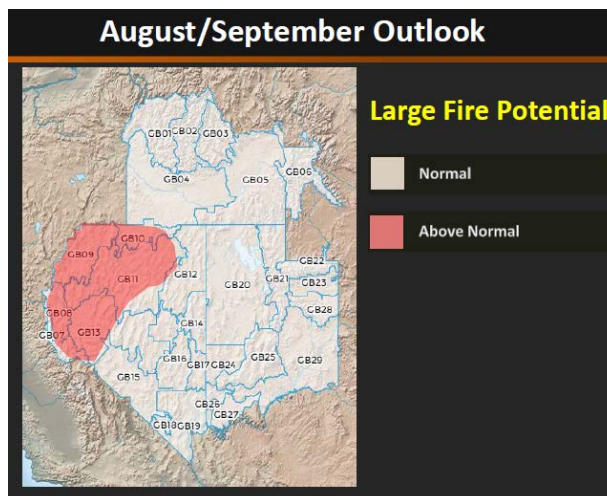
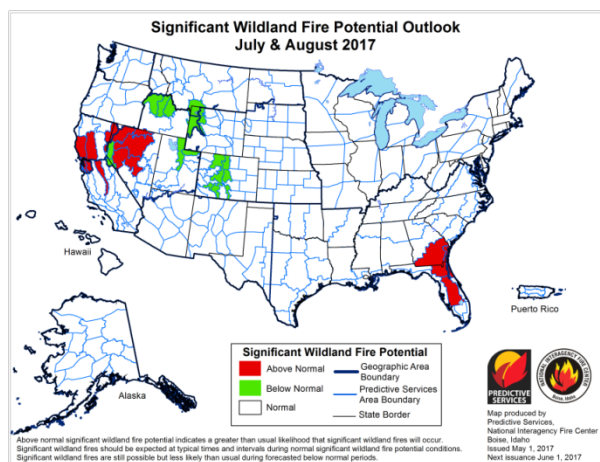


# TETON INTERAGENCY FIRE 2017 WILDLAND FIRE OUTLOOK

June 1, 2017



(Left) [NIFC - Significant Wildland Fire Potential July & August 2017](#) (issued May 1). (Right) Large Fire Potential July-August/September 2017 (issued June 1 by Great Basin Coordinating Center. [GBCC Outlook- Video](#).)

## SUMMARY

Fire season outlooks for the Teton Interagency Dispatch area and for the Great Basin Geographic Area reflect the continuing effect of a record winter snowpack, with an outlook for a moderate to below-normal fire season expected according to most trends and indices.

As a result of this moisture, lower elevation locations with grass/forb fuels may experience an increased fuel loading which may intensify fire spread/intensity if a drying and curing trend occurs. The fire season may be impacted by a transition into neutral El Niño-Southern Oscillation (ENSO) conditions after weak La Niña conditions from June 2016 through January 2017.

La Niña conditions (featuring cold water in the southern Pacific) can result in drier extremes than normal in the summer for Western/Northwestern Wyoming, and wetter than normal winter extremes in our area (based on analyses of past ENSO cycles). These weak La Niña months may explain the 2016 fire season (drier than normal) and the wet-extreme snowpack for 2016-2017. For this coming summer through fall, there is equal likelihood of continued neutral conditions or a transition to weak El Niño conditions. In past (analogue) years, this pattern -- of La Niña transitioning to neutral conditions -- has resulted in a drying trend.

Current 90-day outlooks call for a summer fire season that is wetter than normal and with equal chances of below-normal, normal or above-normal temperatures.

## WEATHER PATTERNS AND OUTLOOK

The weather pattern for the water year to date (as tracked in national climatological rankings at <https://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/>) featured:

### PRECIPITATION – Wettest, until May

- A wet October continued throughout the winter, with both area climate divisions (#2/Western Wyoming/Teton area and #3/Southwest Wyoming) setting the wettest total precipitation for October through April based on a 122-year period of record.
- In the Western Wyoming/Teton climate division, February through April was the 2<sup>th</sup> wettest period in the 122 year record.
- In the Southwestern Wyoming climate division, February through April was the 4<sup>th</sup> wettest period in the 122 year record.
- At the Moose, WY weather station (with one of the longest continuous periods of record for the region), early winter precipitation (October-January) was 119% of normal while late winter/spring

precipitation (February-May) was 85% of normal. May was notably drier at Moose, with 39% of normal precipitation (0.74" of precipitation compared to a normal 1.88"). May is typically the wettest month in the spring-summer fire season from April-September.

### TEMPERATURE – Warmer than Normal

- For all Wyoming climate divisions, February through April was the 5<sup>th</sup> warmest period on record for average temperatures, with April the 45<sup>th</sup> warmest of 122 years.
- In the Western Wyoming/Teton climate division, February through April was the 5<sup>th</sup> warmest period on record for average temperatures, with April nearly average out of 122 years.
- In the Southwestern Wyoming climate division, February through April was the 8<sup>th</sup> warmest period on record for average temperatures, with April nearly average out of 122 years.

Regional outlooks (as of May 1) indicate below-normal fire activity for the season in the Teton Interagency response area, with potential for normal fire activity the rest of Wyoming. The transition from weak La Niña to neutral and perhaps a return to El Niño conditions may support a drying trend, as represented in some analogue years; if this trend occurs, the potential for late-season fire activity may increase.

During a normal season, Bridger-Teton National Forest will have 67 fires for 3290 acres (40-year average from 2016) and Grand Teton National Park will average 11 unplanned fires for 1858 acres (based on a 20-year fire history, 1997-2016).

### CLIMATE AND FUELS OUTLOOK

#### (1) Area Snowpack and Streamflow

Snowpack, accumulated precipitation, and streamflow in western Wyoming tracked above normal (and near record in some drainages). Many basins display twice the snow water equivalent than last year at this time.

