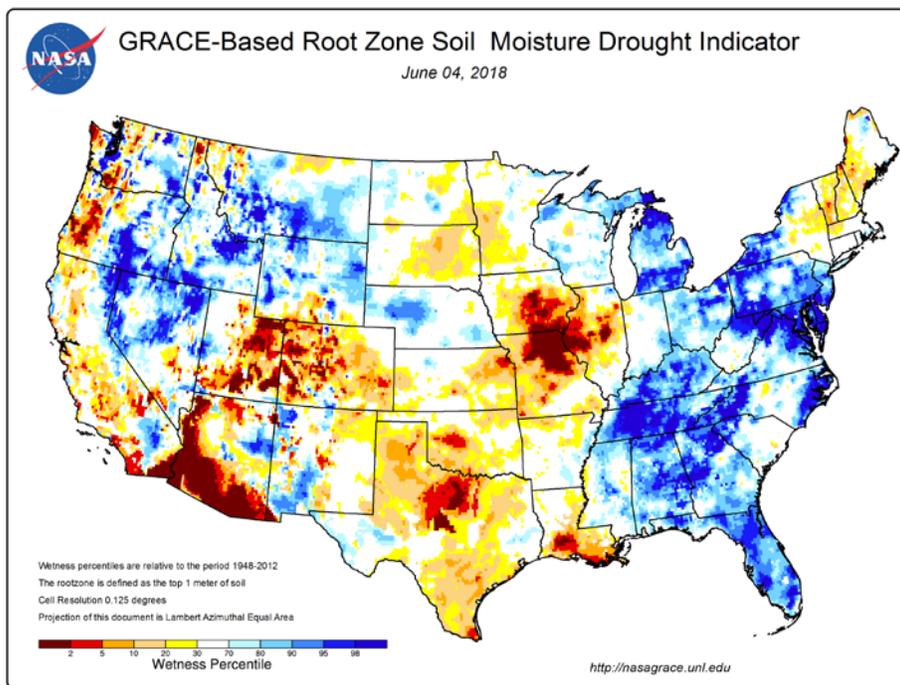
Author:

