



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 4 October 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 3 October shows the greatest positive departures over much of Montana to California and the greatest negative departures over the Central Rockies (Fig. 1). [SNOTEL](#) and ACIS 7-day temperature anomaly ending 3 October shows the greatest positive departures over much of Montana and California and the greatest negative departures over the Central Rockies (Fig. 1a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the bulk of moisture over the eastern peripheral of the Western States including Montana (Fig. 2). In terms of percent of normal, the same region is highlighted with very high percentages in what is usually a very dry period of the year (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, a slow-moving front sank southeastward across the eastern two-thirds of the contiguous United States. A wave of low pressure formed along the front in west-central Texas near the Edwards Plateau, resulting in widespread heavy tropical rains for much of the southern Plains, the lower Mississippi Valley, and the interior Southeast. Heavy rain (2 inches or greater) also fell over the Ohio and Tennessee Valleys, southern Illinois, eastern Missouri, and the interior mid-Atlantic region. The Upper Midwest, northern half of the Great Plains, and the West received little to no precipitation during the past 7-days. Temperatures for the period were generally above normal in the West (as much as 8 degrees above normal in the northern High Plains), 2-4 degrees below normal in the Great Lakes, Northeast, and Ohio Valley, and 2-4 degrees above normal in the Southeast.

The Rockies: The only revisions made this week were in Colorado, where 1-category improvements were made to north-central and extreme southeastern portions of the state.

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. At this time, it appears that the onset of the climatological rainy season will be delayed somewhat.

Hawaii: One-category improvements were made to northeastern portions of Oahu and Maui where respectable rains fell (1.5 to 3.5 inches), and an expansion of D0 conditions was rendered to southwest portions of the Big Island of Hawaii where little if any rain fell.

Author: Anthony Artusa, NOAA/NWS/NCEP/CPC

Weekly Snowpack and Drought Monitor Update Report

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.

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.

Weekly Snowpack and Drought Monitor Update Report

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

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

Oct 03, 2012

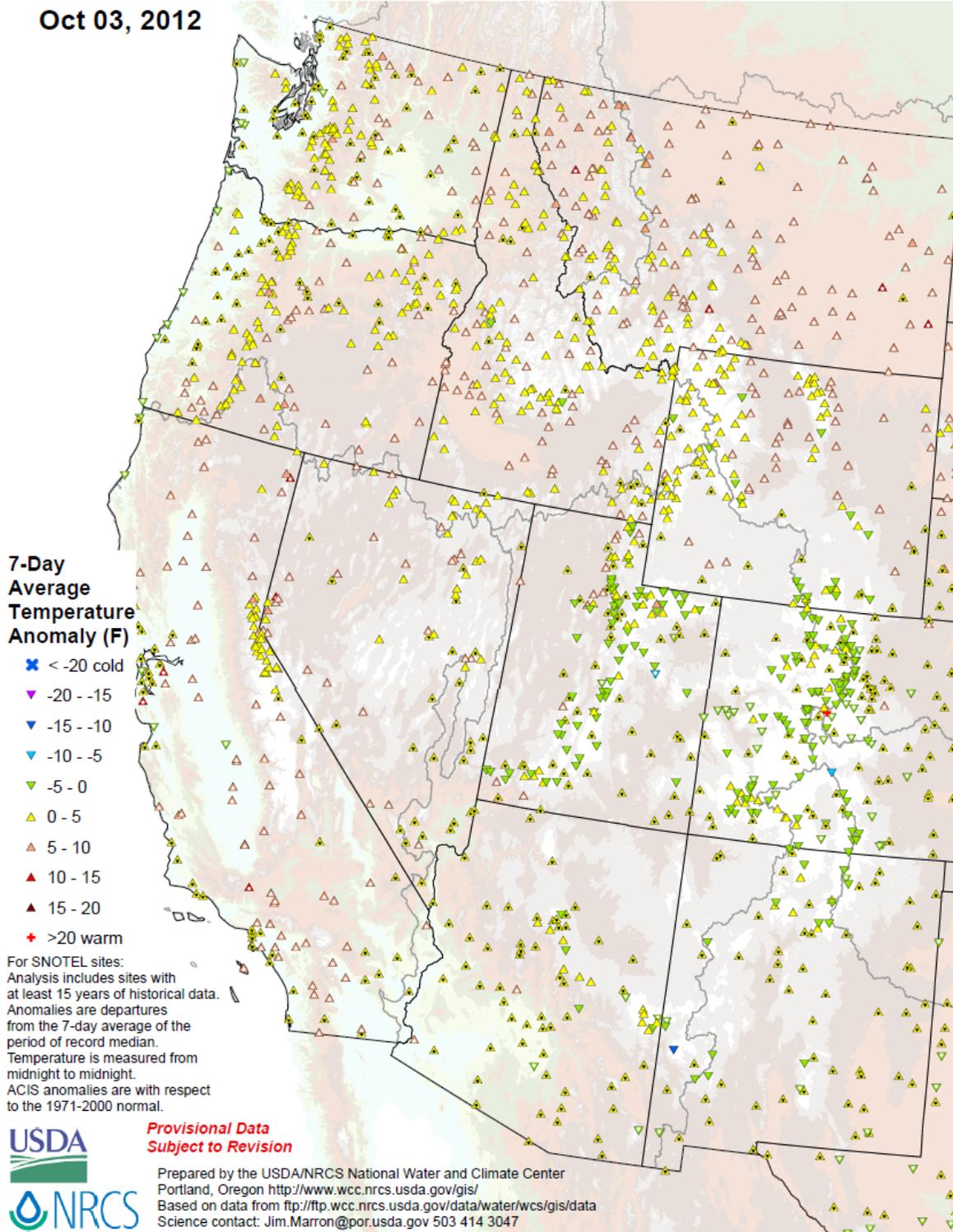
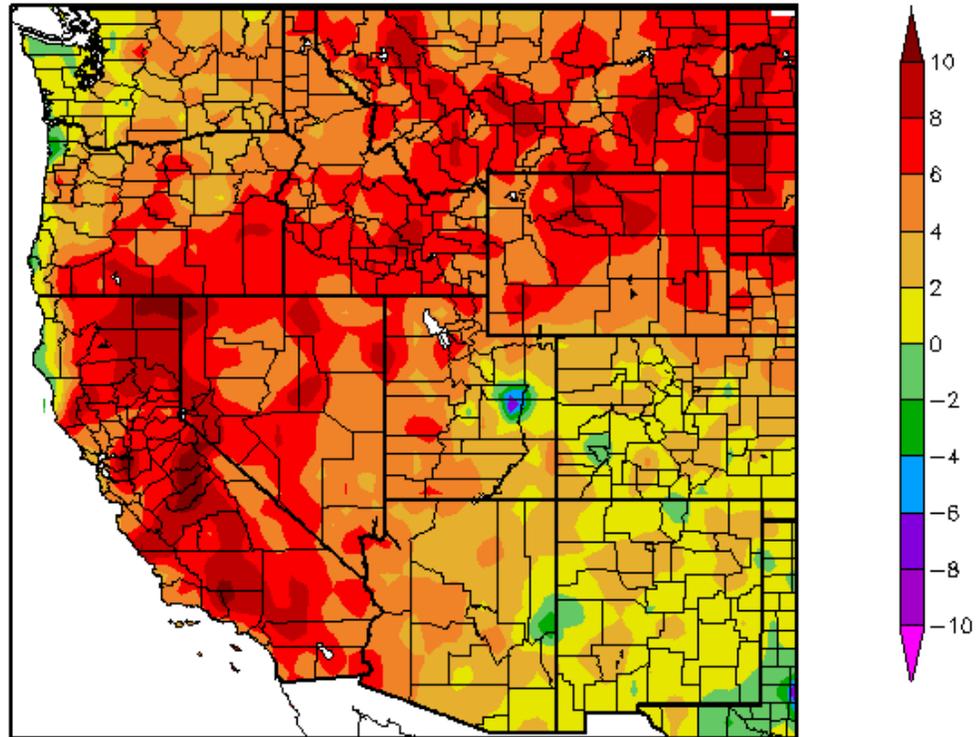


