



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

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## Weekly Report - Snowpack / Drought Monitor Update

Date: 11 October 2012

### SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

**Temperature:** [SNOTEL](#) and ACIS 7-day temperature anomaly ending 10 October shows very cool conditions over the Western High Plains and Northern Rockies while more seasonal temperatures prevailed over the Southwest and West Coast States (i.e. Cascades westward) (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departure over parts of the Upper California desert ( $>+9^{\circ}\text{F}$ ). The greatest negative departures occurred over the Black Hills of Wyoming and South Dakota ( $<-15^{\circ}\text{F}$ ) (Fig. 1a).

**Precipitation:** [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows typical dry conditions for this time of year with the exception of heavy precipitation near the Black Hills (Fig. 2). In terms of percent of normal, regions with any precipitation had high positive percentages due to normally low climatological amounts (Fig. 2a). For the [2013 Water-Year](#) that began on 1 October 2012, statistics will be unreliable for the next several weeks since this observing period is exceedingly short (Fig. 2b).

**Weekly Summary:** The past week featured a series of low-pressure systems that moved across the northern tier of the contiguous 48 states, with their associated cold fronts moving southward to the gulf coast. These cold fronts brought some rains to portions of the contiguous 48 states, with the heaviest amounts across the northern Great Plains, Mid-west, Mid-Atlantic, and Florida. Most of the areas that are west of the Rockies remained dry this week, under the influence of a persistent upper-level ridge. According to the United State Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS) below-normal temperatures were observed for most of the central portions of the contiguous U.S., with above-average temperatures over much of Alaska.

**The Rockies:** Minor revisions were made this week over Colorado, where 1-category improvements were made over the northeastern portions of the state. The improvements were based on recent beneficial moisture, which has continued to accumulate. Impacts in drought-stricken areas have lessened slightly. Standardized precipitation indices (SPIs) are positive through 90 days along the Front Range, so a reduction to D1 was included in this week's depiction. Extreme drought (D3) was trimmed to accommodate and the D4 was reduced, now limited mostly to the far northeast corner of CO where long-term SPIs are still below -2.0.

**The Southwest:** No changes were made to the regional depiction this week.

**The Pacific Northwest:** Abnormal dryness (D0) was expanded across western portions of Oregon and Washington. Ongoing fires are an indication that the wet season has yet to begin across this region. Author: Matthew Rosencrans, NOAA/NWS/NCEP/CPC.

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

### [Drought Impacts Definitions](#)

## Weekly Snowpack and Drought Monitor Update Report

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 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.

### **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.

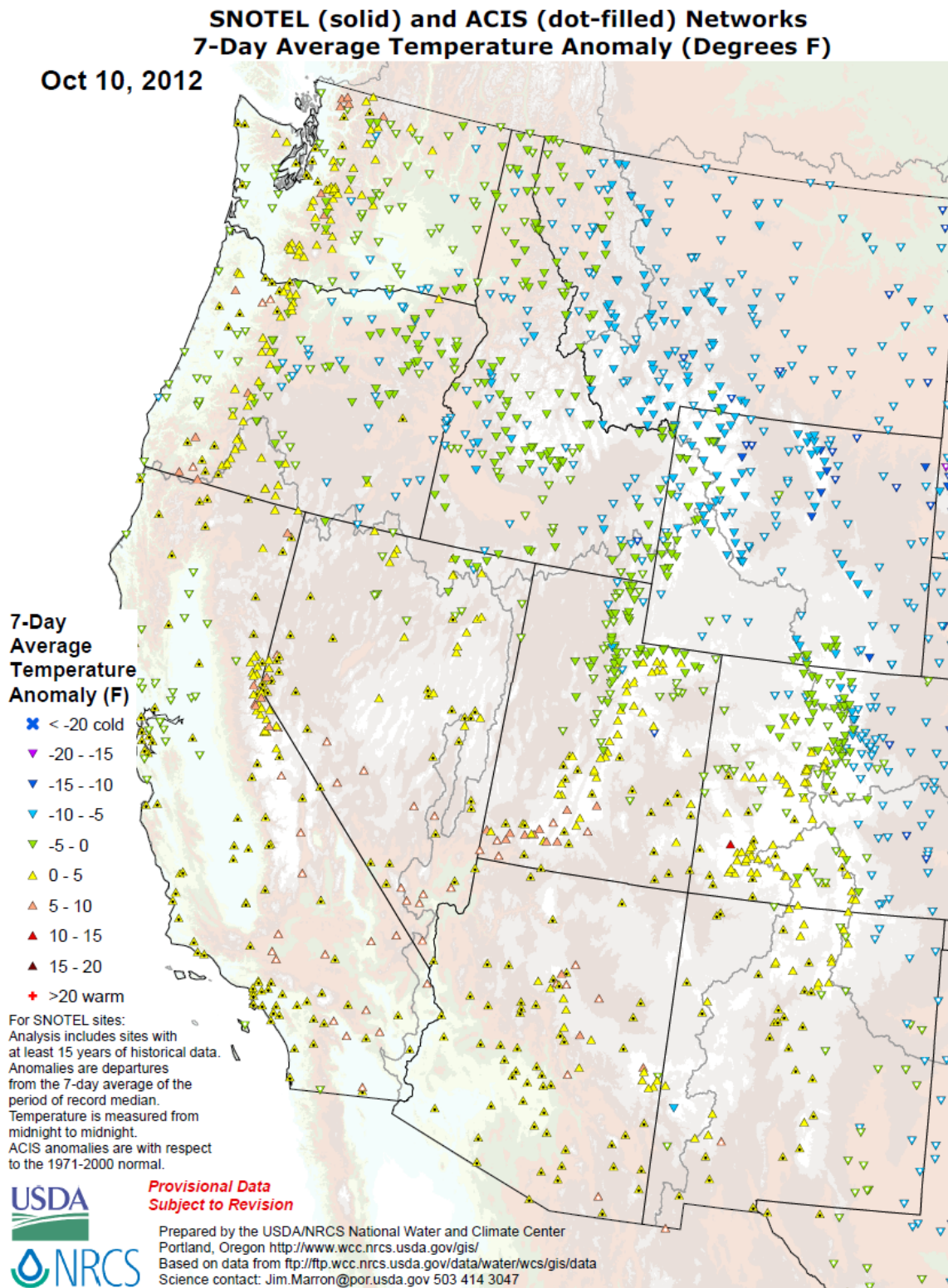
This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/

