



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 18 October 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 17 October shows warm conditions over the Pacific Northwest and Northern Rockies while more seasonal temperatures prevailed elsewhere across the West (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departure over south-central Oregon and southwest Wyoming (>+8°F). The greatest negative departures occurred over an area from central California to Lake Mead (<-3°F). The cold data point south of Utah's Uintah Mountains appears to be a bad report (Fig. 1a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the start of the rainy season over the Pacific Northwest while the effects from a transiting upper level low pressure system can be traced over the Southern Great Basin (Fig. 2). In terms of percent of normal, quite a lot of precipitation fell across the West although area regions missed out (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.

Weekly Summary: During the past week, two storm systems impacted the contiguous 48 states, with the cold front associated with the first storm system bringing generally light rains to areas from the northeast to the southern Great Plains. The second storm system developed along the western, trailing end of that cold front, and intensified rapidly over the central Great Plains. Before departing the country to the northeast, this system spread significant amounts of rain from the Panhandle of Oklahoma to the Upper Great Lakes. A cold front, associated with a low-pressure system over Canada, brought a round of precipitation to the Pacific Northwest. Puerto Rico was impacted over the weekend by the tropical cyclone that is now Hurricane Raphael.

The Rockies: Minor revisions were made this week over Colorado, where a 1-category improvement was made over Chafee and eastern Gunnison counties. Recent stream flow reports are showing a slight recovery, and some recent precipitation has been beneficial. Farther north, over Jackson, Larimer, and Grand counties, recent rains have provided some moisture, but not enough to move the needle away from widespread severe drought.

A slight expansion of severe drought (D2) conditions was included over central New Mexico, while some removal of drought conditions was depicted over southeast New Mexico. The past 6 months have been dry across over central New Mexico, but areas south of Hobbs and east of Carlsbad have received precipitation that measured 125 to 200+ percent of normal during September (monthly totals from 2.9 inches to 4 inches). Improvements were limited by the return to dry conditions during October.

The Southwest: Las Vegas now has its 26th wettest year on record even if no more precipitation was to fall for the rest of the year. Precipitation amounts in excess of 2.0 inches were recorded in a large number of locations on the west and north sides of Las Vegas during

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the past week (County Flood Control District automated gauges) Due to hail and the intensity of the rain, some stations were likely under-reporting precipitation totals. Advanced Hydrologic Prediction System (AHPS) maps show precipitation totaling 150-400 percent of normal from Mt Charleston to Lake Mead during the past 180 days, so widespread improvements to the drought conditions were indicated across this region.

The Pacific Northwest: Abnormal dryness (D0) was removed from much of western Washington and Oregon. Rainfall amounts exceeded 5.0 inches at many reporting stations across this region. Rains did push inland, across the northern Rockies and into western Montana, so some improvement was indicated there as well. 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

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>.

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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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SNOTEL (solid) and ACIS (dot-filled) Networks 7-Day Average Temperature Anomaly (Degrees F)

Oct 17, 2012

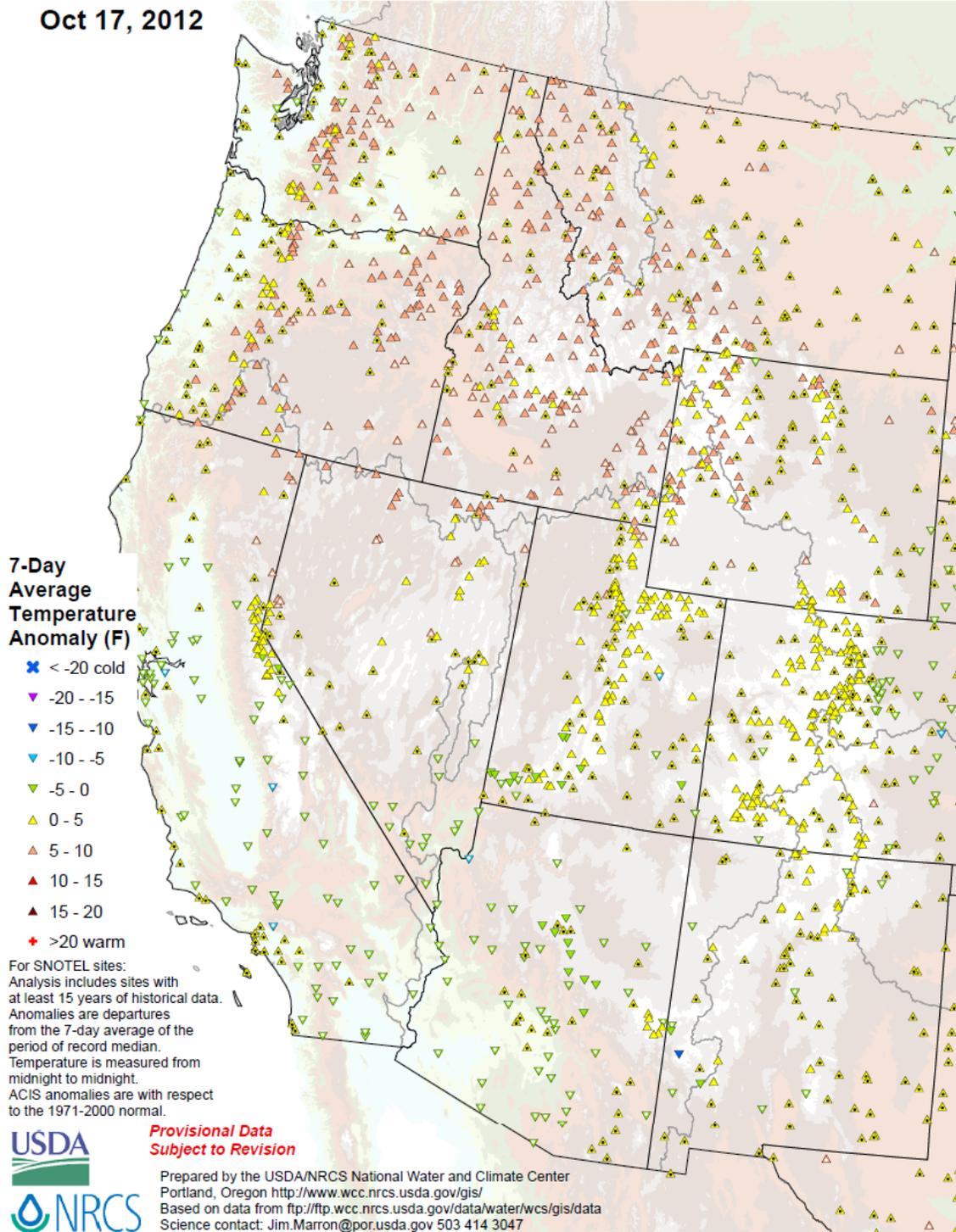
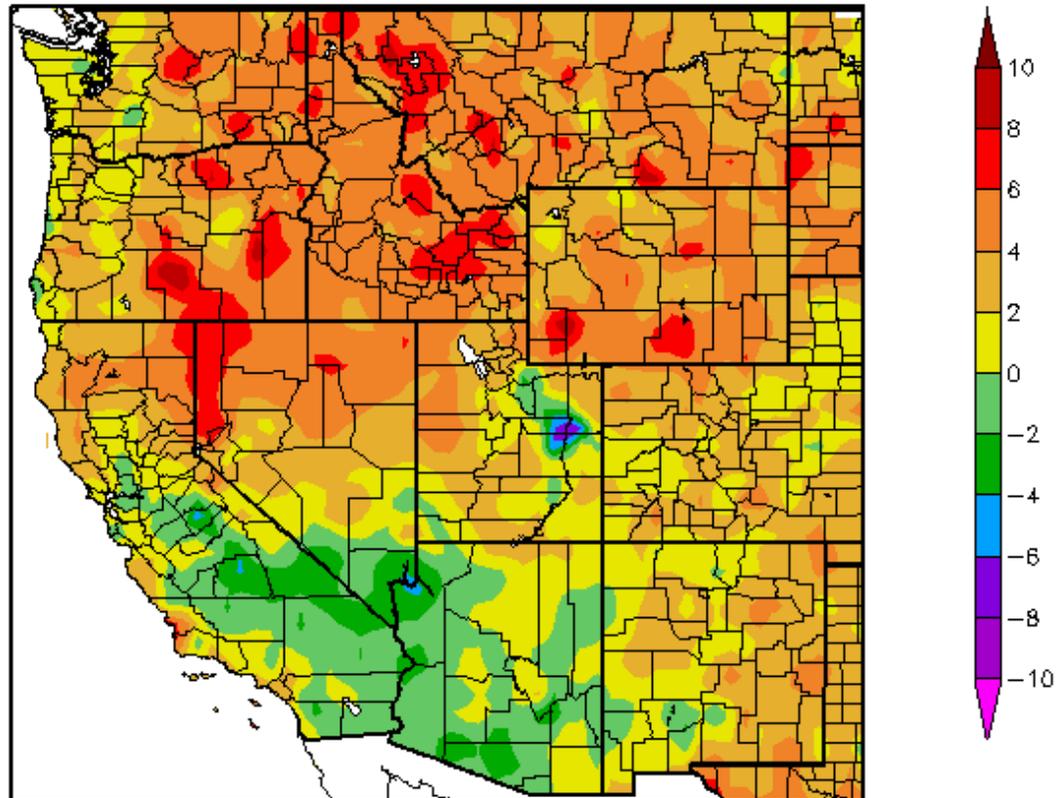


