



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 25 October 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 25 October shows cooler conditions over all but the Central and Southern Rockies (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departure over northeast New Mexico ($>+8^{\circ}\text{F}$). The greatest negative departures occurred over north-central Montana ($<-10^{\circ}\text{F}$) (Fig. 1a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows heavy precipitation (and snow) over the Northern Cascades and Northern Sierra (Fig. 2). In terms of percent of normal, quite a lot of precipitation fell across northern California and the Northern Tier States of the West (Fig. 2a). For the [2013 Water-Year](#) that began on 1 October 2012, statistics will be unreliable for the next few weeks since this observing period is exceedingly short.

Weather Summary: A slow-moving storm resulted in several days of cool, cloudy, showery weather in the Midwest, replenishing soil moisture. Rain also extended southward through the Mississippi Valley. Mostly dry weather prevailed, however, across the lower Southeast. One exception to the dry pattern was southern Florida, where locally heavy showers occurred. Farther west, mostly dry weather accompanied a warming trend across the Plains. Significant precipitation was limited to the eastern Dakotas, while the High Plains' hard red winter wheat belt received little or no rain. As a result, soil moisture shortages continued to limit wheat emergence and development across the northwestern half of the Plains. In addition, mid-week wind gusts locally in excess of 70 mph raised dust and temporarily closed major roadways across parts of the Plains. On the southern half of the Plains, however, a combination of warmer weather and previous soil moisture improvements promoted wheat growth. Elsewhere, dry weather from southern California to the central and southern Rockies contrasted with substantial precipitation in northern California and the Northwest.

The West: The most impressive precipitation of the season overspread northern California, the Pacific Northwest, and the northern Rockies. The precipitation also helped to establish high-elevation snow packs, with 1 to 2 feet reported at some locations in the Cascades and Sierra Nevada. The heaviest rain and snow fell in drought-free areas, although precipitation chipped away at dryness and drought in a few areas. Meanwhile, dry conditions prevailed across the southern half of the West. In fact, extreme drought (D3) was expanded slightly in northern Utah based on continuing long-term precipitation deficits. On October 21, Utah's stock water supplies were reported by USDA to be 56% very short to short. Rangeland and pasture conditions remain abysmal in much of the West, with nine of eleven states reporting more than half rated very poor to poor. On October 21, California (97% very poor to poor) matched Nebraska for the nation's worst rangeland and pasture conditions, followed by Colorado (86%), Wyoming (86%), New Mexico (84%), Nevada (82%), Montana (77%), Utah (56%), Idaho (54%), Oregon (53%), Arizona (49%), and Washington (35%). Author: Brad Rippey, U.S. Department of Agriculture

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.

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.

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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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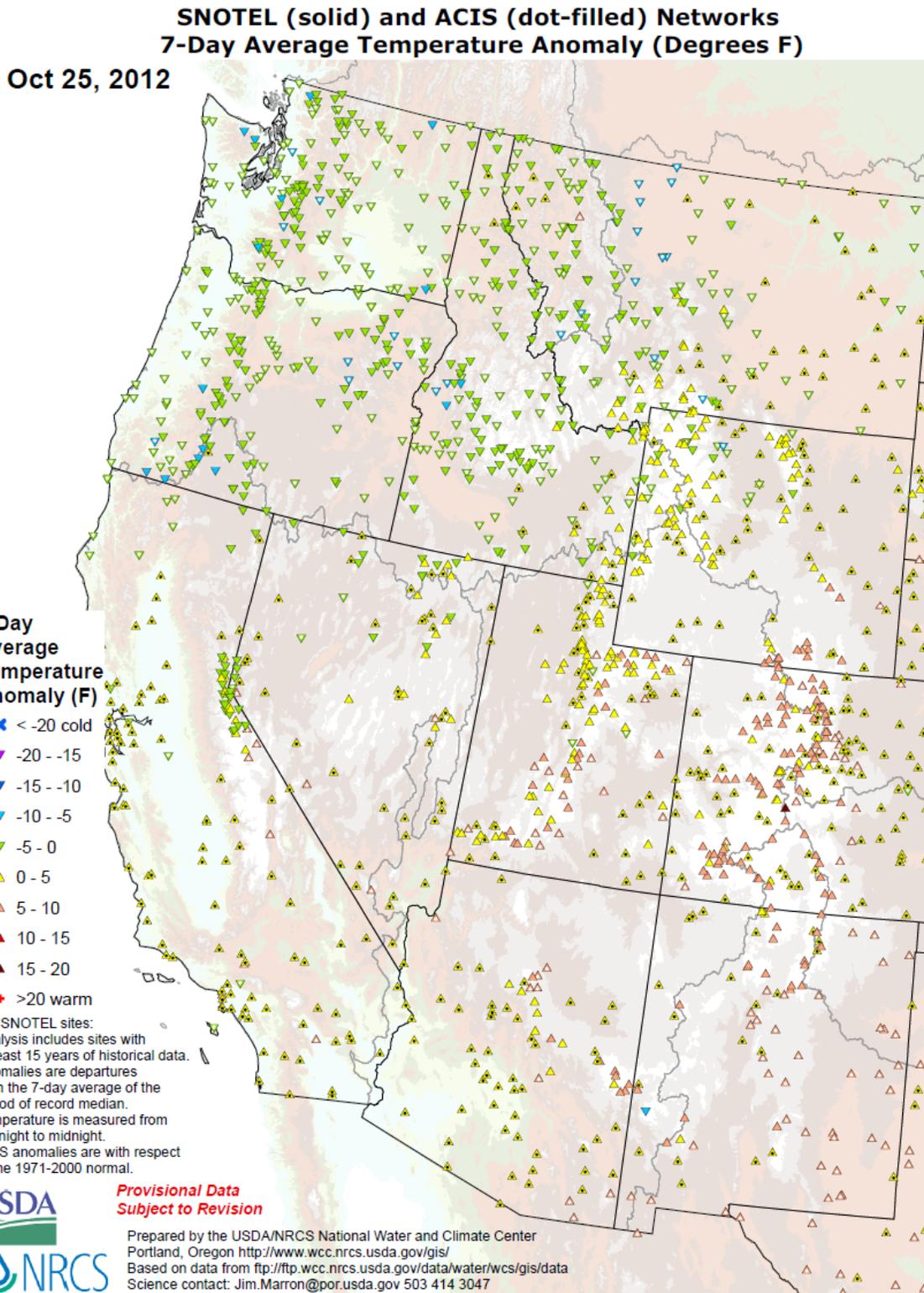
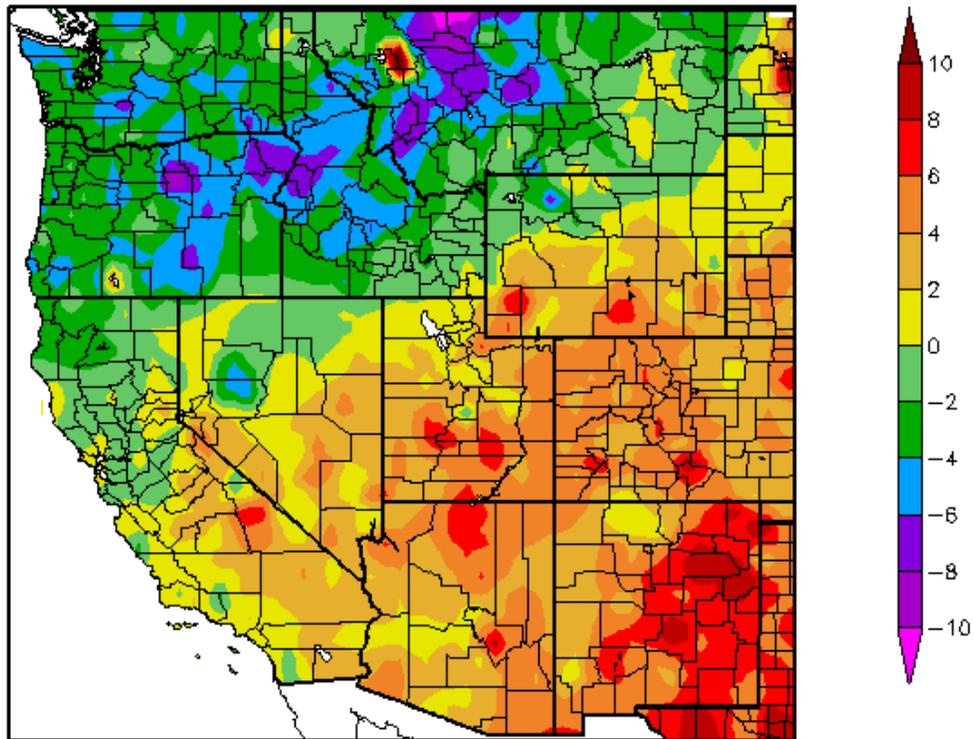


Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 25 October shows cooler conditions over all but the Central and Southern Rockies.

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Departure from Normal Temperature (F)
10/18/2012 – 10/24/2012



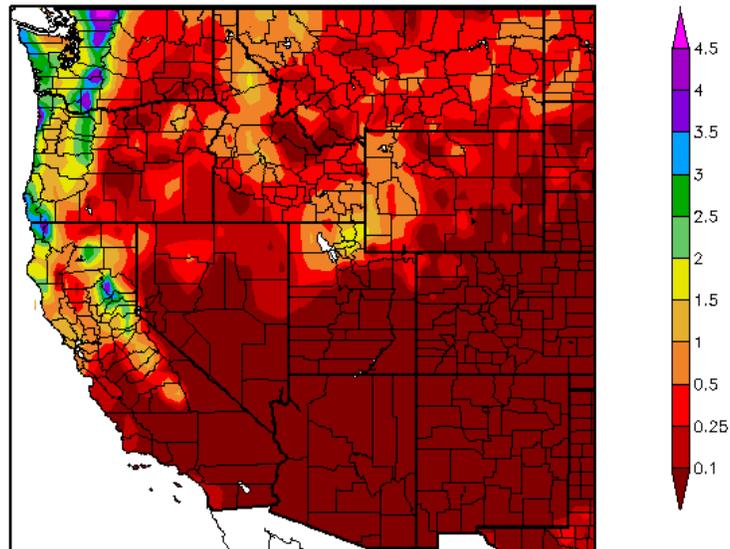
Generated 10/25/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departure over northeast New Mexico (>+8°F). The greatest negative departures occurred over north-central Montana (<-10°F). The hot spot over western Montana appears to be a bad data point.

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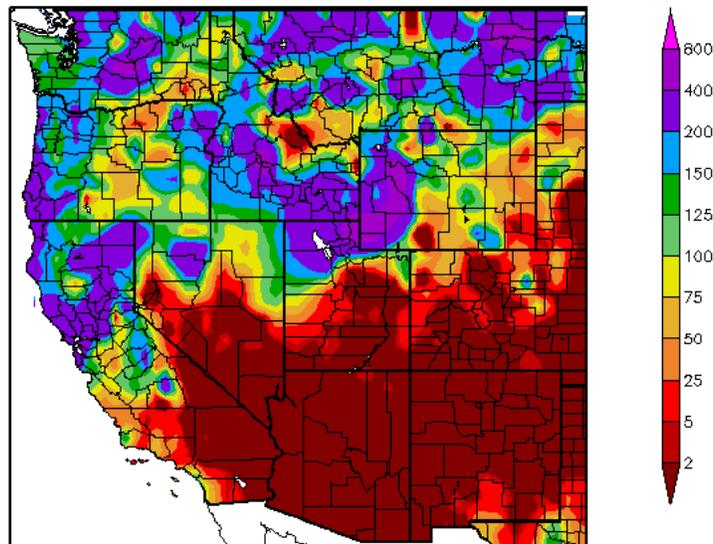
Precipitation (in)
10/18/2012 - 10/24/2012



Generated 10/25/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
10/18/2012 - 10/24/2012



Generated 10/25/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2 and 2a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows heavy precipitation (and snow) over the Northern Cascades and Northern Sierra (top). In terms of percent of normal, quite a lot of precipitation fell across northern California and the Northern Tier States of the West (bottom). This certainly suggests a La Niña precipitation pattern dominating for now.

