



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

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## Weekly Report - Snowpack / Drought Monitor Update

Date: 13 September 2012

### SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

**Temperature:** [SNOTEL](#) and ACIS 7-day temperature anomaly ending 13 September shows departures within  $\pm 5^{\circ}\text{F}$  of the long-term average for this week (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departures over Nevada ( $> +6^{\circ}\text{F}$ ). The greatest negative departures occurred over southwest Arizona ( $< -8^{\circ}\text{F}$ ) (Fig. 1a).

**Precipitation:** [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the bulk of moisture as a result of the Southwest Monsoon (Fig. 2). In terms of percent of normal, the same region is highlighted with very high percentages (Fig. 2a). 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. Values over southwest Utah are increasing as a result of an active Southwest Monsoon. However, most river basins are not expected to change much for the remainder of this Water Year. Data for Arizona is missing this week but should be inching higher as a result of the Southwest Monsoon (Fig. 2b). For the first half of [September](#), Utah and New Mexico have been exceedingly wetter than expected for this period. Additionally, the enhanced monsoon over parts of Arizona has increased the month's total although the data are not available (not shown) this week (Fig. 2c).

**Summary:** In the Southwest, southerly flows continued to deliver monsoonal rains helping to ease drought conditions over portions of Arizona and the Great Basin. Some worsening of drought conditions continued in the Plains and Texas associated with hot, dry conditions in the region.

**The West:** In the West, Colorado and Wyoming experienced the warmest summer in 118 years while Wyoming had the driest summer on record. For August, the West experienced above average temperatures and below normal precipitation in the northwestern and northern Rockies. Overall, precipitation in August was above normal in Arizona, California, and parts of the Great Basin. During the past seven days, continued monsoonal moisture led to one-category improvements across southern Arizona, southeastern California, southwestern Colorado, southern Nevada, and southwestern Utah. Areas of Arizona, Nevada, and Utah have experienced more than 200 percent of normal precipitation during the last thirty days. A small expansion of Exceptional Drought (D4) was depicted in this week's map as pasture and crop conditions continued to deteriorate in northeastern Colorado. **Author:** [David Simeral, Western Regional Climate Center](#) (New Drought Monitor Author).

***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

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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 3d).

### 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/>.

### 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/cgibin/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

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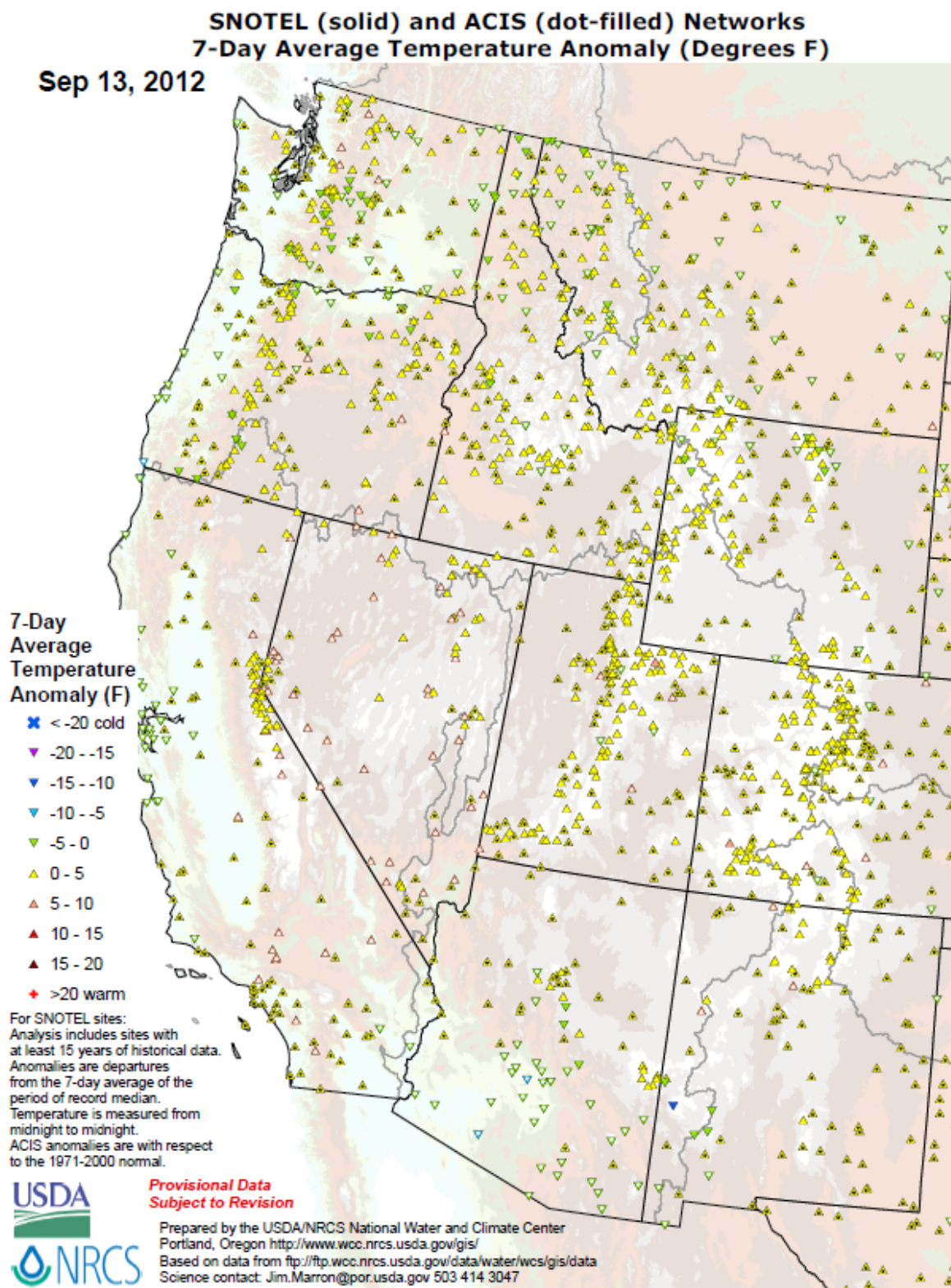
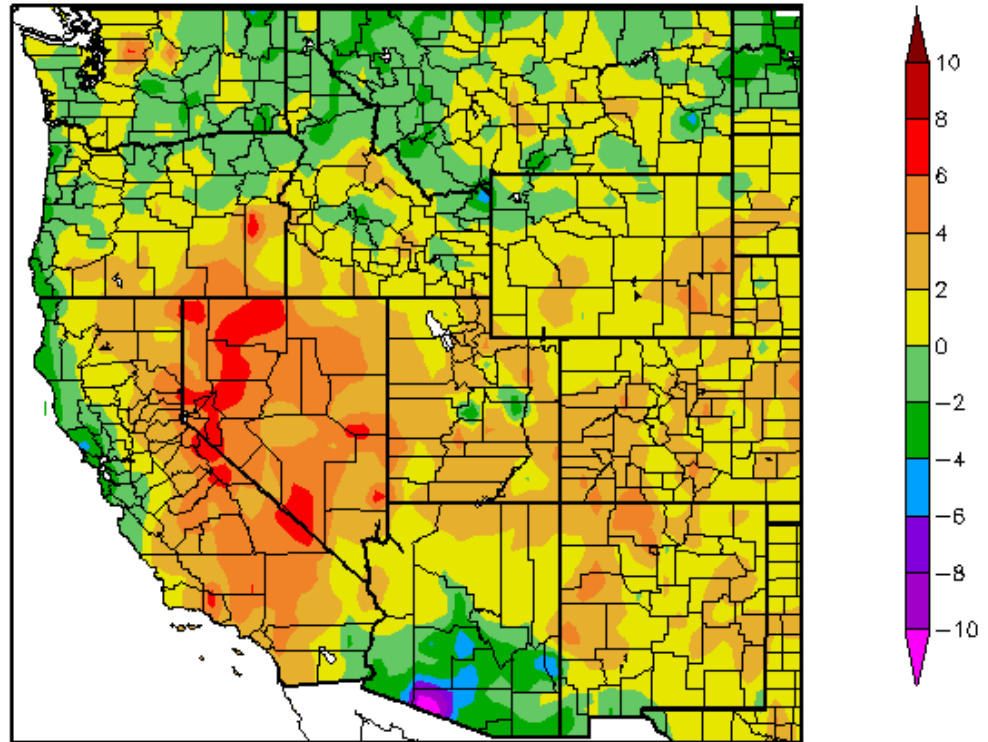


Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 13 September shows departures within  $\pm 5^{\circ}\text{F}$  of the long-term average for this week.