Table 1: Percent of 30-Year Average Snow Water Content and Precipitation by Basin. 5/30/17. ( <a href="http://www.wrcc.dri.edu/snotelanom/snotelbasin">http://www.wrcc.dri.edu/snotelanom/snotelbasin</a> ). *=Analysis may not be valid measure of conditions.		
	Snow Water Content	Total Precipitation (Water YTD)
Snake River	178 % *	151 %
Upper Green River	529 % *	162 %
Yellowstone	154 %	139 %
Wind River	436 % *	169 %

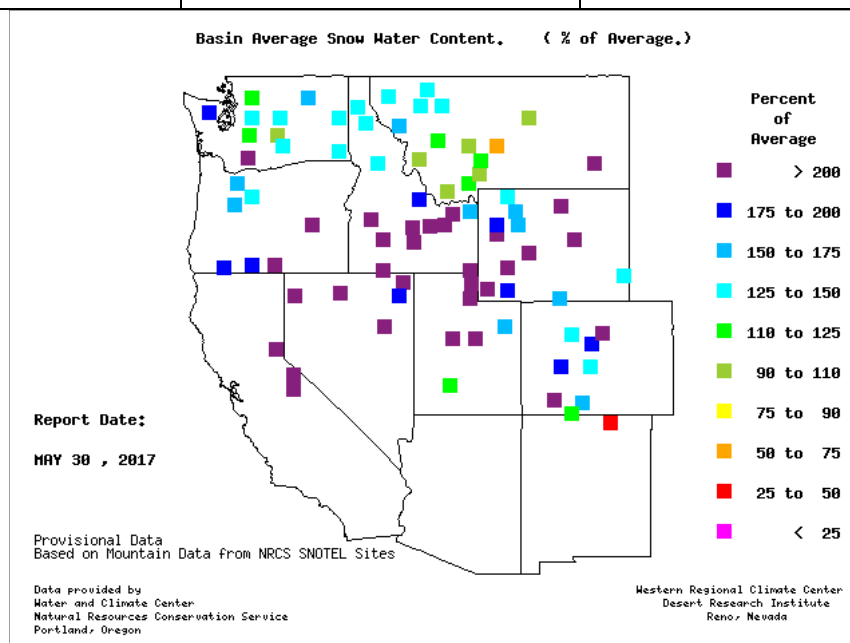


Figure 1a: Basin - Percent of Average - Snow Water Content

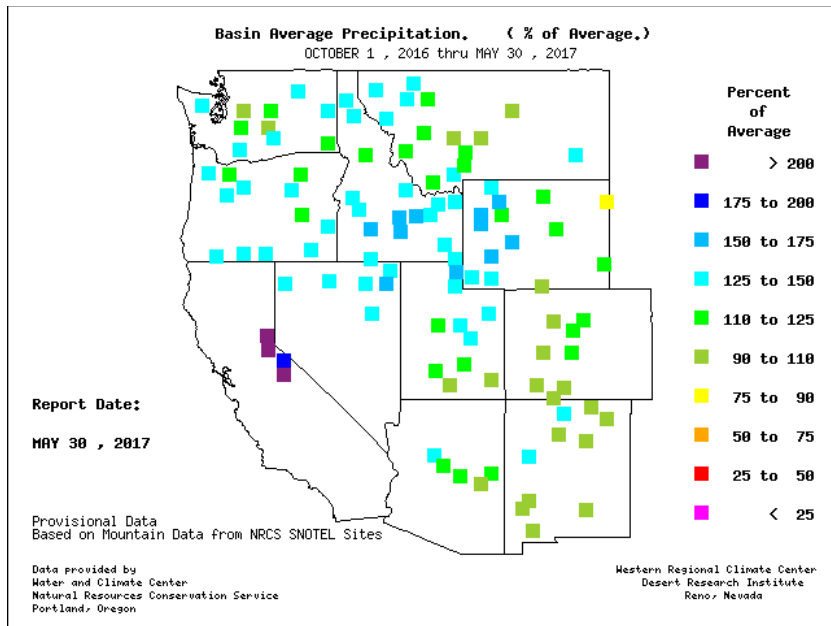


Figure 1b: [Basin – Percent of Average – Precipitation](#)

Figures 1 c-e. SNOTEL Water Year to Date, Snow Water Equivalent for Grassy Lake (North Zone), Elkhart Park Guard Station (East Zone), and Snider Basin (West Zone). All sites exhibited above normal moisture (in total precipitation and snow water equivalent), with a slightly delayed transition in the fall from rain to snow followed by near-record snowpack. Snowmelt is tracking generally with normal melt-off trends for low- to mid-elevation sites, with significant snowpack remaining at higher elevations.

Station (499) WATERYEAR=2017 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision  
Thu May 25 06:10:47 GMT-08:00 2017

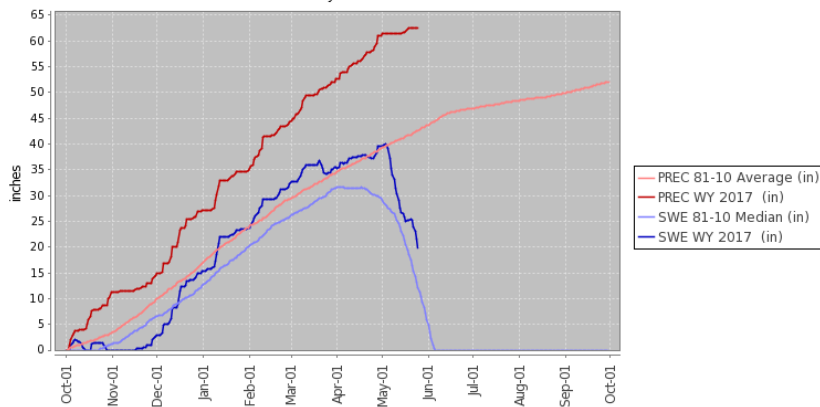


Figure 1c: Grassy Lake Snotel (Teton Zone). <http://wcc.sc.egov.usda.gov/nwcc/site?sitenum=499>