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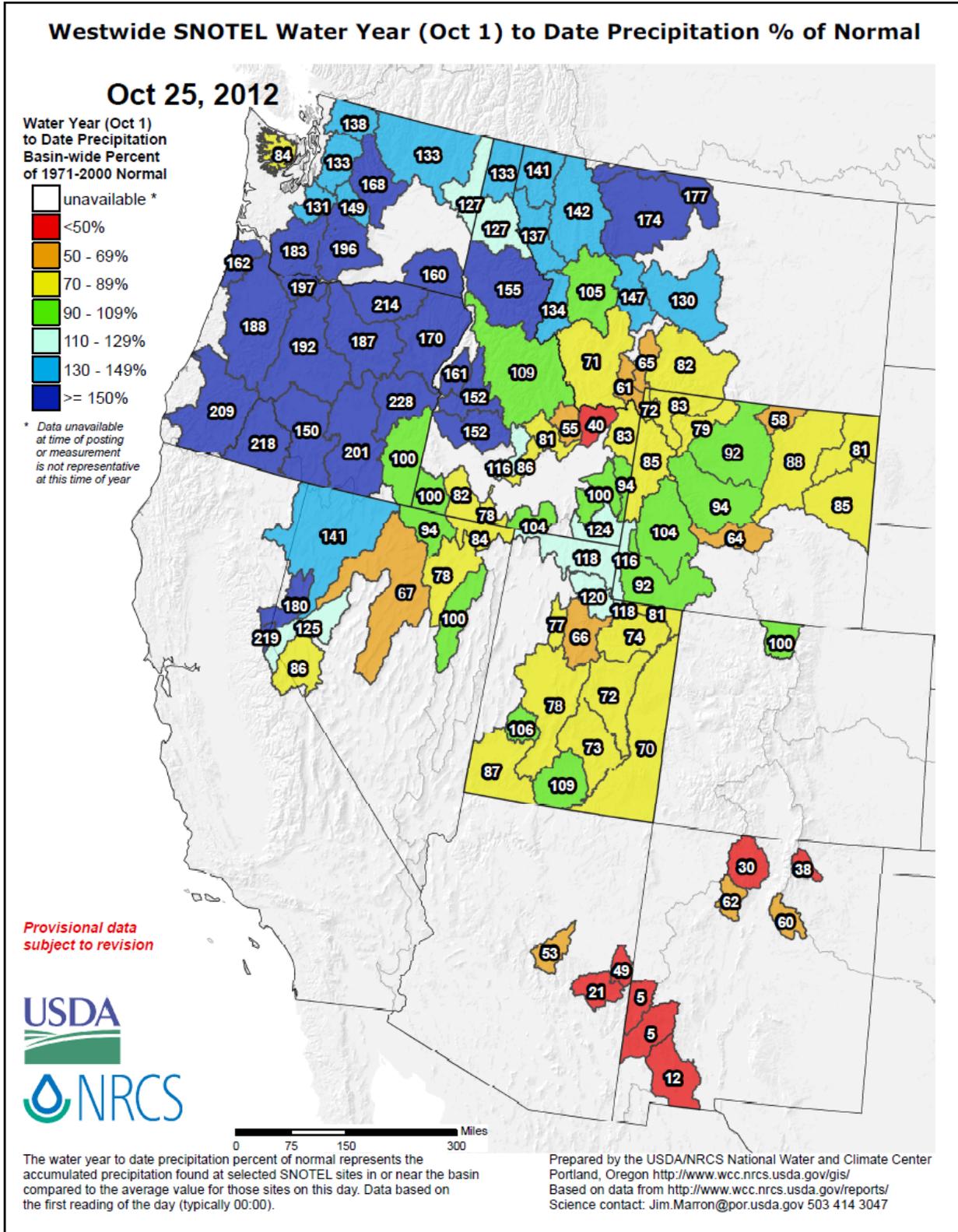


Fig. 2b: For the **2013 Water-Year** that began on 1 October 2012, statistics will be unreliable for the next few weeks since this observing period is exceedingly short.

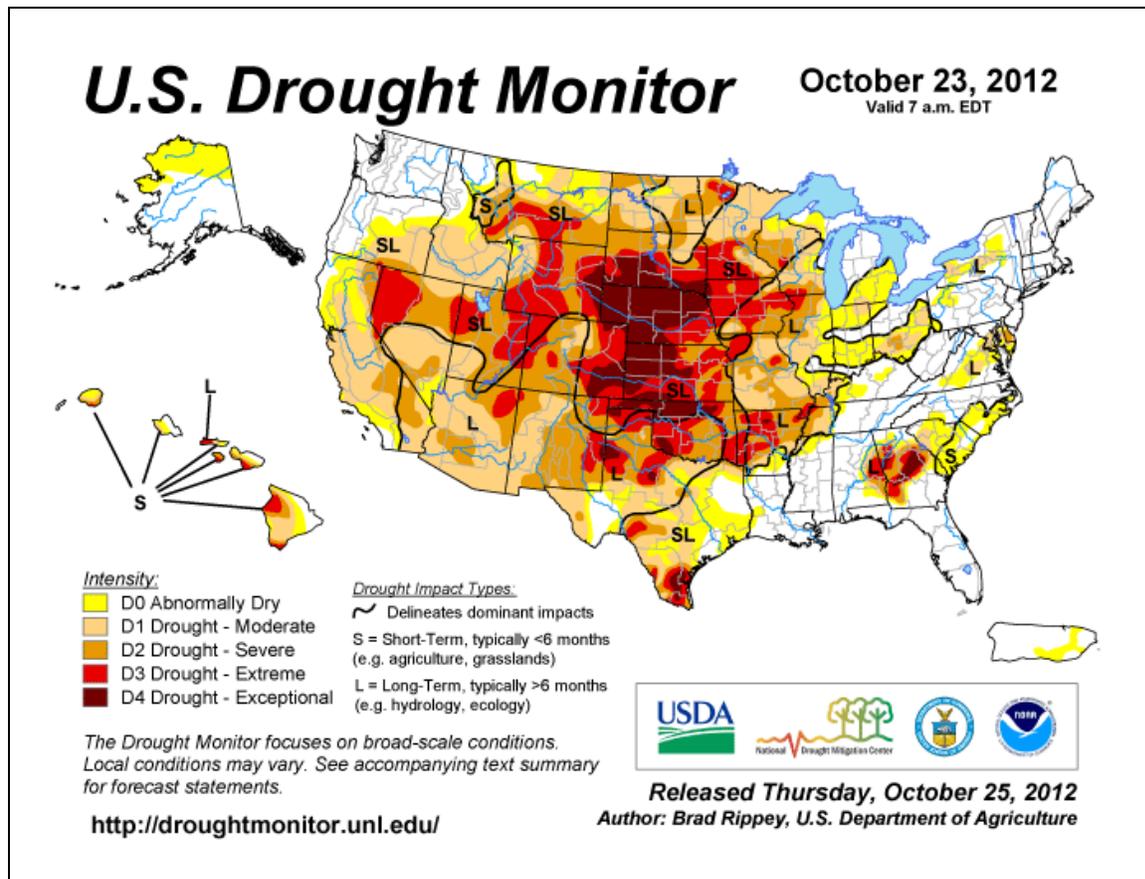


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and scattered across the corn belt of the Central Plains into Colorado and Wyoming and over southern Texas. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics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

Agriculture

[Hays Feeders to close after Jan. 1](#)

Oct 16, Hays, Kansas. Hays Feeders, a cattle feed yard with a capacity of 18,000 head of cattle, plans to close at the start of 2013 because the cattle herd has shrunk, due to drought, leading fewer cattle to be taken to feedlots. The feedlot may be reopened when conditions improve and demand for the feedlot rebounds.

[Indiana Corn Yield Down About 40%](#)

Oct 16, Indiana. Sixty percent of the corn harvest in Indiana was complete and revealed a 40 percent reduction on the corn yield in the state, according to a Purdue University agricultural economist. The average corn yield this year was 100 bushels per acre, in comparison with better years when the yield is normally 165 bushels per acre. Roughly 40 percent of the soybean crop has been harvested and showed nearly a 20 percent decline in yield at 41 bushels per acre, down from the usual 50 bushels per acre in a normal year.