Departure from Normal Temperature (F)  
9/6/2012 – 9/12/2012



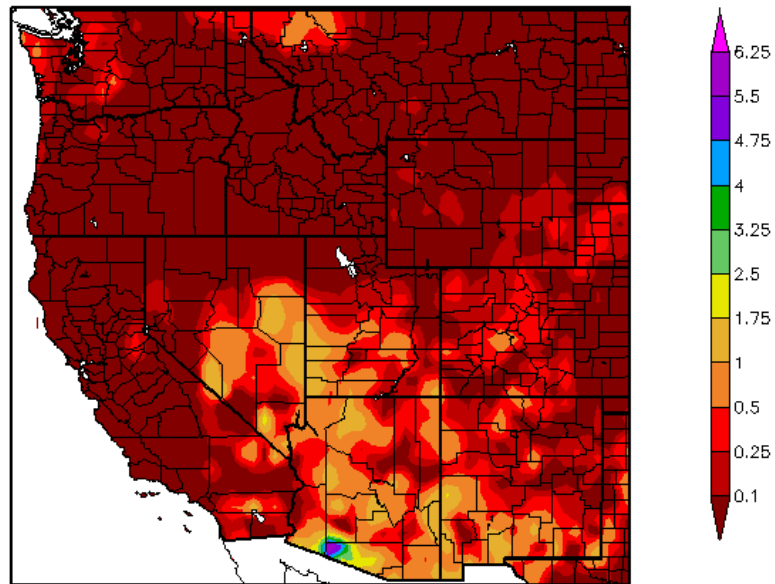
Generated 9/13/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 1a:** ACIS 7-day average temperature anomalies show the greatest positive temperature departures over Nevada (**>+6°F**). The greatest negative departures occurred over southwest Arizona (**<-8°F**).

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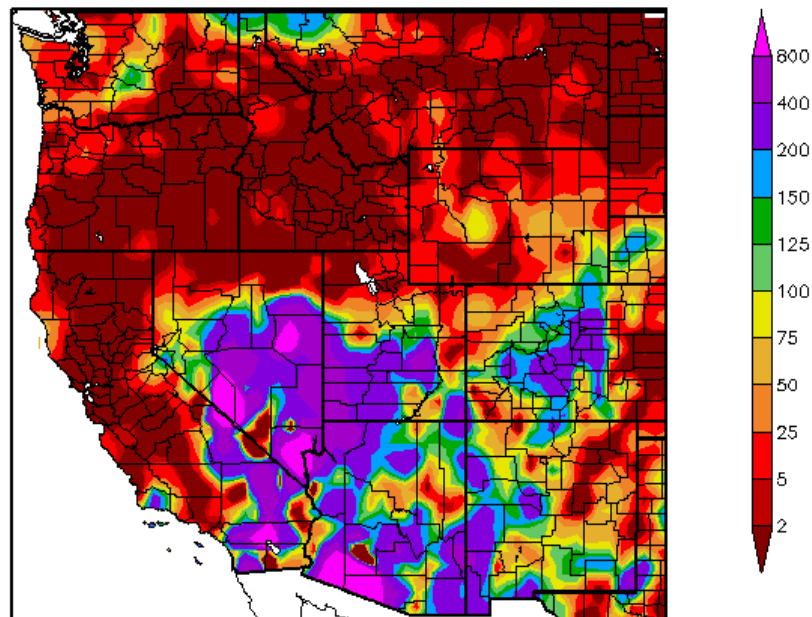
Precipitation (in)  
9/6/2012 – 9/12/2012



Generated 9/13/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
9/6/2012 – 9/12/2012



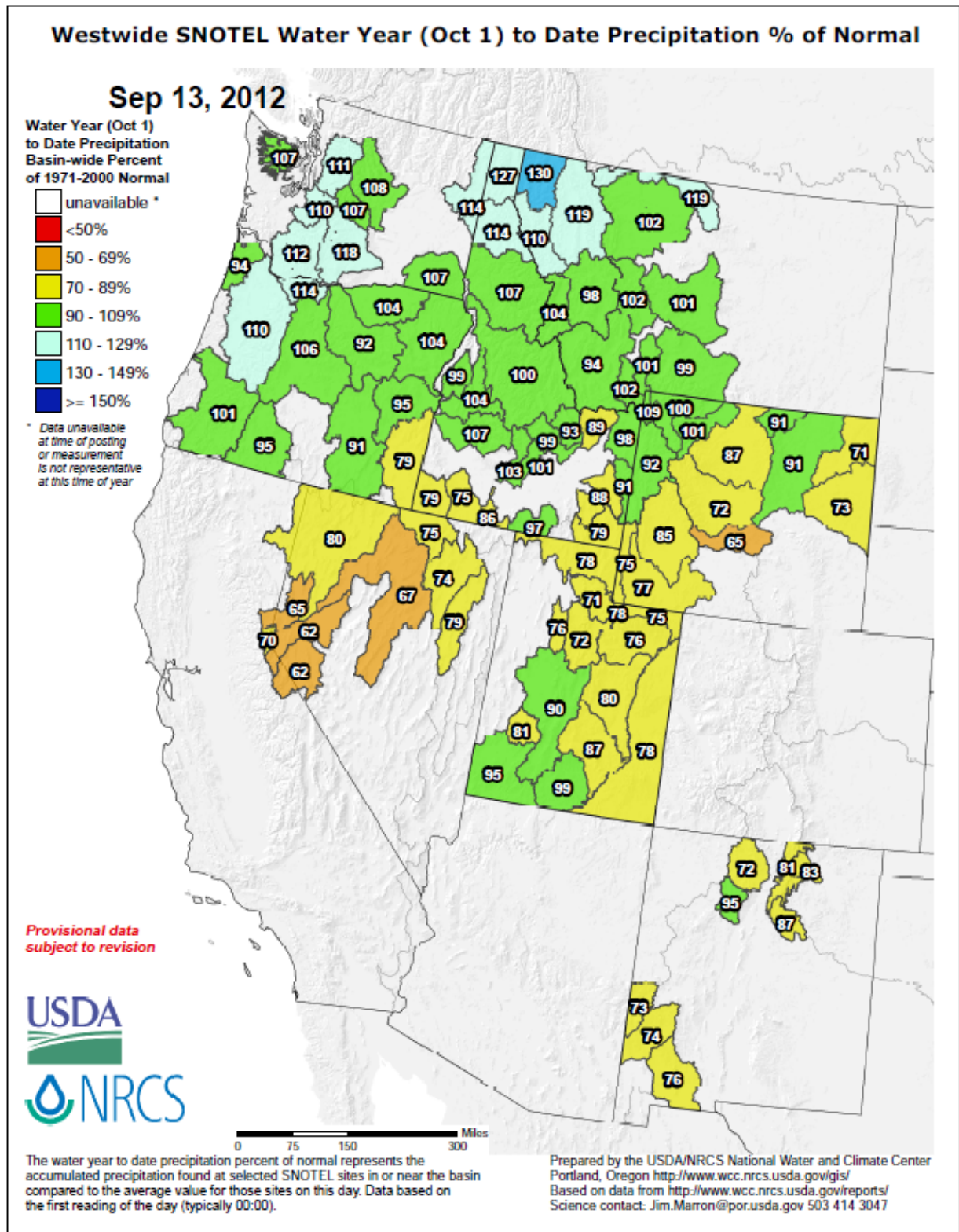
Generated 9/13/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 2 and 2a:** [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the bulk of moisture as a result of the Southwest Monsoon (top). In terms of percent of normal, the same region is highlighted with very 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. Values over southwest Utah are increasing as a result of an active Southwest Monsoon. However, most river basins are not expected to change much for the remainder of this Water Year. Data for Arizona is missing this week but should be inching higher as a result of the Southwest Monsoon.

