



Natural Resources Conservation Service  
P.O. Box 2890  
Washington, D.C. 20013

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**Weekly Report - Snowpack / Drought Monitor Update**

**Date: 05 July 2012**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Temperature:** [SNOTEL](#) and ACIS 7-day temperature anomaly showed values cooler over the West Coast States and warmer over the Central and Southern Rockies (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departures eastern Colorado (>+10°F) and the greatest negative departures over parts of the South-Central Oregon (<-8°F). This pattern is very similar to last week (Fig. 1a).

**Precipitation:** [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the wettest areas over the Olympic Mountains in northwestern Washington (Fig. 2). However, in terms of percent of normal, isolated thunderstorm activity over parts of Arizona and New Mexico reflects a weak start to the Southwest Monsoon (Fig. 2a). Since rainfall is uncommon for this time of year over the Pacific Northwest and northern California, any precipitation will represent high percentages. Since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has continued to favor the Northern Tier States. Over much of the southern half of the West, drier conditions dominate. This is helping to drive an active early fire season. These values are not expected to change much through the end of September (Fig. 2b).

**Weather Summary:** Overall, this week featured the expansion and intensification of dryness in large sections of the country, with only southern Texas reporting some improvement. Light precipitation (0.5 inch or less) fell on most areas of dryness and drought, with only scattered areas reporting more than an inch, primarily in the northern Plains, lower Mississippi Valley, southernmost Great Lakes region, Appalachians, mid-Atlantic region, and southern Texas. This despite a couple of thunderstorm complexes that pushed rapidly from northern Illinois east-southeastward through the mid-Atlantic, including one on June 29 that caused significant damage, knocked out power for millions of customers, and took 2 dozen lives. Unfortunately, where rain did fall (outside southern Texas), it was not enough to make up for blistering heat that covered the Nation's midsection, reaching the central and southern Atlantic Coast by the end of the workweek. Both the number of record highs in the past week, and the areas with record and near-record dryness over the last 1 to 3 months, are too numerous to mention. Daily high temperatures averaged above 100 degrees in the central and upper southern Plains, extending eastward into parts of Missouri and Arkansas, and average temperatures for the week were 8 to locally 15 degrees above normal from the Ohio Valley and upper Southeast westward through most of the High Plains. The dryness is beginning to take a significant toll on some of the Nation's crops, pastures, and rangelands. In the primary growing states for corn and soybeans (18 each), 22 percent of the crop is in poor or very poor condition, as are 43 percent of the Nation's pastures and rangelands and 24 percent of the sorghum crop. In addition, the area scorched by wildfires expanded significantly. Over 1.9 million acres have been engulfed since the start of the year, and increase of 38 percent in just the past week.  
Author: Rich Tinker, Climate Prediction Center, NCEP, NWS, NOAA

## Weekly Snowpack and Drought Monitor Update Report



This week saw an increase of thunderstorm activity over the Southwest perhaps signaling the start of the summer [Southwest Monsoon](#). – Photo (J. Curtis) taken near Santa Fe, New Mexico.

***A comprehensive narrative describing drought conditions for the nation can be found at the end of this document.***

### **Drought Impacts Definitions**

The possible impacts associated with **D4 (S, L)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (S, L)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (S, L)** drought are focused on water shortages common and water restrictions imposed and crop or pasture losses likely. The possible impacts associated with **D1 (S, L)** drought are focused on water shortages developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs. 3 through 3b).

### **Soil Moisture**

Soil moisture (Fig. 4), is simulated by the [VIC macroscale hydrologic model](#). The detailed, physically-based VIC model is driven by observed daily precipitation and temperature maxima and minima from approximately 2130 stations, selected for reporting reliably in real-time and for having records of longer than 45 years (and various other criteria). Another good resource can be found at: <http://www.emc.ncep.noaa.gov/mmb/nldas/drought/>.

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### Soil Climate Analysis Network (SCAN)

Figure 5 provides supplemental data on soil conditions (moisture and temperatures at various depths from 2 inches to 80 inches. For more information about SCAN see ([brochure](#)).

### U.S. Historical Streamflow

This map, (Fig. 6) shows the 7-day average streamflow conditions in hydrologic units of the United States and Puerto Rico for the day of year. The colors represent 7-day average streamflow percentiles based on historical streamflow for the day of the year. Thus, the map shows conditions adjusted for this time of the year. Only stations having at least 30 years of record are used. Sub-regions shaded gray indicate that insufficient data were available to compute a reliable 7-day average streamflow value. During winter months, this situation frequently arises due to ice effects. The data used to produce this map are provisional and have not been reviewed or edited. They may be subject to significant change.

### **Fire Conditions**

Fig. 7 comes from the [Predictive Services](#) (USFS) facilitates integration of comprehensive climate, weather, situation and fuels information in geospatial format.

### **State Activities**

State government drought activities can be tracked at the following URL: <http://drought.unl.edu/mitigate/mitigate.htm>. NRCS SS/WSF State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SS/WSF information - <http://www.wcc.nrcs.usda.gov/cqibin/bor.pl>. Additional information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/> and <http://www.drought.gov>.

### **For More Information**

The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>. Reports from 2007 are available on-line while ones from 2001-2006 can be acquired upon request.