Fig. 1: **SNOTEL** and ACIS 7-day temperature anomaly ending 17 October shows warm conditions over the Pacific Northwest and Northern Rockies while more seasonal temperatures prevailed elsewhere across the West.

Departure from Normal Temperature (F)
10/11/2012 – 10/17/2012



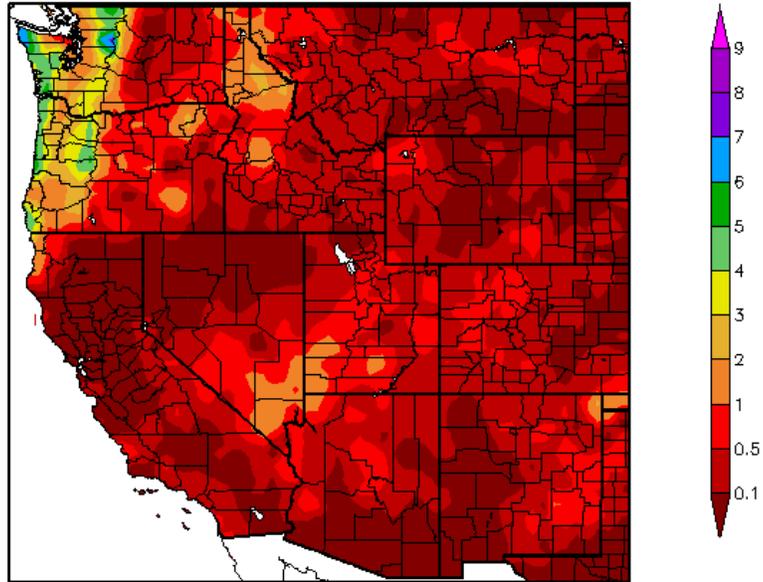
Generated 10/18/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departure over south-central Oregon and southwest Wyoming (>+8°F). The greatest negative departures occurred over an area from central California to Lake Mead (<-3°F). The cold data point south of Utah's Uintah Mountains appears to be a bad report.

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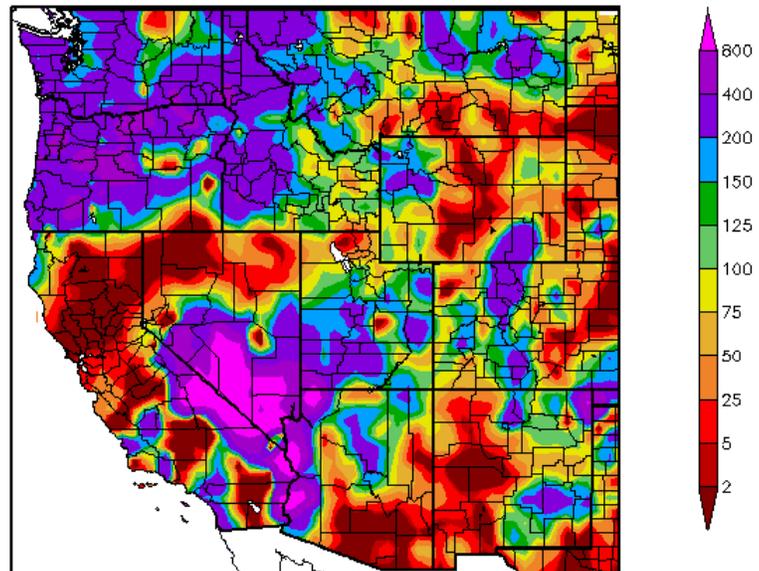
Precipitation (in)
10/11/2012 - 10/17/2012



Generated 10/18/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
10/11/2012 - 10/17/2012



Generated 10/18/2012 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 start of the rainy season over the Pacific Northwest while the effects from a transiting upper level low pressure system can be traced over the Southern Great Basin (top). In terms of percent of normal, quite a lot of precipitation fell across the West although area regions missed out (bottom).