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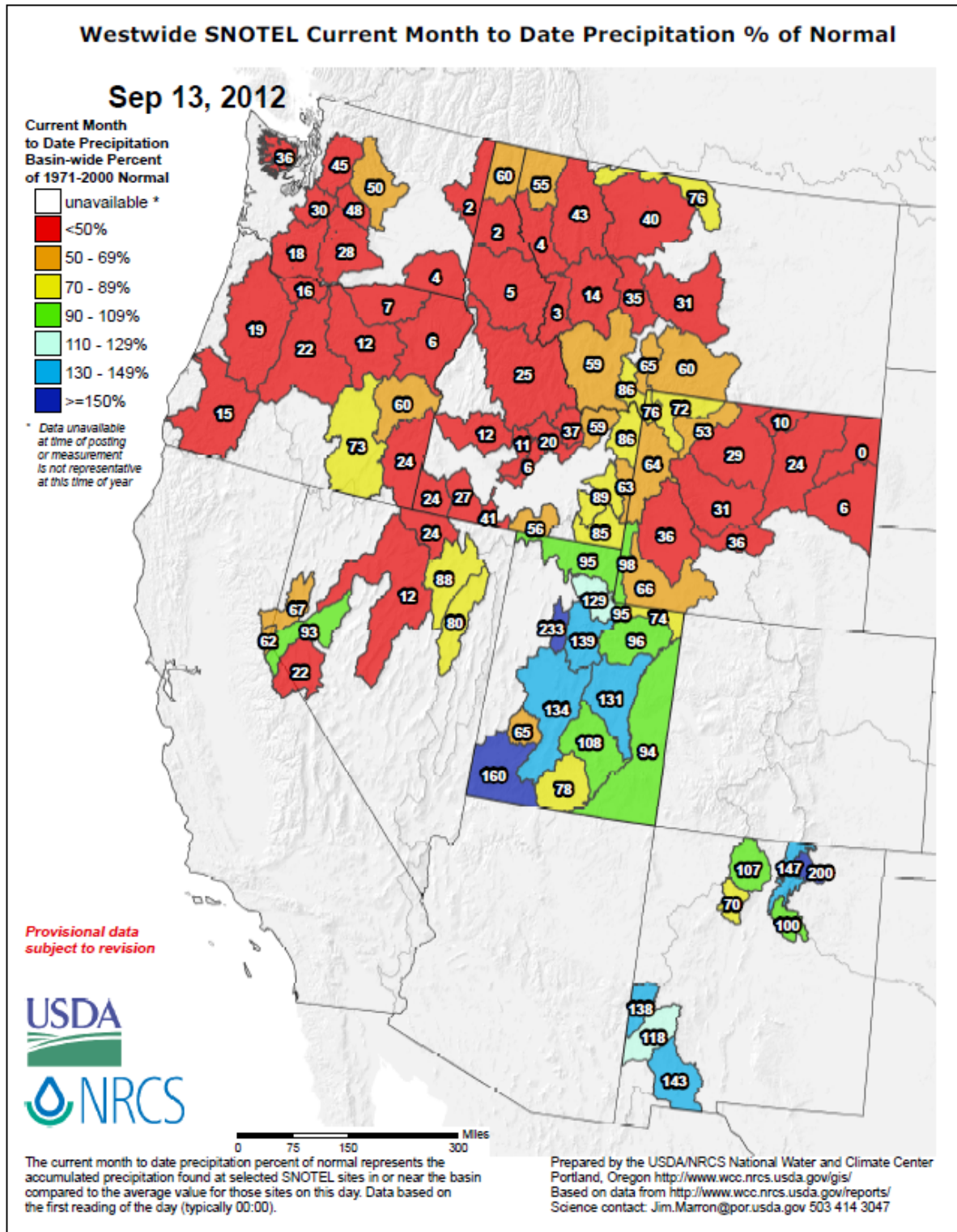


Fig. 2c: For the first half of September, Utah and New Mexico have been exceedingly wetter than expected for this period. Additionally, the enhanced monsoon over parts of Arizona has increased the month's total although not available (not shown) this week.

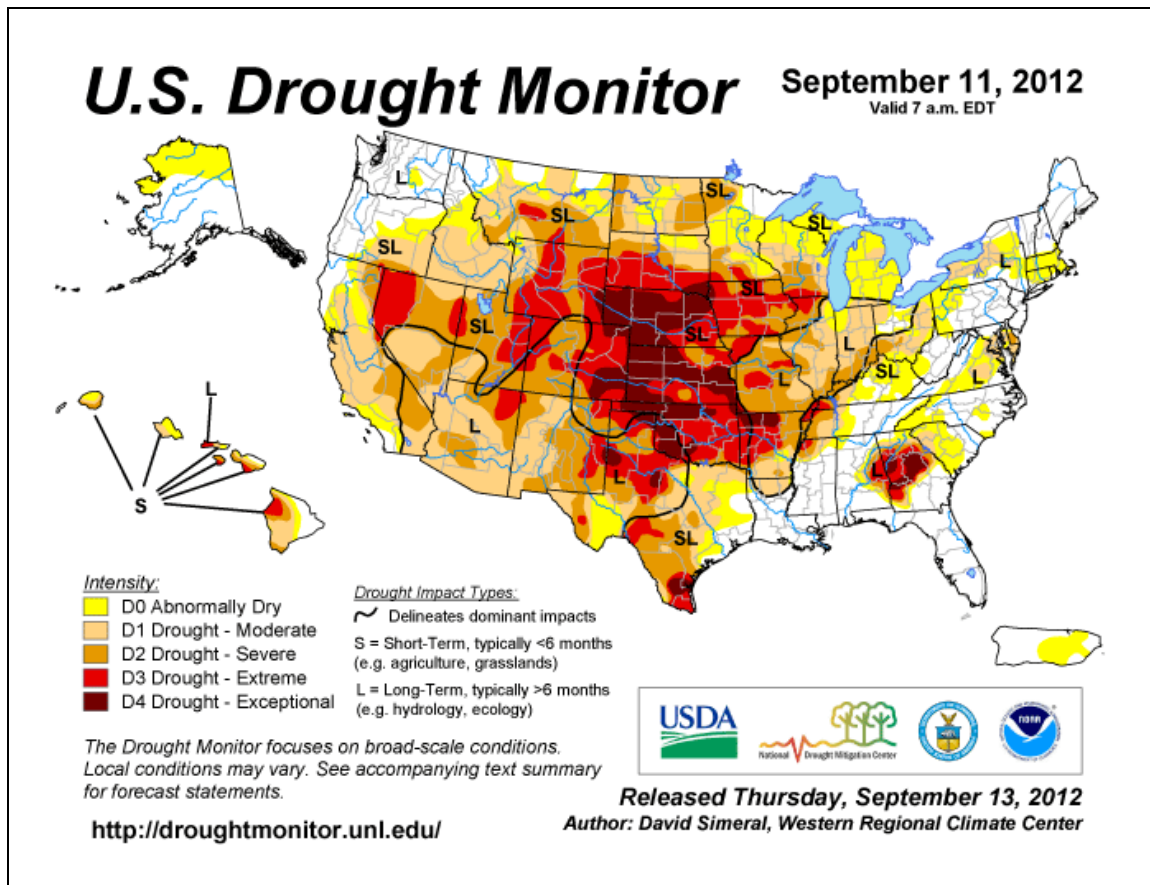


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and scattered across the corn belt of the Central Plains into Colorado. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California Reservoirs](#). The new September [drought indicator blend and component percentiles](#) spreadsheet is a great resource for climate division drought statistics.