This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/

Micheal L. Golden  
Deputy Chief, Soil Survey and Resource Assessment

# Weekly Snowpack and Drought Monitor Update Report

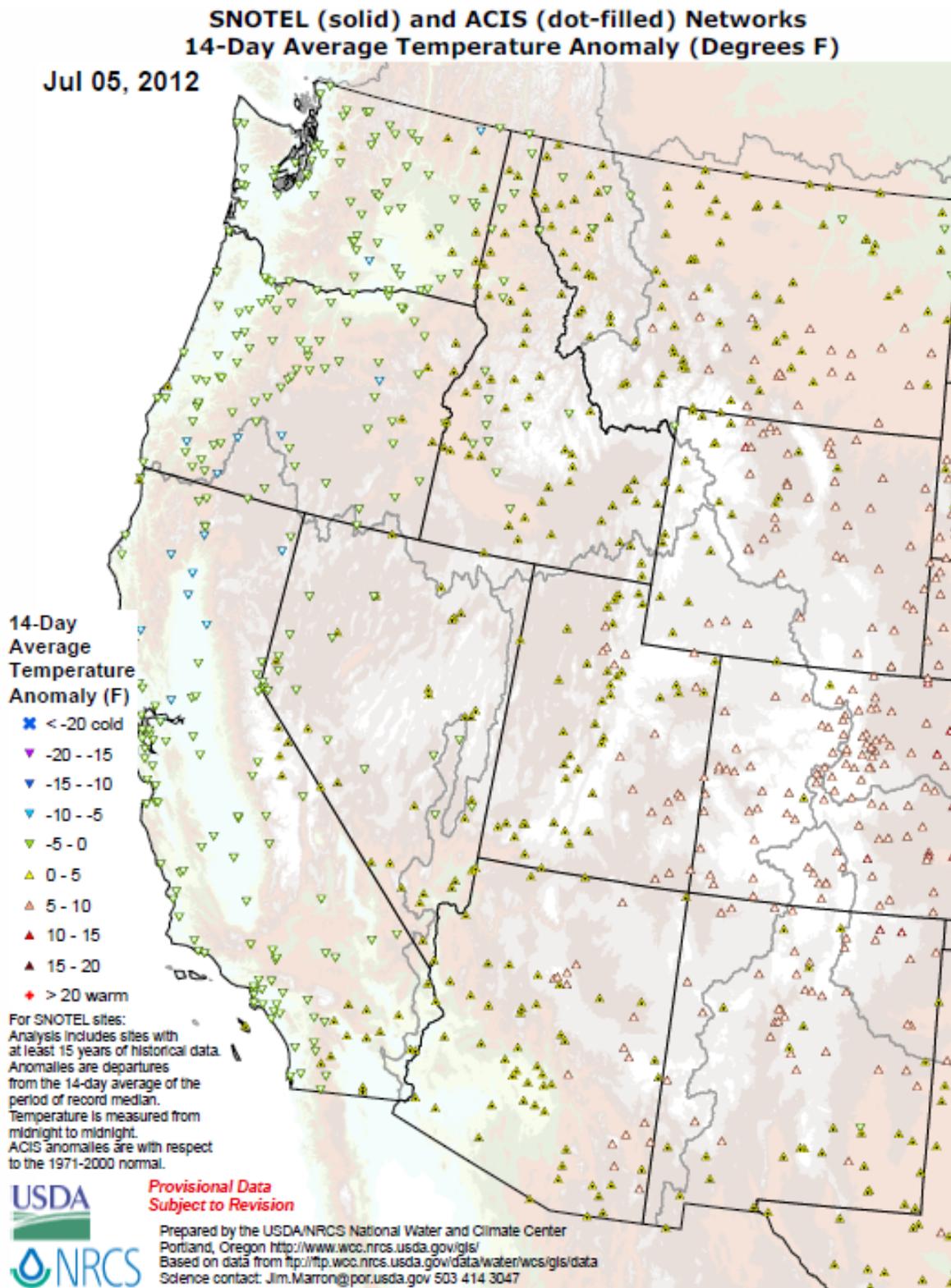
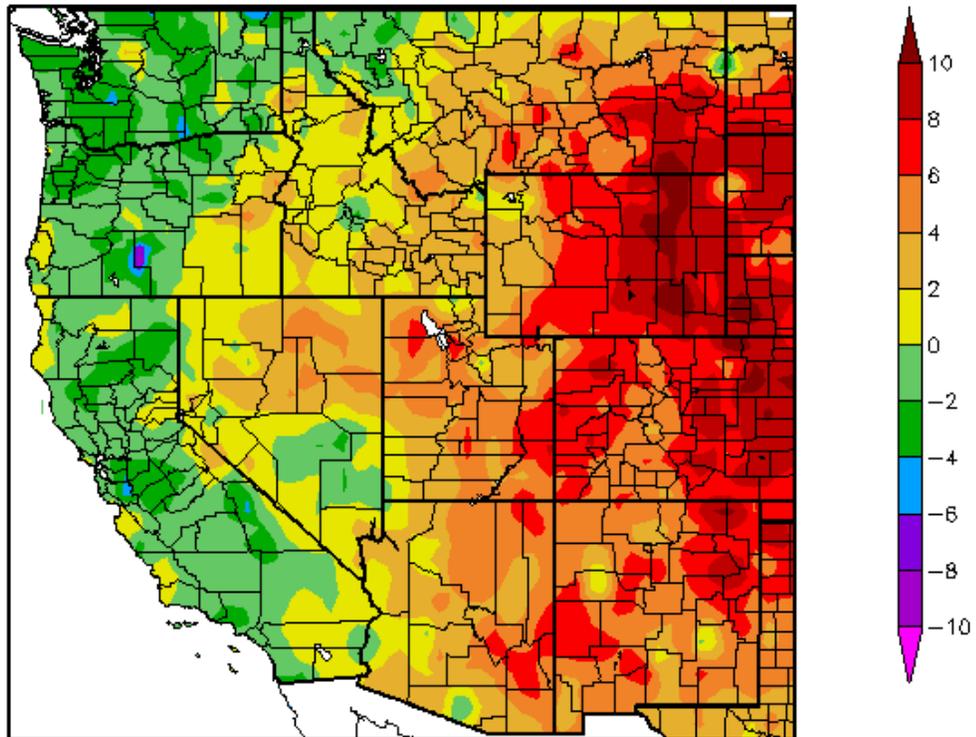


Fig. 1: **SNOTEL** and ACIS 7-day temperature anomaly showed values cooler over the West Coast States and warmer over the Central and Southern Rockies.

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### Departure from Normal Temperature (F) 6/28/2012 – 7/4/2012



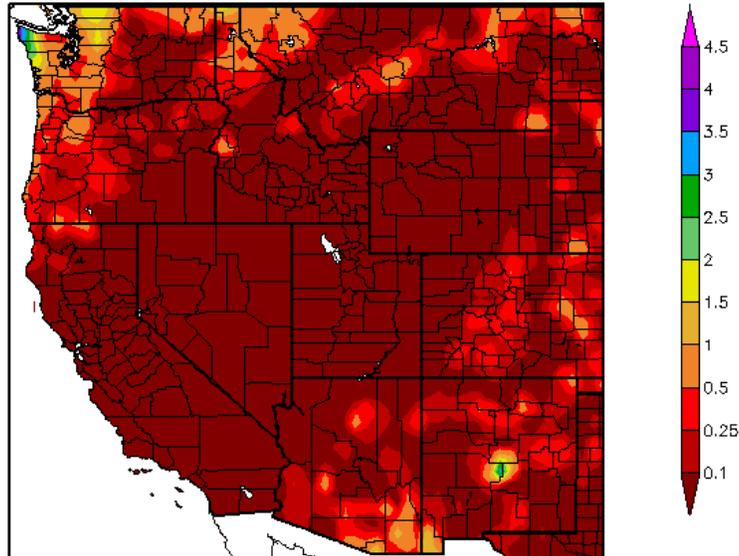
Generated 7/5/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 1a:** ACIS 7-day average temperature anomalies show the greatest positive temperature departures eastern Colorado (**>+10°F**) and the greatest negative departures over parts of the South-Central Oregon (**<-8°F**). This pattern is very similar to last week.