Fig. 1: **SNOTEL** and ACIS 7-day temperature anomaly ending 3 October shows the greatest positive departures over much of Montana and California and the greatest negative departures over the Central Rockies.

Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)
9/27/2012 – 10/3/2012



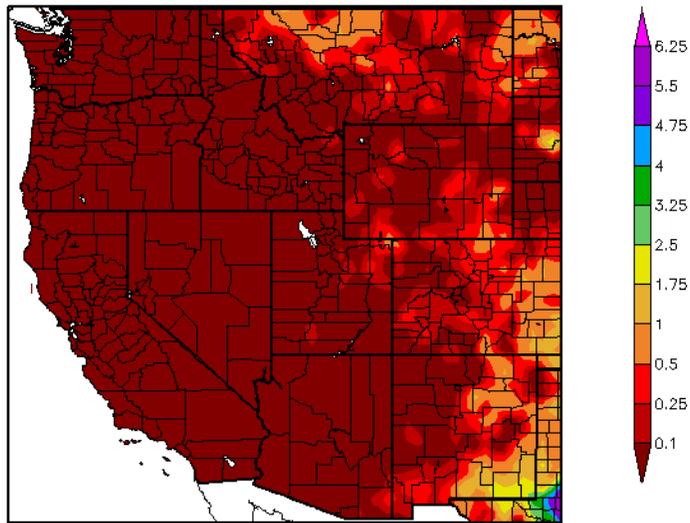
Generated 10/4/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departure over parts of California ($>+10^{\circ}\text{F}$). The greatest negative departures occurred over northwest Washington ($<-4^{\circ}\text{F}$).

Weekly Snowpack and Drought Monitor Update Report

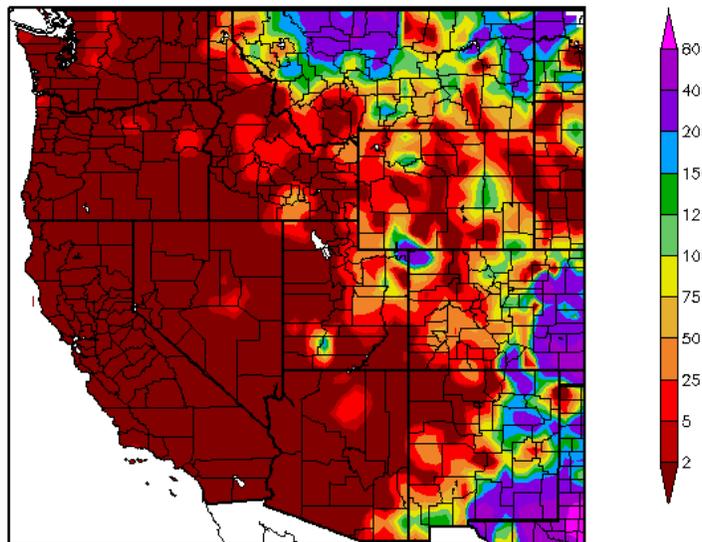
Precipitation (in)
9/27/2012 - 10/3/2012



Generated 10/4/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
9/27/2012 - 10/3/2012



Generated 10/4/2012 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 over the eastern periphery of the Western States including Montana (top). In terms of percent of normal, the same region is highlighted with very high percentages in what is usually a very dry period of the year (bottom).