Station (468) WATERYEAR=2017 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision  
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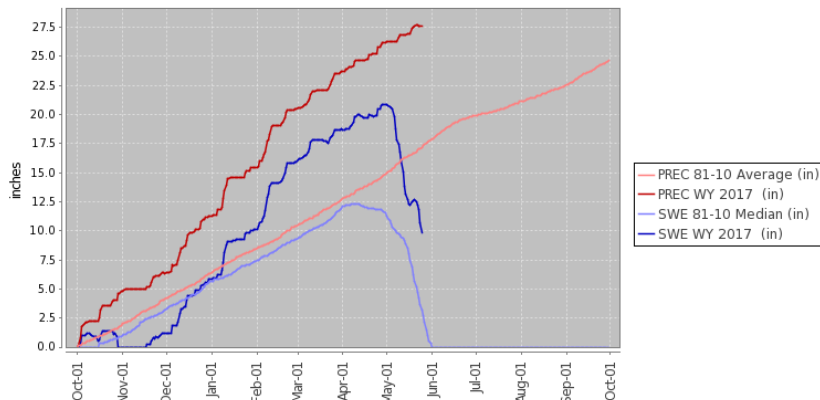


Figure 1d: Elkhart Snotel (Wind River Zone). <http://wcc.sc.egov.usda.gov/nwcc/site?sitenum=468>

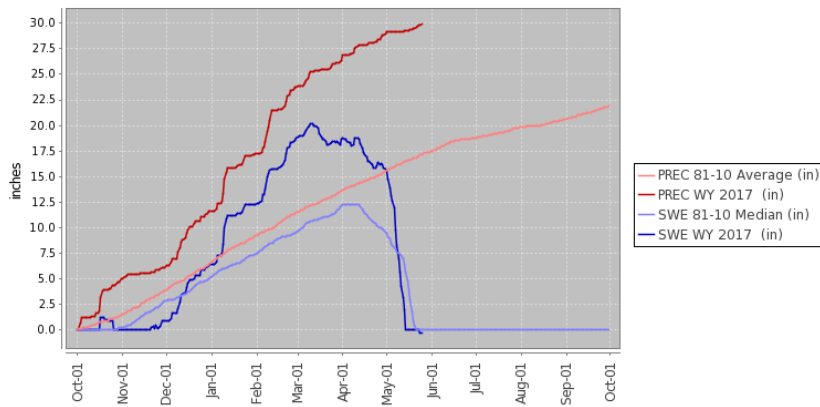


Figure 1e: Snider Basin Snotel (Wyoming Range Zone). <http://wcc.sc.egov.usda.gov/nwcc/site?sitenum=765>

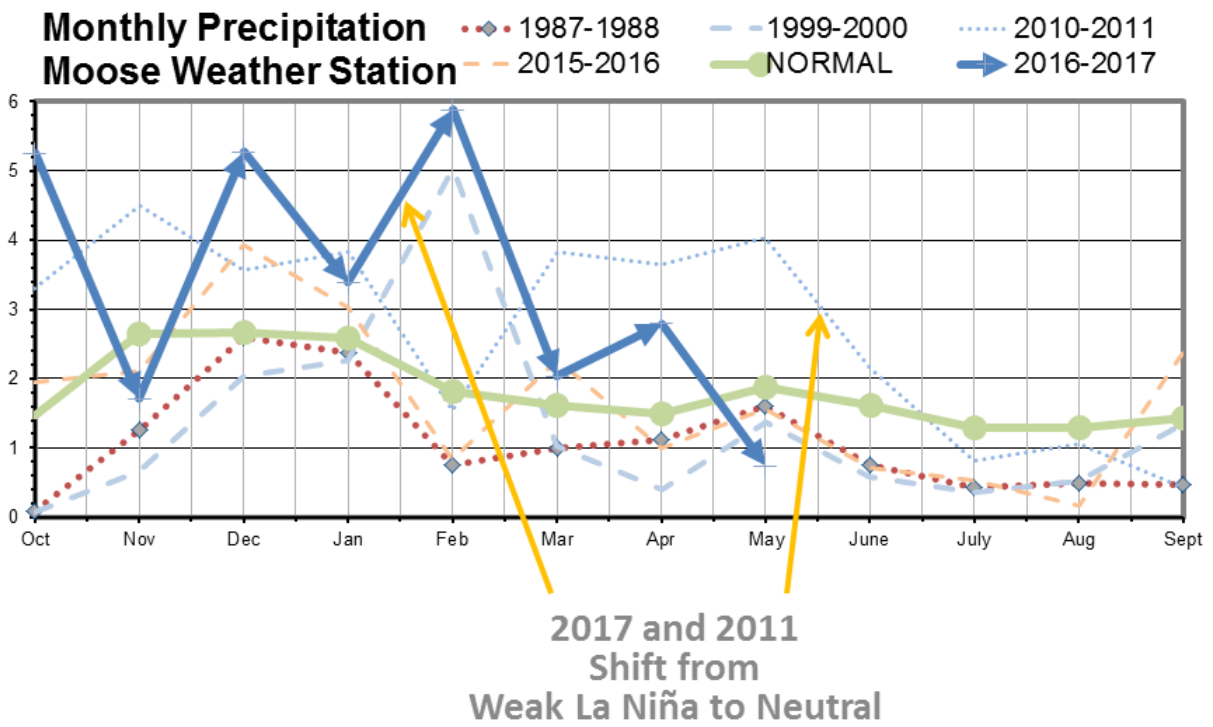
## (2) Year-to-Date Precipitation for Area Weather Stations

Area precipitation for the water year to date (October through May) may reflect the impact of weak La Niña conditions, with record moisture overall for the area. Precipitation tracking at the [Moose weather station](#), which is representative for lower elevation sites in Grand Teton National Park and some North Zone sites, recorded six of eight months above average.