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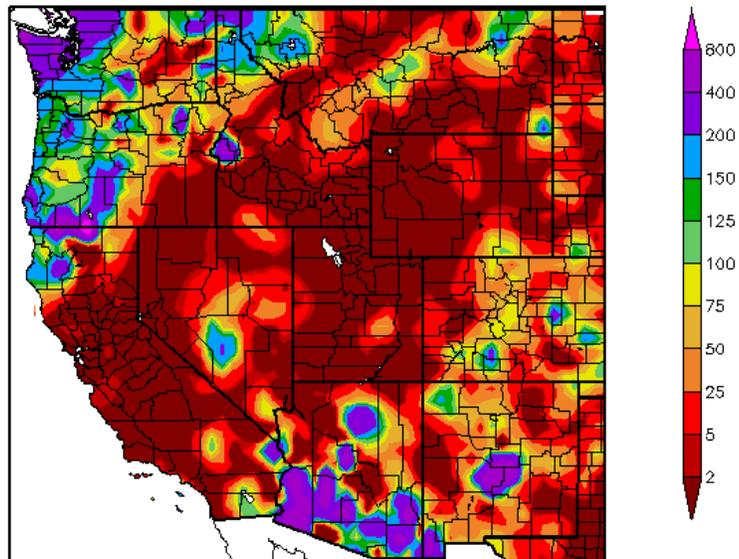
Precipitation (in)  
6/28/2012 – 7/4/2012



Generated 7/5/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
6/28/2012 – 7/4/2012

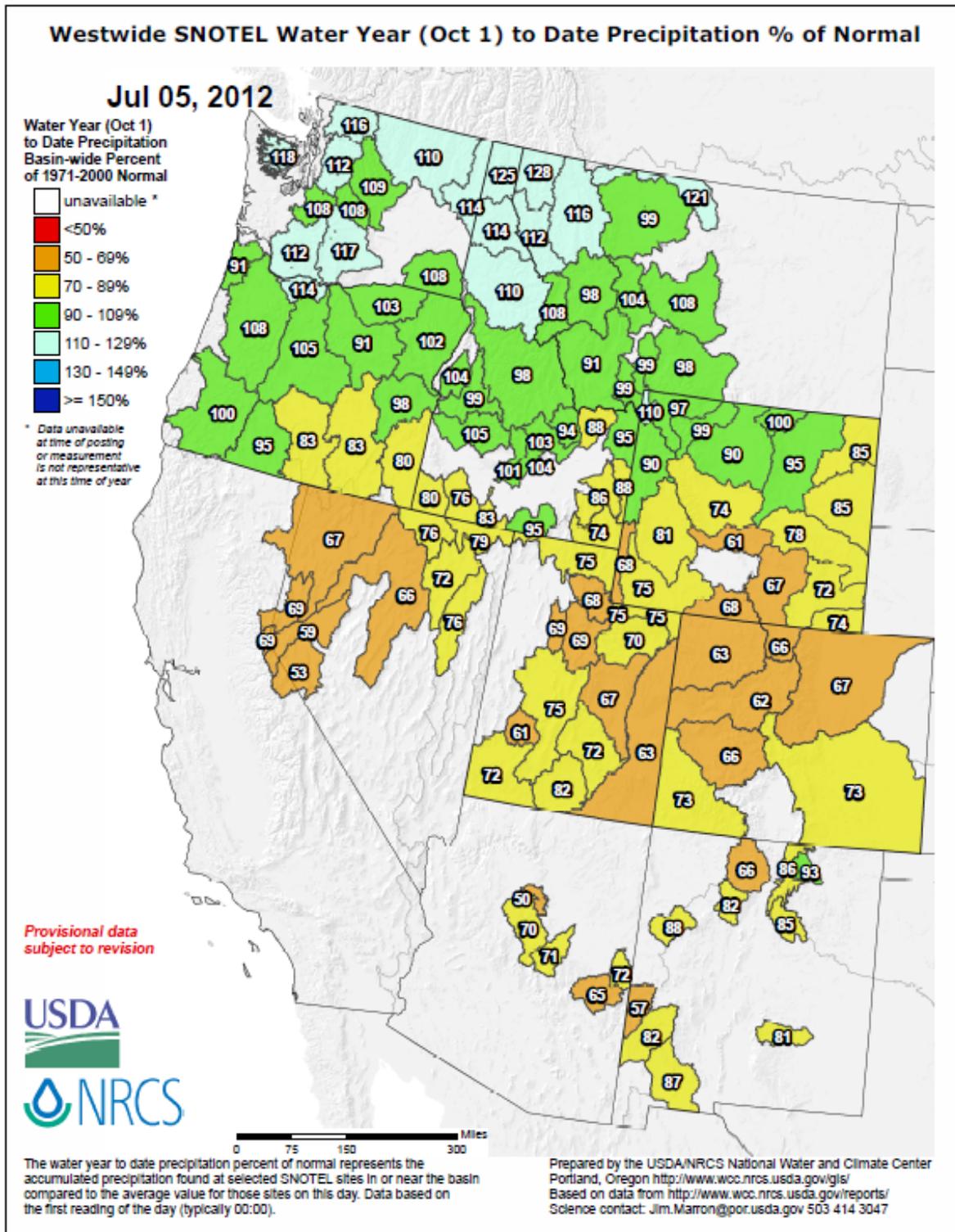


Generated 7/5/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 2 and 2a:** [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the wettest areas over the Olympic Mountains in northwestern Washington (top). However, in terms of percent of normal, isolated thunderstorm activity over parts of Arizona and New Mexico reflects a weak start to the Southwest Monsoon. Since rainfall is uncommon for this time of year over the Pacific Northwest and northern California, any precipitation will represent high percentages (bottom).

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**Fig 2b:** Since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has continued to favor the Northern Tier States. Over much of the southern half of the West, drier conditions dominate. This is helping to drive an active early fire season. These values are not expected to change much through the end of September.