Micheal L. Golden

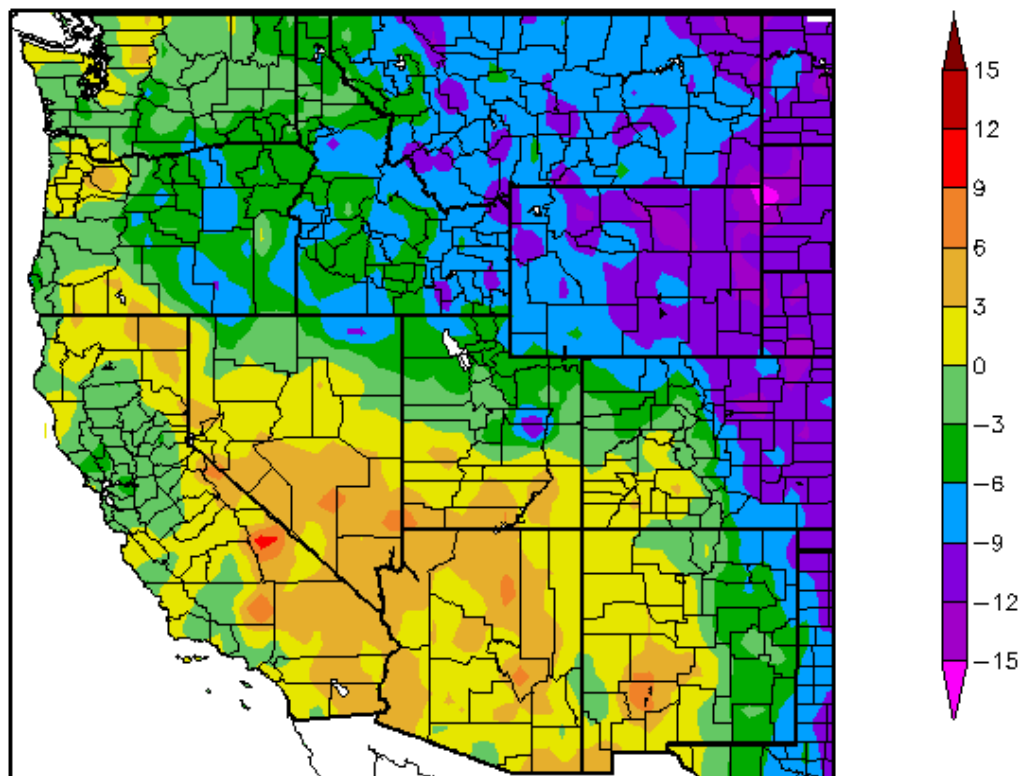
Deputy Chief, Soil Survey and Resource Assessment

## Weekly Snowpack and Drought Monitor Update Report



**Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 10 October shows very cool conditions over the Western High Plains and Northern Rockies while more seasonal temperatures prevailed over the Southwest and West Coast States (Cascades westward).**

Departure from Normal Temperature (F)  
10/4/2012 – 10/10/2012



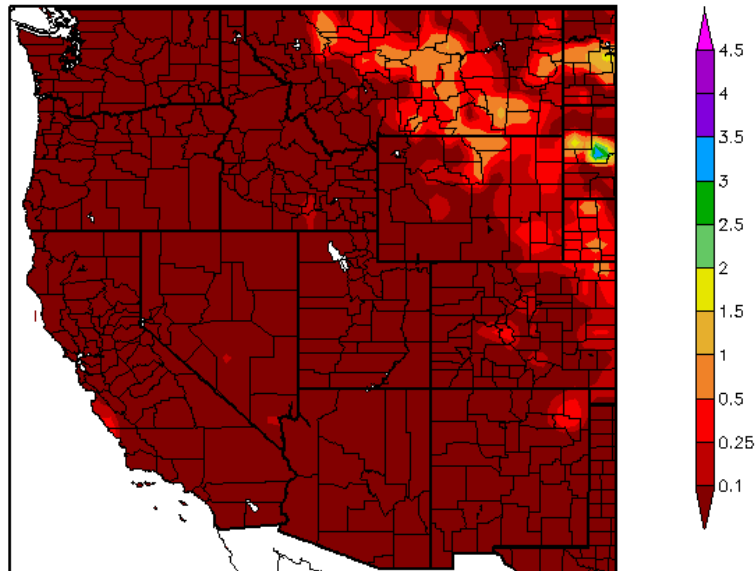
Generated 10/11/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 1a:** ACIS 7-day average temperature anomalies show the greatest positive temperature departure over parts of the Upper California desert (**>+9°F**). The greatest negative departures occurred over the Black Hills of Wyoming and South Dakota (**<-15°F**).

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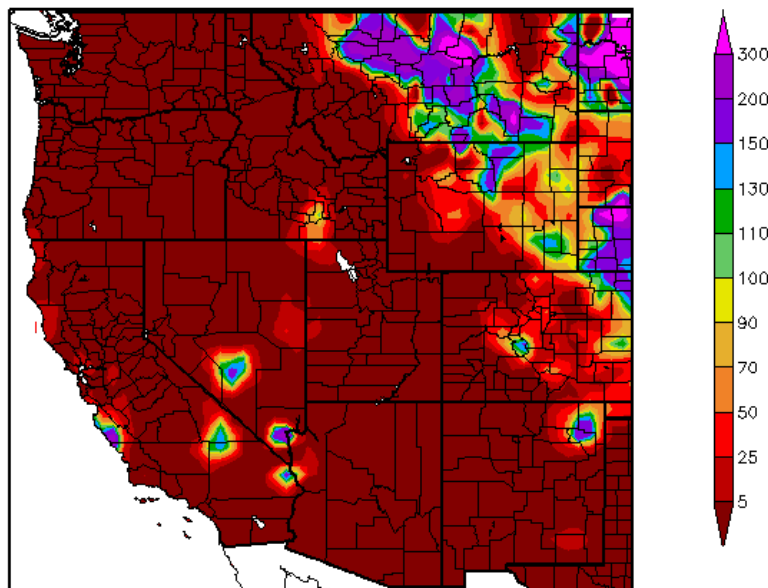
Precipitation (in)  
10/4/2012 – 10/10/2012



Generated 10/11/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
10/4/2012 – 10/10/2012