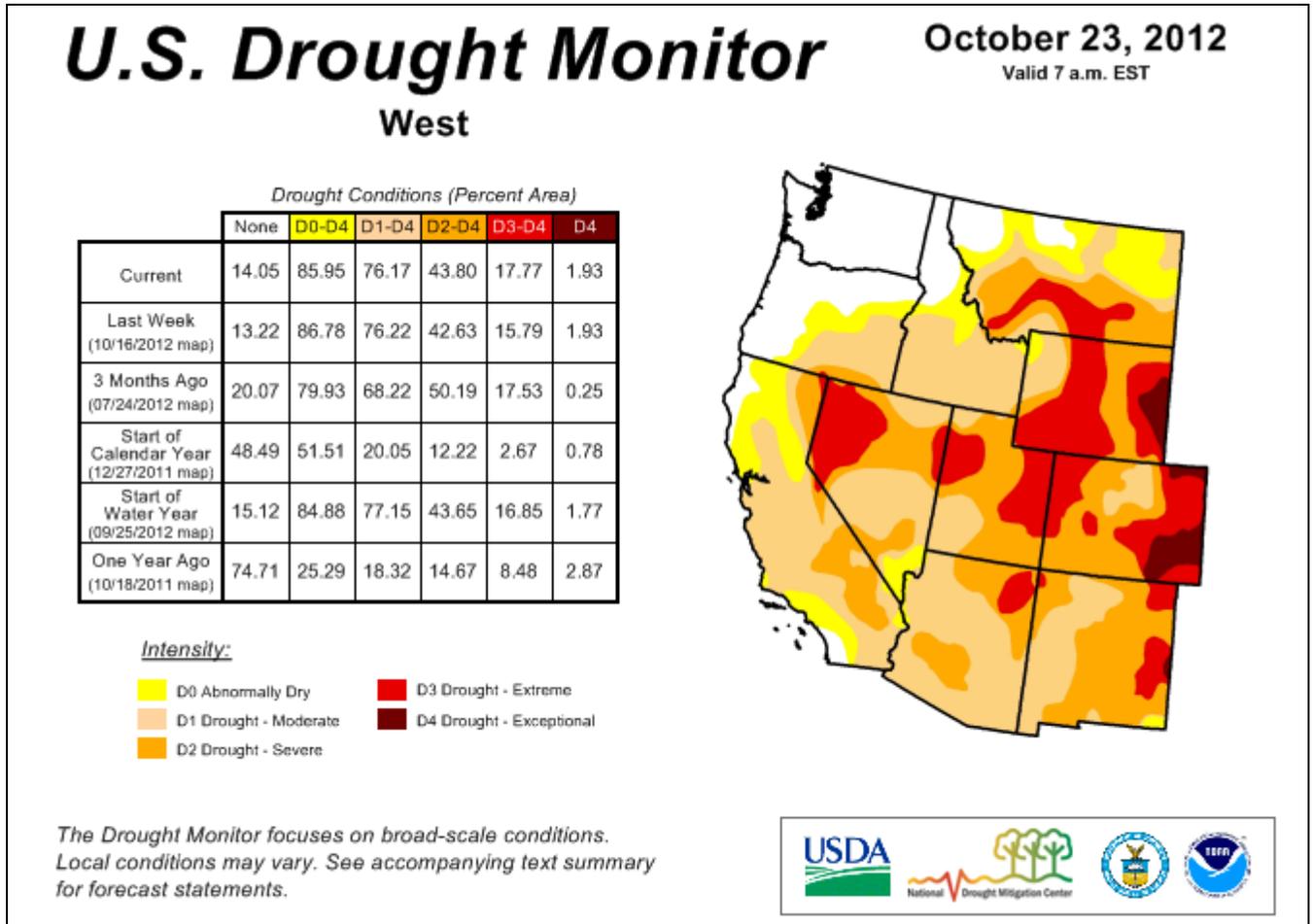
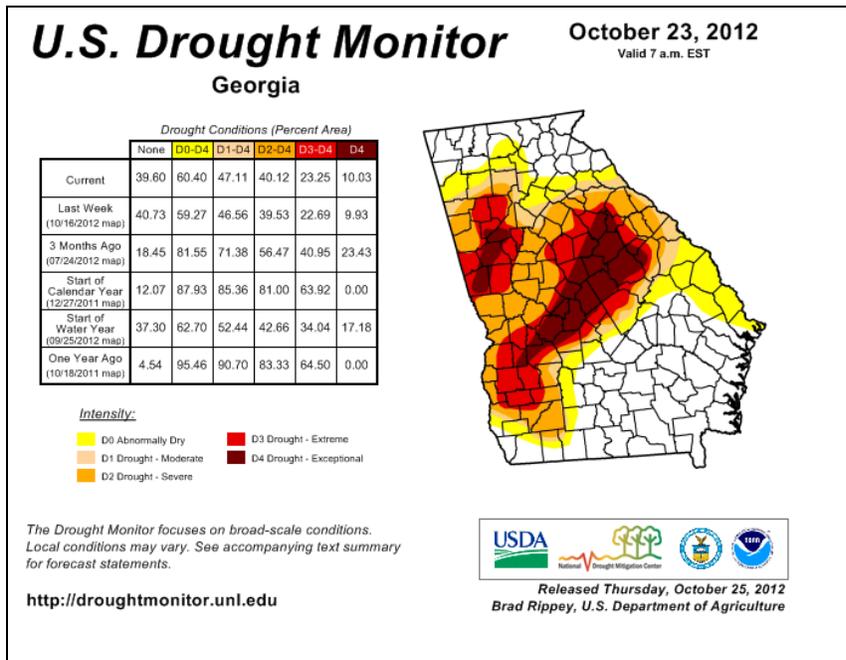


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Some minor deterioration in D3 is noted this week. D4 is holding near 2%. For the Southwest Climate Outlook, click [here](#). For the Intermountain West Climate Dashboard - beta version, click [here](#).

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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.