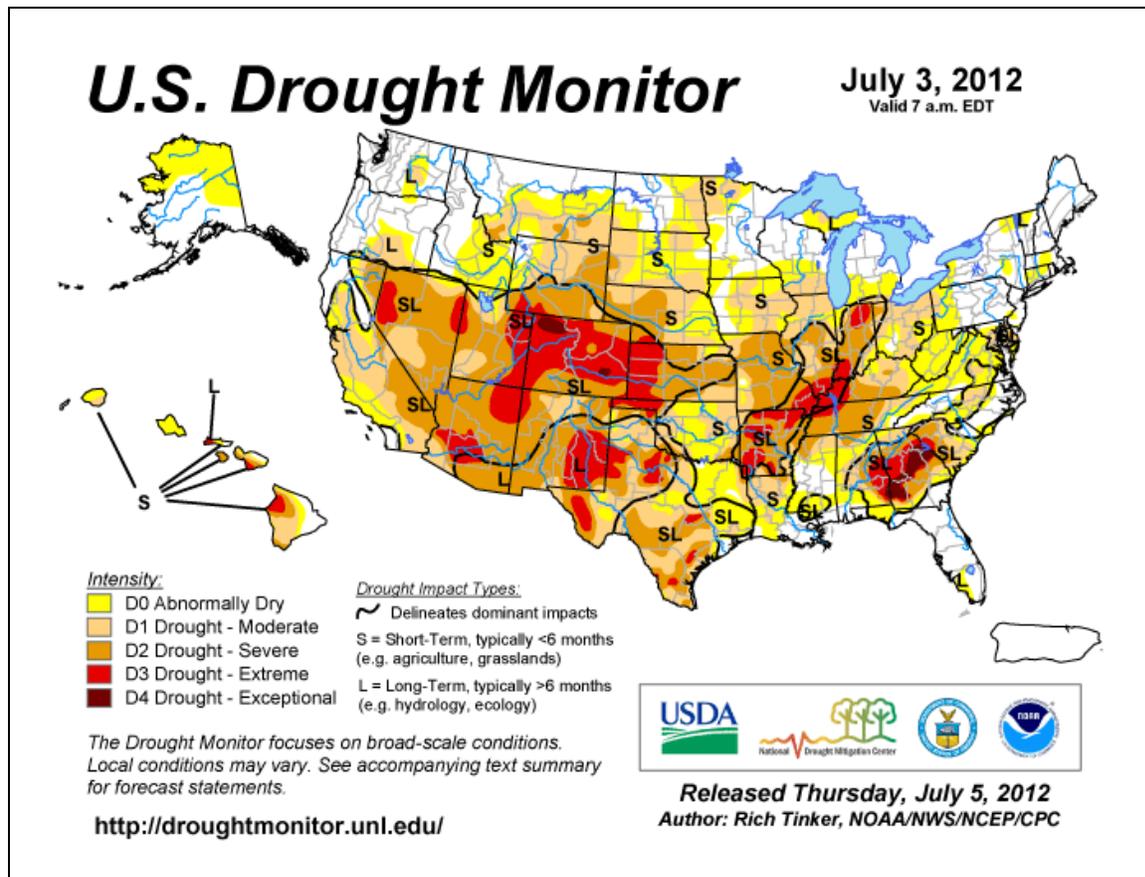


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over the Southeast US. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California Reservoirs](#). The monthly [drought indicator blend and component percentiles spreadsheet](#) is a great resource for climate division drought statistics. A number of these articles will be posted on the [Drought Headlines](#) page at the [NDMC website](#).

The link below is a good summary article that discusses drought impacts in the Corn Belt, including effects on world food production and prices.

<http://www.insurancejournal.com/news/midwest/2012/06/29/253423.htm>

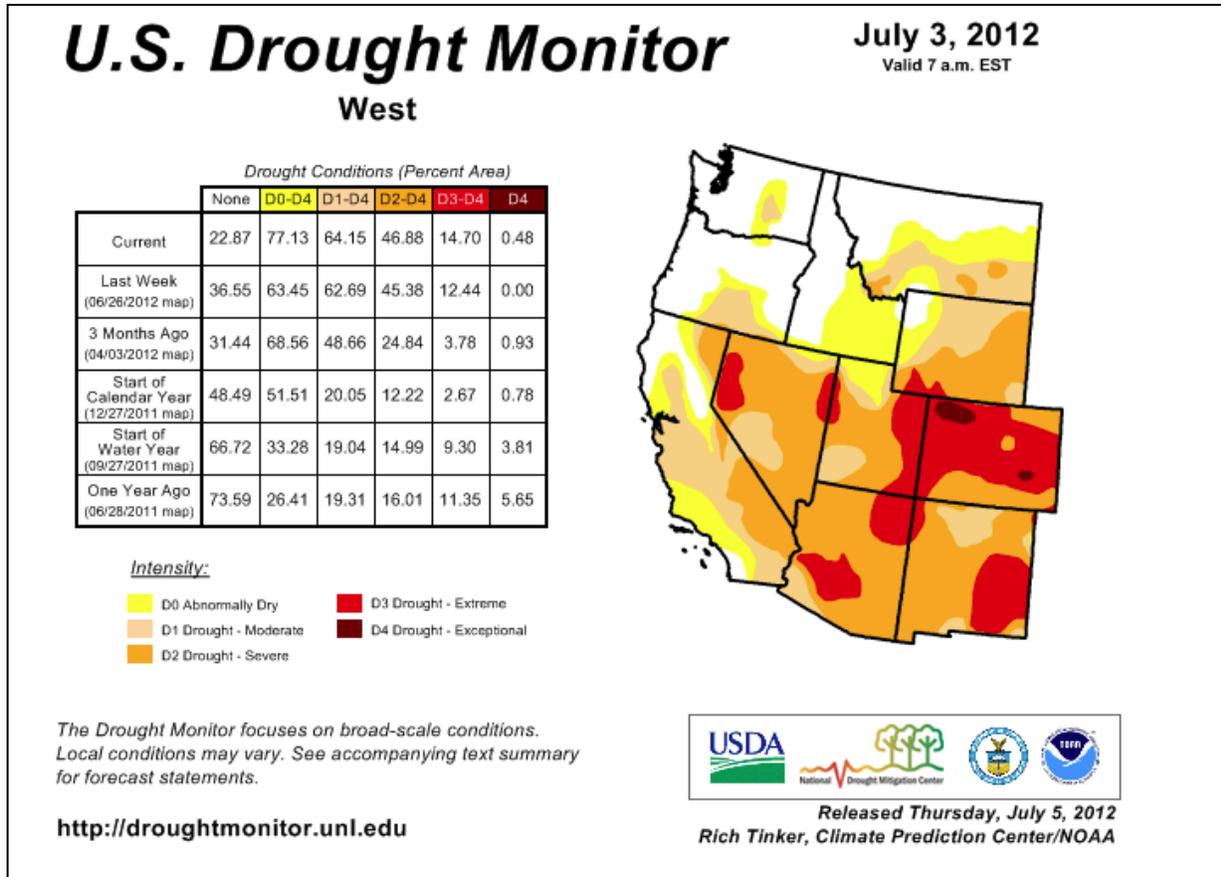


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Note some deterioration in D1-D3 this week (note new development of D4).