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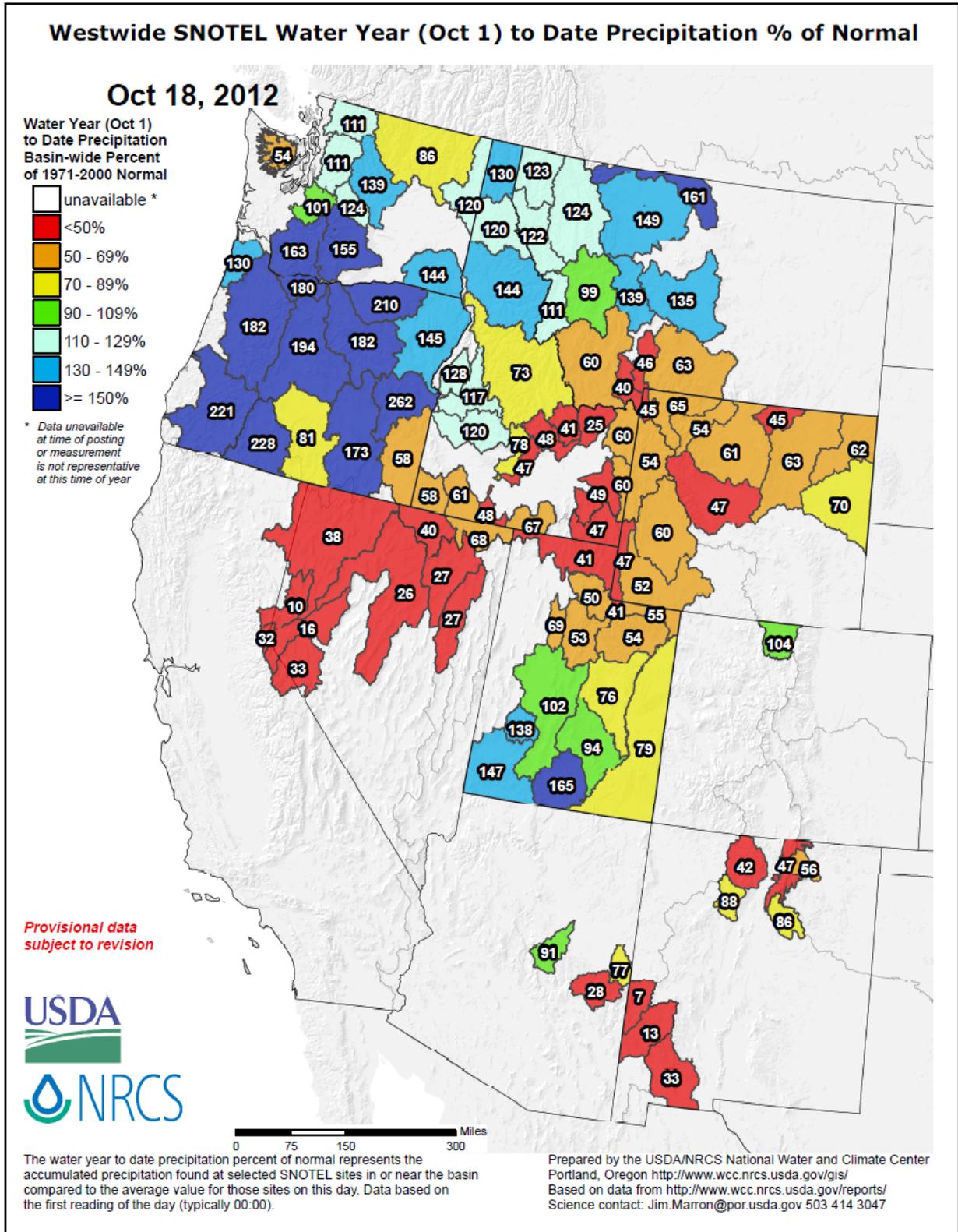


Fig. 2b: For the **2013 Water-Year** that began on 1 October 2012, statistics will be unreliable for the next several weeks since this observing period is exceedingly short.