For May, precipitation tracking at Moose (Table 2/Graph) and area-wide (Figure 2a) shows a drying trend throughout the region. The 90-day moisture trend (Figure 2b) recorded a predominately wet trend. Additional references show a trend in analogue years – with precipitation dropping when La Niña transitions to neutral conditions. The Ocean Niño Index and outlooks call for equal likelihood of neutral or weak El Niño conditions for the rest of 2017 (Figure 4). Note: in the Graph below of potential analogue moisture years, both 2011 and 2017 shared a shift from La Niña to neutral conditions, and each shift was followed by below normal moisture in the months after this transition.

Table 2 and Graph: Precipitation at Moose Weather Station (Grand Teton National Park).

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	YTD total
<b>Monthly Precipitation</b> (inches)	1987-88	0.09	1.27	2.59	2.37	0.75	0.99	1.12	1.61	10.79
	1999-00	0.08	0.67	2.03	2.27	5.04	1.03	0.4	1.38	12.9
	2010-11	3.31	4.5	3.57	3.84	1.54	3.84	3.64	4.04	28.28
	2015-16	1.94	2.11	3.93	3.02	0.83	2.28	1	1.57	16.68
	<i>Normal</i>	2.58	1.82	1.62	1.49	1.88	2.58	1.82	1.62	16.17
	<b>2016-17</b>	<b>5.25</b>	<b>1.7</b>	<b>5.27</b>	<b>3.39</b>	<b>5.88</b>	<b>2.03</b>	<b>2.79</b>	<b>0.74</b>	<b>27.05</b>
Percent of NORMAL	1987-88	6%	60%	102%	92%	40%	63%	75%	84%	70%
	1999-00	6%	32%	80%	88%	267%	66%	27%	72%	83%
	2010-11	225%	170%	134%	149%	85%	237%	244%	215%	175%
	2015-16	132%	80%	147%	117%	46%	141%	67%	84%	103%
		<b>2016-17</b>	<b>357%</b>	<b>64%</b>	<b>197%</b>	<b>131%</b>	<b>323%</b>	<b>125%</b>	<b>187%</b>	<b>39%</b>



Departure from Normal Precipitation (in)  
 5/1/2017 – 5/30/2017

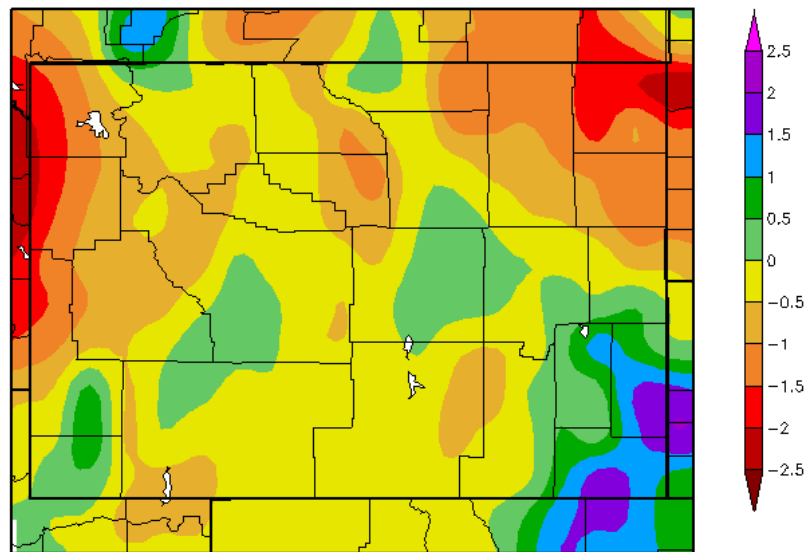
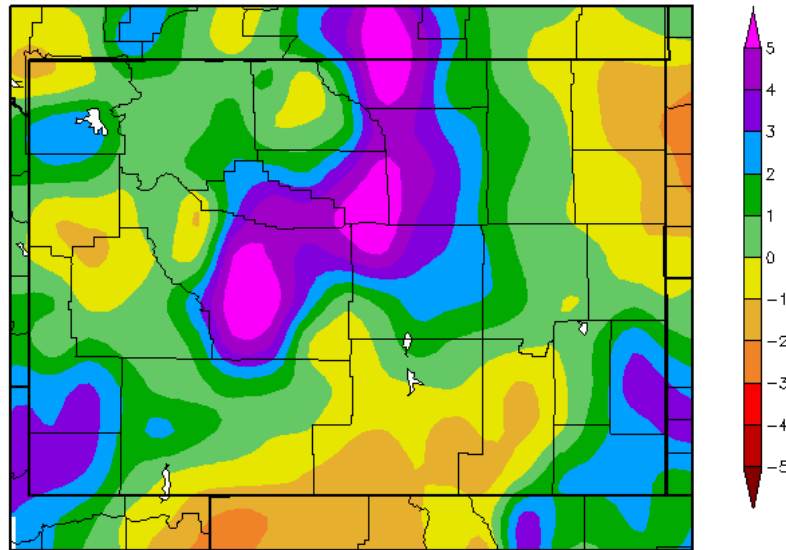


Figure 2a. Wyoming, Current Precipitation – Departure from Normal -- for May (the past 30 days ending May 30, 2017), Western Wyoming exhibits below-normal precipitation compared to normal for May. [NRCS - Departure from Normal - Wyoming - Permalink.](#)

Departure from Normal Precipitation (in)  
3/2/2017 – 5/30/2017



Generated 5/31/2017 at HPRCC using provisional data.