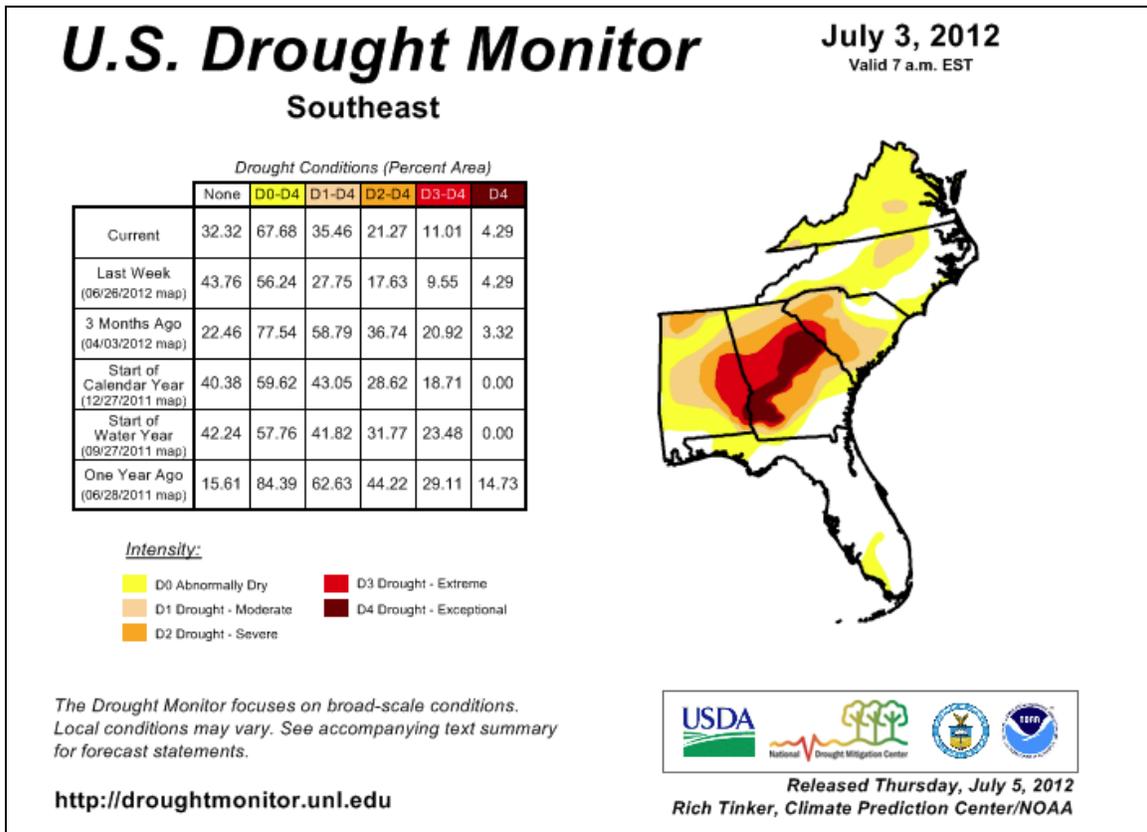
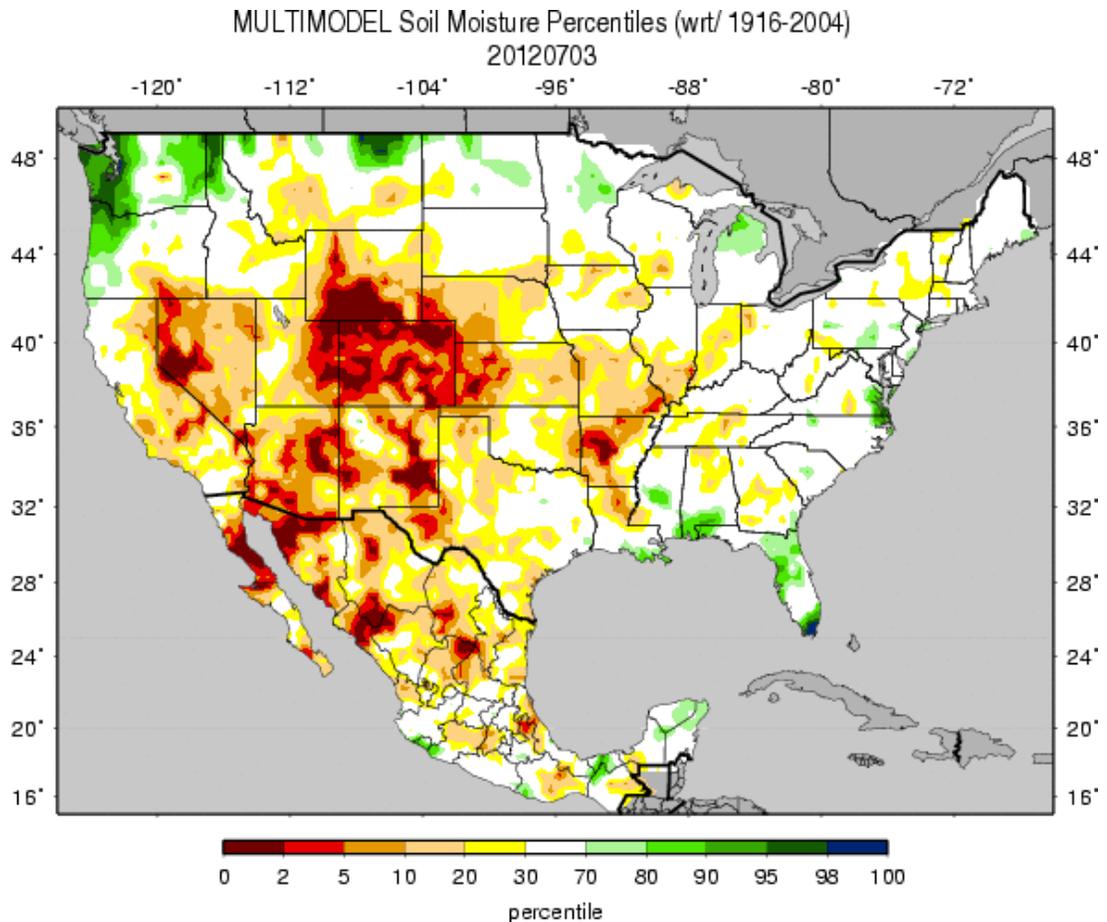


Fig. 3b: Drought Monitor for the [Southeastern States](#) with statistics over various time periods. Note deterioration in D1-D3 this week but no change in D4.