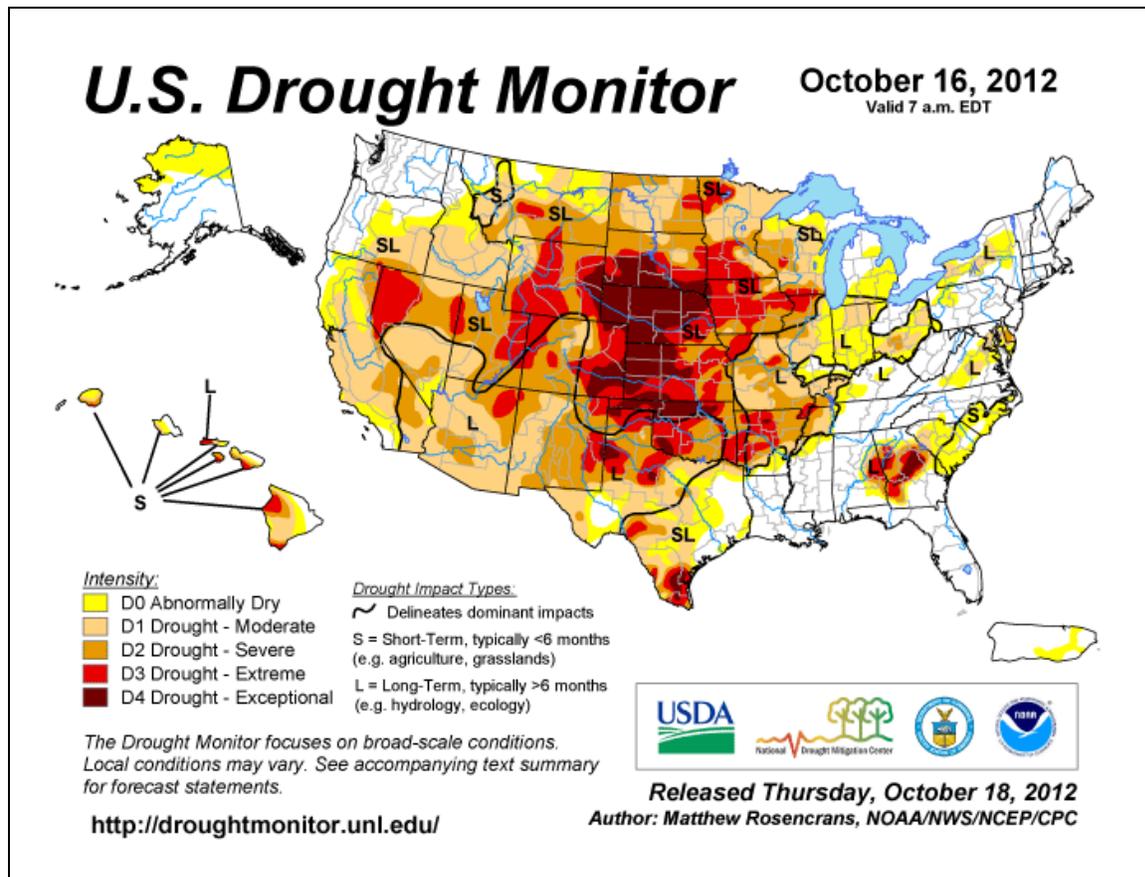


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and scattered across the corn belt of the Central Plains into Colorado and Wyoming and over southern Texas. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics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

Agriculture

[Drought Cuts U.S. Crops Below Demand First Time in 38 Years](#)

[Drought forces Montana ranchers to sell cattle early, at a loss](#)

[Drought leads to flood of claims](#)

[Drought takes toll on Siouxland pumpkin growers](#)

[Iowa farmers advised to let soil rest for the fall](#)

[Lack of rain is affecting Coulee Region's crops, rivers and groundwater](#)

[Midwest Drought Claims Poultry Producer](#)

[Pumpkin farmers have smashing crop despite drought](#)

[Top US agriculture negotiator expects farm exports to be down \\$1B to \\$2B because of drought](#)

[USDA REPORT: Crop Yields Down Due To Drought](#)

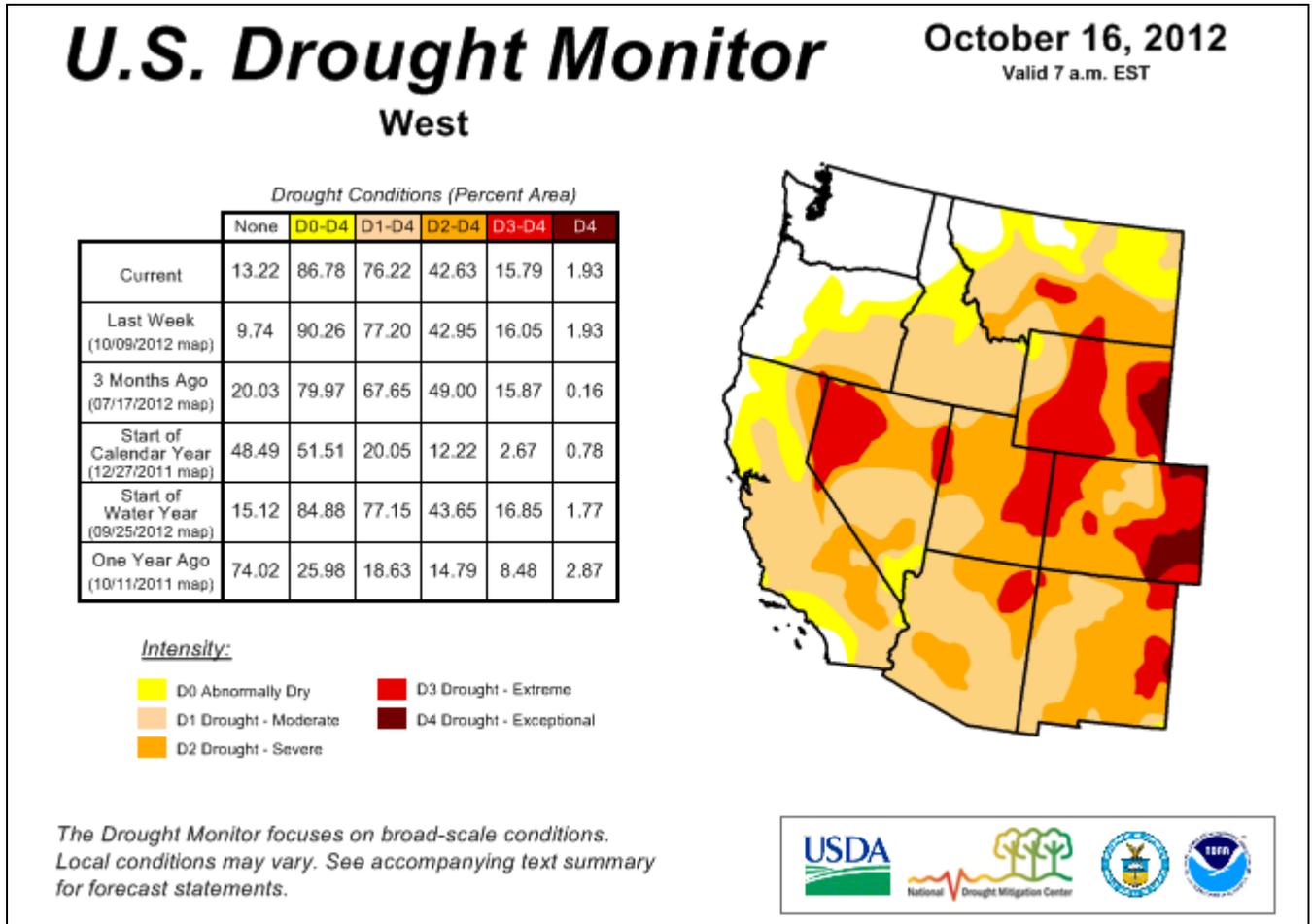
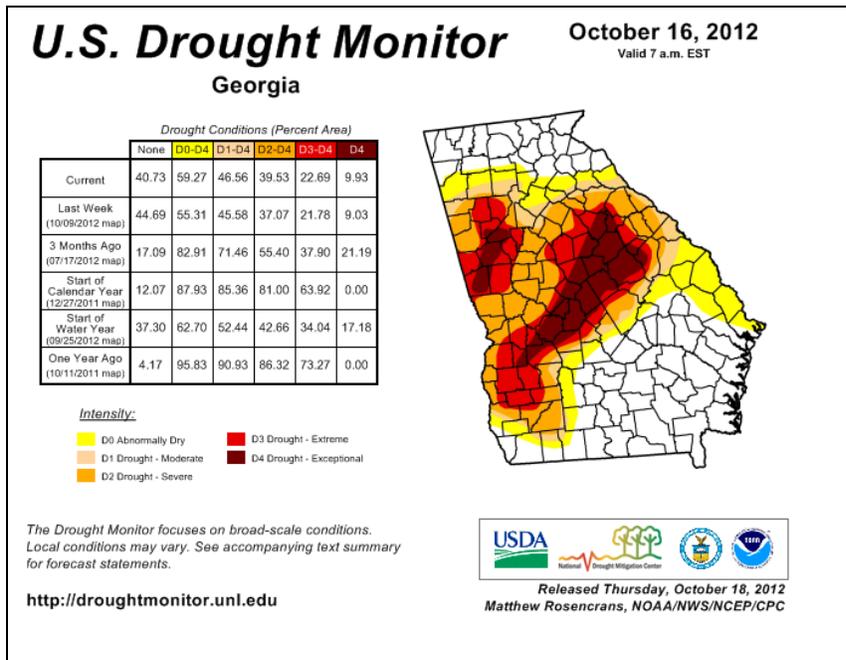