## Agriculture

[Drought Conditions Hurt Oklahoma Farms](#) - Sept 6, **Oklahoma**. Although the Texoma region has had more precipitation than last year, ponds are still low and hay production was down as the area continues to recover from last year's drought.

[Drought Damps Optimism of U.S. Farmers, Agribusinesses](#) - Sept 4, **US**. Farmers were less optimistic than they were in March as drought wears on, according to a survey by DTN/The Progressive Farmer. Farmers rated their present condition at 120.4; approximately 20 points lower than in March and anticipate that one year from now their situation will rank at 98.2. A value of 100 indicates neutral or on the line between optimism and pessimism.

[Drought Didn't Squash Pumpkin Crop](#) - Sept 6, **Indiana**. One Indiana pumpkin grower said that they had to start the pumpkin seeds indoors in pots before planting them outside because soil moisture was so low. Hand-watering was needed during the summer to keep the pumpkins going.



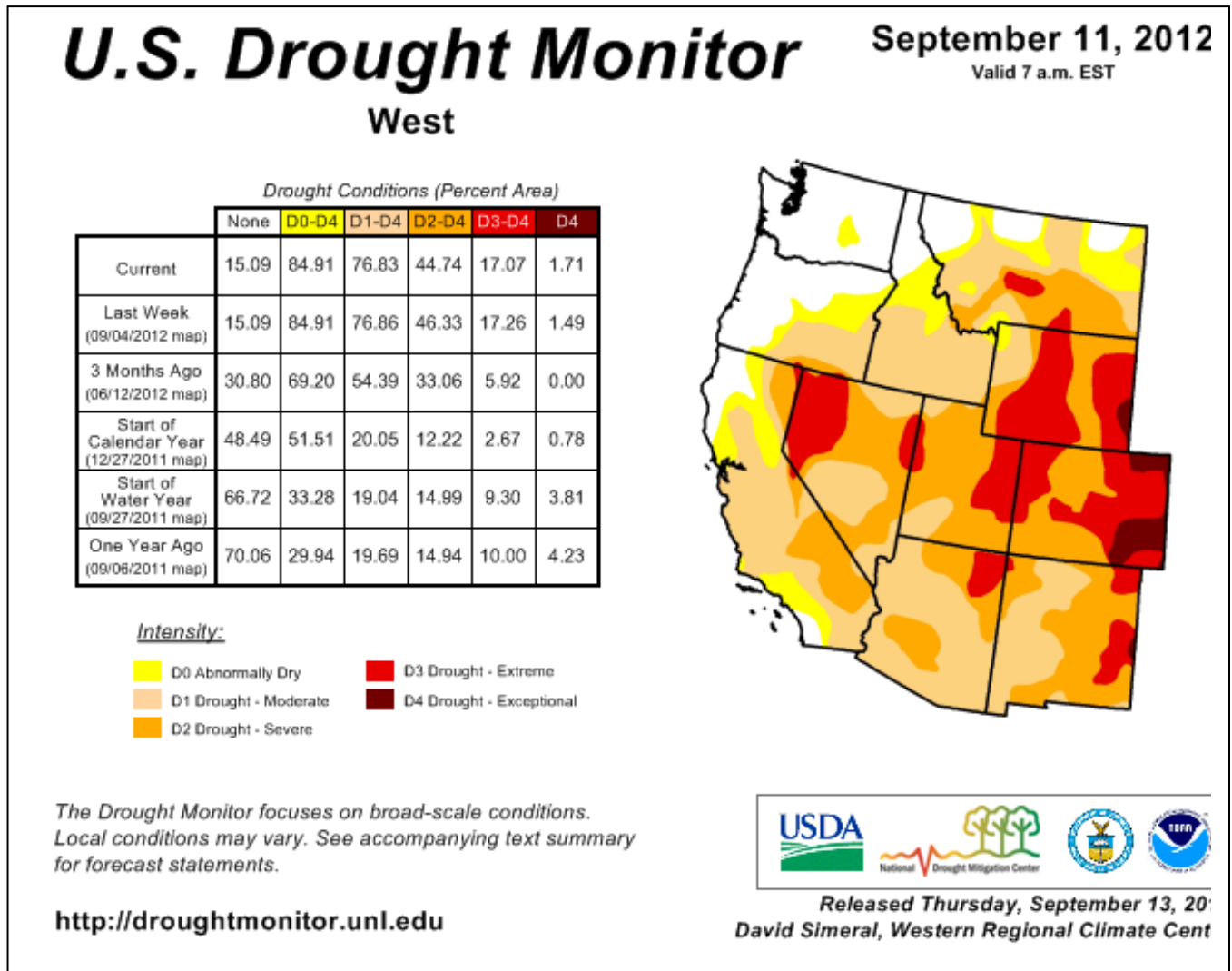


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Slight improvement is noted in D2 this week.

News: [BLM plans emergency horse gather in Nevada.](#)

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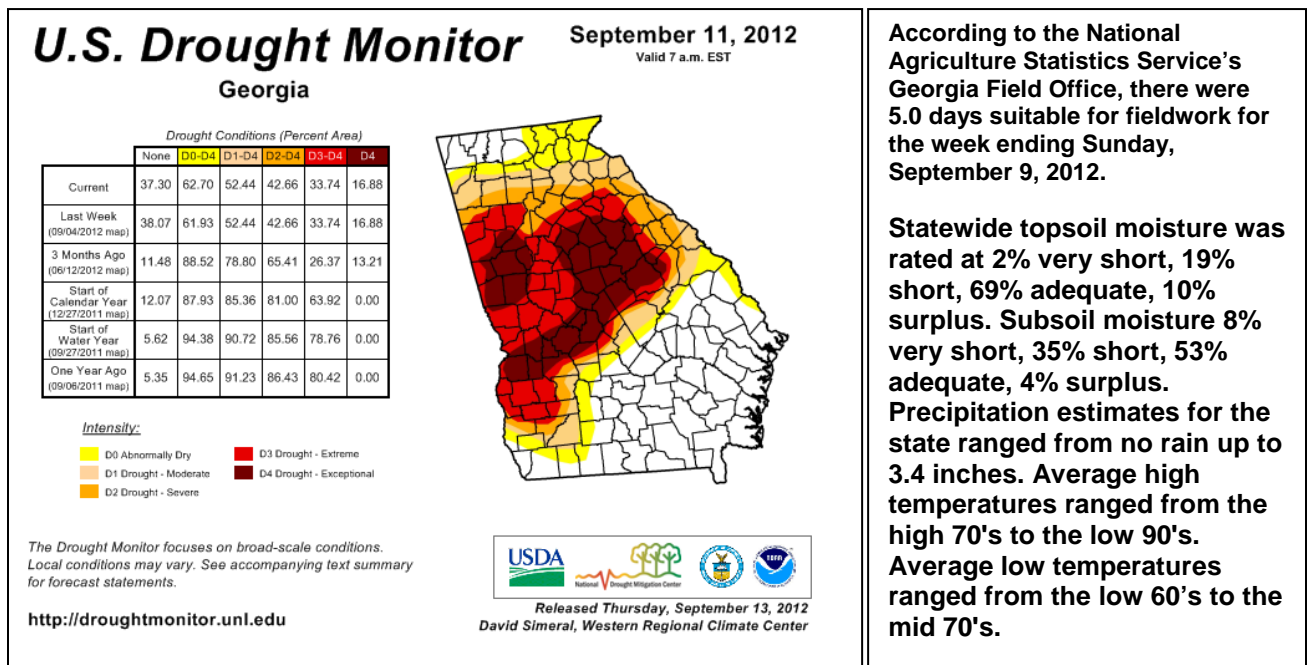