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Figs. 4: Soil Moisture ranking in [percentile](#) as of 3 July shows dryness intensifying over the South and Central Rockies, the Southwest, and Central Great Basin.

### *Useful Hydrological Links:*

USDA western U.S. mountain snow water content anomaly map.

- USGS (U.S. Geological Service) [observed streamflow](#);
- NOAA Climate Prediction Center (CPC) modeled runoff [anomalies](#) and [percentiles](#);
- VIC (University of Washington Variable Infiltration Capacity macro scale hydrologic model) [1-](#), [2-](#), [3-](#), and [6-](#)month and [water year-to-date](#) runoff percentiles;
- NLDAS (North American Land Data Assimilation System) modeled streamflow [anomalies](#) and [percentiles](#);
- NLDAS model runoff [anomalies](#) and [percentiles](#);
- USGS groundwater observations ([real-time network](#), [climate response network](#), [total active network](#));
- USDA snow water content observations for the West (SNOTEL station [percentiles](#) and [percent of normal](#), SNOTEL basin [percent of normal](#) and [percent of average](#)) and Alaska ([SNOTEL station percent of normal](#), [SNOTEL basin percent of normal](#));
- USDA reservoir storage as [percent of capacity](#).

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### Soil Climate Analysis Network ([SCAN](#))

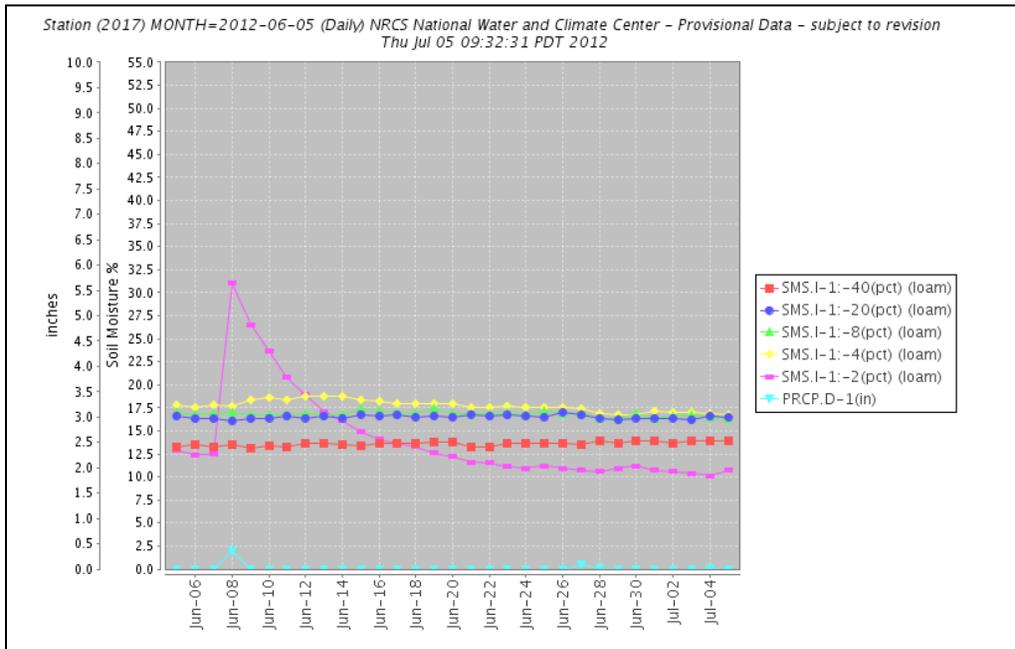


Fig. 5: This NRCS resource shows a site over the [northeast Colorado](#) with steadily declining top soil moisture as rainfall has been lacking in recent weeks.

#### Useful Agriculture Links:

- USDA (U.S. Department of Agriculture) [observed soil moisture conditions](#), [departures and percentiles](#), and comparison to [5-year average](#) and [10-year average](#);
- the Palmer [Crop Moisture Index \(CMI\)](#), which intensified during the month in the West and Lower to Mid-Mississippi Valley (weeks [1](#), [2](#), [3](#), [4](#), [5](#));
- CPC modeled soil moisture [anomalies](#) and [percentiles](#) for end of May, and [soil moisture anomaly change](#) compared to previous month;
- CPC's Leaky Bucket model [soil moisture percentiles](#);
- NLDAS modeled soil moisture percentiles for the [top soil layer](#) and [total soil layer](#);
- VIC modeled [soil moisture percentiles](#), and [soil moisture percentile change](#) compared to previous month;
- USDA observed [pasture and rangeland conditions](#);
- [Vegetation Drought Response Index \(VegDRI\)](#);
- the NOAA/NESDIS satellite-based [Vegetation Health Index \(VHI\)](#);
- the USGS agro-hydrologic model ([Soil Water Index](#), [Water Requirement Satisfaction Index](#));
- Selected [SNOTEL Sites](#) (measured 2" soil moisture depth);