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Some minor improvement in D0 is noted this week. D4 is holding near 2%.

Weekly Snowpack and Drought Monitor Update Report



GA

According to the National Agriculture Statistics Service's Georgia Field Office, there were 6.1 days suitable for fieldwork for the week ending Sunday, October 14, 2012. Statewide topsoil moisture was rated at 7% very short, 35% short, 56% adequate, 2% surplus. Subsoil moisture 14% very short, 41% short, 44% adequate, 1% surplus. Precipitation estimates for the state ranged from no rain up to 2.5 inches. Average high temperatures ranged from the mid 60's to the low 80's. Average low temperatures ranged from the low 40's to the mid 60's.

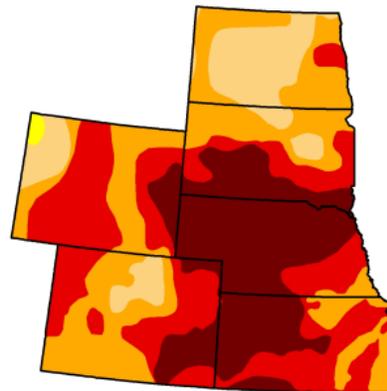
Fig. 3b: Drought Monitor for [Georgia](#) with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions that are deteriorating (~10%). See the Weekly GridSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

U.S. Drought Monitor

High Plains

October 16, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	99.60	87.42	57.81	27.44
Last Week (10/09/2012 map)	0.00	100.00	99.61	87.58	60.82	28.24
3 Months Ago (07/17/2012 map)	3.52	96.48	85.88	68.44	28.07	1.35
Start of Calendar Year (12/27/2011 map)	61.66	38.34	18.12	7.22	2.07	0.04
Start of Water Year (09/25/2012 map)	0.00	100.00	98.91	83.80	61.28	24.35
One Year Ago (10/11/2011 map)	71.42	28.58	17.42	12.10	5.52	2.57



Intensity:

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

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

<http://droughtmonitor.unl.edu>

USDA National Drought Mitigation Center
Released Thursday, October 18, 2012
Matthew Rosencrans, NOAA/NWS/NCEP/CPC

Fig. 3c: Drought Monitor for the [High Plains](#) with statistics over various time periods. Slight improvement is noted this week. D4 has decreased to 27.5%. See the latest [Kansas Drought Report](#).

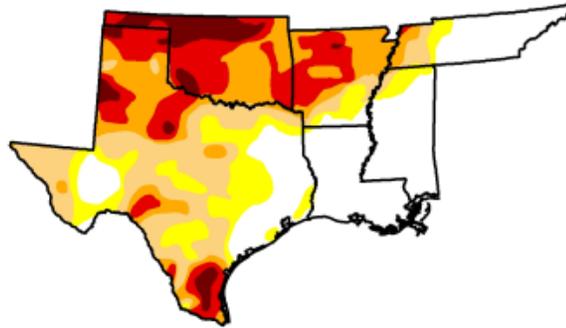
U.S. Drought Monitor

South

October 16, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.50	68.50	55.33	37.17	20.39	5.29
Last Week (10/09/2012 map)	30.52	69.48	57.14	37.67	23.10	6.58
3 Months Ago (07/17/2012 map)	17.29	82.71	68.69	40.29	13.63	1.09
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 (10/11/2011 map)	13.64	86.36	78.80	70.71	62.22	47.03



Intensity:

- D0 Abnormally Dry
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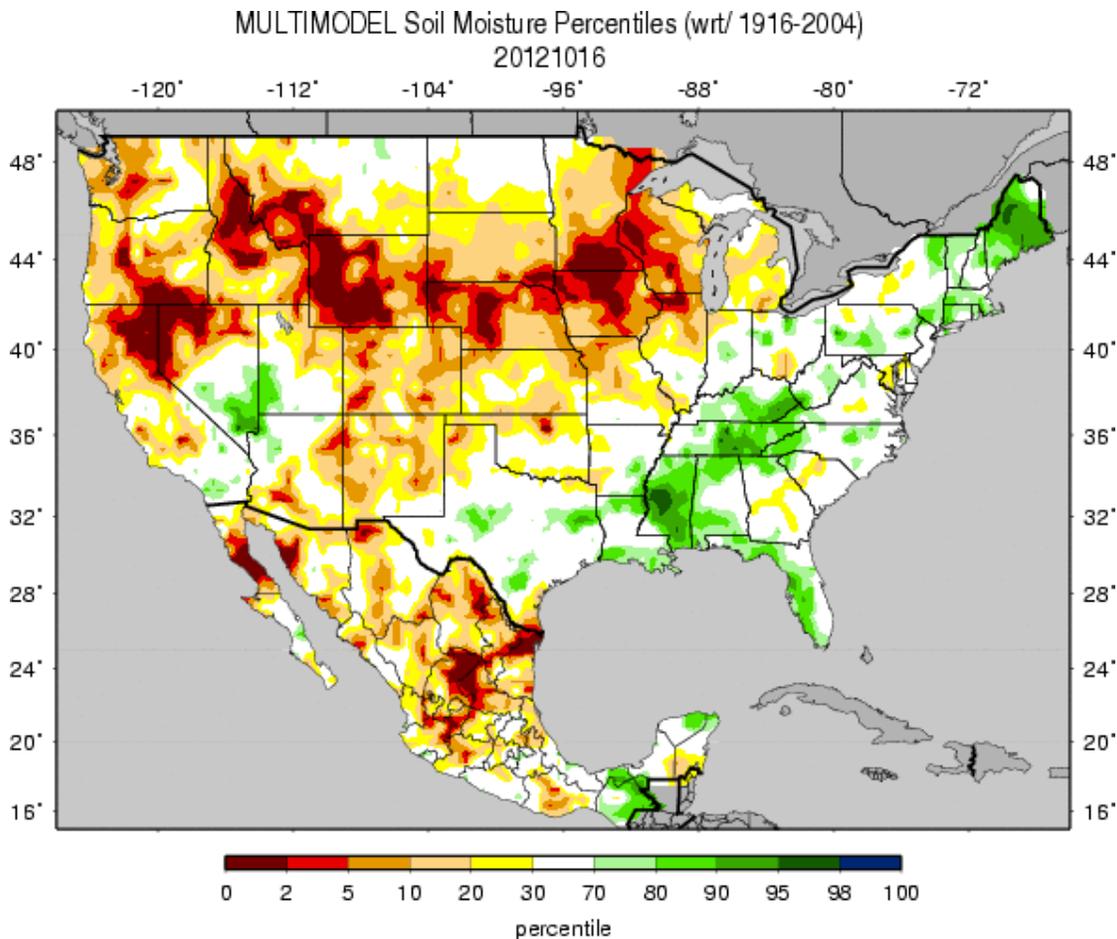
<http://droughtmonitor.unl.edu>