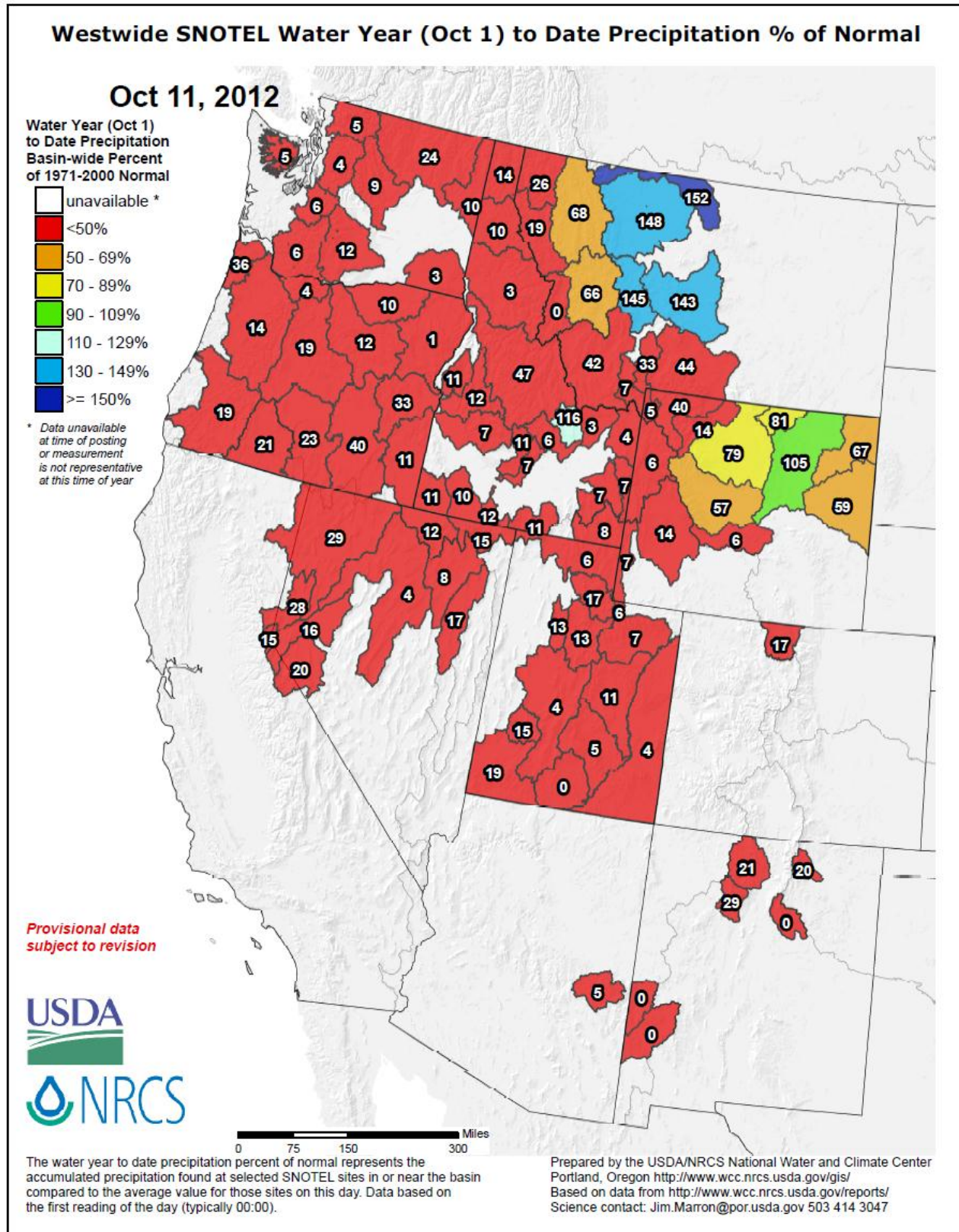
Generated 10/11/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 2 and 2a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows typical dry conditions for this time of year with the exception of heavy precipitation near the Black Hills (top). In terms of percent of normal, regions with any precipitation had high positive percentages due to normally low climatological amounts (bottom).**



## Weekly Snowpack and Drought Monitor Update Report



**Fig. 2b:** For the 2013 Water-Year that began on 1 October 2012, statistics will be unreliable for the next several weeks since this observing period is exceedingly short.

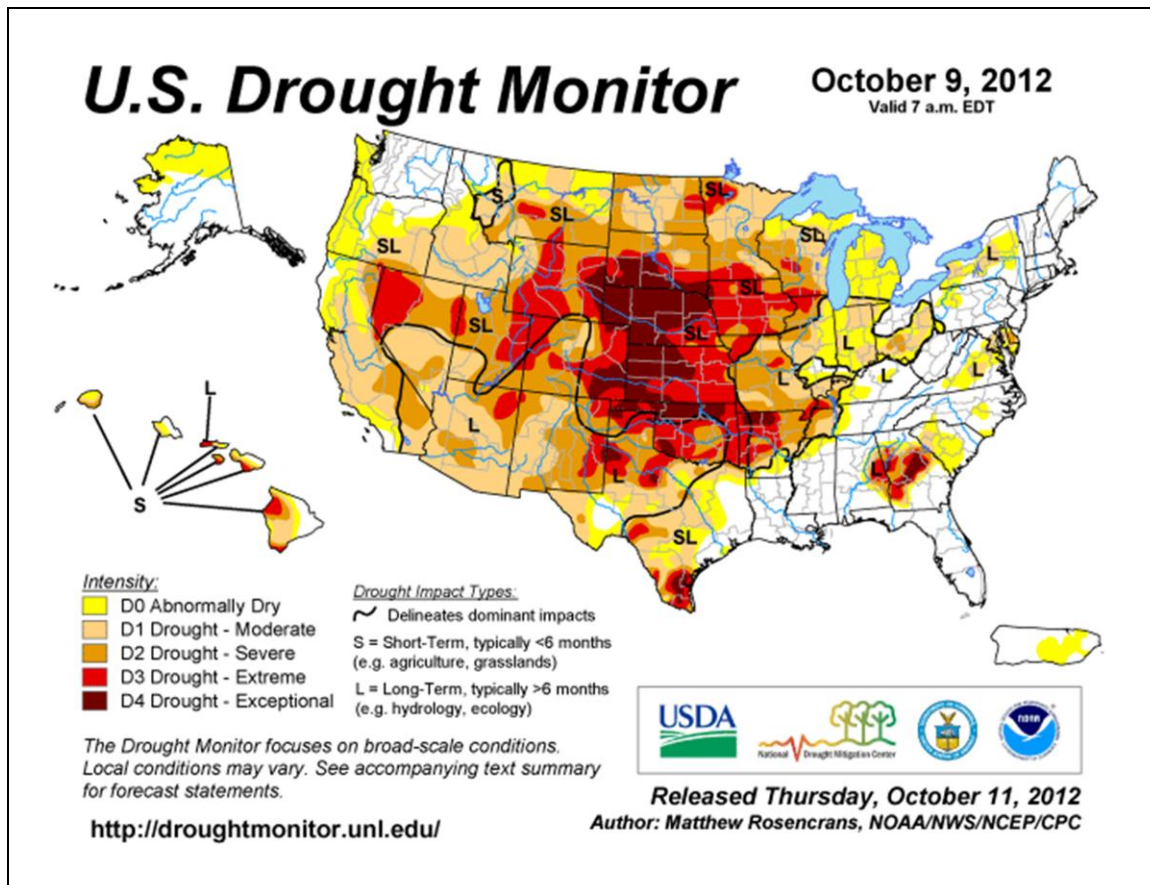


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and still scattered across the corn belt of the Central Plains into Colorado and Wyoming. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California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

## Agriculture

### [Bacon Shortage 'Baloney,' but Prices to Rise](#)

Oct 1, **US**. Prices for pork may rise as much as 10 percent in 2013, but there will be plenty of bacon and other pork products. Whew.

### [Calif dairies going broke due to feed, milk prices](#)

Sept 29, **California**. Higher prices for feed and low milk prices set by the California Department of Food and Agriculture were driving dairy farmers out of business. Nearly 300 California dairies have closed since 2008.

### [Drought crushes local beef industry in Hawaii](#)

Oct 4, **Hawaii**. Persistent drought was threatening ranchers' livelihoods in Hawaii because pastures were not growing and feed prices are high.

### [Drought Worsens in Some Key Midwest Farming States](#)

Oct 4, **Midwest**. The drought was slowing the emergence of winter wheat in at least five states.

### [FDA Grants Request to Blend Moldy Corn](#)

Oct 5, **Indiana**. Grain companies are able to use corn contaminated with low levels of aflatoxin mixed with feed for livestock.