Anthony Artusa  
NOAA/NWS/NCEP/CPC



<http://droughtmonitor.unl.edu/>

**National Root Zone Soil Moisture – June 4, 2018**

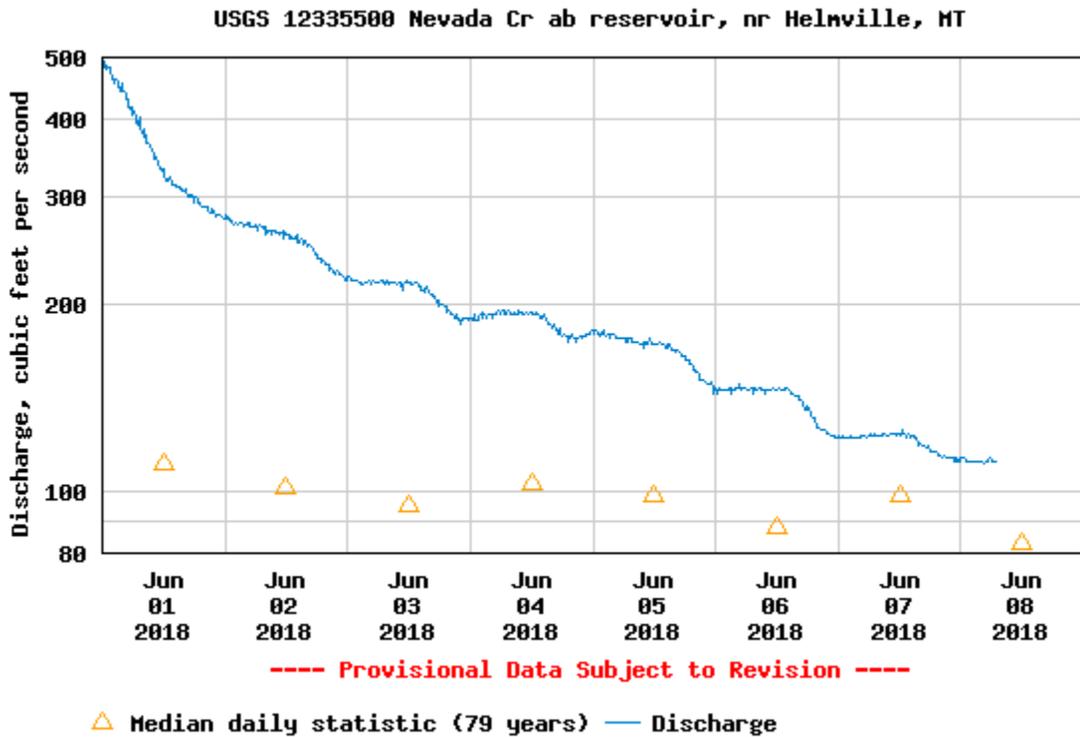


## June 8, 2018, USGS Real Time Flow Conditions

### Nevada Creek (above Reservoir)

Discharge, cubic feet per second

Most recent instantaneous value: 112 06-08-2018 06:45 MDT



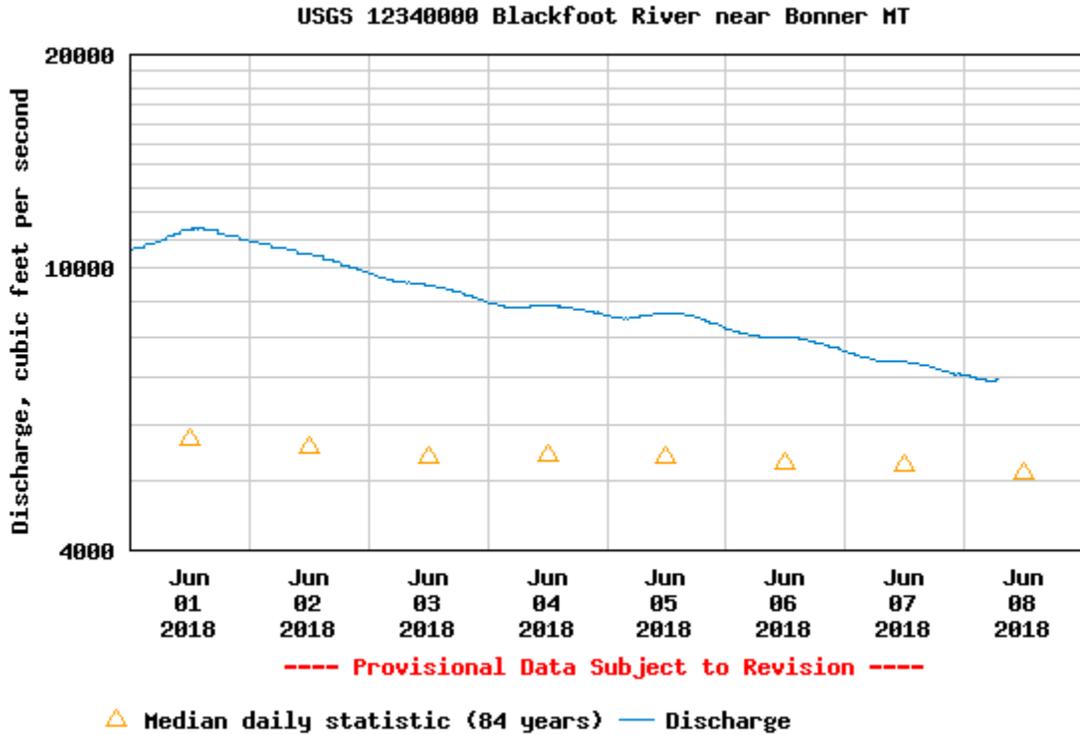
Daily discharge, cubic feet per second -- statistics for Jun 8 based on 79 years of record [more](#)

Min (1973)	25th percentile	Median	Most Recent Instantaneous Value Jun 8	Mean	75th percentile	Max (2011)
12.0	46	83	112	117	140	655