Weekly Snowpack and Drought Monitor Update Report

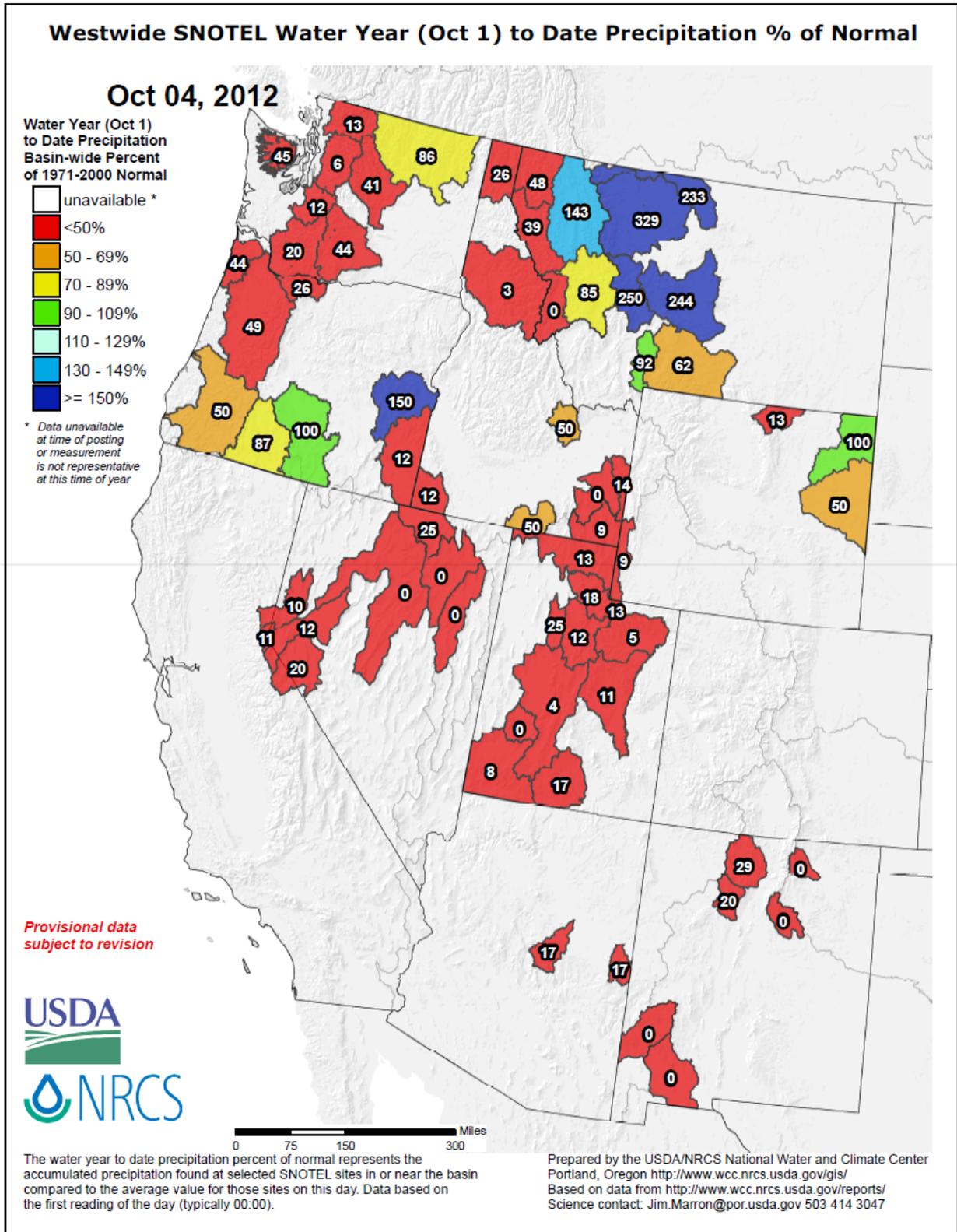


Fig. 2b: For the 2013 Water-Year that began on 1 October 2012, statistics will be unreliable for the next several weeks since this observing period is exceedingly short.

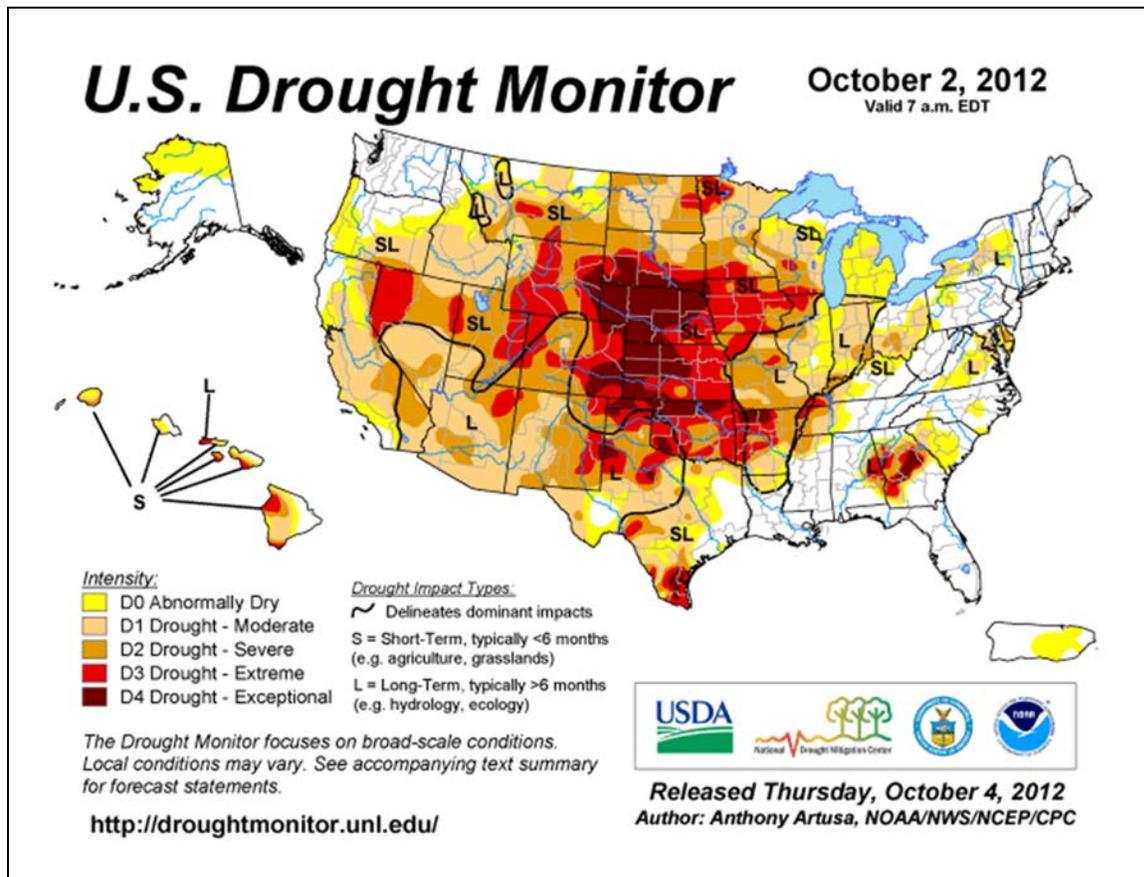


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and scattered across the corn belt of the Central Plains into Colorado and Wyoming. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California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

Agriculture

[Despite Record Drought, Farmers Expect Banner Year](#) - Sept 27, **US**. Thanks to high prices for the crops, things will turn out better than many expected.

[Drought impact pegged at \\$128M for Arkansas ranchers](#) - Sept 27, **Arkansas**. Drought cost Arkansas beef cattle producers about \$128 million, according to a survey done by the University of Arkansas System Division of Agriculture. Because the estimate does not include economic impacts at a community level, the loss estimate is considered to be conservative.

[Pig Slaughter Shrinks Supply to 1975 Low in Drought: Commodities](#) - Sept 25, **US**. High feed costs are forcing hog farmers to slaughter more animals, which will lead to a small herd and higher prices for pork next year.

Water Supply & Quality

[Barge traffic halted near Mississippi River lock](#) - Sept 19, **Near St. Louis, Missouri**.

[Portraits of drought: Low river levels stall barges](#) - Sept 19, **Mississippi and Ohio rivers**.

[Water shortages ahead for most states as drought lingers](#) - Sept 28, **US**.