Regional Climate Centers

Figure 2b. This moisture pattern reverses when looking at the past 90 days of Precipitation – Departure from Normal. A few areas received below-normal precipitation, with most at above normal precipitation. <https://hprcc.unl.edu/products/maps/acis/hprcc/wy/90dPDeptHPRCC-WY.png>

**(3) Drought Monitor**

The current drought map for the U.S. West shows 86% of the West with no drought conditions, compared to 55% exhibiting some drought conditions at this time last year. In Wyoming, 93% of the state has no drought conditions, compared to 84% exhibiting no drought conditions at this time last year.

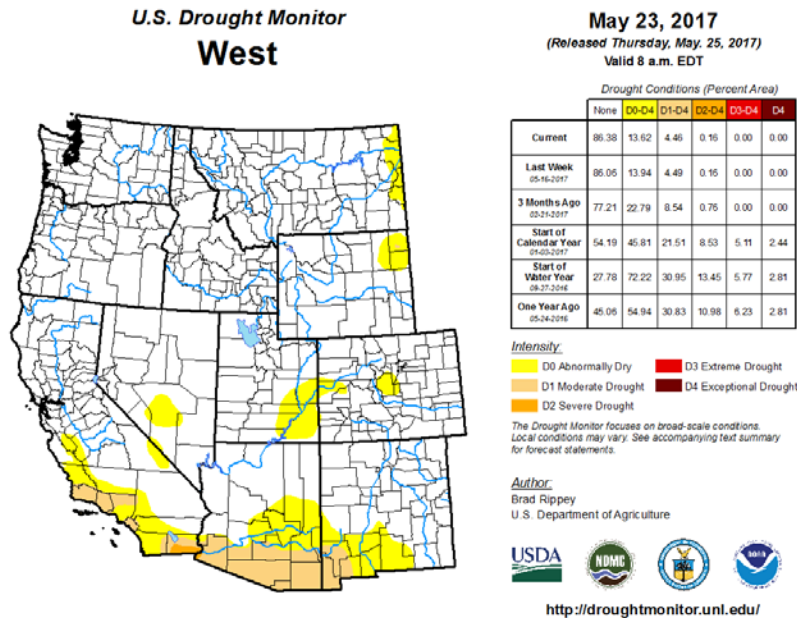
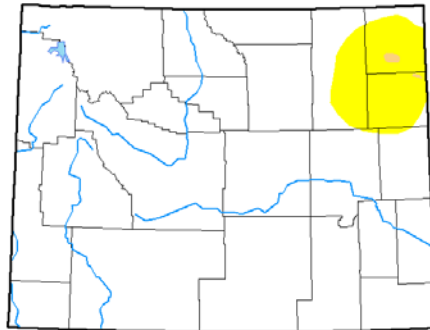


Figure 3a. U.S. Drought Monitor – West. <http://droughtmonitor.unl.edu/Home/RegionalDroughtMonitor.aspx?west>



**U.S. Drought Monitor  
Wyoming**

**May 23, 2017**  
(Released Thursday, May 25, 2017)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	93.04	6.96	0.12	0.00	0.00	0.00
Last Week 05-16-2017	92.01	7.99	0.12	0.00	0.00	0.00
3 Months Ago 02-21-2017	85.14	14.86	9.33	0.00	0.00	0.00
Start of Calendar Year 01-01-2017	60.99	39.02	15.58	0.72	0.00	0.00
Start of Water Year 09-27-2016	41.39	58.61	24.40	9.97	0.00	0.00
One Year Ago 05-24-2016	84.46	15.54	4.77	1.04	0.00	0.00

**Intensity:**  
■ D0 Abnormally Dry ■ D3 Extreme Drought  
■ D1 Moderate Drought ■ D4 Exceptional Drought  
■ D2 Severe Drought

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

**Author:**  
Brad Rippey  
U.S. Department of Agriculture



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

Figure 3b. U.S. Drought Monitor – Wyoming.  
<http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?WY>

**(4) Oceanic Niño Index (for tracking El Niño / La Niña / ENSO-Southern Oscillation)**

The Oceanic Niño Index (ONI) (<http://ggweather.com/enso/oni.htm>) offers a streamlined tool for tracking El Niño (warm) and La Niña (cool) events in the tropical Pacific. During 2015-16, strong El Niño conditions persisted for 15 months, comparable if not stronger than the prior El Niño conditions in 1997-1998, which lasted 13 months. In summer 2016 we transitioned to ENSO-neutral followed by an eight-month (June 2016 through January 2017) period of weak La Niña conditions. Analogue years for these conditions correlate these weak La Niña conditions with dry summer extremes and wet winter extremes, which we experienced during this past La Niña. We are currently in ENSO-neutral condition with nearly equal chances of El Niño and ENSO-neutral through the remainder of 2017. Current updates can be found at <http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml>.