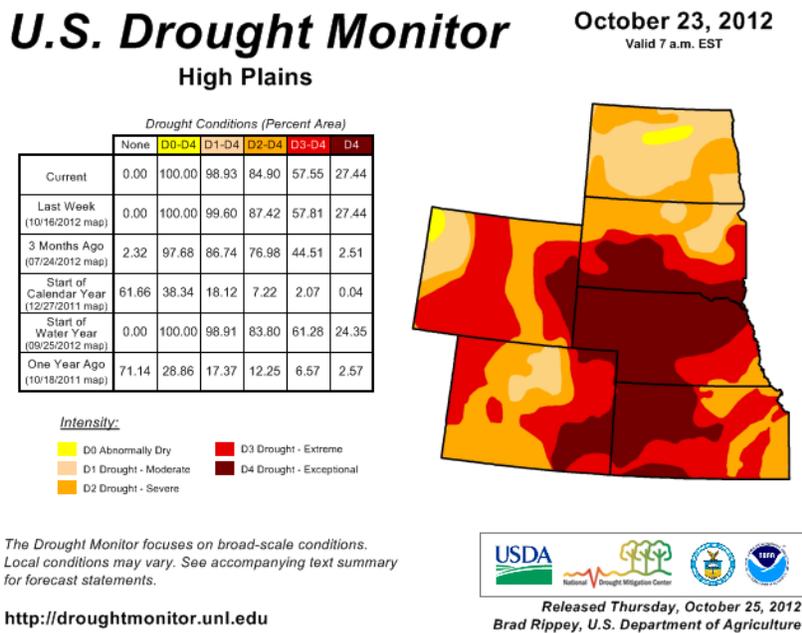


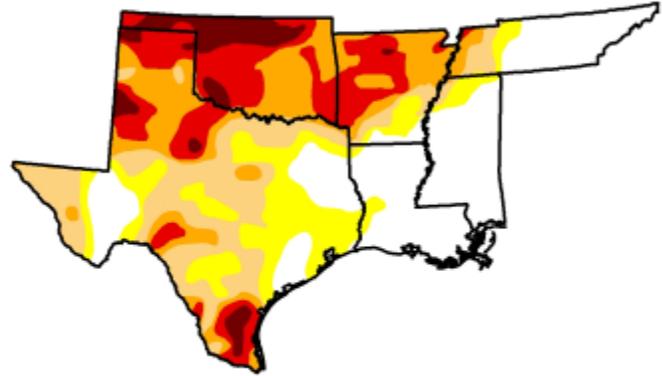
Fig. 3c: Drought Monitor for the [High Plains](#) with statistics over various time periods. Slight improvement in D2 is noted this week. D4 has remained near 27.5%. See the latest [Kansas Drought Report](#).

U.S. Drought Monitor

South

October 23, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	29.65	70.35	54.93	37.22	20.52	5.29
Last Week (10/16/2012 map)	31.50	68.50	55.33	37.17	20.39	5.29
3 Months Ago (07/24/2012 map)	19.82	80.18	67.23	42.53	20.72	4.30
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 (10/18/2011 map)	14.13	85.87	78.18	71.28	63.72	47.94



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.

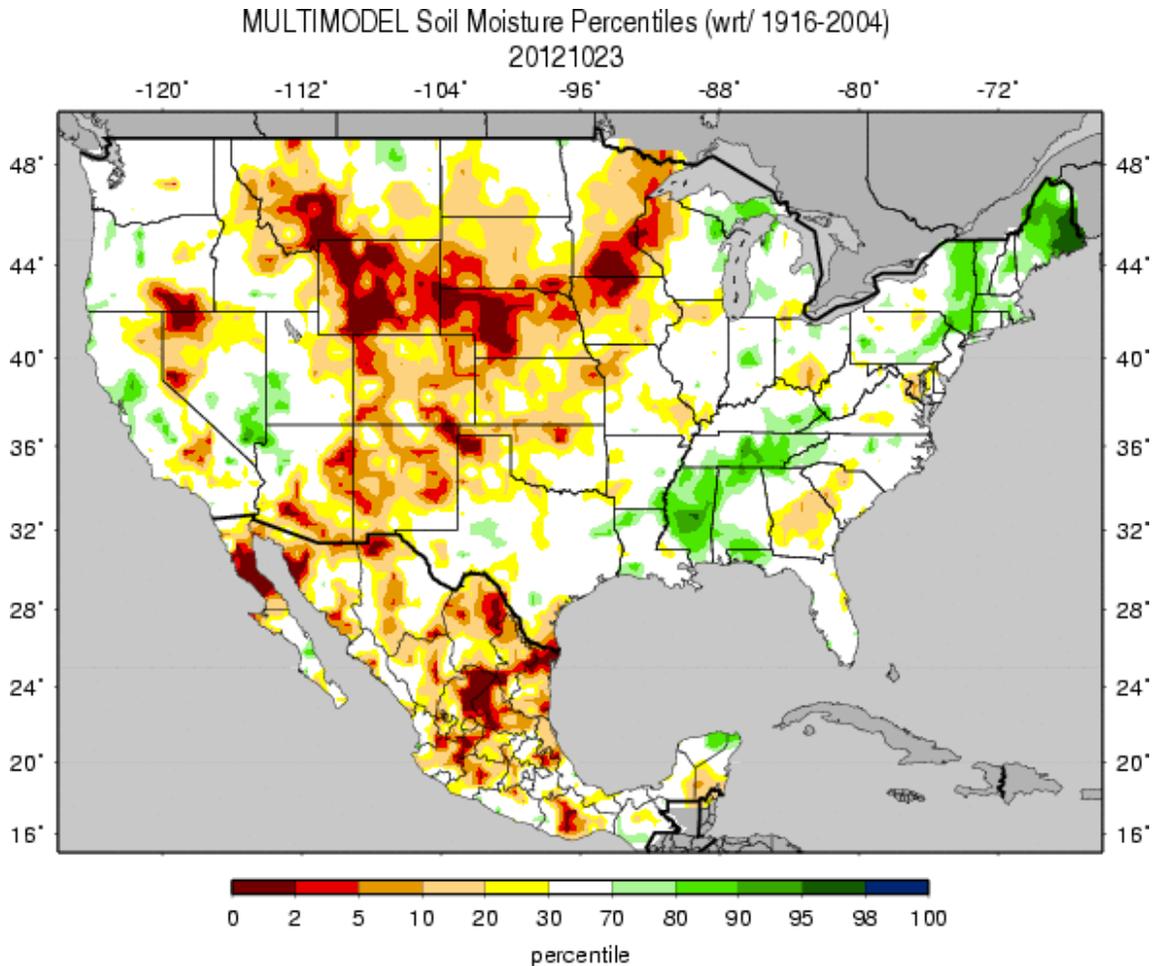
<http://droughtmonitor.unl.edu>



Released Thursday, October 25, 2012
Brad Rippey, U.S. Department of Agriculture

Fig. 3d: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note no significant change this week. D4 is holding ~5%.

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Figs. 4: Soil Moisture ranking in [percentile](#) as of 23 October shows dryness over much of the Northern Rockies, the Central High Plains (including southern Minnesota), northwest Great Basin, and northern-most part of Texas.

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 (2006) MONTH=2012-09-25 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Oct 25 08:34:54 PDT 2012