Fig. 3b: Drought Monitor for [Georgia](#) with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions. See the Weekly GridSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

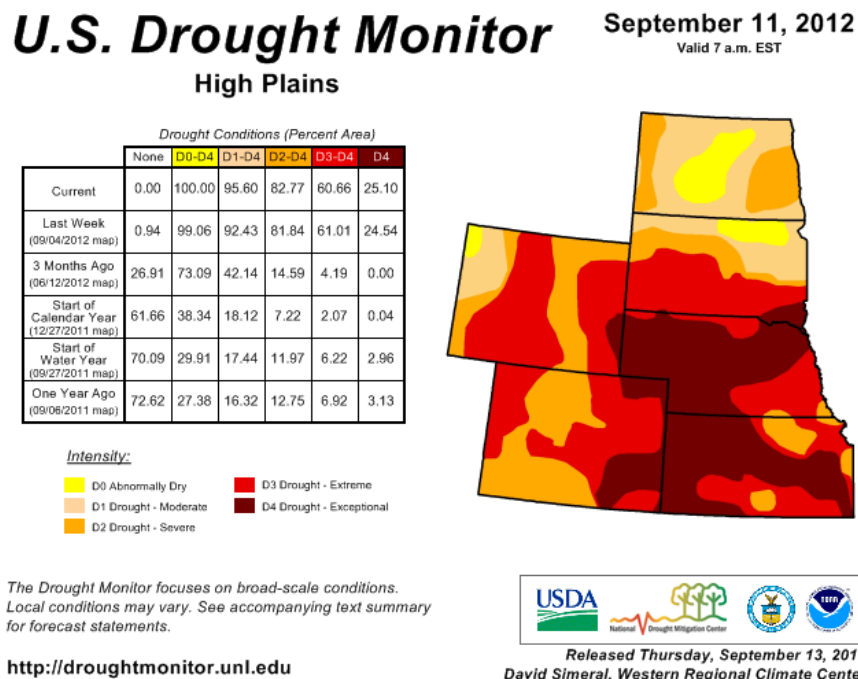


Fig. 3c: Drought Monitor for the [High Plains](#) with statistics over various time periods. Note significant deterioration in the higher categories this week. See the latest [Kansas Drought Report](#). News: [Deer disease fueled by drought in Neb. Cattle](#).

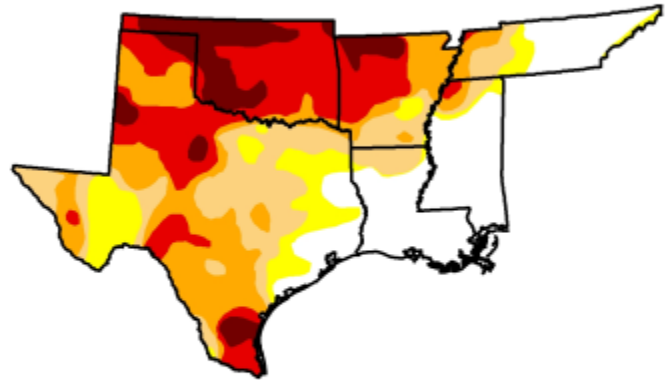
# U.S. Drought Monitor

## South

September 11, 2012

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	22.96	77.04	66.47	49.00	29.31	8.92
Last Week (09/04/2012 map)	24.35	75.65	64.56	45.89	30.09	8.46
3 Months Ago (06/12/2012 map)	25.76	74.24	48.27	14.82	4.33	0.07
Start of Calendar Year (12/27/2011 map)	26.47	73.53	69.01	54.81	39.11	17.15
Start of Water Year (09/27/2011 map)	18.34	81.66	76.26	70.61	63.67	53.77
One Year Ago (09/06/2011 map)	18.36	81.64	76.27	70.39	63.73	51.88

Intensity:

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

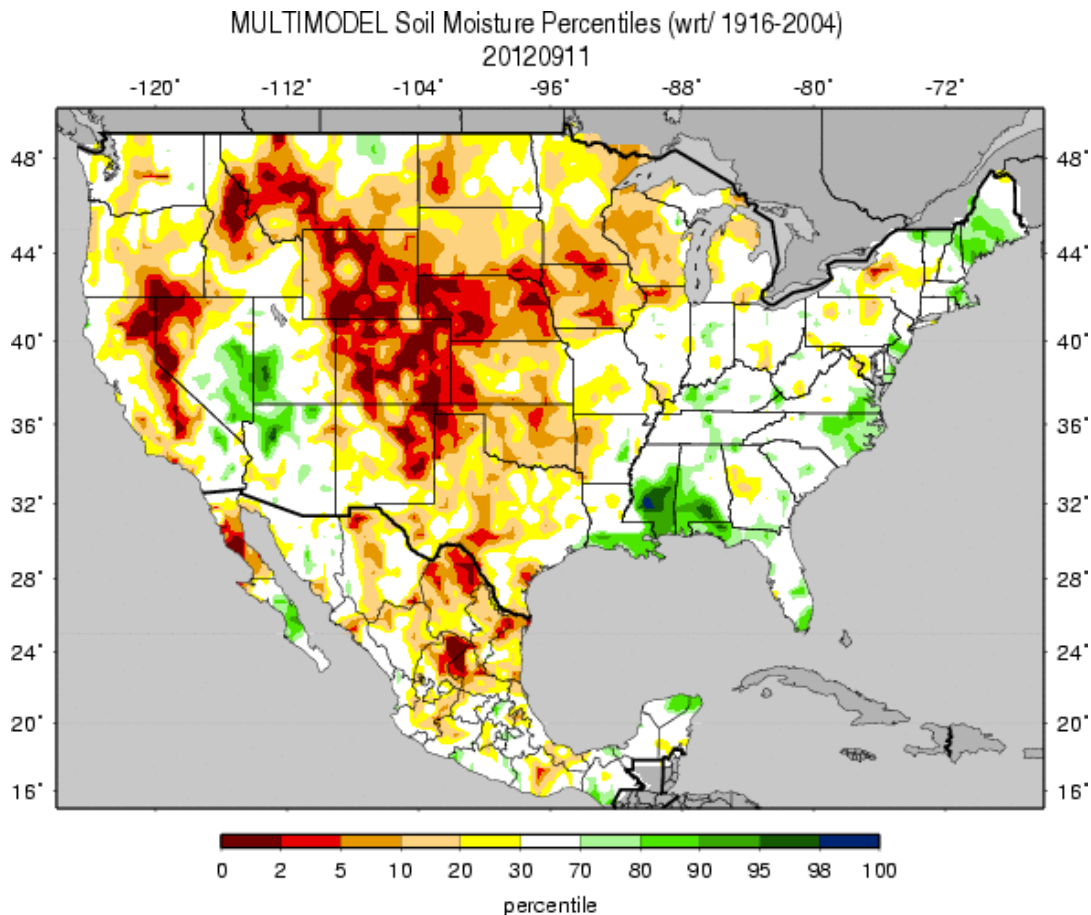
<http://droughtmonitor.unl.edu>



Released Thursday, September 13, 2012  
David Simeral, Western Regional Climate Center

Fig. 3e: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note no significant changes this week. News: [Drought deals setback to prairie chicken recovery efforts](#); [Lake levels going down](#).