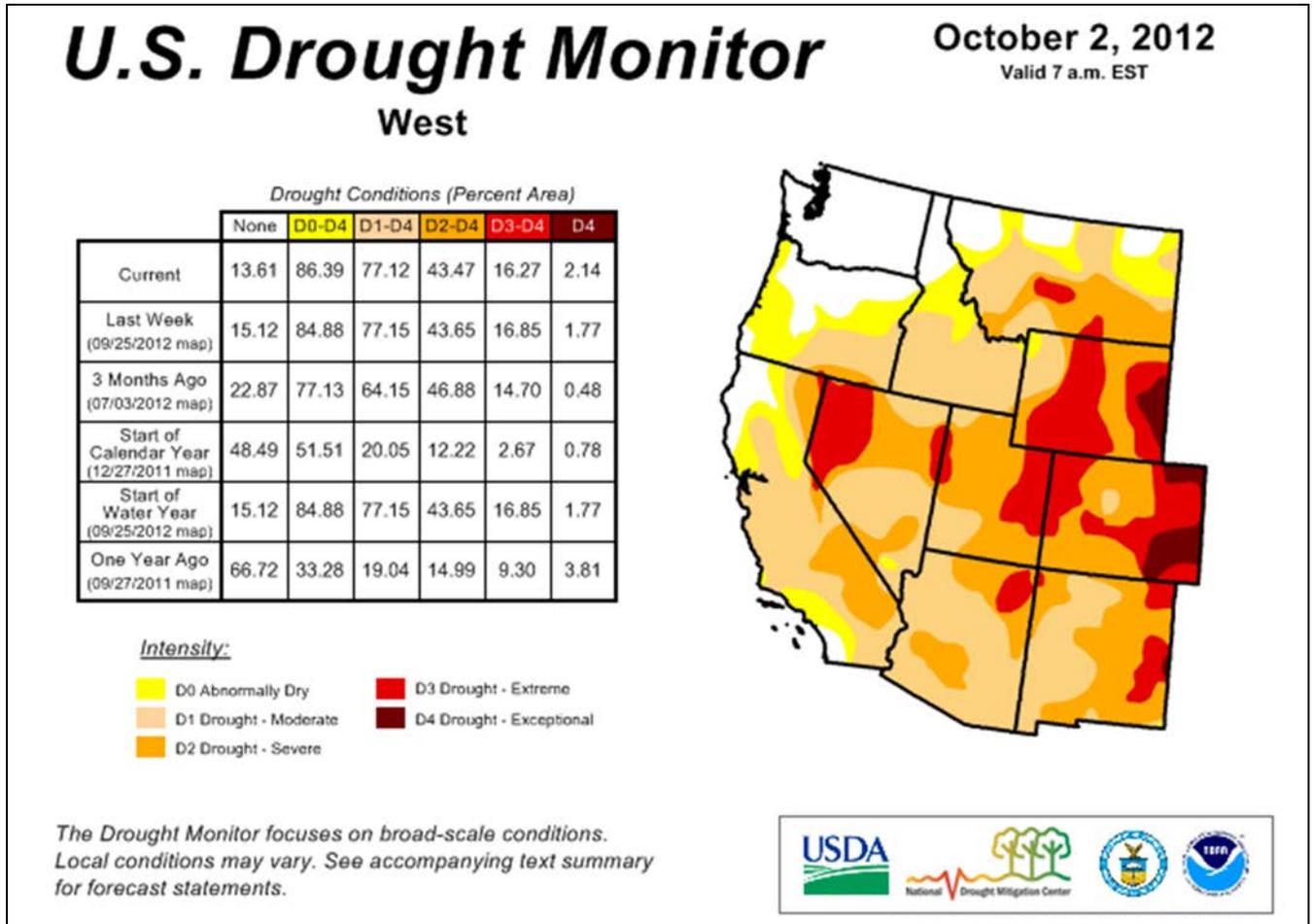


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. No significant change this week. D4 is holding near 2%.

Weekly Snowpack and Drought Monitor Update Report

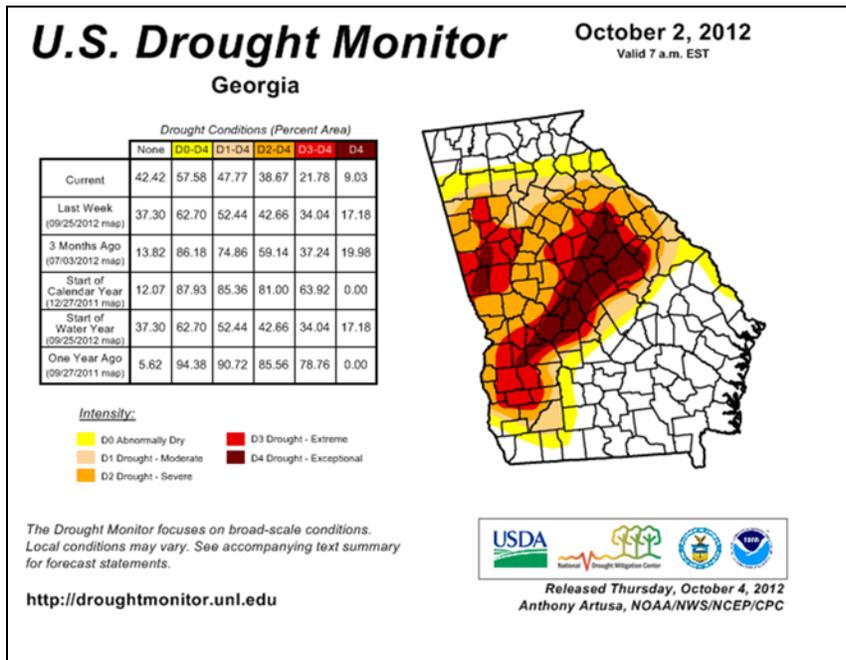


Fig. 3b: Drought Monitor for [Georgia](#) with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions that are improving (~9%). See the Weekly GridSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

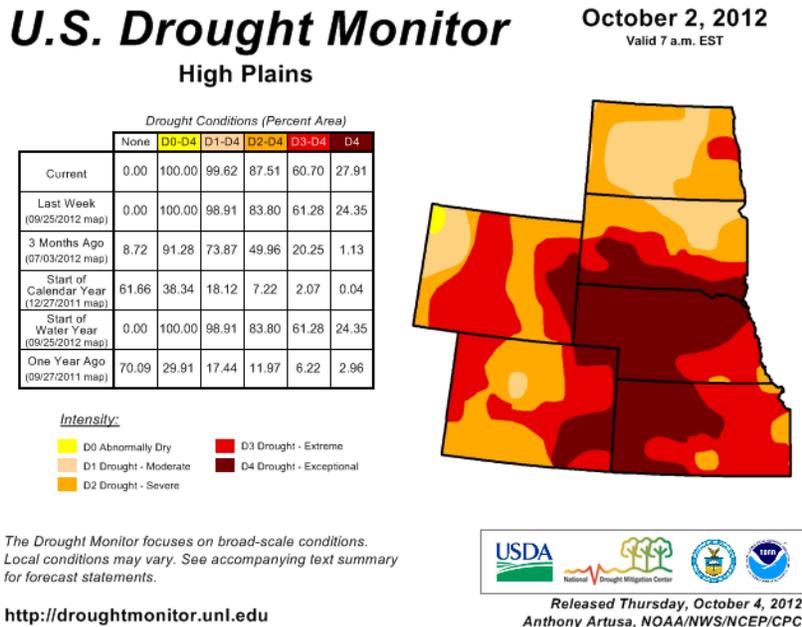


Fig. 3c: Drought Monitor for the [High Plains](#) with statistics over various time periods. Some further deterioration is noted this week. D4 has increased 4% to near 28%. See the latest [Kansas Drought Report](#).