## Blackfoot River at Bonner

### Discharge, cubic feet per second

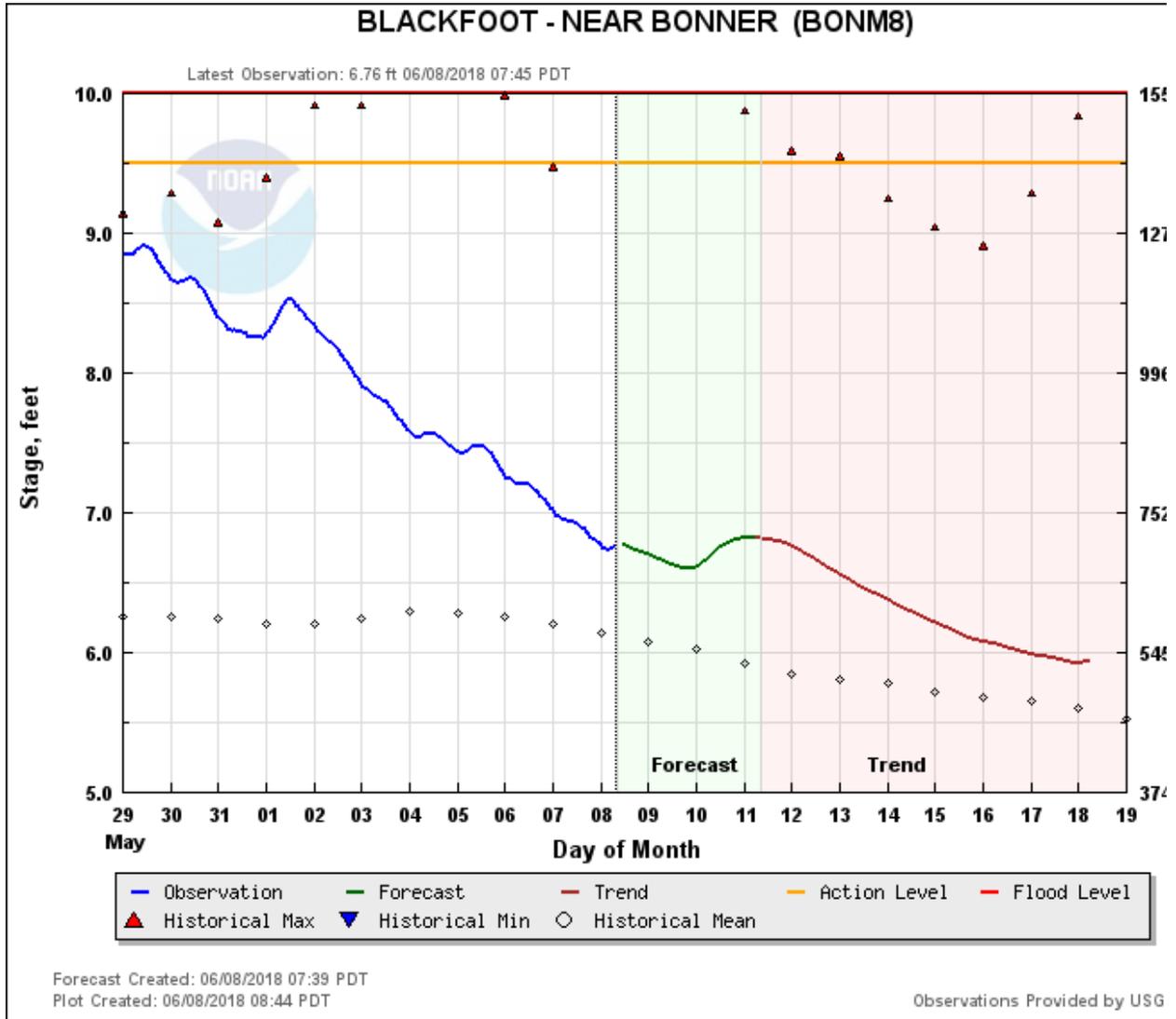
Most recent instantaneous value: 6950 06-08-2018 06:45 MDT



Daily discharge, cubic feet per second -- statistics for Jun 8 based on 84 years of record

Min (1987)	25th percentile	Median	Mean	75th percentile	Most Recent Instantaneous Value Jun 8	Max (2011)
1290	4090	5150	5720	6510	6950	16600