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Figs. 4: Soil Moisture ranking in [percentile](#) as of 11 September shows dryness over much of the Rockies, Western High Plains (including Iowa), northern California, and the Western Great Basin. Hurricane Isaac's moisture is still noted over southern Louisiana and Mississippi.

### *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](#))

ation (2136) MONTH=2012-08-14 (Daily) NRCS National Water and Climate Center – Provisional Data – subject to revision  
Thu Sep 13 08:42:32 PDT 2012

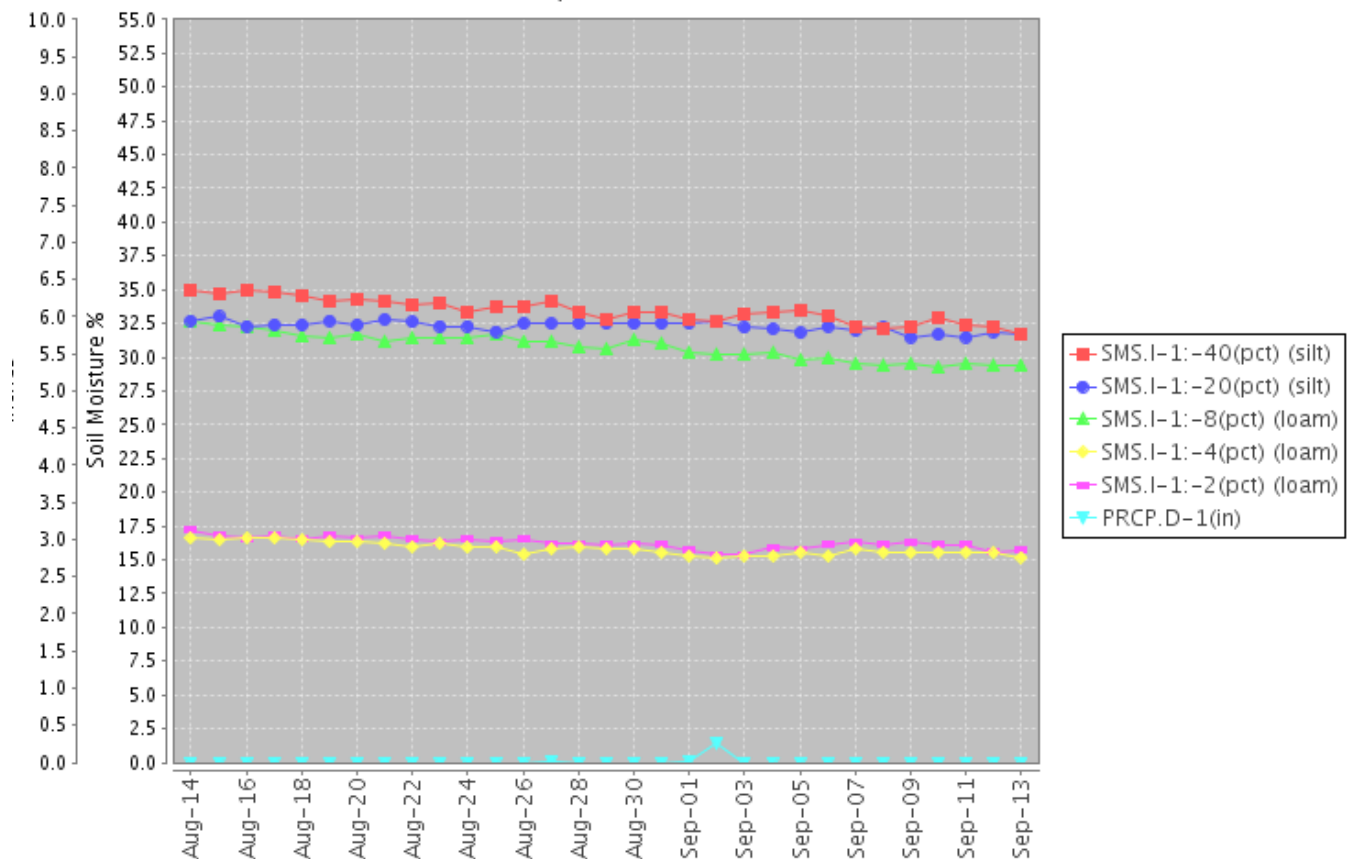


Fig. 5: This NRCS resource shows a site over the [northern Utah](#) with ample moisture especially at lower layer soil depths. However, note the slow decline at all depths.

#### 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"](#), [4"](#), [8"](#), [20"](#), and [40"](#) soil moisture depths);

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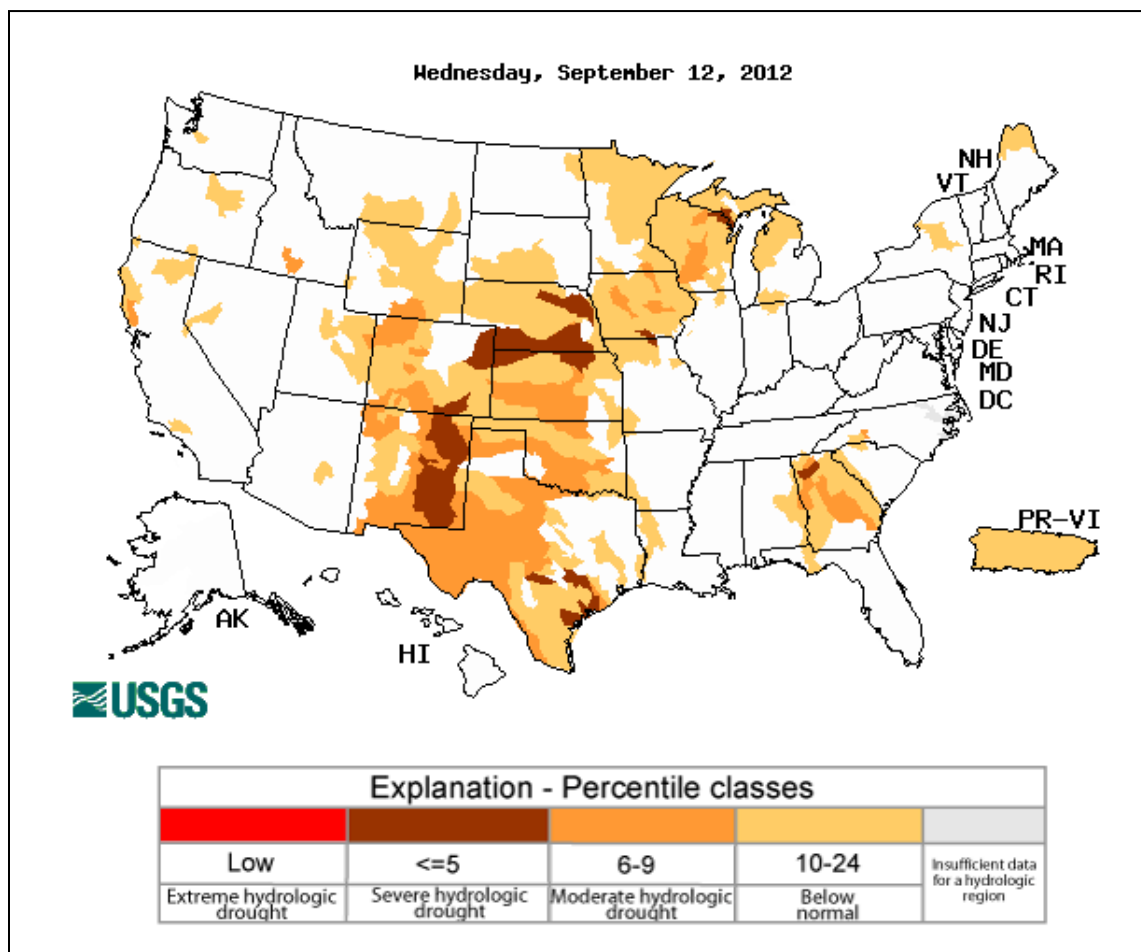


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of northern Kansas and east Nebraska, northern Missouri, and the eastern half of New Mexico.