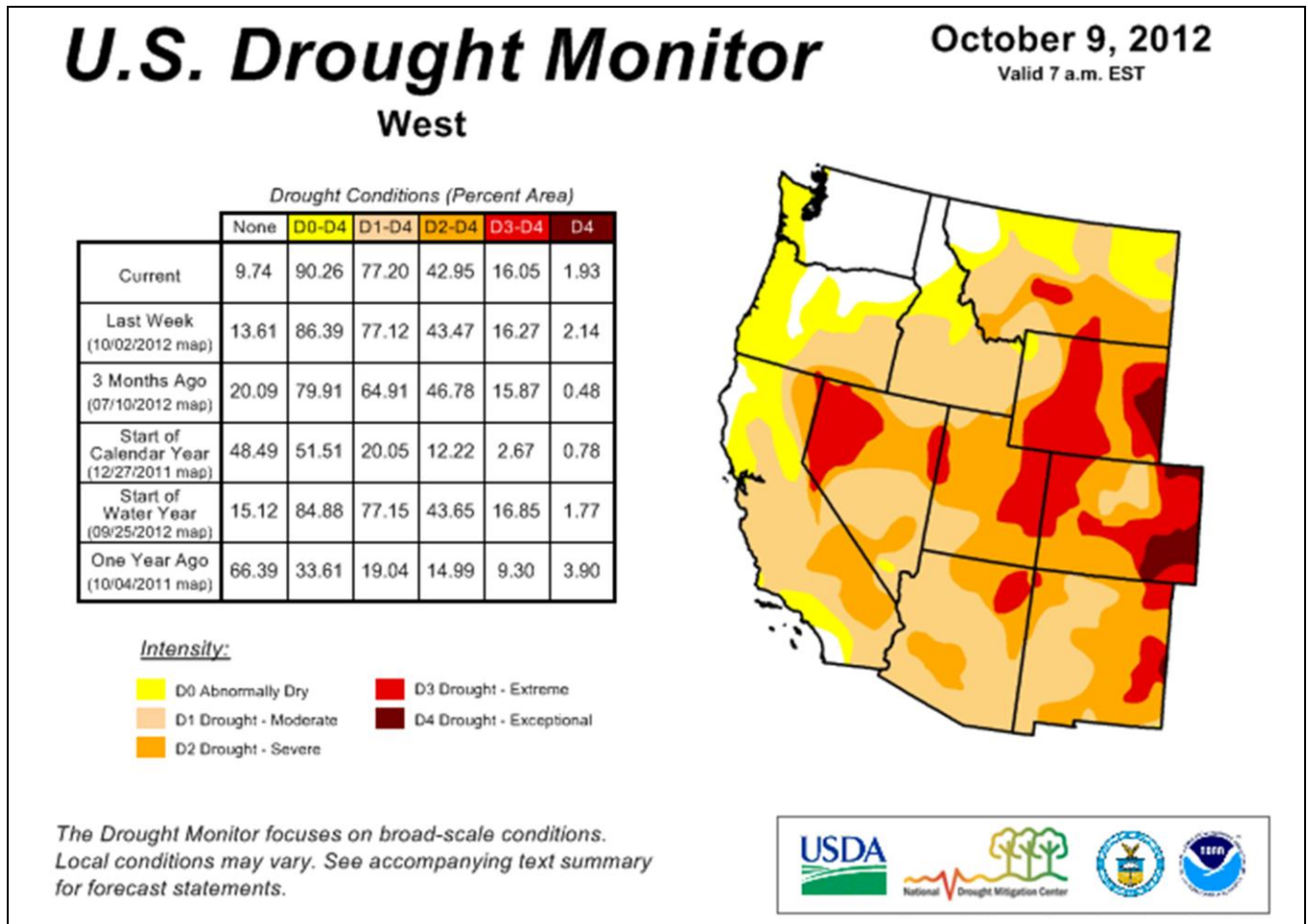


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Note a slight increase in D0 this week. D4 is holding around the 2% level.



## Weekly Snowpack and Drought Monitor Update Report

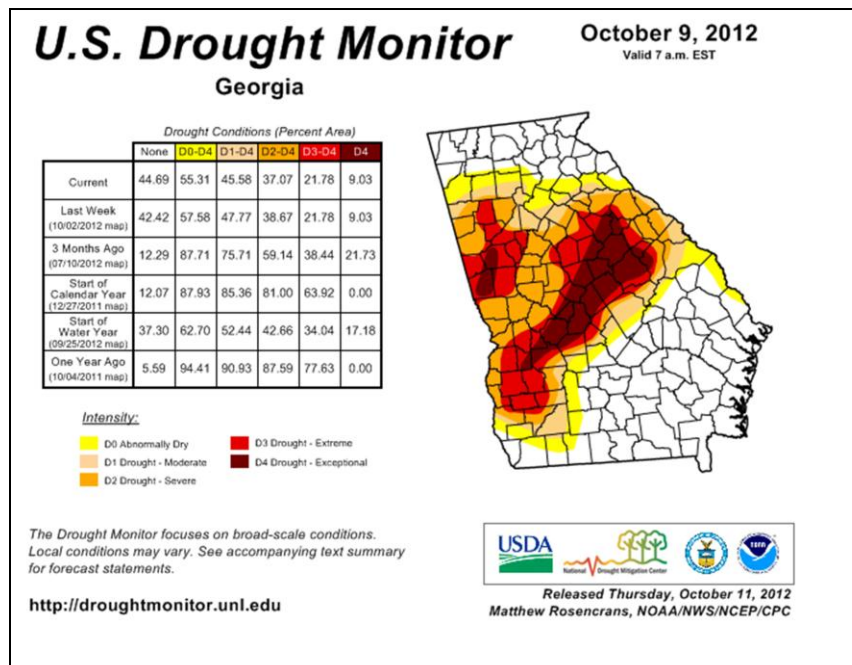


Fig. 3b: Drought Monitor for [Georgia](#) with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions that are holding at (~9%). See the Weekly GrIDSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

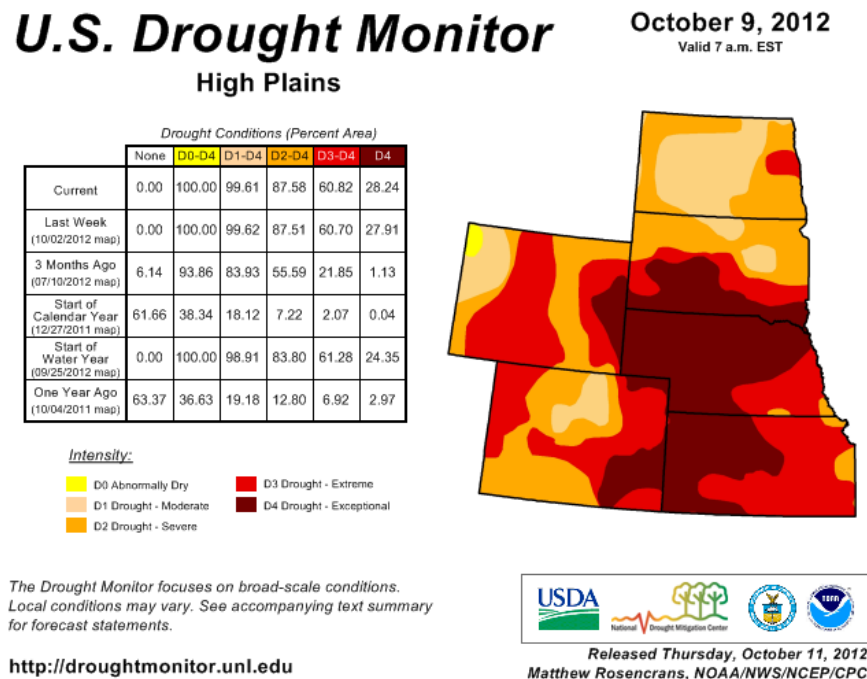


Fig. 3c: Drought Monitor for the [High Plains](#) with statistics over various time periods. Some further deterioration is noted this week. D4 is holding just over 28%.