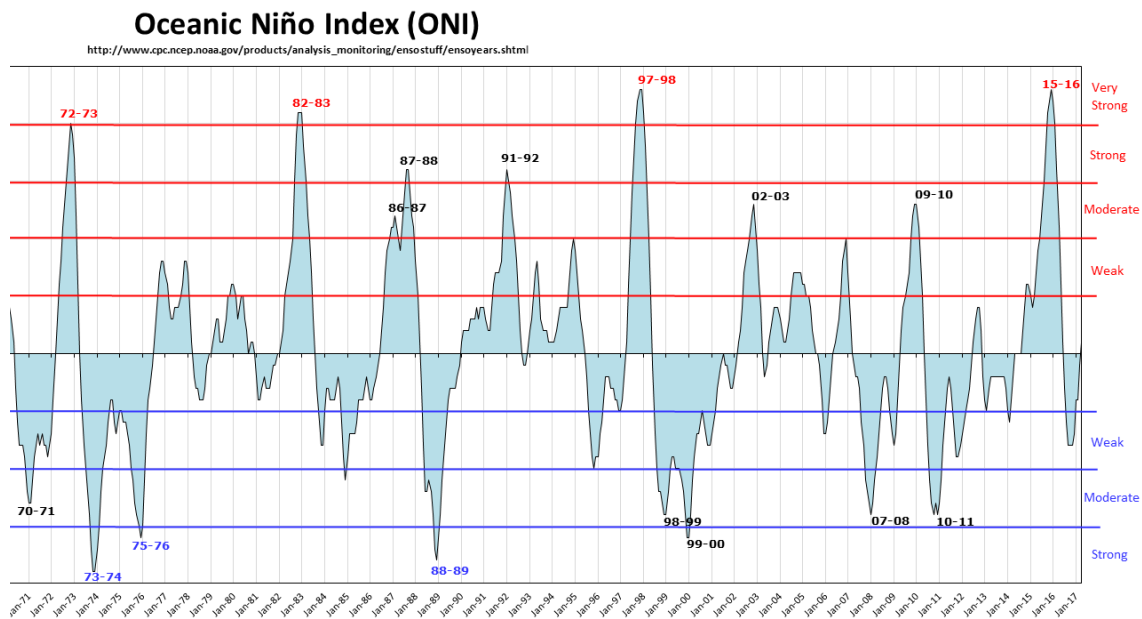
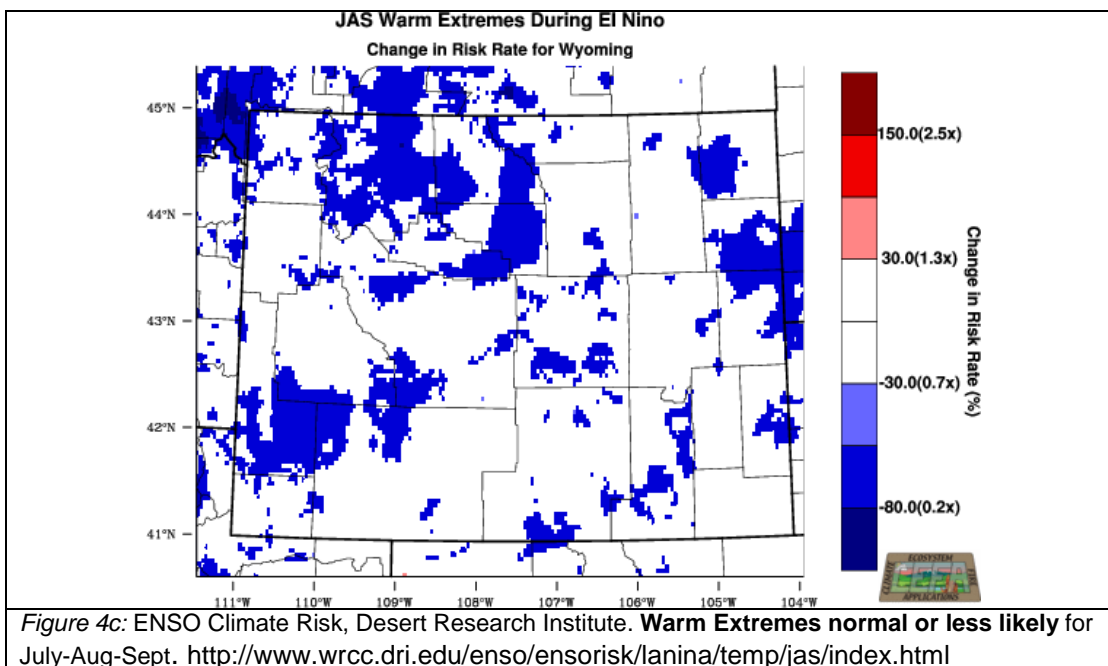
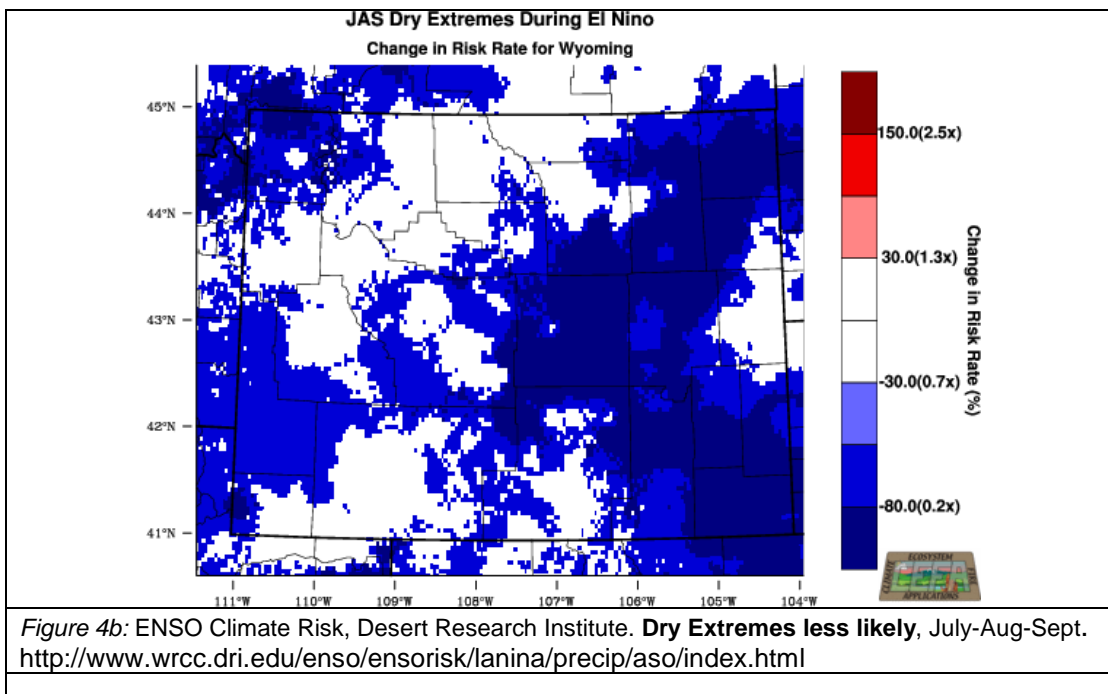


Figure 4a. Oceanic Niño Indicator (cropped) tracks the strong El Niño conditions of 2015-2016 and transition to La Niña conditions in the summer-fall 2016 / winter 2017. Such conditions may be linked to the transition from last year's dry summer to the warmer and wetter winter of 2016-2017.  
<http://ggweather.com/enso/oni.htm>.