Released Thursday, October 18, 2012
Matthew Rosencrans, NOAA/NWS/NCEP/CPC

Fig. 3d: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note slight improvements in D3-D4 this week. D4 has fallen to ~5%.

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Figs. 4: Soil Moisture ranking in [percentile](#) as of 16 October shows dryness over much of the Northern and Central Rockies, Western High Plains (including Wisconsin), northern California, the Western Great Basin, and now encroaching over western Oregon and Washington although this region is expected to improve with the start of the winter rains and mountain snows.

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](#))

Station (2018) MONTH=2012-09-18 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Oct 18 07:12:33 PDT 2012

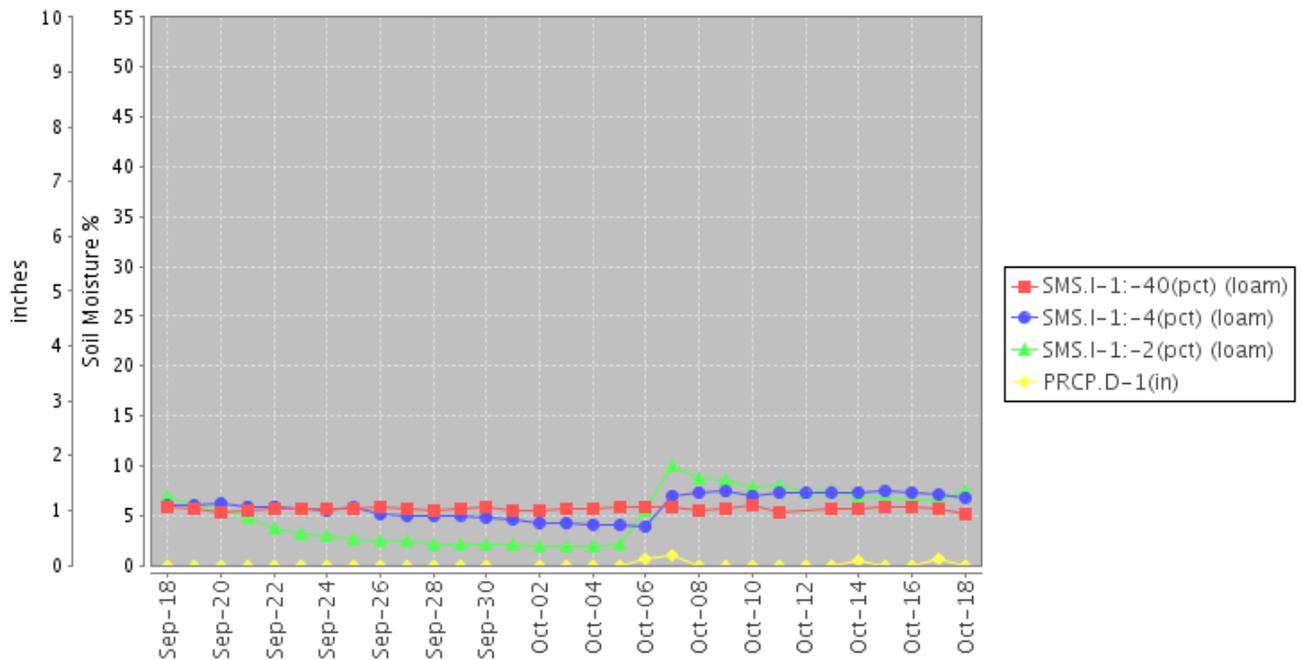


Fig. 5: This NRCS resource shows a site over the [southeastern Wyoming](#) with soil moisture reflecting D4 exceptional (1 in 50 year) type drought levels.