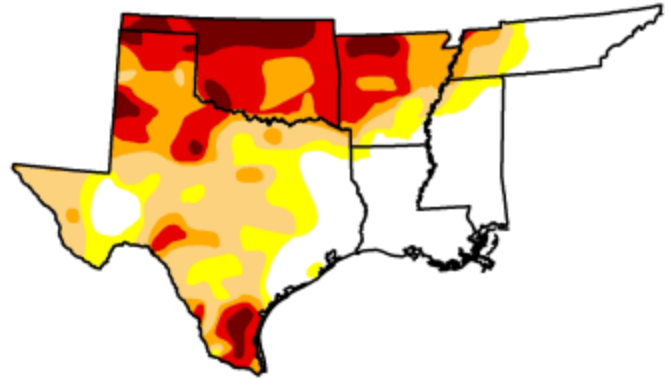
# U.S. Drought Monitor

## South

October 9, 2012

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.52	69.48	57.14	37.67	23.10	6.58
Last Week (10/02/2012 map)	28.17	71.83	60.13	38.85	23.18	6.27
3 Months Ago (07/10/2012 map)	10.01	89.99	73.67	40.06	14.06	0.33
Start of Calendar Year (12/27/2011 map)	26.47	73.53	69.01	54.81	39.11	17.15
Start of Water Year (09/25/2012 map)	24.13	75.87	66.61	51.50	29.86	9.11
One Year Ago (10/04/2011 map)	18.31	81.69	77.36	70.07	63.80	55.39



### Intensity:

<span style="color: yellow;">■</span> D0 Abnormally Dry	<span style="color: red;">■</span> D3 Drought - Extreme
<span style="color: orange;">■</span> D1 Drought - Moderate	<span style="color: darkred;">■</span> D4 Drought - Exceptional
<span style="color: brown;">■</span> D2 Drought - Severe	

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

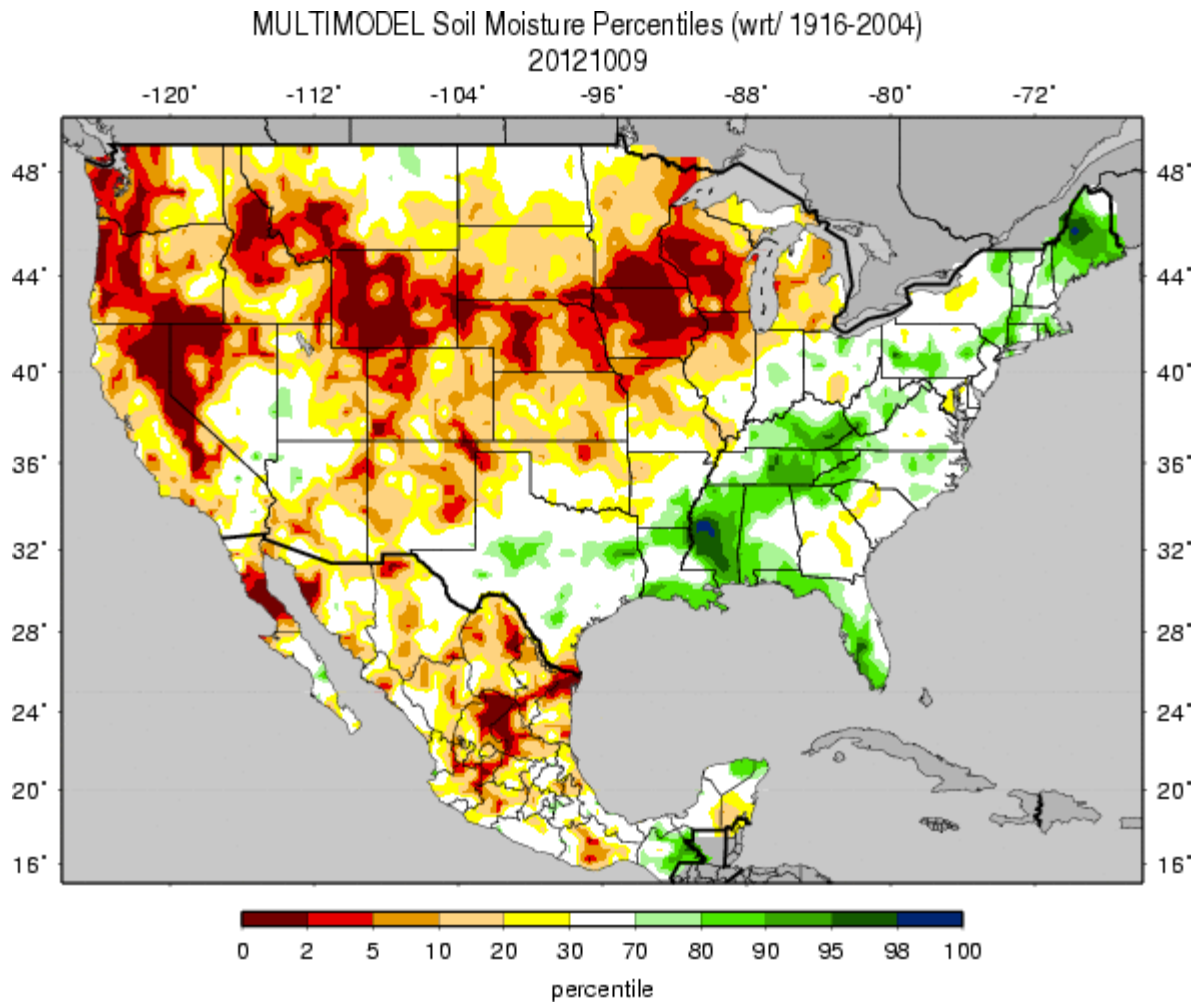
<http://droughtmonitor.unl.edu>



Released Thursday, October 11, 2012  
Matthew Rosencrans, NOAA/NWS/NCEP/CPC

Fig. 3e: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note significant changes this week. D4 is holding near 6.5% of the total area in this region.

## Weekly Snowpack and Drought Monitor Update Report



**Figs. 4:** Soil Moisture ranking in [percentile](#) as of 9 October shows dryness over much of the Northern and Central Rockies, Central High Plains (including Iowa and now Wisconsin), northern California, the Western Great Basin, and now western Oregon and Washington.