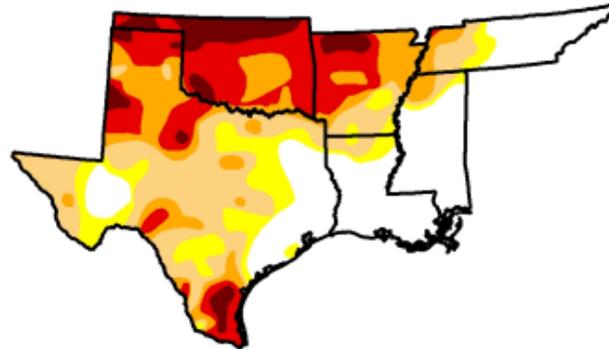
U.S. Drought Monitor

South

October 2, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.17	71.83	60.13	38.85	23.18	6.27
Last Week (09/25/2012 map)	24.13	75.87	66.61	51.50	29.86	9.11
3 Months Ago (07/03/2012 map)	8.29	91.71	68.39	36.08	9.80	0.00
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 (09/27/2011 map)	18.34	81.66	76.26	70.61	63.67	53.77



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.

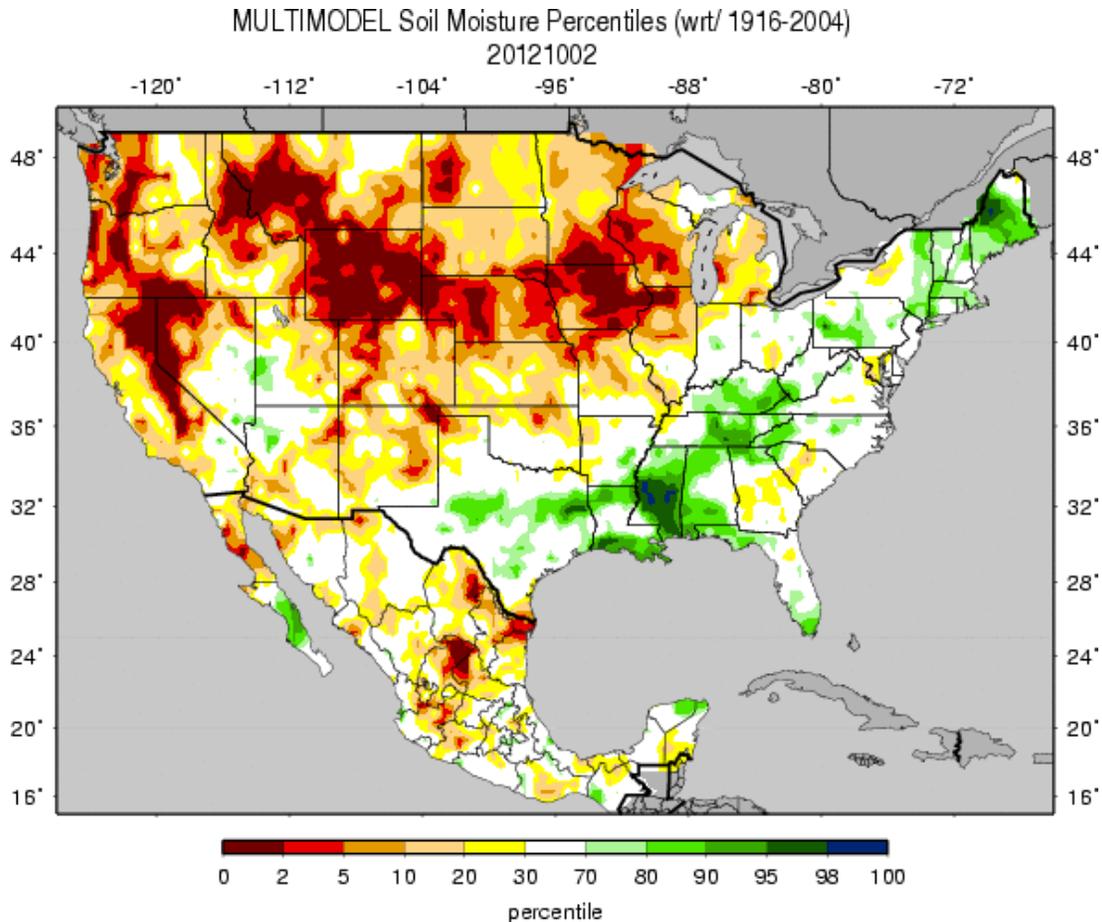


Released Thursday, October 4, 2012
Anthony Artusa, NOAA/NWS/NCEP/CPC

<http://droughtmonitor.unl.edu>

Fig. 3e: Drought Monitor for the South-Central Region with statistics over various time periods. Note significant improvements in D2-D4 this week. D4 has fallen to ~6%.

Weekly Snowpack and Drought Monitor Update Report



Figs. 4: Soil Moisture ranking in [percentile](#) as of 2 October shows dryness over much of the Northern and Central Rockies, Western High Plains (including Iowa), northern California, the Western Great Basin, and now encroaching over western Oregon and Washington. Residual moisture from Hurricane Isaac's still persists 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](#).

Weekly Snowpack and Drought Monitor Update Report

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

Station (2119) MONTH=2012-09-04 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Oct 04 08:19:35 PDT 2012