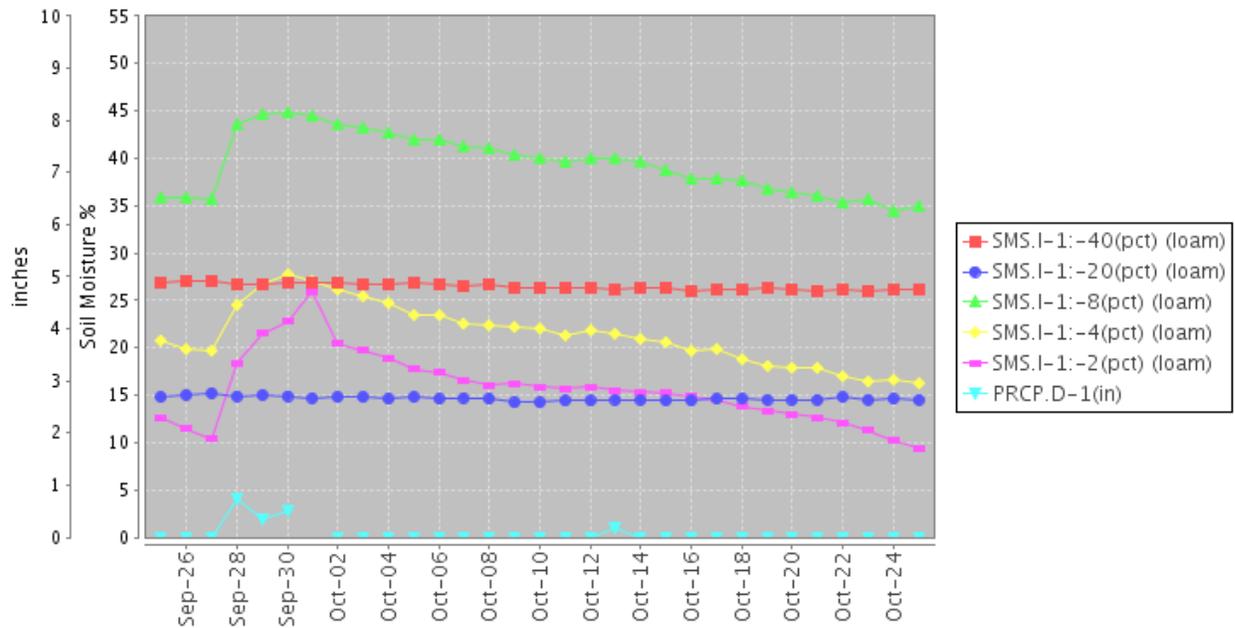


Fig. 5: This NRCS resource shows a site over the [Panhandle of Texas](#) with soil moisture near average moisture although it was been declining in recent weeks near the surface.

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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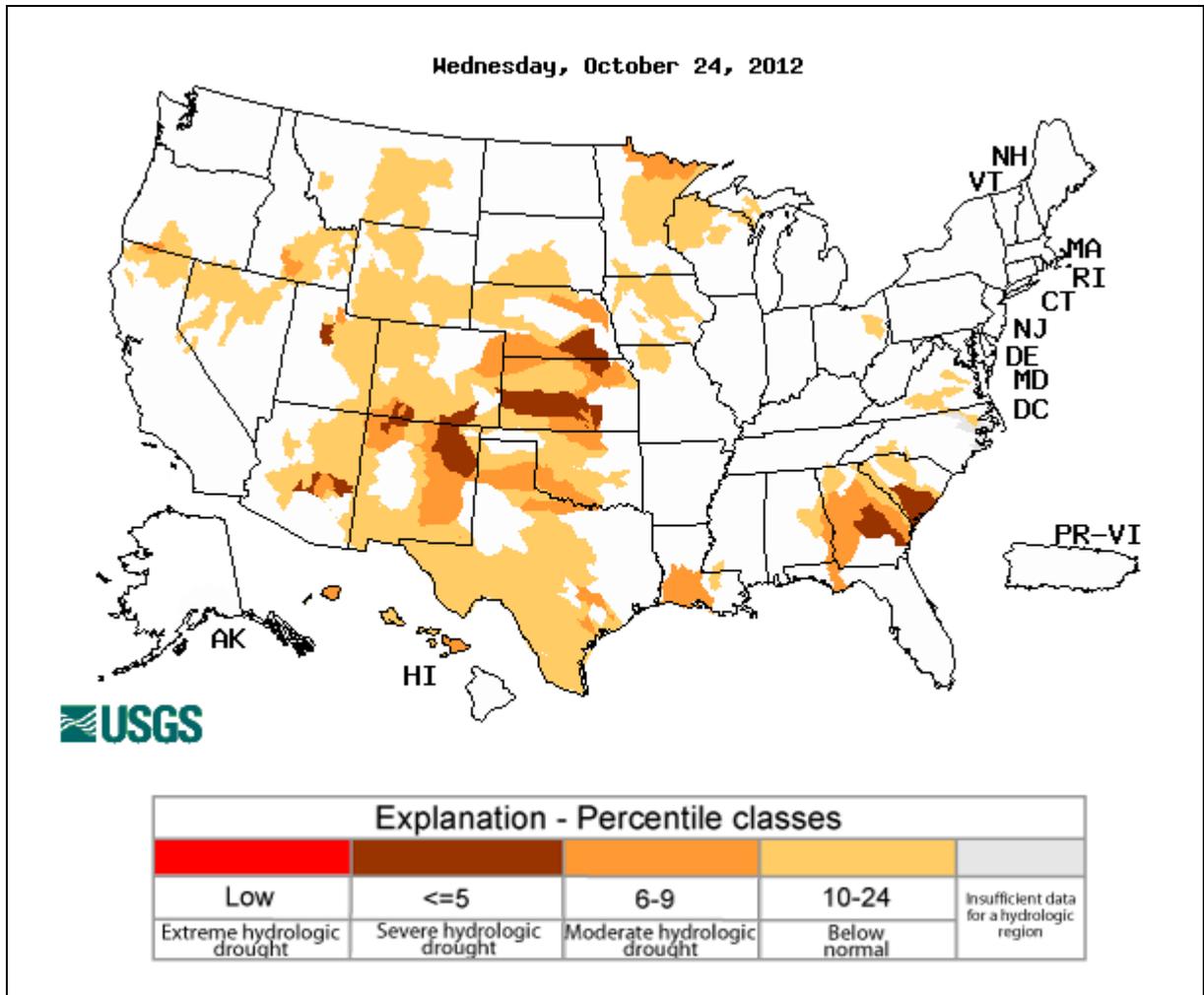


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of central Kansas and southeast Nebraska, The Great Salt Lake, southeast Colorado, northeast New Mexico, Georgia, and South Carolina. See new USGS [National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