### *Useful Hydrological Links:*

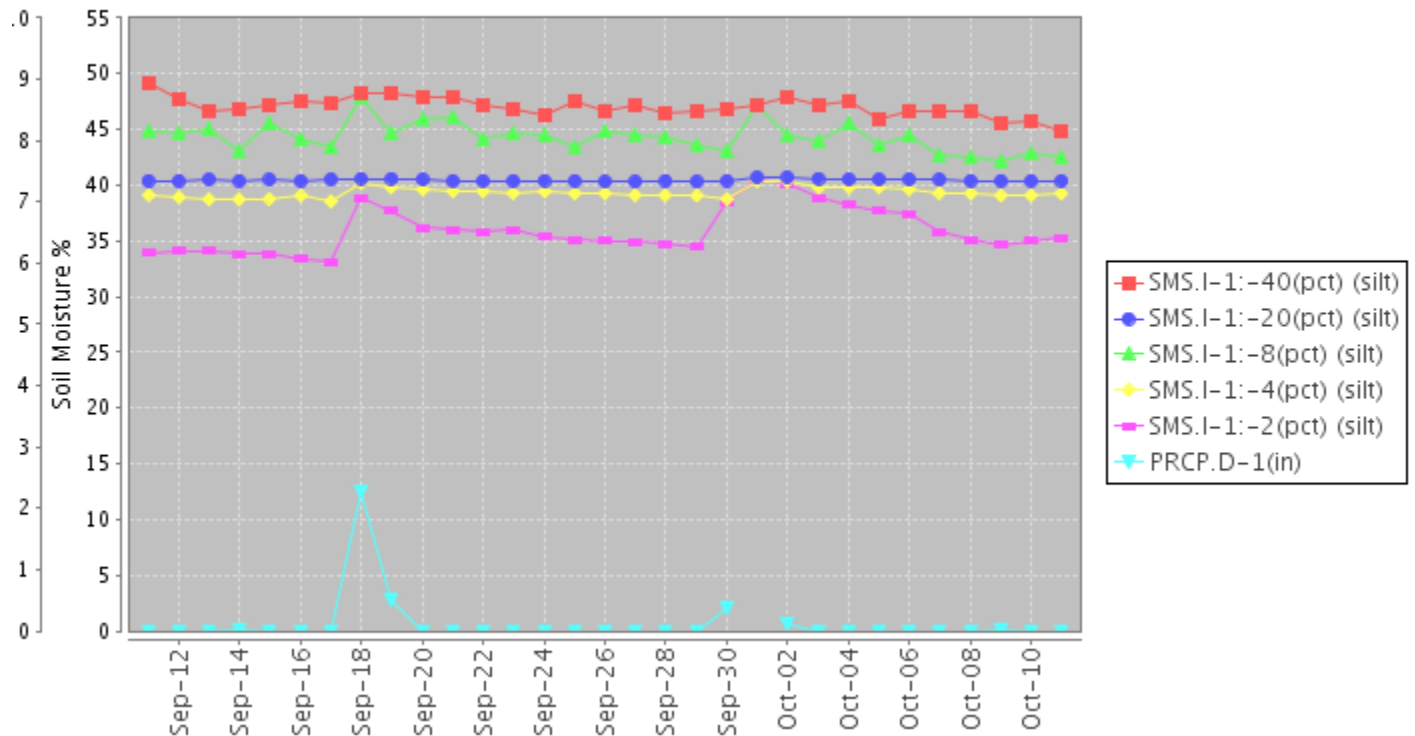
USDA western U.S. mountain snow water content anomaly map.

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](#).

## Weekly Snowpack and Drought Monitor Update Report

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

(2033) MONTH=2012-09-11 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision  
Thu Oct 11 07:28:24 PDT 2012



**Fig. 5:** This NRCS resource shows a site over the [western Mississippi](#) with very moisture soil conditions at all depth due to Hurricane Isaac in early September and reinforced again with heavy rains on 18 September.

#### 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);



## Weekly Snowpack and Drought Monitor Update Report

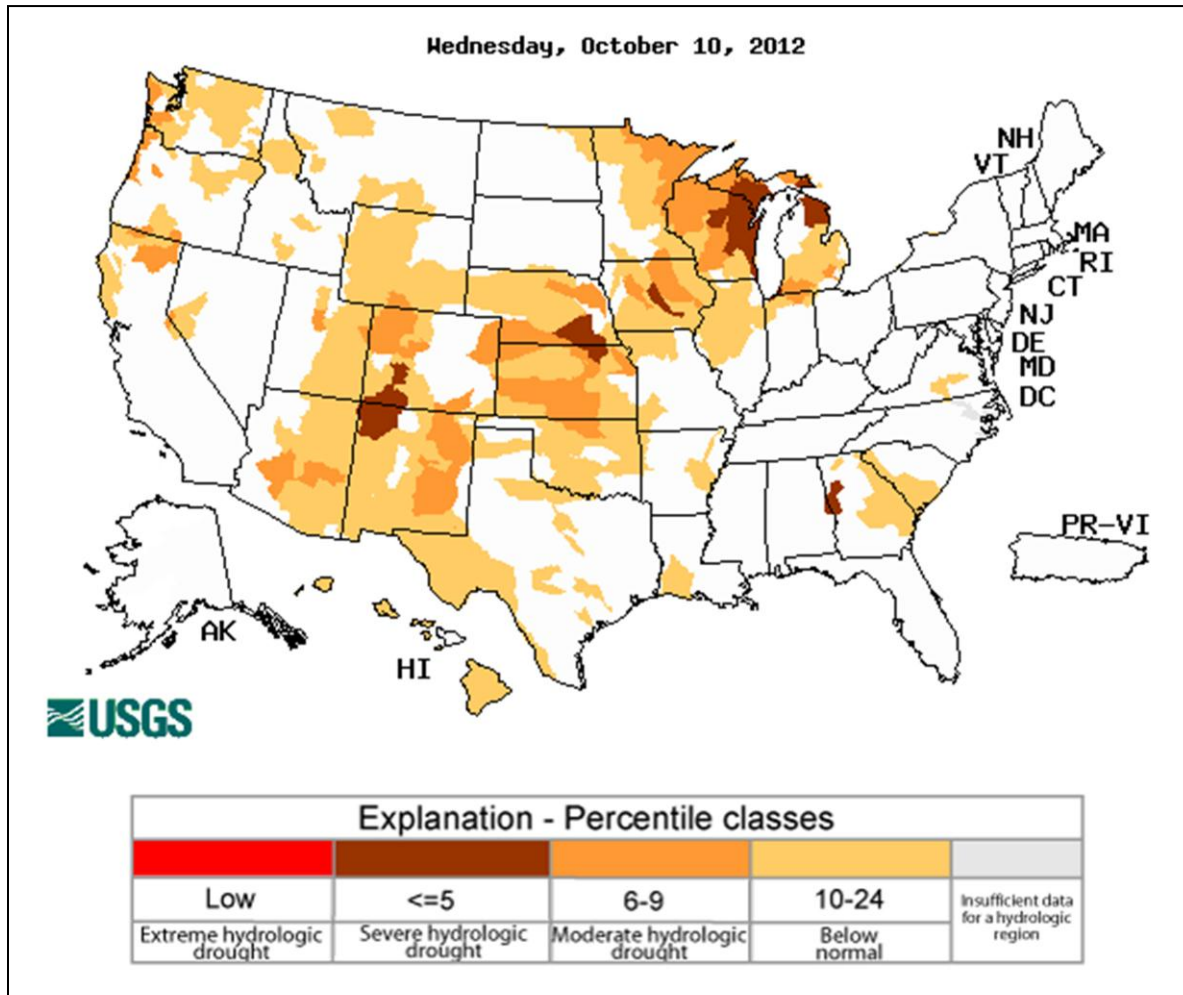


Fig. 6: Map of below normal 7-day average **streamflow** compared to historical streamflow for the day of year. **Severe** conditions exist over parts of northern Kansas and east Nebraska, Wisconsin, Iowa, northwest Minnesota, northern Michigan, and South Carolina. See new USGS [National Water Information System Mapper](#).