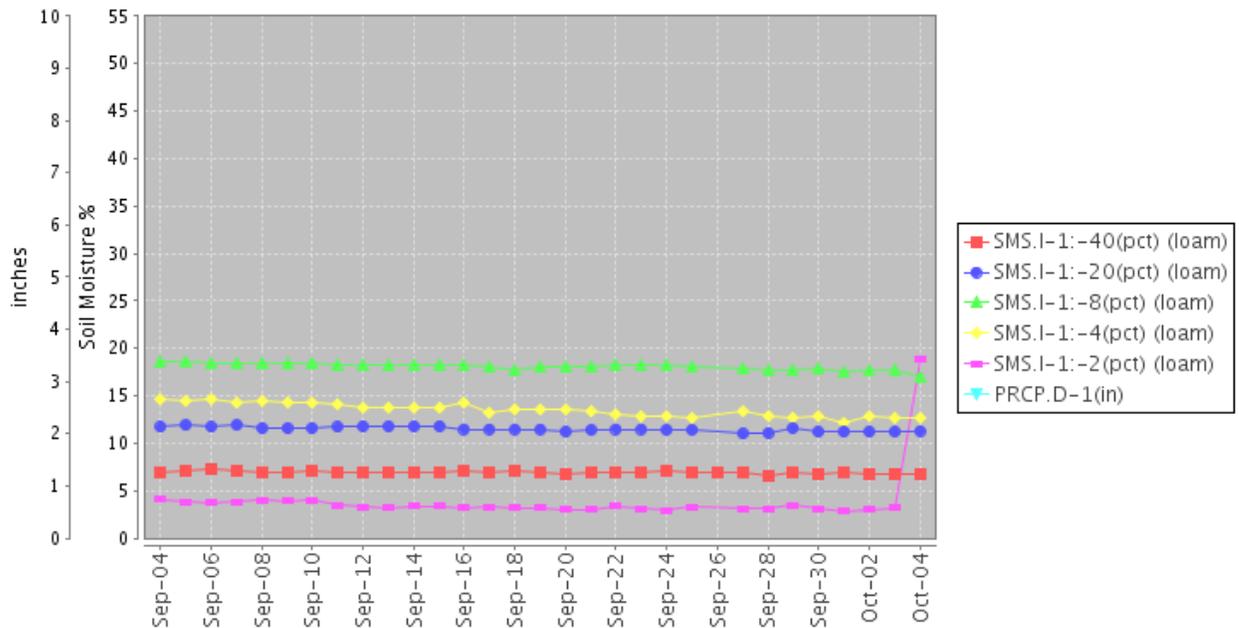


Fig. 5: This NRCS resource shows a site over the [central Montana](#) with soil moisture increasing with depth to 8" then decreasing to 40".

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

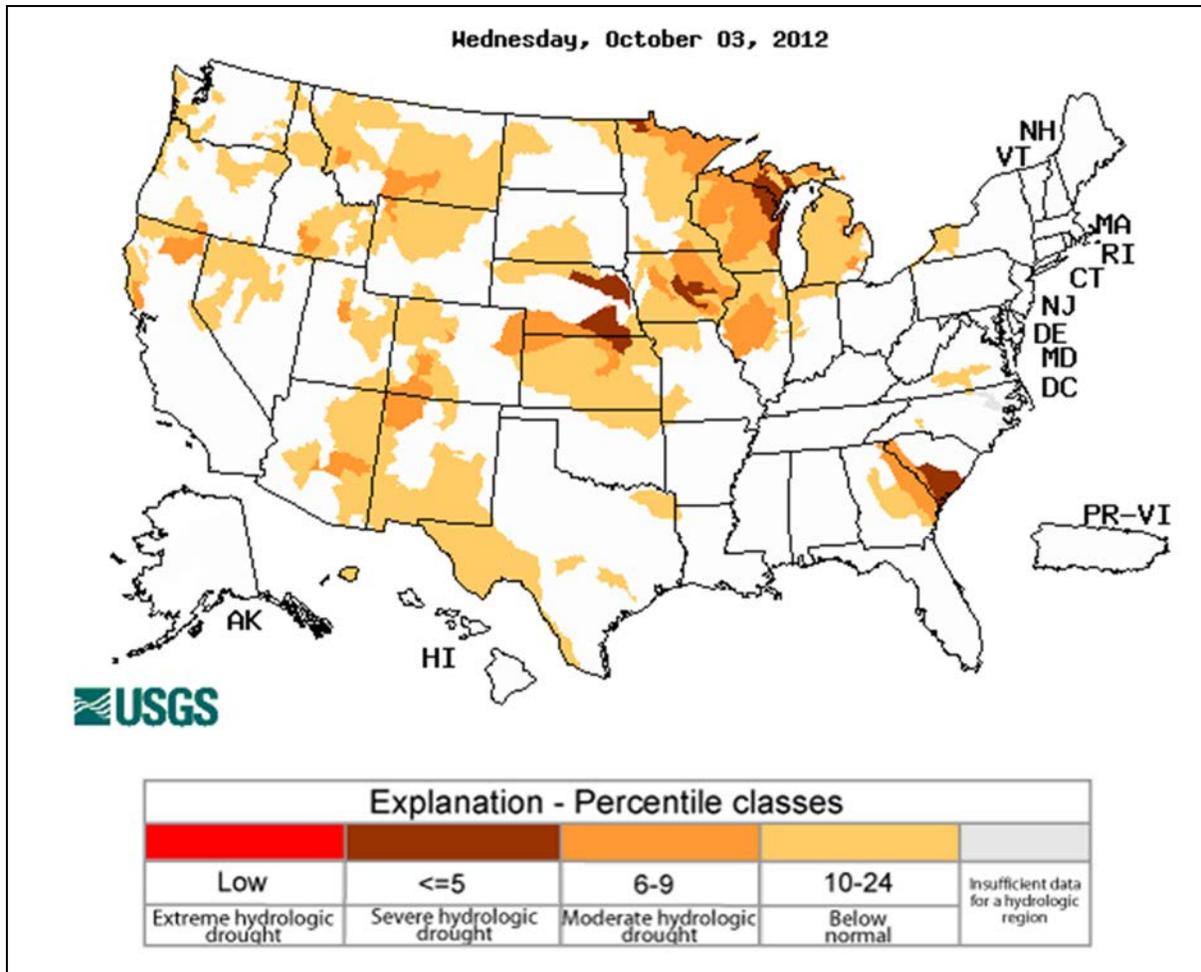


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of northern Kansas and east Nebraska, Wisconsin, Iowa, northwest Minnesota, northern Michigan, and South Carolina. See new [USGS National Water Information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