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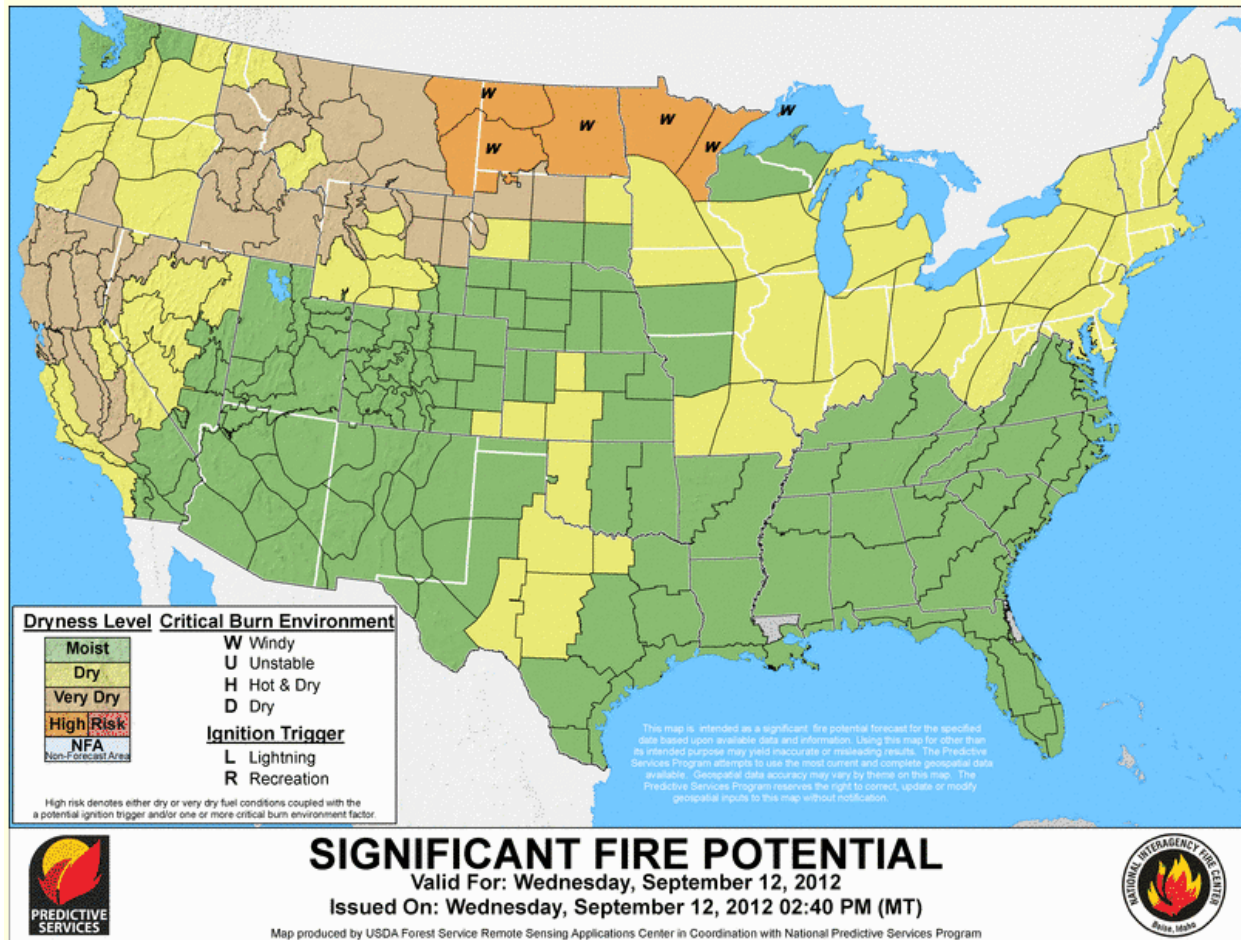


Fig. 7: [Significant fire potential](#) for yesterday. This resource also provides forecasts out to 7 days. Also check out: [NOAA's Fire Server](#). Risk has increased over the Northern Plains. Also see: [Experimental Southwest area wildland fire smoke impact awareness page](#) and the latest, [National Interagency Fire Agency Report](#).