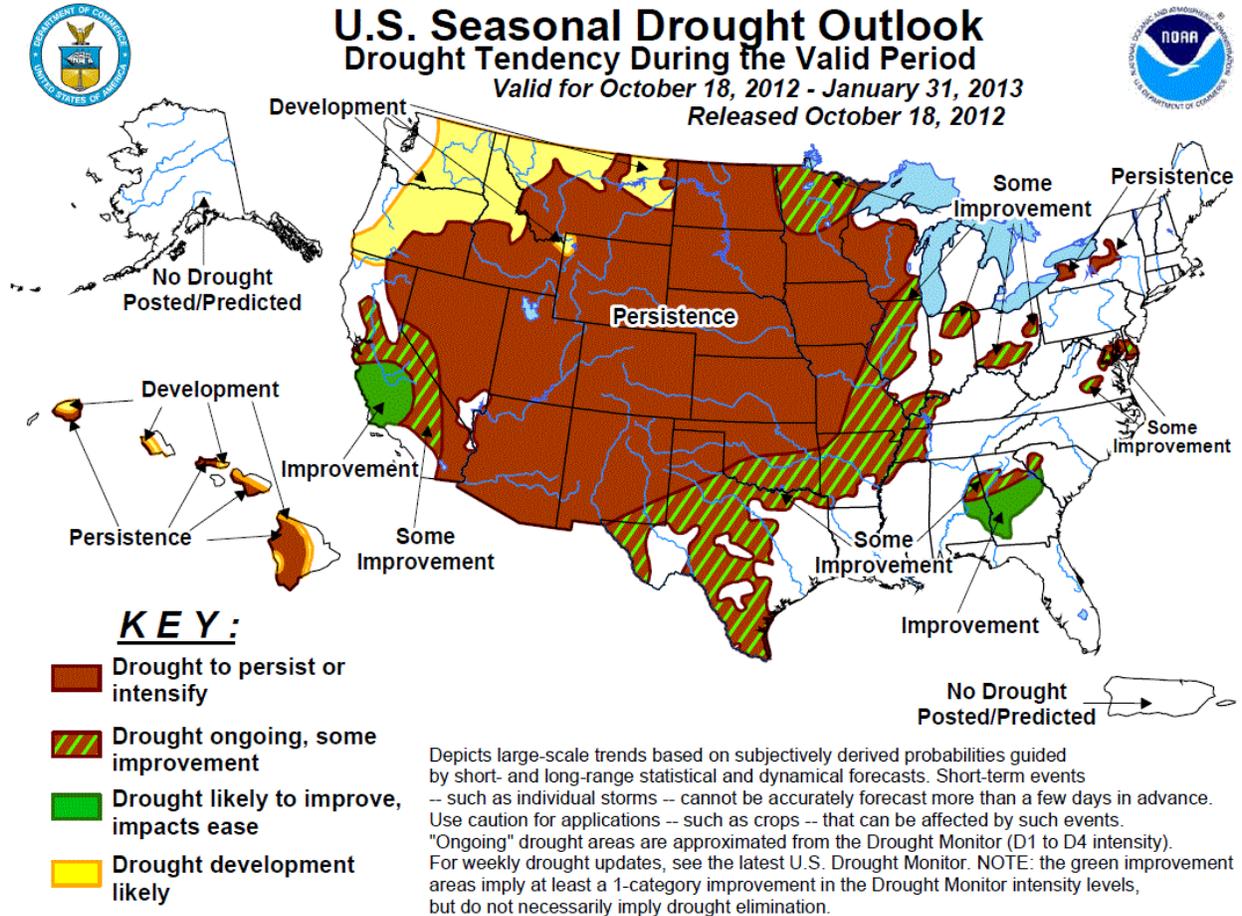


Fig. 7: [U.S. seasonal Drought Outlook](#) released (18 October 2012).

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National Drought Summary -- October 23, 2012

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

Weather Summary: A slow-moving storm resulted in several days of cool, cloudy, showery weather in the Midwest, replenishing soil moisture. Rain also extended southward through the Mississippi Valley. Mostly dry weather prevailed, however, across the lower Southeast. One exception to the dry pattern was southern Florida, where locally heavy showers occurred. Farther west, mostly dry weather accompanied a warming trend across the Plains. Significant precipitation was limited to the eastern Dakotas, while the High Plains' hard red winter wheat belt received little or no rain. As a result, soil moisture shortages continued to limit wheat emergence and development across the northwestern half of the Plains. In addition, mid-week wind gusts locally in excess of 70 mph raised dust and temporarily closed major roadways across parts of the Plains. On the southern half of the Plains, however, a combination of warmer weather and previous soil moisture improvements promoted wheat growth. Elsewhere, dry weather from southern California to the central and southern Rockies contrasted with substantial precipitation in northern California and the Northwest.

The East: Heavy rain in the northern Mid-Atlantic region brought further reductions in the coverage of abnormal dryness (D0) and moderate drought (D1). Farther south, however, little or no rainfall occurred. As a result, drought coverage began to gradually increase in the interior Southeast, including parts of Alabama and Georgia. On October 21, USDA rated topsoil moisture 49% very short to short in Georgia and 38% very short to short in South Carolina.

The Mid-South: Spotty showers provided some additional drought relief in a few areas, including parts of Missouri and western Tennessee. Meanwhile, drought coverage increased slightly in areas bypassed by rain, such as a few locations in northern and western Arkansas.

The Midwest: The second significant rainfall event in less than 2 weeks provided broad drought relief. In addition, an increasing area of the Midwest is being affected primarily by only long-term drought (L), rather than both short- and long-term drought (SL). The most recent rainfall event was heaviest in the states bordering Lake Michigan, while locally heavy showers and thunderstorms also dotted Missouri, Iowa, and the far upper Midwest (the eastern Dakotas and western Minnesota). By October 21, topsoil moisture had improved dramatically, with less than one-fifth rated very short to short in Indiana (13%) and Michigan (16%).

The Plains: From October 16-18, a low-pressure system over the Midwest generated high winds across the nation's mid-section. On the 18th, gusts were clocked to 74 mph in Pierre, South Dakota, and 70 mph in Broken Bow, Nebraska. Two days earlier in Montana, Havre (62 mph on October 16) had noted its highest October gust since 1999. The wind raised dust, temporarily closing several major roadways—including parts of I-80 in Nebraska—and triggering several chain-reaction automobile accidents. In some of the nation's hardest-hit drought areas, winter wheat has been very slow to emerge this fall. For example, only 13% of South Dakota's crop had emerged by October 21, versus the 5-year average of 80%. The wheat emergence situation is only slightly better in Montana (36 vs. 67%), Nebraska (58 vs. 87%), and Colorado (66 vs. 82%). On October 21, Nebraska continued to report the nation's worst rangeland and pasture conditions (97% very poor to poor; tied with California). Behind Nebraska were Kansas (80% very poor to poor), South Dakota (80%), Montana (77%), Oklahoma (71%), North Dakota (59%), and Texas (41%). Meanwhile, the storm that produced the high winds also brought much-needed moisture to the eastern Dakotas. On the strength of heavy rain, extreme drought (D3) was eradicated from eastern North Dakota. Some of the greatest improvements occurred in the

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Red River Valley of the North.

The West: The most impressive precipitation of the season overspread northern California, the Pacific Northwest, and the northern Rockies. The precipitation also helped to establish high-elevation snow packs, with 1 to 2 feet reported at some locations in the Cascades and Sierra Nevada. The heaviest rain and snow fell in drought-free areas, although precipitation chipped away at dryness and drought in a few areas. Meanwhile, dry conditions prevailed across the southern half of the West. In fact, extreme drought (D3) was expanded slightly in northern Utah based on continuing long-term precipitation deficits. On October 21, Utah's stock water supplies were reported by USDA to be 56% very short to short. Rangeland and pasture conditions remain abysmal in much of the West, with nine of eleven states reporting more than half rated very poor to poor. On October 21, California (97% very poor to poor) matched Nebraska for the nation's worst rangeland and pasture conditions, followed by Colorado (86%), Wyoming (86%), New Mexico (84%), Nevada (82%), Montana (77%), Utah (56%), Idaho (54%), Oregon (53%), Arizona (49%), and Washington (35%).