Weekly Snowpack and Drought Monitor Update Report

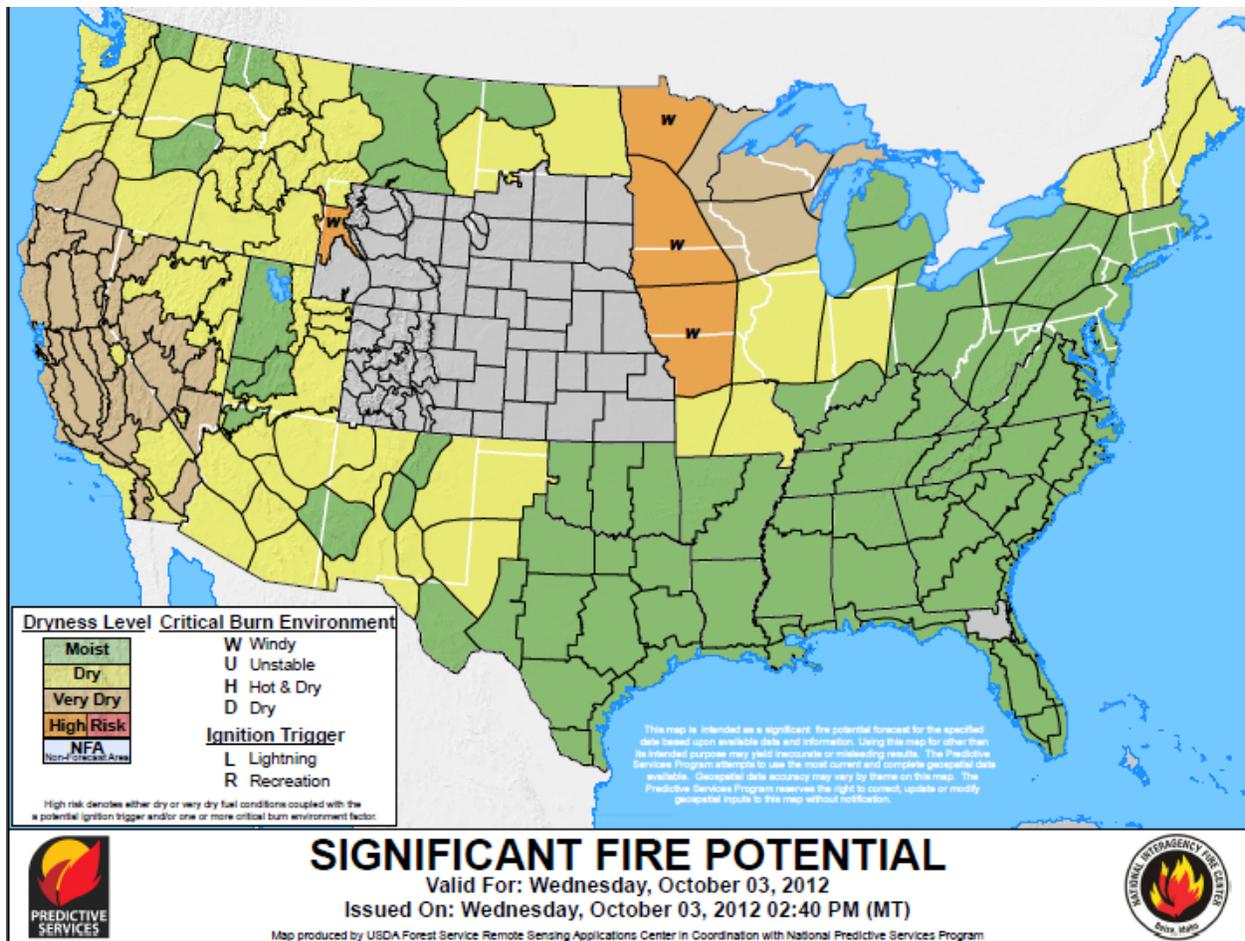


Fig. 7: [Significant fire potential](#) for yesterday. This resource also provides forecasts out to 7 days. Also check out: [NOAA's Fire Server](#). Risk continues over the Eastern Plains. Also see: [Experimental Southwest area wildland fire smoke impact awareness page](#) and the latest, [National Interagency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

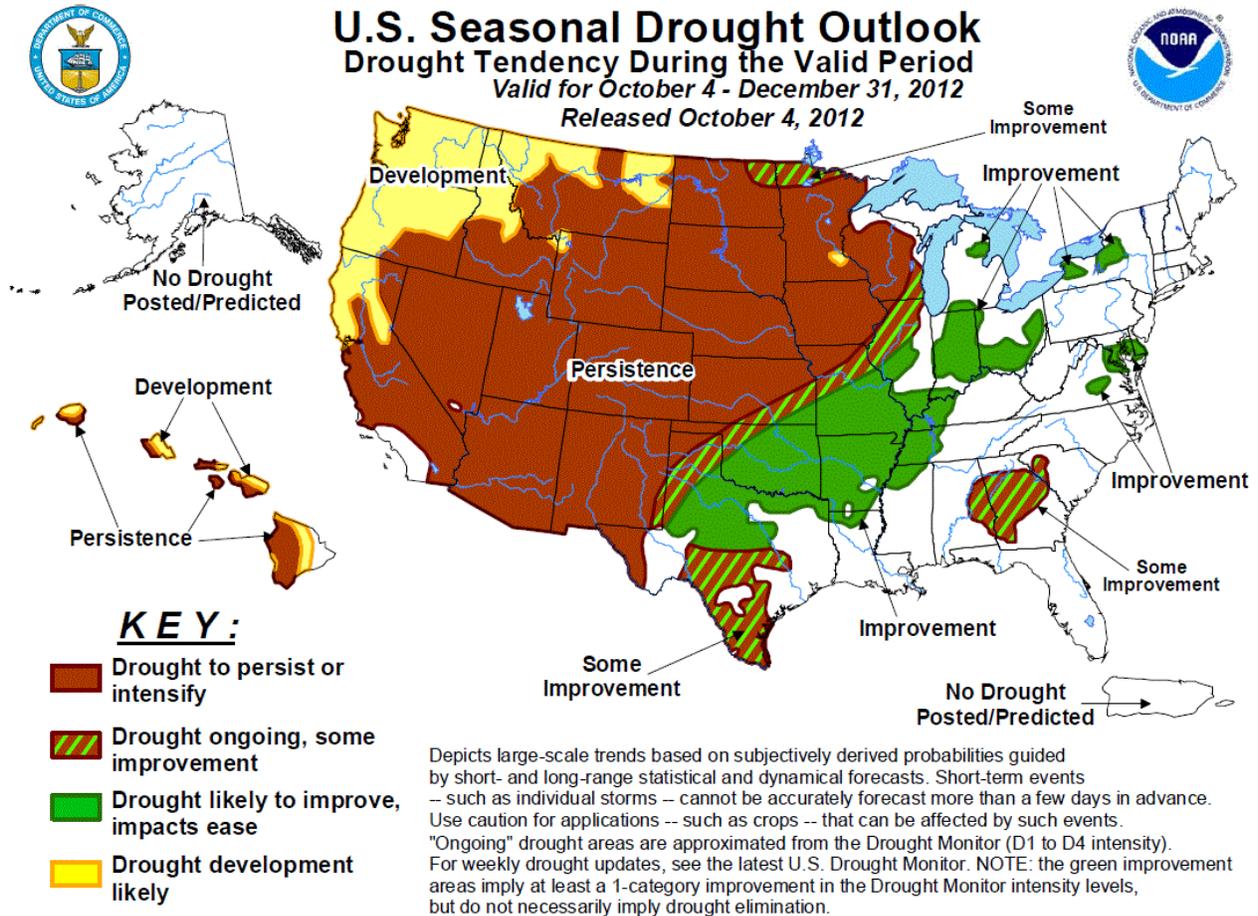


Fig. 8: [U.S. seasonal Drought Outlook](#) released today (4 October 2012).

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- October 2, 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, a slow-moving front sank southeastward across the eastern two-thirds of the contiguous United States. A wave of low pressure formed along the front in west-central Texas near the Edwards Plateau, resulting in widespread heavy tropical rains for much of the southern Plains, the lower Mississippi Valley, and the interior Southeast. Heavy rain (2 inches or greater) also fell over the Ohio and Tennessee Valleys, southern Illinois, eastern Missouri, and the interior mid-Atlantic region. The Upper Midwest, northern half of the Great Plains, and the West received little to no precipitation during the past 7-days. Temperatures for the period were generally above normal in the West (as much as 8 degrees above normal in the northern High Plains), 2-4 degrees below normal in the Great Lakes, Northeast, and Ohio Valley, and 2-4 degrees above normal in the Southeast.