# Blackfoot River Short-term Streamflow Forecast (6/8/2018)

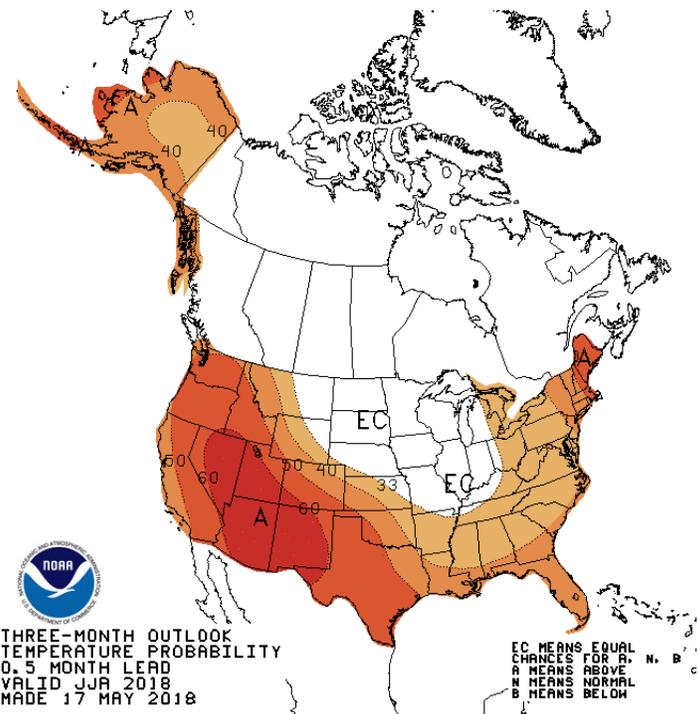
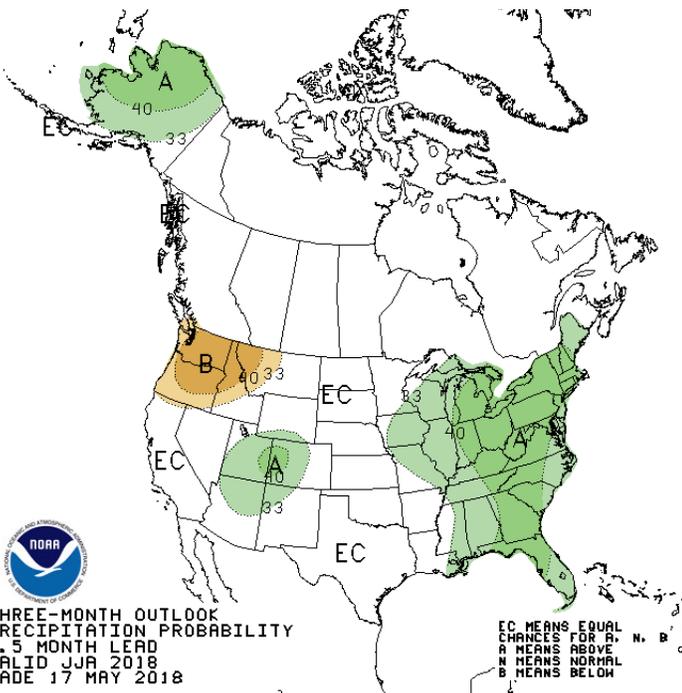


# Three-Month Outlook June 8, 2018

From  
National Weather Service Climate Prediction Center  
<http://www.cpc.ncep.noaa.gov/>

Higher chance for below average precipitation  
for June through August.

Higher chance to experience above normal  
temperatures from June through August.




**THREE-MONTH OUTLOOK PRECIPITATION PROBABILITY**  
 0.5 MONTH LEAD  
 VALID JJA 2018  
 MADE 17 MAY 2018


**THREE-MONTH OUTLOOK TEMPERATURE PROBABILITY**  
 0.5 MONTH LEAD  
 VALID JJA 2018  
 MADE 17 MAY 2018

EC MEANS EQUAL CHANCES FOR A, N, B  
 A MEANS ABOVE  
 N MEANS NORMAL  
 B MEANS BELOW

33% 40% 50% 60% 70% 80% 90% 100% 33% 40% 50% 60% 70% 80% 90% 100% 33% 40% 50% 60% 70% 80% 90% 100% 33% 40% 50% 60% 70% 80% 90% 100% 33% 40% 50% 60% 70% 80% 90% 100%

Probability of Below      Probability of Near-Normal      Probability of Above      Probability of Below      Probability of Near-Normal      Probability of Above