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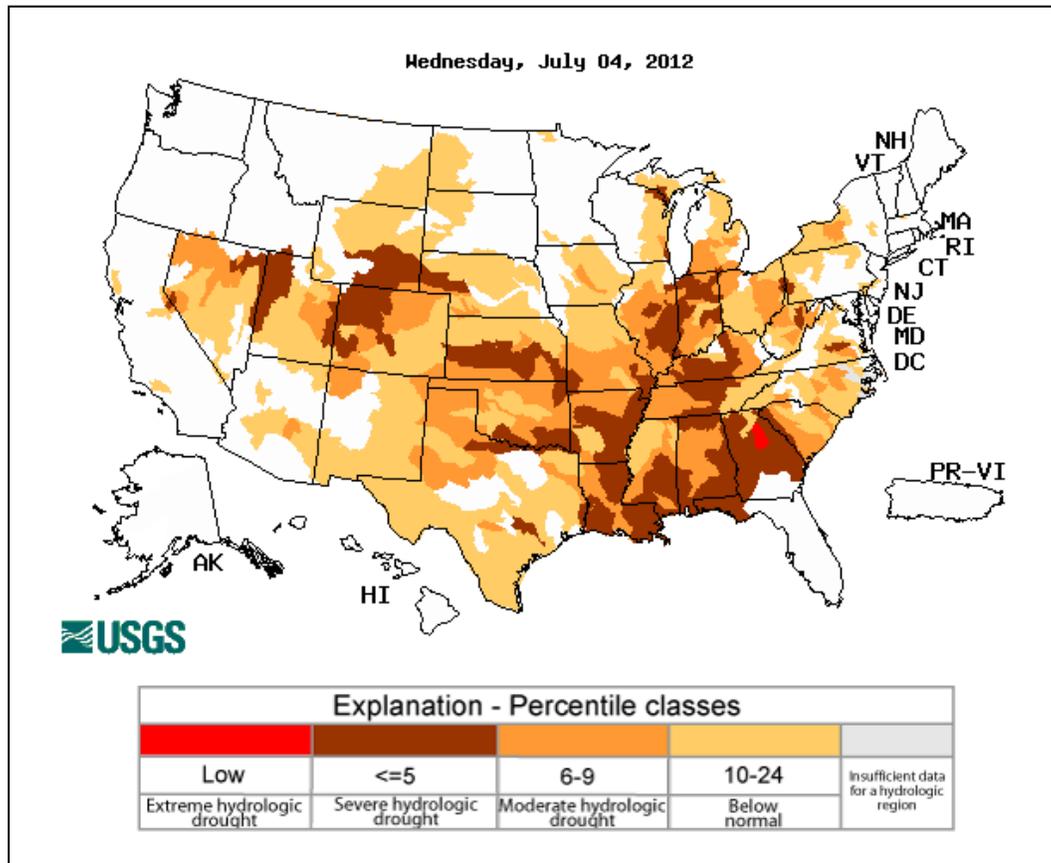


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Extreme** conditions exist over northern Georgia.

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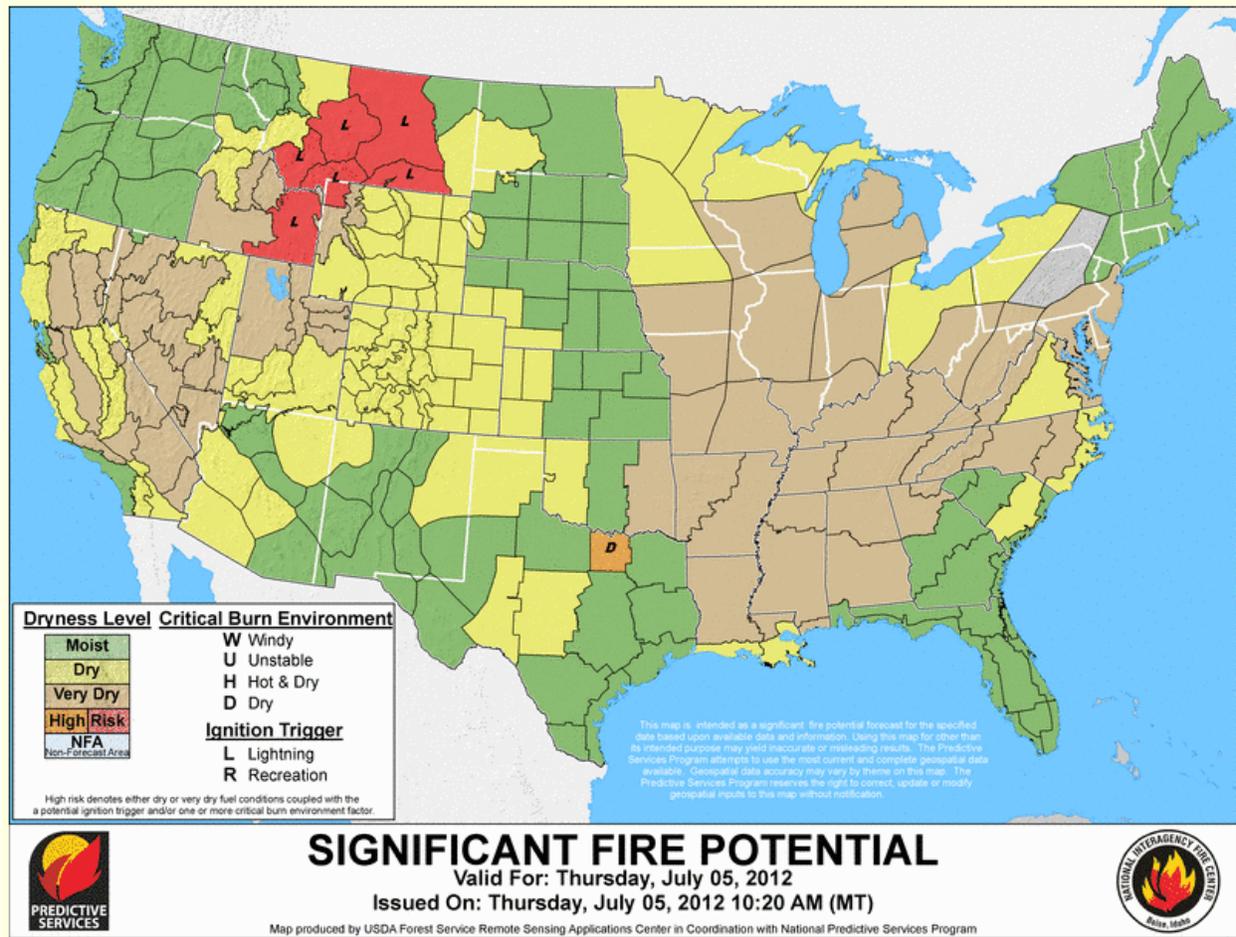


Fig. 7: [Significant fire potential](#) for today. This resource also provides forecasts out to 7 days. Also check out: [NOAA's Fire Server](#). Risk has increased over Wyoming during the past several days. Also see: [Experimental Southwest area wildland fire smoke impact awareness page](#) and the latest, [National Interagency Fire Agency Report](#). Note high risk over much of Northern Rockies.