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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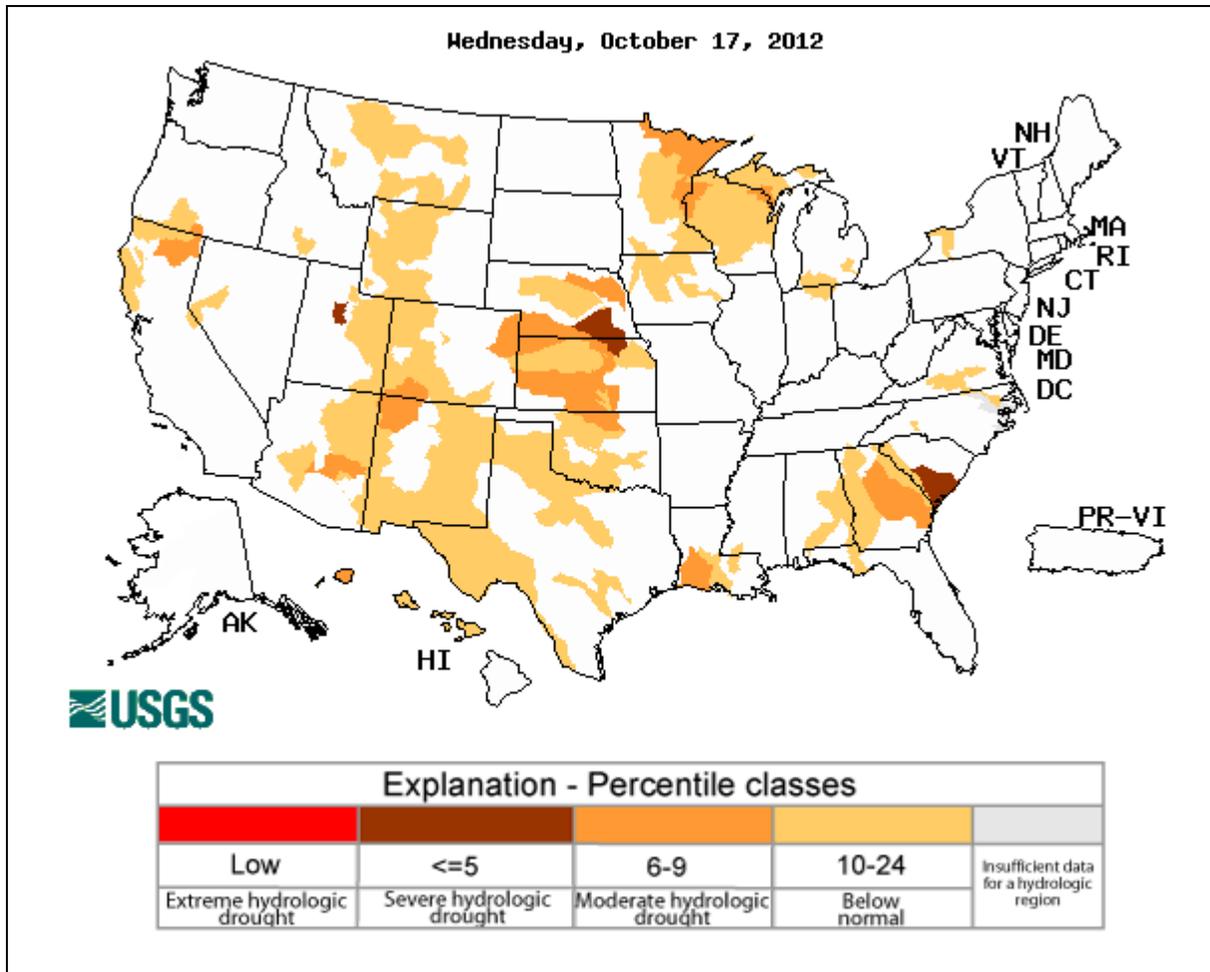


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of northern Kansas and east Nebraska, The Great Salt Lake, and South Carolina. See new USGS [National Water Information System Mapper](#).

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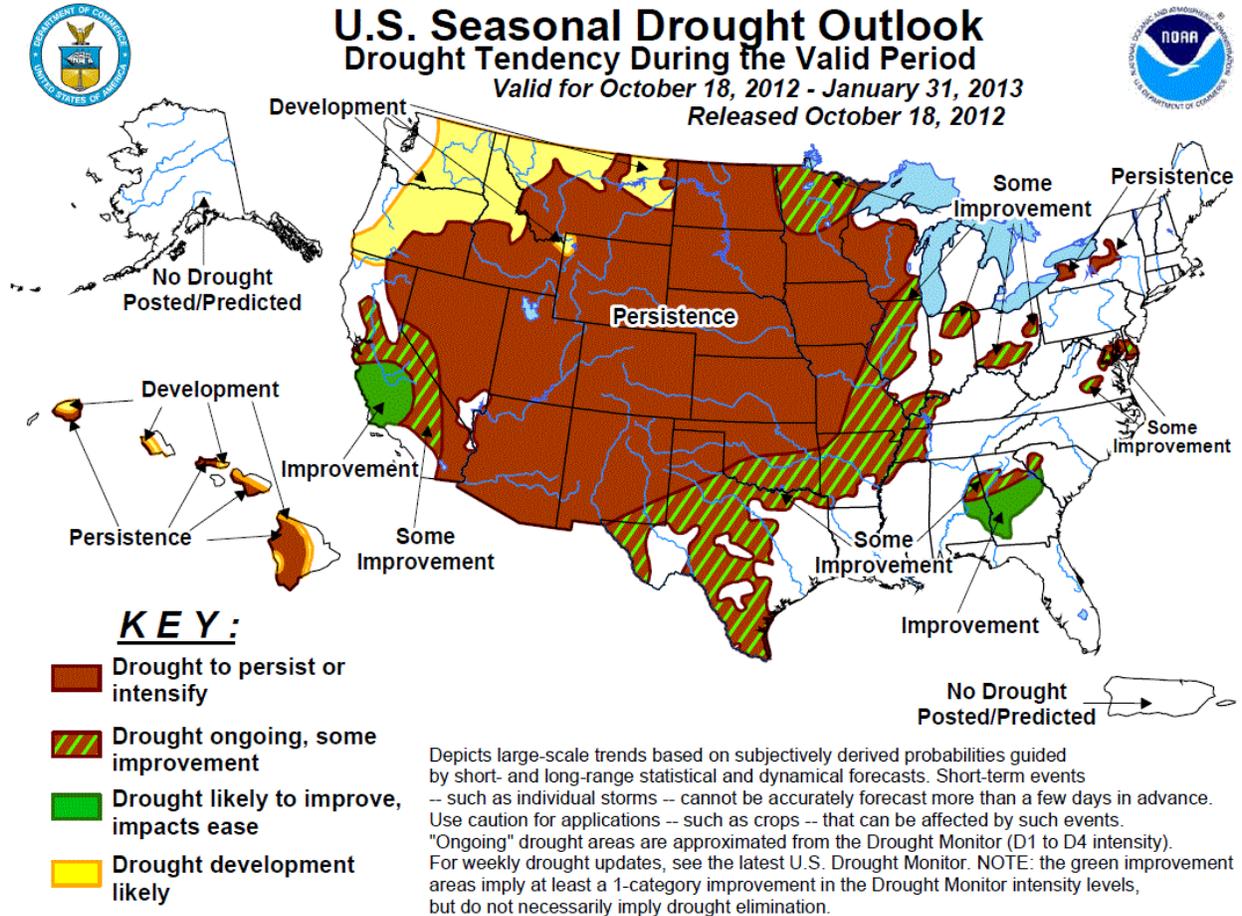


Fig. 7: [U.S. seasonal Drought Outlook](#) released today (18 October 2012).