The Northeast and mid-Atlantic: During the past week, most areas received light to moderate rain (up to 2 inches), with heavy rain (2 inches or greater) observed over northern and extreme southwestern Virginia, southwestern and south-central Pennsylvania, southern West Virginia, and parts of New England. Abnormally dry (D0) conditions were removed from West Virginia, and from Fayette County in southwestern Pennsylvania. One-category improvements were made in west-central and eastern New York, and in parts of northern Virginia. For the southern Delmarva Peninsula, Accomack, Somerset, and Worcester Counties were upgraded from D1 to D0 based on AHPS Departure from Normal Precipitation (DNP) at 180-, 90-, and 60-days.

The Ohio Valley: Heavy rain (2 inches or greater) fell over northern and eastern Ohio, southern Indiana, and much of Kentucky. Near to above-normal stream flows contributed to 1-category upgrades across portions of the region. Louisville, Kentucky's 5.83 inches of rain resulted in their 9th wettest September on record. In Ohio, D2 conditions were removed from southwestern parts of the state, and trimmed back in south-central portions of the state.

The Southeast: East-central Alabama, northern and western Georgia, western portions of both North and South Carolina, and Tennessee received in excess of 2 inches of rain during the past week, prompting 1-category improvements to some areas, especially across approximately the northwest half of Georgia. Some of these locales in north-central and northeastern Georgia received as much as 8 inches of rain.

The Upper Great Lakes and Midwest: Little if any precipitation fell over Minnesota, Iowa, Wisconsin, Upper Michigan, northern Illinois and portions of northern Missouri during the past 7-days. Widespread 1-category degradations were made in the region. Some of the more extensive changes involved expansion of moderate drought (D1) conditions across northern Minnesota, and much of north-central and northeastern Wisconsin. Low stream flows and 60-

Weekly Snowpack and Drought Monitor Update Report

day DNPs lend support for these degradations. In contrast, 1-category improvements were rendered to the drought depiction over southern Illinois and eastern Missouri including the St. Louis area.

The lower Mississippi/Delta area: Though Louisiana and Mississippi received in excess of 2 inches of rain in association with the low pressure area that developed over Texas, the only alteration made at this time was to remove the D3 designation over northwestern Mississippi.

The Northern Plains: Very dry weather continues to prevail across the northern Great Plains, prompting extensive 1-category downgrades across a large portion of North Dakota. Severe drought (D2) was expanded to include most of the eastern half of the state, and D2 was also expanded eastward across the Canadian border counties as far east as Rolette County. In the heart of the state, D0 conditions were downgraded to D1. In South Dakota, exceptional drought (D4) was expanded throughout the southwestern portion of the state, and severe drought (D2) was expanded throughout the northwestern portion of the state in keeping with the prevailing dryness. These expansions also pushed D4 and D2 conditions into eastern Wyoming and extreme southeastern Montana, respectively.

The Central and Southern Plains: The stalled front and associated wave of low pressure that developed along it last week brought beneficial, widespread rains to the southern Great Plains. Many locations in Texas and in the southern half of Oklahoma received heavy precipitation (2 inches or greater). As a result, extensive 1-category upgrades were made to the regional drought depiction. Significant runoff occurred for the first time in over two years in west-central areas of Texas. In Oklahoma, 1-category improvements were made across much of the state, including portions of the Panhandle, while D4 conditions were expanded eastward across northern Oklahoma where little rain fell this past week. Farther north in Kansas, a one-category downgrade from D2 to D3 conditions was made across northeastern and north-central sections of the state due to lack of rain and surface water shortages. However, in eastern areas of Kansas, one-category improvements were rendered to the depiction due to recent rains and improved stream flows.

The Rockies: The only revisions made this week were in Colorado, where 1-category improvements were made to north-central and extreme southeastern portions of the state.

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. At this time, it appears that the onset of the climatological rainy season will be delayed somewhat.

Alaska, Hawaii, and Puerto Rico: One-category improvements were made to northeastern portions of Oahu and Maui where respectable rains fell (1.5 to 3.5 inches), and an expansion of D0 conditions was rendered to southwest portions of the Big Island of Hawaii where little if any rain fell. The depiction for both Alaska and Puerto Rico remain unchanged at this time.

Looking Ahead: In the ensuing 5 days, a fairly dry period is in store for much of the lower 48 states. Exceptions would include the eastern margin of the Eastern CONUS drought area, from Arkansas northeast to New York, where 1-2 inches of rain is expected, and also in North

Weekly Snowpack and Drought Monitor Update Report

Dakota and far northern Minnesota, where 1-2 inches of rain is predicted.

The CPC 6-10 day Precipitation Outlook projects elevated odds of above-median precipitation from the eastern Great Lakes region, the Northeast and mid-Atlantic southwestward to the Southwest, as well as for most of Alaska (excluding the Panhandle). The odds for below-median precipitation are enhanced across the western Gulf Coast states including eastern Texas, the northwestern quarter of the CONUS, and the Alaska Panhandle.

Author: [Anthony Artusa, 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 3, 2012

Released 30 September, NOAA Climate Prediction Center's October [Update](#).

News Release

Drought likely to continue, according to WGA and NOAA 'Outlook' on weather and climate

FOR IMMEDIATE RELEASE

October 4, 2012

Weekly Snowpack and Drought Monitor Update Report

DENVER -- Drought is likely to persist through December across much of the West, according to the latest regional [Quarterly Climate Impacts and Outlook](#) from the Western Governors' Association (WGA) and the National Oceanic and Atmospheric Administration (NOAA).

"Information contained in the *Outlook* is an excellent resource for our on-the-ground folks who have to be prepared for that all-too uncontrollable factor: weather," said Governor Gary Herbert (Utah), WGA Chairman.

"This document indicates that our state should prepare for continued drought impacts, especially for the farmers and ranchers who will continue to see a scarcity of rain through the end of the year."

The *Outlook* combines maps, projections and other products that provide information to decision makers about current and likely future weather conditions. Among the features of this release is the latest version of the U.S. Drought Monitor, a map detailing the degree of severity of the drought across the West. Also included are maps that show the summer's major wildfires and the departure from the average temperature from June to August.

The *Outlook* is a quarterly publication that was developed by the WGA and NOAA following a [Memorandum of Understanding](#) between the two organizations in June 2011. WGA and NOAA have also co-sponsored two regional meetings, one in [the Pacific Northwest](#) and one in the Upper Missouri basin.

All of the maps and information presented in the *Outlook* are also available from NIDIS, or the [National Integrated Drought Information System](#). NIDIS is hosted online at [drought.gov](#), where a series of drought information tools are available. Western Governors were instrumental to the passage of NIDIS in 2006. NIDIS is currently up for reauthorization by Congress.

NOAA has also produced a series of regional *Outlooks* that focus more closely on regions, including publications for [the Central Region](#), [the Southern Great Plains](#), [the Western Region](#), and [the Pacific Islands](#). All of the publications are available online at WGA's [Drought, Fire and Extreme Events page](#).

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