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### National Drought Summary -- July 3, 2012

*The discussion in the Looking Ahead section is simply a description of what the official national guidance from the National Weather Service (NWS) National Centers for Environmental Prediction is depicting for current areas of dryness and drought. The NWS forecast products utilized include the HPC 5-day QPF and 5-day Mean Temperature progs, the 6-10 Day Outlooks of Temperature and Precipitation Probability, and the 8-14 Day Outlooks of Temperature and Precipitation Probability, valid as of late Wednesday afternoon of the USDM release week. The NWS forecast web page used for this section is:*  
<http://www.cpc.ncep.noaa.gov/products/forecasts/>.

**Weather Summary:** Overall, this week featured the expansion and intensification of dryness in large sections of the country, with only southern Texas reporting some improvement. Light precipitation (0.5 inch or less) fell on most areas of dryness and drought, with only scattered areas reporting more than an inch, primarily in the northern Plains, lower Mississippi Valley, southernmost Great Lakes region, Appalachians, mid-Atlantic region, and southern Texas. This despite a couple of thunderstorm complexes that pushed rapidly from northern Illinois east-southeastward through the mid-Atlantic, including one on June 29 that caused significant damage, knocked out power for millions of customers, and took 2 dozen lives. Unfortunately, where rain did fall (outside southern Texas), it was not enough to make up for blistering heat that covered the Nation's midsection, reaching the central and southern Atlantic Coast by the end of the workweek. Both the number of record highs in the past week, and the areas with record and near-record dryness over the last 1 to 3 months, are too numerous to mention. Daily high temperatures averaged above 100 degrees in the central and upper southern Plains, extending eastward into parts of Missouri and Arkansas, and average temperatures for the week were 8 to locally 15 degrees above normal from the Ohio Valley and upper Southeast westward through most of the High Plains. The dryness is beginning to take a significant toll on some of the Nation's crops, pastures, and rangelands. In the primary growing states for corn and soybeans (18 each), 22 percent of the crop is in poor or very poor condition, as are 43 percent of the Nation's pastures and rangelands and 24 percent of the sorghum crop. In addition, the area scorched by wildfires expanded significantly. Over 1.9 million acres have been engulfed since the start of the year, and increase of 38 percent in just the past week.

**The Northeast and Mid-Atlantic:** Despite a couple of thunderstorm complexes that brought light to locally moderate rain to parts of the region, the late-period hot weather across the mid-Atlantic and a return to dry weather over the last couple of weeks allowed D0 conditions to expand through much of this region, with a few patches of moderate drought showing up. Farther north, there was some limited expansion of D0 and, in western Pennsylvania, D1 conditions.

**The Tennessee Valley, Southeast, Deep South, and lower Ohio Valley:** Brutal heat and only light to locally moderate rain engendered a broad expansion and intensification of dryness and drought. Most of this region recorded less than half of normal precipitation during the last 30 days, with under 25 percent of normal falling on the lower Ohio Valley, much of Kentucky and northern Tennessee. Indiana, Missouri, Kentucky, and Tennessee each have 45 to 50 percent of their corn crop in poor or very poor condition as well as 34 to 49 percent of soybeans.

**The Mississippi Valley Westward to the Pacific Coast:** Another hot and dry week led to rapid deterioration and expansion of dryness and drought from the Rockies eastward. The only exception was southern Texas, where many locations recorded 1 to 3 inches of rain, leading to

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areas of improvement in the widespread D1 to D3 conditions. Farther north, D0 to D3 conditions expanded, with exceptional dryness (D4) developing in parts of north-central and east-central Colorado. In New Mexico, 59 percent of the Sorghum crop is in poor or very poor condition, and much of the region's rangeland is in similarly bad shape, including 74 percent of rangeland in Arizona, 77 percent in Colorado, and 89 percent in New Mexico. In addition, the now-infamous Waldo Canyon Fire in Colorado, though partially contained, has been called the most destructive wildfire in the state's history by local officials. Farther north, the Nation's largest wildfire rages in Montana's Custer National Forest, having consumed approximately 186,000 acres as of this writing. Dryness and heat were less exceptional from the Intermountain West westward to the Pacific Coast. No changes in dryness or drought were introduced there.

**Hawaii and Alaska:** Between 1 and 3 inches of rain fell on east-central Alaska while little or none fell on the state's northern tier. This engendered some slight improvement in southeastern sections of the D0 region, but it seems insufficient to have completely eliminated that region's dryness. In the dry areas across Hawaii, many locations reported 1 to locally over 3 inches of rain in southwestern sections of the Big Island, east-central Maui, and some of central and southeastern Oahu. Other D0 to D3 areas reported only light precipitation, if any. The continuing dryness in the southeastern half of Kauai, where cattle ranchers are reporting that drought stress has started, was degraded to moderate drought (D1), and the rest of the state was unchanged.

**Looking Ahead:** In general, July 4 – 8, 2012 doesn't look promising in terms of relief, though the intense heat should subside somewhat. One area that could see relief would be from the central and southern Rockies into the northern Plains, much of which is forecast to receive over an inch of rain. Totals near or above 2 inches are expected in the central Dakotas. One to perhaps 3 inches is also anticipated along and near the central Gulf Coast. Elsewhere, light rain at best is expected, with little or none forecast for the lower Northeast, the mid-Atlantic region, the upper Southeast, the Ohio Valley, much of the Mississippi Valley, and the central and southern Plains. Seasonably dry weather is expected in the West. Modest improvement is forecast for most areas that have endured the recent heat wave, but most locations from the Plains eastward are still expected to be warmer than normal. Temperatures could average over 6 degrees above normal from the mid-Atlantic region westward through the Tennessee and Ohio Valleys to near the Mississippi River.

The ensuing 5 days (July 9 – 13, 2012) bring enhanced chances for below-normal rainfall from the Tennessee and middle Mississippi Valleys northward through the Appalachians, Great Lakes, and northern Great Plains. In contrast, the odds favor above-normal rainfall along and near the southern half of the Atlantic Coast and in the southern halves of the High Plains and Rockies. Below-normal temperatures are expected to settle into the Northeast, but continued above-normal temperatures are anticipated in the southern halves of the Mississippi Valley and eastern Plains, and from the northern Plains, the central Rockies, and the desert Southwest westward to near the Pacific Coast.

**Author:** [Rich Tinker, Climate Prediction Center, NCEP, NWS, NOAA](#)

### Dryness Categories

D0 ... Abnormally Dry ... used for areas showing dryness but not yet in drought, or for areas recovering from drought.

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### **Drought Intensity Categories**

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

### **Drought or Dryness Types**

S ... Short-Term, typically <6 months (e.g. agricultural, grasslands)

L ... Long-Term, typically >6 months (e.g. hydrology, ecology)

*Updated July 3, 2012*