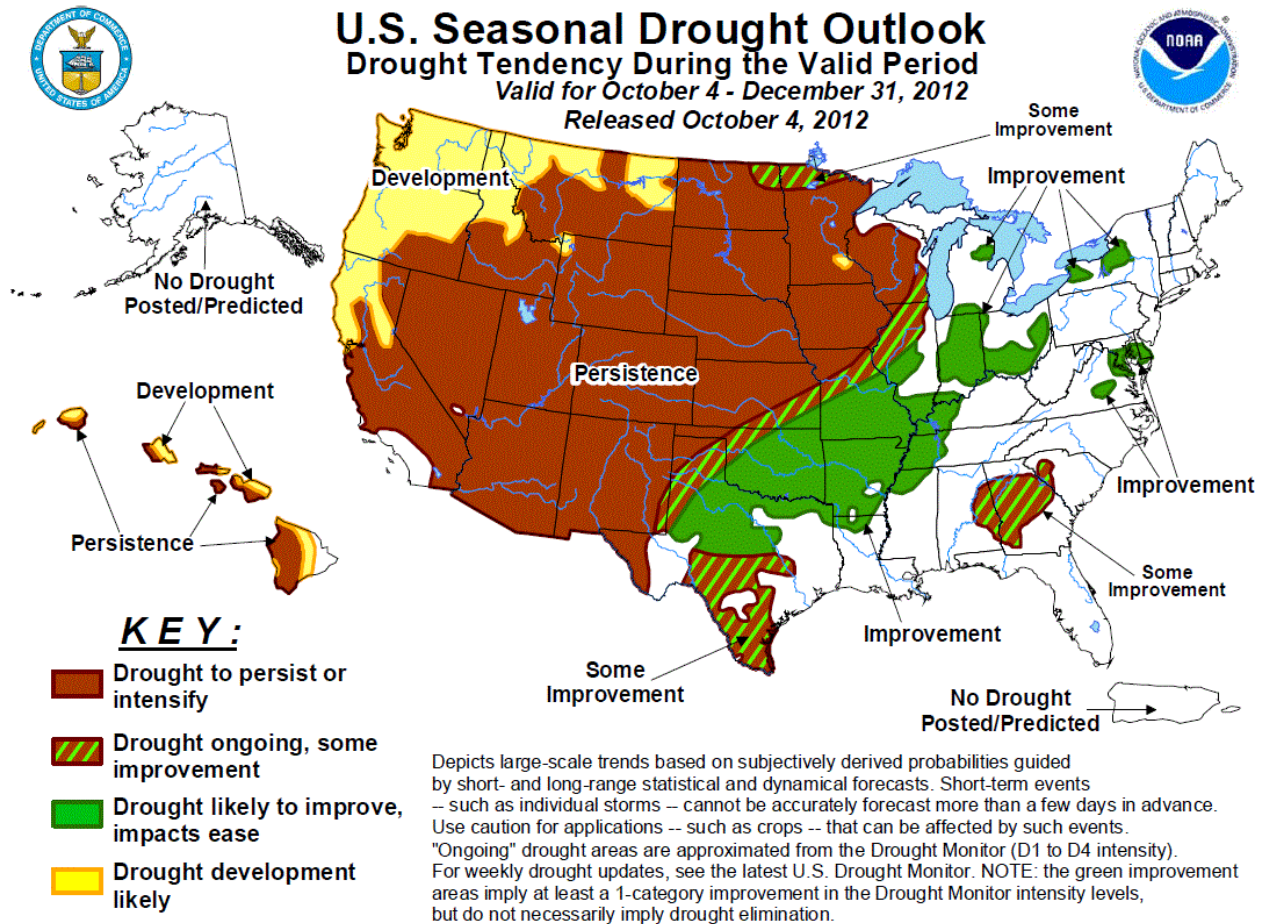


Fig. 7: [U.S. seasonal Drought Outlook](#) released today (4 October 2012).

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- October 9, 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/>.

**Weekly Summary:** The past week featured a series of low-pressure systems that moved across the northern tier of the contiguous 48 states, with their associated cold fronts moving southward to the gulf coast. These cold fronts brought some rains to portions of the contiguous 48 states, with the heaviest amounts across the northern Great Plains, Mid-west, Mid-Atlantic, and Florida. Most of the areas that are west of the Rockies remained dry this week, under the influence of a persistent upper-level ridge. According to the United State Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS) below-normal temperatures were observed for most of the central portions of the contiguous U.S., with above-average temperatures over much of Alaska.

**The Northeast and mid-Atlantic:** The depiction of abnormally dry conditions (D0) across the Great Lakes region of New York was modified in response to light-to-moderate rains (0.5 -1 .5 inches). Near the eastern shores of Lake Ontario, the area of D0 was trimmed, while slight expansion was included just east of the Rochester area. Farther south, across central Maryland and northern Virginia, drought and dryness were removed from the depiction due to recent rains (some reports of approximately 3.0 inches across central Maryland with lighter amounts over northern Virginia). Additional improvements were made across the Delmarva (Accomack County) in response to recent rains. According to the National Weather Service, Advanced Hydrologic Prediction Service (AHPS), over 3.0 inches fell on this county during the last 30 days, pushing the 60-day totals to greater than 100% of normal.

**The Ohio Valley:** The recent wet pattern allowed for widespread removal of drought and dry conditions across the Ohio Valley. Based on near-normal precipitation during the past 30, 60, and 90-day periods, burn bans being lifted, and stream flows getting closer to normal, severe drought (D2) was removed from southern Indiana. Additional improvements were made across southern Illinois, based on the National Agricultural Statistics Service (NASS) report for this week, which reported 100% of the agricultural topsoil was in the adequate to surplus range. For subsoil, the report indicated moisture was 0% in very short and 29% short. Improvements also extended into Kentucky, which, despite a dry week this past week, has experienced a wet pattern during much of the past 30 days (some areas received over 8 inches of precipitation).

**The Southeast:** Some improvements (the removal of drought depiction) were made across northern Georgia. The past 7 days were relatively dry across much of the state, while the improvements were made based on cumulative rains during the past 30 days. Rainfall totals from Gwinnett to Hall to Hart Counties during the past 30-days are above-average, but an overall dry pattern for the long-term limited the scope of the removal of drought and dryness. No large changes were made across the Carolinas or Alabama.

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**The lower Mississippi/Delta area:** As part of a reassessment of conditions, moderate drought (D1) and abnormal dryness (D0) were almost completely removed from Louisiana. Additional removals of drought designations were pursued across southeastern Arkansas and Tennessee, based on 30 and 60-day rainfall totals (above-average) and SPI values out through 24 months, which indicate normal or wet conditions for time periods less than 6 months across eastern Tennessee, most of Mississippi, and southeastern Arkansas.

**The Central and Southern Plains:** Minor changes were made to the depictions across Texas, Oklahoma, and Kansas. Continued dry conditions prompted the expansion of drought conditions across Oklahoma and central Kansas. Across Kansas, continued dry conditions prompted the expansion of extreme drought conditions to cover the entire south-central portions of the state. Impacts range from agricultural (Kansas winter wheat was at 65% planted by Sunday, slightly ahead of average, however, it was only 25% emerged, which is below average) to ecological (the Cheyenne Bottoms Wetlands had seen a dramatic reduction in coverage of water).