Hawaii, Alaska and Puerto Rico: Currently, there is no drought—only abnormal dryness (D0)—depicted in Alaska and Puerto Rico, where no changes were introduced. Alaskan dryness is confined to the northern part of the state. Meanwhile in Hawaii, October has featured very dry conditions. At Hawaii's major airport observation sites, October 1-23 rainfall ranged from 0.01 inch (1% of normal) at Kahului, Maui, to 2.35 inches (36%) at Hilo, on the Big Island. Moderate, severe, and extreme drought (D1, D2, and D3) covers more than half of Hawaii, with some of the driest conditions noted in leeward areas. On October 21, Hawaiian topsoil moisture was reported to be 78% very short to short, and irrigation was being used in many areas to maintain favorable crop conditions.

Looking Ahead: During the next 5 days (October 25-29), the complex interaction between Hurricane Sandy, a cold front crossing North America, and a blocking high-pressure system over the northern Atlantic Ocean will result in a high-impact weather event in the eastern U.S. Coastal highlights will include large waves and beach erosion. Inland—especially in the Northeast—conditions developing during the weekend and persisting well into next week should include multiple days of high winds and heavy rainfall. Precipitation may eventually change to snow in parts of the Appalachians. Farther west, rainfall associated with the cold front could total 1 to 2 inches in the Midwest. Similar precipitation totals should also occur during the next 5 days in the Northwest. In contrast, dry weather will prevail from southern California to the southern Plains. Cold air will gradually engulf much of the nation, although temperatures will rebound to above-normal levels in the West by early next week.

The NWS 6- to 10-day outlook for October 30 – November 3 calls for below-normal temperatures across the eastern half of the U.S., while warmer-than-normal weather will prevail from the Pacific Coast to the High Plains. Meanwhile, near- to below-normal precipitation across the majority of the U.S. will contrast with wetter-than-normal conditions in the Northeast and Northwest.

Author: [Brad Rippey, U.S. Department of Agriculture](#)

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

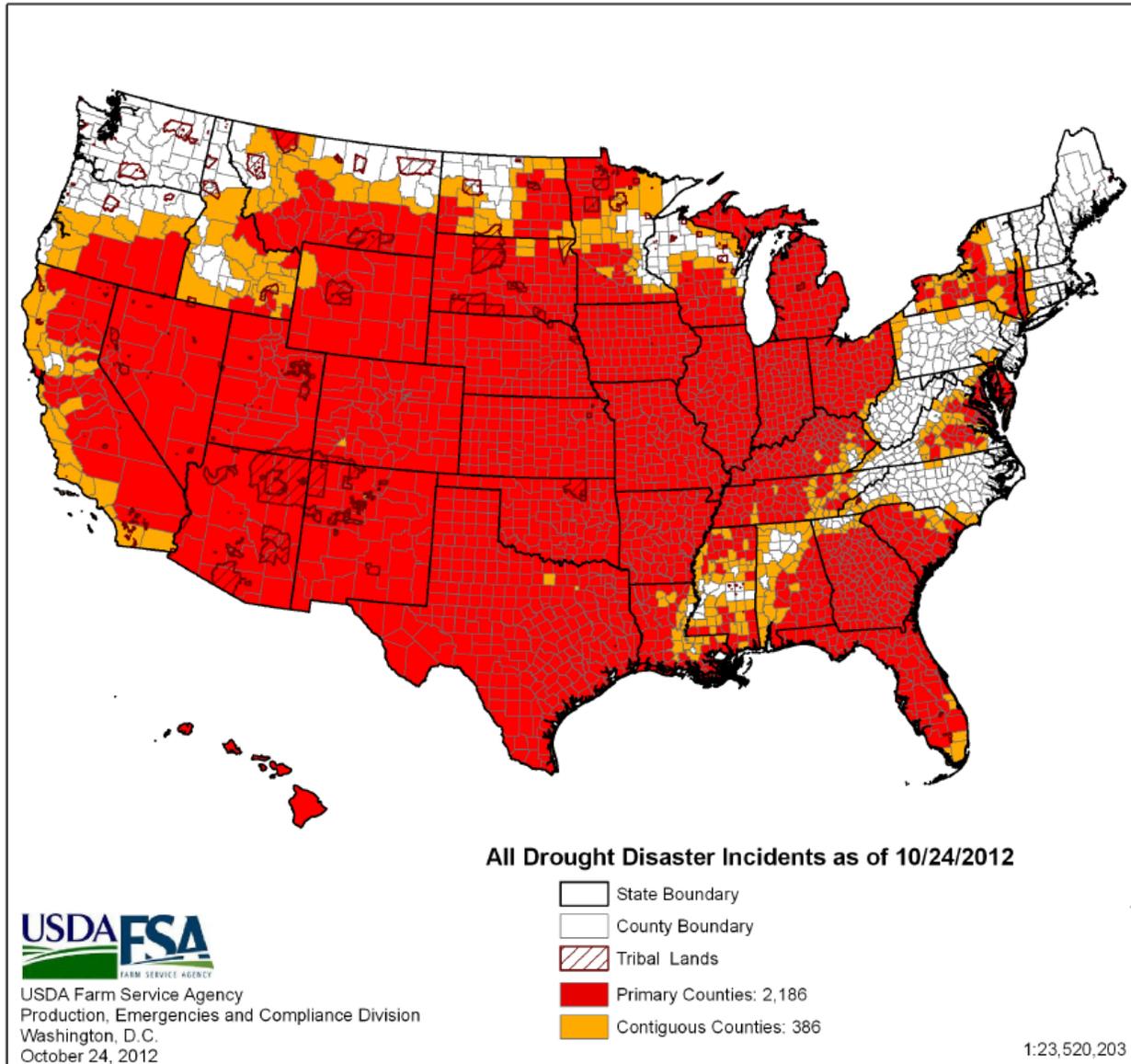
Drought or Dryness Types

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S ... Short-Term, typically <6 months (e.g. agricultural, grasslands)
L ... Long-Term, typically >6 months (e.g. hydrology, ecology)

Updated October 24, 2012

2012 Secretarial Drought Designations - All Drought



Ref: http://www.usda.gov/wps/portal/usda/usdahome?navid=DISASTER_ASSISTANCE

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Special Feature

Harvest in the Midst of Drought: Healthy Soil Delivers for Ohio Farmer *NRCS Unveils National Effort to Promote Healthy Soil Benefits*

Natural Resources Conservation Service Chief Dave White today visited a family-owned farm in Ohio to announce the start of a U.S. Department of Agriculture effort meant to highlight the benefits of improving and maintaining America's soil.

Natural Resources Conservation Service's (NRCS) awareness and education effort features farmers from communities in numerous states—Ohio, Indiana, New Mexico, North Dakota, Indiana, Utah, North Carolina, Massachusetts, Montana and Kansas—where growers are increasingly interested in how improved soil health can benefit their operations. The agency is studying successes and identifying lessons learned in these states to share with farmers in other states.

Read more about [Chief Dave White' visit to the Farm](#), and read more about [NRCS's soil health initiative](#).

Contact Jody Holzworth, jody.holzworth@wdc.usda.gov, Phone: 202-720-3210, Fax: 202-720-1564.