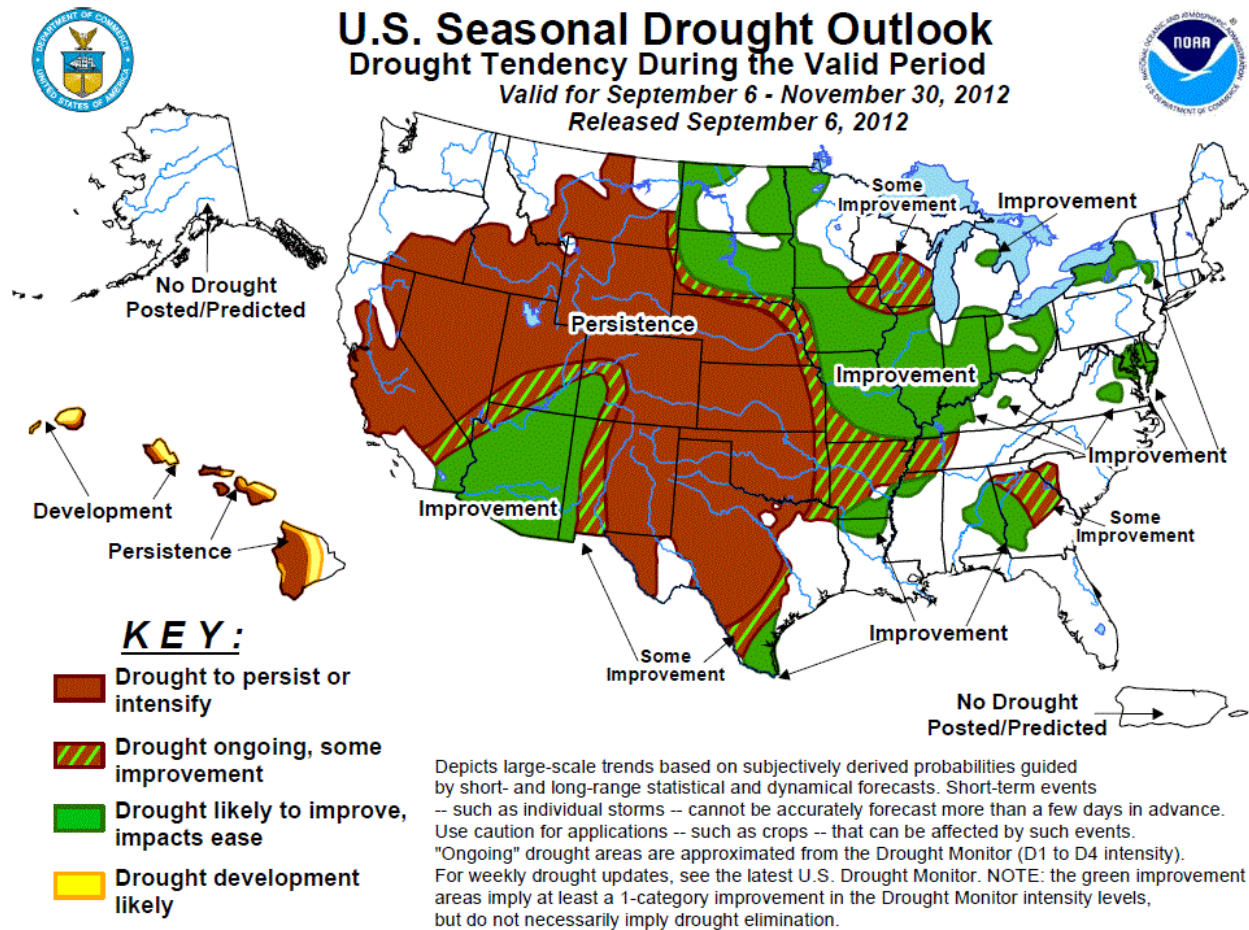


Fig. 8: [U.S. seasonal Drought Outlook](#) released 6 September 2012.



## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- September 11, 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/>.

This U.S. Drought Monitor week saw some minor improvements in parts of the Mid-Atlantic, Midwest, and Northeast associated with the passage of a strong cold front during the weekend. In the Southwest, southerly flows continued to deliver monsoonal rains helping to ease drought conditions over portions of Arizona and the Great Basin. Some worsening of drought conditions continued in the Plains and Texas associated with hot, dry conditions in the region. The Northeast and parts of the Mid-Atlantic continued to benefit from recent rainfall leading to improvements in New York, Vermont, Maine, Delaware, and Maryland. The National Climatic Data Center's "State of the Climate" report for August 2012 indicated that the contiguous U.S. experienced the third hottest summer on record.

**The Northeast:** Widespread rains throughout the region led to improvements from Abnormally Dry (D0) to normal conditions in northeastern New York and northern Vermont while the Mohawk Valley and Finger Lakes regions improved from Moderate Drought (D1) to Abnormally Dry (D0). Long-term deficits remain in Massachusetts and Connecticut, however, and this area remained unchanged.

**Mid-Atlantic:** Recent rains helped to improve conditions in parts of the Delmarva Peninsula which were upgraded from Severe Drought (D2) to Moderate Drought (D1). Rainfall totals ranged from two to five inches this week in Dorchester and Worcester Counties, Maryland as well as Accomack County, Virginia.

**The Southeast:** Some locally heavy rainfall during the last week helped to improve a small area of Abnormally Dry (D0) in south-central Alabama. Otherwise, the region was generally unchanged.

**The South and Southern Plains:** Persistence of hot and dry conditions led to expansion of Extreme Drought (D3) and Exceptional Drought (D4) in northern and central Oklahoma as well as southeastern Texas. Temperatures soared near 100 degrees, as very windy conditions exacerbated drought in the Oklahoma panhandle. Rainfall in the Texas' Hill Country totaled no more than 50 percent of normal during the last one to two months. Northeastern Arkansas continued to receive rainfall reducing drought intensity from Extreme Drought (D3) to Severe Drought (D2).

**Midwest:** With the passage of a strong cold front during the weekend, significant rains led to widespread one-category improvements across southeastern Missouri, Kentucky, western Tennessee, eastern Illinois, central Indiana, and southwestern Ohio. Local rains in western Kentucky ranged from 1.5 to 3.5 inches. Upward of five inches of rain fell locally this week in southeastern Missouri and western Indiana. A one-category improvement was depicted in northern Ohio, as consistent rainfall during the last two weeks provided some short-term improvement. In the northern tier, above average temperatures combined with below average

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precipitation during the last 30 to 45 days led to the expansion of Moderate Drought (D1) and Abnormal Dryness (D0) in Minnesota and Wisconsin. Severe drought grew to include Beltrami, Clearwater, and Mahnomen Counties in northwestern Minnesota as well.

**The Central and Northern Plains:** The region continued to experience below normal precipitation and slightly above normal temperatures with the exception of parts of central and eastern Kansas. In the Dakotas, there was widespread expansion of Severe Drought (D2) in western North Dakota. Within the last month, the percent of normal precipitation was below 50 percent throughout most of the Northern Plains. Growing precipitation deficits in central North Dakota led to widespread one-category degradation. A small expansion in Extreme Drought (D3) was depicted in central South Dakota as agricultural field conditions worsened.

**The West:** In the West, Colorado and Wyoming experienced the warmest summer in 118 years while Wyoming had the driest summer on record. For August, the West experienced above average temperatures and below normal precipitation in the northwestern and northern Rockies. Overall, precipitation in August was above normal in Arizona, California, and parts of the Great Basin. During the past seven days, continued monsoonal moisture led to one-category improvements across southern Arizona, southeastern California, southwestern Colorado, southern Nevada, and southwestern Utah. Areas of Arizona, Nevada, and Utah have experienced more than 200 percent of normal precipitation during the last thirty days. A small expansion of Exceptional Drought (D4) was depicted in this week's map as pasture and crop conditions continued to deteriorate in northeastern Colorado.

**Hawaii, Alaska, and Puerto Rico:** These regions remained unchanged for the week.

**Looking Ahead:** In the short-term, the HPC 5-Day forecast is predicting rainfall totals in excess of two inches throughout large portions of Texas and Oklahoma and amounts more than three inches along the Gulf Coast regions of Texas and Louisiana. Portions of drought stricken Colorado, Kansas, and Iowa are expected to receive some modest relief.

The CPC 6-10 Day Outlook is projecting above average precipitation in Alaska excluding the southeastern portions. Below normal precipitation is forecasted for most of West, while above average precipitation is forecasted for the upper Great Lakes states, Northeast, and Mid-Atlantic. Temperatures around most of the West, except coastal California, will remain above average while most of the Plains and Midwest will see below average conditions. In the Northeast, above average temperatures are predicted for much of the region.

**Author:** [David Simeral, Western Regional Climate Center](#)

### Dryness Categories

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

### Drought Intensity Categories

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

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### 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 September 12, 2012*

## Special Report

### USACE Role in 2012 Drought

The U.S. Army Corps of Engineers services 41 states with ports and waterways. Navigation is one of USACE's civil works missions. Nearly 25,000 miles are operated and maintained by USACE for commercial navigation. During this 2012 drought season, USACE has published guidance to coordinate a collective Common Operating Picture to monitor ongoing impacts on navigation, identified critical river gages as key monitors for navigation, and implemented Waterway Action Plans. In addition, USACE employs designated assets, such as dredges and survey boats, to prevent and mitigate impacts to navigation and critical works infrastructure. USACE is currently dredging in locations along the Upper Mississippi River, Lower Mississippi River, and the Ohio and Missouri Rivers. Additional locations will be dredged as river stages continue to fall. Finally, USACE is ensuring that storage reservoirs are releasing flows to support natural flows downstream for the Ohio and Mississippi Rivers, and is coordinating with industry, NOAA, and the U.S. Coast Guard to mitigate drought conditions. USACE actions are taken within existing authorities and approved operating plans.

As drought conditions persist, USACE cautions swimmers and boaters to watch for hazards, such as trees or rocks, which may be exposed or closer to the water surface due to lower lake levels. With waters lower than the traditional pools at most USACE lakes, it is even more imperative that visitors do not jump or dive into the water and that everyone wears a life jacket when recreating in or near the water.