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National Drought Summary -- October 16, 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: During the past week, two storm systems impacted the contiguous 48 states, with the cold front associated with the first storm system bringing generally light rains to areas from the northeast to the southern Great Plains. The second storm system developed along the western, trailing end of that cold front, and intensified rapidly over the central Great Plains. Before departing the country to the northeast, this system spread significant amounts of rain from the Panhandle of Oklahoma to the Upper Great Lakes. A cold front, associated with a low-pressure system over Canada, brought a round of precipitation to the Pacific Northwest. Puerto Rico was impacted over the weekend by the tropical cyclone that is now Hurricane Raphael.

The Northeast and mid-Atlantic: Minor changes were made to the depiction of abnormally dry (D0) conditions over the Great Lakes region of New York. Recent rainfall (0.5 to 1.2 inches) supported this change in conditions. No changes were made to the drought depiction across the Mid-Atlantic.

The Ohio Valley: Light rains fell across the Ohio Valley. When coupled with a recent wetter pattern during the past 60-days, the recent rains allowed for the removal of some moderate drought (D1) across Indiana, Ohio and northern Kentucky. Additionally, some minor changes were made over Kentucky to reflect a continued wetter pattern, as D2 (severe drought) was removed from western Kentucky.

The Southeast: A relatively dry week across much of the southeast prompted the expansion of abnormally dry conditions across the eastern portions of the Carolinas and southeastern Georgia. Additional intensification is indicated across central and southern Georgia, where rains continue to miss the most intensely dry areas. Across Alabama, short-term dryness back to 60-days is showing up in some of the streams, with stream flows down to the 9th percentile in Crenshaw and Pike counties.

A reduction in dry conditions was noted was across western and central North Carolina, so D0 was removed from the area west of Charlotte, NC. To reflect a continued wetter pattern, as a 1-category improvement was included over western Tennessee.

The Central and Southern Plains: Many changes to the depiction of drought were included in the map this week. Significant rains (some reports in excess of 4.5 inches) fell across eastern Oklahoma, northwestern Arkansas, southwestern Missouri, Nebraska, Kansas, and Iowa. Broad, 1-category improvements were implemented across these regions. Across Nebraska, Missouri, Kansas and Iowa, the improvements were made across areas that received in excess of 1.5 inches of precipitation. As noted by the Nebraska state climatologist, the areas of Nebraska that are annotated as receiving the most improvement were the same areas the

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received rainfall (1-4 inches) during September.

The Upper Great Lakes and Northern Great Plains: Significant rains (0.5-4.1 inches) fell across lower Michigan, with slightly higher amounts reported over central Wisconsin. Based on that recent rainfall, moderate drought was removed from the lower portion of Michigan and the western most portions of the Upper Peninsula. The area of abnormal dryness was also scaled back across most of Michigan, with areas of D0 remaining over southern Michigan, the western UP, and where the D1 (moderate drought) was indicated last week, as rains were not enough to justify to 2-category improvement.

Across central Wisconsin and southeast Minnesota, rains of 2-4 inches (3-6 times the normal amount for the week) prompted a broad 1-category improvement. Other portions of southern Wisconsin miss out on the rains, so areas receiving less than 2.0 inches of rain were largely left the same as last week.

After a dry week, minor expansions of extreme drought were pursued this week across eastern South Dakota and western Minnesota, as those areas missed out on the rains the fell south and east.

The Rockies: Minor revisions were made this week over Colorado, where a 1-category improvement was made over Chafee and eastern Gunnison counties. Recent stream flow reports are showing a slight recovery, and some recent precipitation has been beneficial. Farther north, over Jackson, Larimer, and Grand counties, recent rains have provided some moisture, but not enough to move the needle away from widespread severe drought.

A slight expansion of severe drought (D2) conditions was included over central New Mexico, while some removal of drought conditions was depicted over southeast New Mexico. The past 6 months have been dry across over central New Mexico, but areas south of Hobbs and east of Carlsbad have received precipitation that measured 125 to 200+ percent of normal during September (monthly totals from 2.9 inches to 4 inches). Improvements were limited by the return to dry conditions during October.

The Southwest: Las Vegas now has its 26th wettest year on record even if no more precipitation was to fall for the rest of the year. Precipitation amounts in excess of 2.0 inches were recorded in a large number of locations on the west and north sides of Las Vegas during the past week (County Flood Control District automated gauges) Due to hail and the intensity of the rain, some stations were likely under-reporting precipitation totals. Advanced Hydrologic Prediction System (AHPS) maps show precipitation totaling 150-400 percent of normal from Mt Charleston to Lake Mead during the past 180 days, so widespread improvements to the drought conditions were indicated across this region.

The Pacific Northwest: Abnormal dryness (D0) was removed from much of western Washington and Oregon. Rainfall amounts exceeded 5.0 inches at many reporting stations across this region. Rains did push inland, across the northern Rockies and into western Montana, so some improvement was indicated there as well.

Alaska, Hawaii, and Puerto Rico: No changes were pursued to the drought depiction across Alaska. The northern sections continued to be mostly dry, although some locations did report light precipitation. Minor trimming was performed on the abnormal dryness (D0) area over

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Puerto Rico that received significant rains (1.0 – 2.4 inches).

Over Hawaii, Extreme drought was added to the lower elevations of Kauai from the south through southeast sectors (from near Koloa to near Hanapepe). Some pasture lands are no longer able to support any cattle. Additionally, drought depictions were expanded over the big island of Hawaii, based on USDA/FSA reports and local reports of dwindling water supplies (some at 20 percent of capacity).

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 and some rains across the Midwest. Particularly wet conditions are likely across the Pacific Northwest and from the Tennessee Valley to the Great Lakes and across the Northeast. Minimal amounts of rainfall are likely across the Southeast, Rockies, and Southwest.

During the following 6-10 day period, the outlooks from the Climate Prediction Center indicate enhanced odds for below-average temperatures across southern Alaska, along the Pacific Coast, and across the Great Basin to the Northern Rockies. With enhanced odds of above-average temperatures elsewhere. Wetter than average conditions are more likely across the Pacific Northwest, northern Great Plains, and Great Lakes. Dry conditions are more likely than normal across the southern tier of the contiguous U.S. and southern Alaska.

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 17, 2012

The Latest NOAA Climate Prediction Center's Seasonal Outlook is now [available](#).