**El Niño/ENSO Impacts:** A forecasted shift to either neutral ENSO conditions or a return to El Niño conditions in the Pacific Ocean has been correlated with national and regional weather extremes (and thus fire activity). Monthly and seasonal risk assessment maps from the Desert Research Institute offer a visual analyses of this risk (Figure s 4b/4c, <http://www.wrcc.dri.edu/enso/ensorisk/index.html>).

For Wyoming, the ENSO Climate Risk maps during El Niño conditions (should those occur) indicate a normal or decreased risk of “dry extremes” for July-August-September and a normal to decreased risk for warm extremes. However, it is unclear when or if effects from shifting neutral to El Niño conditions will have impact. For additional ENSO background, see [http://www.cpc.ncep.noaa.gov/products/analysis\\_monitoring/lanina/enso\\_evolution-status-fcsts-web.pdf](http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf).





**(5) Fuel Moisture**

Fuel moisture sampling has been initiated in Grand Teton National Park and in support of prescribed fires in Bridger-Teton National Forest. Greenup is delayed at the sampling sites. Initial fuel sampling measurements show live woody moistures in conifers and sagebrush slightly drier than normal, a likely indicator of delayed flush. Other indicator fuels, including 1000-hour fuels, are trending wetter than average.

**(6) Long-term Temperature and Precipitation Trends and Outlook**

**WARMER WINTER.** This winter was warmer than normal in the Teton Interagency area.

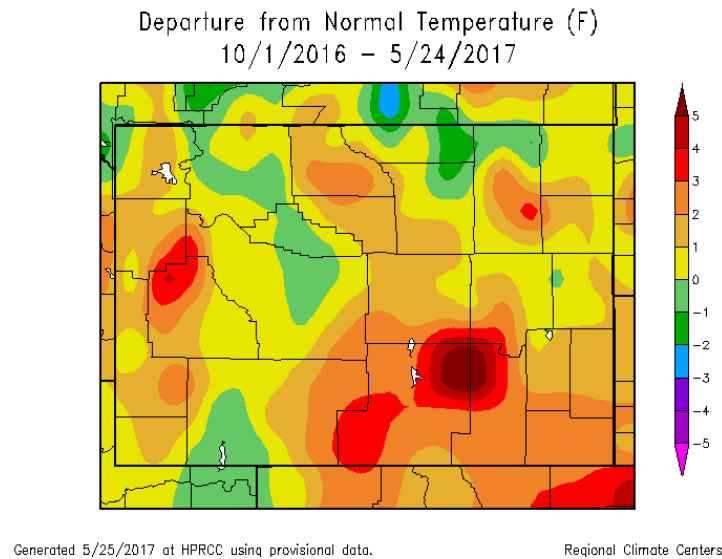


Figure 6a. Departure from Normal Temperature, Wyoming, Oct. 1 2016 through May 24, 2017 (Water Year-to-Date). <https://hprcc.unl.edu/products/maps/acis/hprcc/wy/WaterTDeptHPRCC-WY.png>

**SEASON OUTLOOKS:** The 30- and 90-day temperature outlook (left) calls for equal probability of below-normal, normal and above-normal temperature ranges throughout the summer. The precipitation outlook (right) indicates a probability for above normal moisture in the near-term (June) and for the summer. ([http://www.cpc.ncep.noaa.gov/products/predictions/multi\\_season/13\\_seasonal\\_outlooks/color/page2.gif](http://www.cpc.ncep.noaa.gov/products/predictions/multi_season/13_seasonal_outlooks/color/page2.gif)).