Farther north, reports out of Nebraska had less than one-third of winter wheat fields as emerged, 12 days behind average. Across Missouri, rainfall totals ranging from 0.5-1.4 inches did little to alleviate severe and extreme (D3) drought conditions, so no changes were made.

**The Upper Great Lakes and Northern Great Plains:** Rainfall amounts that varied from 0.2 inch to 1.8 inches were recorded across North Dakota and northwestern Minnesota, which prompted some removal of severe (D2) and extreme (D3) drought. Those rains did not translate eastward, and little to no rain fell across Wisconsin during the reporting period for this week's U.S. Drought Monitor. Accordingly, severe drought conditions were expanded across central Wisconsin and southeastern Minnesota.

Exceptional Drought (D4) coverage was increased over central South Dakota. Below-normal temperatures may have helped to reduce evaporation concerns, but no precipitation fell east of the badlands. Extreme drought and severe drought were also expanded, with severe drought now covering almost every county in South Dakota. Across the lower terrain of northern Montana, abnormally dry conditions expanded northward to cover the remaining portions of the state, east of the continental divide. The drought designation across northwestern Montana was changed to "S" as most impacts are of the types typically associated with droughts less than 6 months.

**The Rockies:** Minor revisions were made this week over Colorado, where 1-category improvements were made over the northeastern portions of the state. The improvements were based on recent beneficial moisture, which has continued to accumulate. Impacts in drought-stricken areas have lessened slightly. Standardized precipitation indices (SPIs) are positive through 90 days along the Front Range, so a reduction to D1 was included in this week's depiction. Extreme drought (D3) was trimmed to accommodate and the D4 was reduced, now limited mostly to the far northeast corner of CO where long-term SPIs are still below -2.0.

**The Southwest:** No changes were made to the regional depiction this week.

**The Pacific Northwest:** Abnormal dryness (D0) was expanded across western portions of



## Weekly Snowpack and Drought Monitor Update Report

Oregon and Washington. Ongoing fires are an indication that the wet season has yet to begin across this region.

**Alaska, Hawaii, and Puerto Rico:** No changes were pursued to the drought depiction across Hawaii. Minor trimming was performed on the abnormal dryness (D0) area over Puerto Rico that received significant rains (1.0 – 2.4 inches). Likewise, minor adjustments to the depiction of D0 were included in this week's Drought Monitor to reflect where precipitation amounts exceeded 1.0 inch.

**Looking Ahead:** In the ensuing 5 days, National Weather Service forecasts call for a fairly wet pattern across the northern tier of the contiguous 48 states. Particularly wet conditions are likely across the Pacific Northwest and from the central Great Plains to the Great Lakes. Minimal amounts of rainfall are likely across the Southeast and Mid-Atlantic.

During the 6-10 day period, the outlooks from the Climate Prediction Center indicate enhanced odds for below-average temperatures across southern Alaska and the Pacific Northwest, with enhanced odds of above-average temperatures elsewhere. Wetter than average conditions are more likely across the Pacific Northwest, northern Great Plains, and from the Great Lakes to the central Gulf Coast. Dry conditions are more likely than normal across the southern Rockies and southern High Plains.

**Author:** [Matthew Rosencrans, NOAA/NWS/NCEP/CPC](#)

### 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

### Drought or Dryness Types

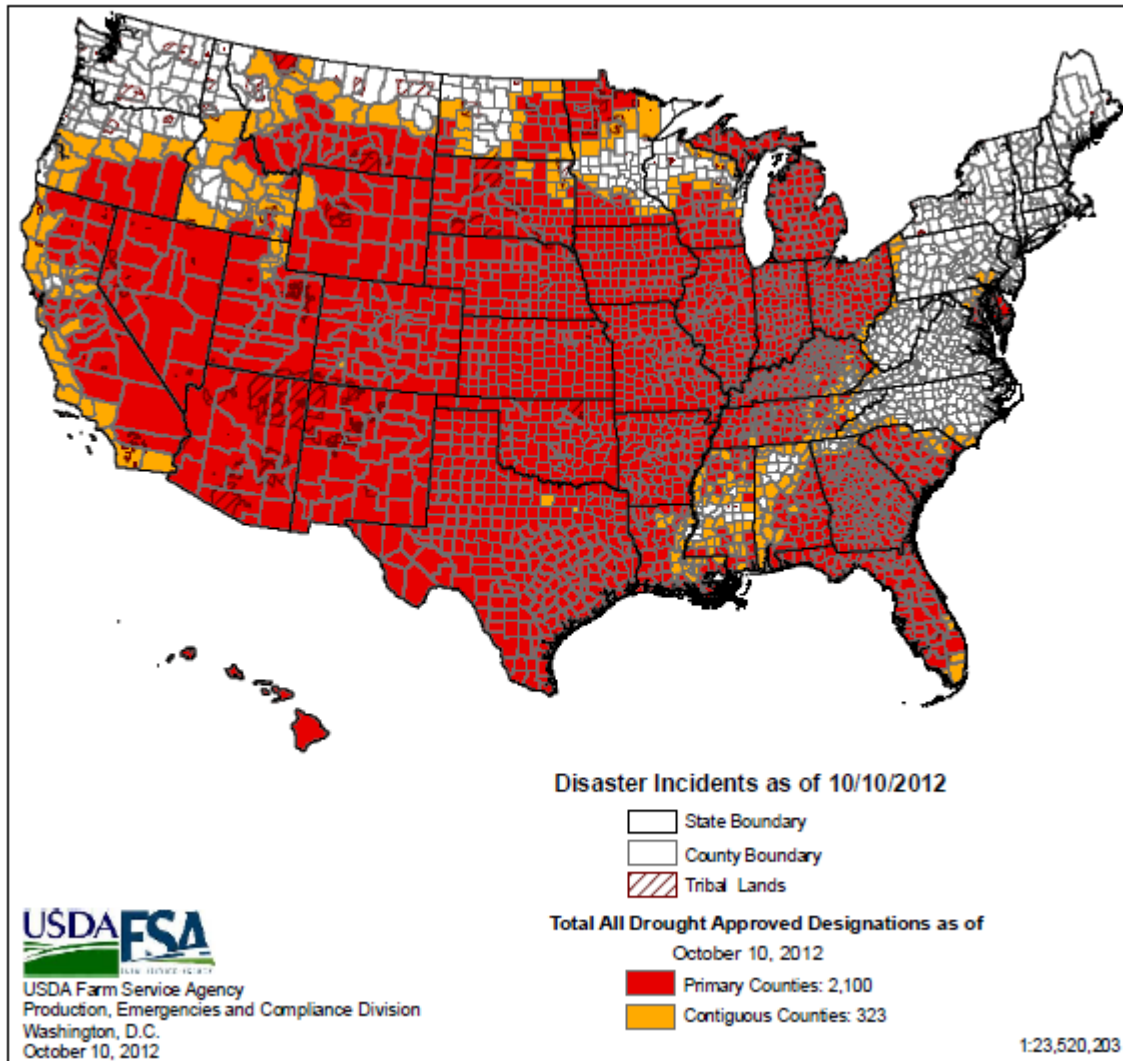
S ... Short-Term, typically <6 months (e.g. agricultural, grasslands)

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

*Updated October 10, 2012*

**See latest USDA Drought Designations Map below.**

## 2012 Secretarial Drought Designations - All Drought



For more information, click [here](#).