## TEMPERATURE

## PRECIPITATION

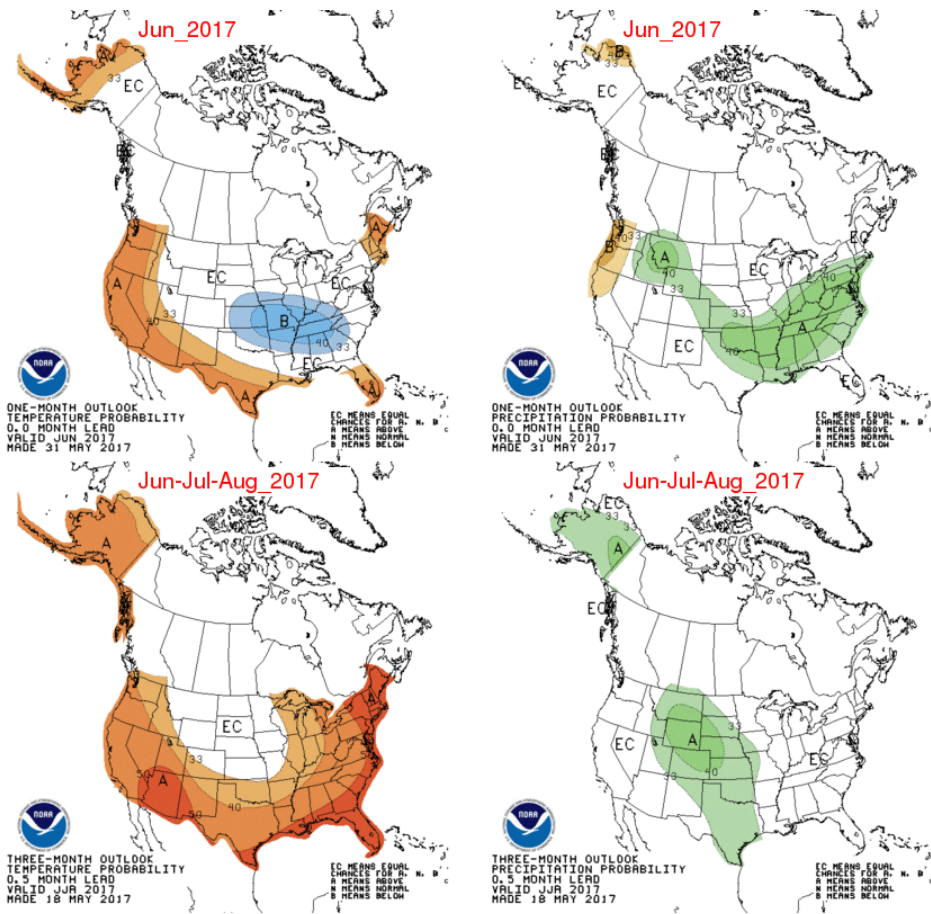


Figure 6b: June and June through August, 30- and 90-day Outlook.

### GEOGRAPHIC AREA OUTLOOKS

The Teton Area fire zone is within the Great Basin Geographic Area. Fire seasons in our zone also track with similar conditions in adjacent areas within the Rocky Mountain and Northern Rockies geographic areas, which converge within the Greater Yellowstone Area (GYA) and share common trends of fire activity. The season outlooks excerpted below support an outlook for below-normal fire activity in the Teton Interagency Dispatch area, with potential for above-normal fire activity in western areas of the Great Basin geographic area.

*Excerpts of National and Regional Outlooks from “National Wildland Significant Fire Potential Outlook” (May 1, 2017, NIFC Predictive Services).*

[http://www.nifc.gov/nicc/predictive/outlooks/monthly\\_seasonal\\_outlook.pdf](http://www.nifc.gov/nicc/predictive/outlooks/monthly_seasonal_outlook.pdf).

**National - Weather and Climate Outlooks:** El Niño-Southern Oscillation (ENSO) continues in a neutral state. Latest model forecasts show slight warming but continue to keep ENSO in a neutral state through June with a weak El Niño developing by late summer or early fall.

Northern California and the Great Basin will experience drier than normal conditions in May and early June but could receive periods of above normal precipitation during July and August.

**National:** Exceptional winter and early spring precipitation is leading to the development of a substantial crop of fine fuels in the lower and middle elevations. The heavy loading of fine fuels could become problematic when they cure out in July. In the higher elevations, the mountain snowpack continues to melt at a normal to slower than normal rate. This should produce a delay in the onset of significant fire activity in the high elevations. In Alaska, the south central portion of the state continues to be abnormally dry. While overall normal fire potential is forecast, bursts of more significant fire activity are possible across the interior portion of the state. By mid-late July, the western fire season will begin to progress north into the Pacific Northwest and Northern Rockies. While a normal transition into fire season is expected in the lower elevations, a delayed entrance is possible in the higher elevations as both regions enter their fire seasons having seen abundant winter and spring precipitation and snowpack accumulation.

**Great Basin:** Below normal significant wildland fire potential is expected to develop across northern portions of the Great Basin and far western Nevada in May and June. For July and August, expect above normal significant fire potential to develop across the northwestern portion of Nevada thanks to anticipated abundant fine fuel growth.

## CURRENT FIRE ACTIVITY

### *Fire Activity: Teton Interagency Dispatch Center*

Early season wildland fire activity is typically limited by green fuel conditions. The current season has experienced minimal fire activity, limited to two abandoned campfires.

Table 2: Year-to-Date Fire Activity (Unplanned Ignitions).

	Bridger-Teton National Forest		Grand Teton National Park	
	Fires	Total Acres	Fires	Total Acres
June 5, 2007	2	5.1	1	0.1
June 1, 2008	1	0.1	0	0
June 1, 2009	1	0.1	0	0
June 1, 2010	4	0.4	0	0
June 1, 2011	1	5.0	0	0
May 25, 2012	2	0.35	1	0.1
June 1, 2013	1	0.1	0	0
June 1, 2014	3	0.3	0	0
June 8, 2015	5	7.8	0	0
June 4, 2016	3	0.23	0	0
<b>40-year AVERAGE (to June 1)</b>	<b>1.5</b>	<b>8.1</b>	<b>0.4</b>	<b>1.0</b>
<b>Year-to-Date to May 31, 2017</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Selected Sources

- Precipitation Tracking: <https://water.weather.gov/precip/>
- Snow / Snotel Tracking: <https://www.wcc.nrcs.usda.gov/snotel/Wyoming/wyoming.html>
- Climate Prediction Center, Three-Month Outlooks: <https://www.cpc.ncep.noaa.gov/products/predictions/90day/>
- *Regional outlooks from “National Wildland Significant Fire Potential Outlook” (June 1, 2016, NIFC Predictive Services):* [https://www.nifc.gov/nicc/predictive/outlooks/monthly\\_seasonal\\_outlook.pdf](https://www.nifc.gov/nicc/predictive/outlooks/monthly_seasonal_outlook.pdf).
- Great Basin Predictive Services/Outlooks: <https://gacc.nifc.gov/gbcc/outlooks.php>.
- Teton Interagency Fire and Dispatch Center: <https://gacc.nifc.gov/gbcc/dispatch/wy-tdc/>.

\* \* \*

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