



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 1 November 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 1 November shows cooler conditions over the Northern Plains and warmer conditions over the Cascades and Sierra (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departure over central Oregon ($>+6^{\circ}\text{F}$). 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 (mostly rain) over the Northern Cascades and Coastal Range of Washington (Fig. 2). In terms of percent of normal, quite a lot of precipitation fell across the Pacific Northwest, Upper Snake River and the Eastern Plains of Wyoming and Colorado (Fig. 2a). For the [2013 Water-Year](#) that began on 1 October 2012, statistics are starting to reveal a La Niña-like precipitation pattern that is favoring the Northern Tier States. However, we are still very early into the snow accumulation season and these values can still change rapidly (Fig. 2b).

Weather Summary: This U.S. Drought Monitor week has been dominated primarily by the passing of the Hurricane Sandy and her remnants. This powerful, far-reaching storm passed along the East Coast before making landfall near Atlantic City, New Jersey on Monday and combining with a mid-latitude Low pressure system as it continued its trek through the Mid-Atlantic and into the Northeast. In its wake, the storm dumped up to over eight inches of rain in Virginia, Maryland, and Delaware. The highest total, 9.57 inches as of Tuesday morning, fell at the Oceana NAS/Soucek airport in Virginia. States up the coastline from North Carolina to New York, Connecticut, and Rhode Island experienced significant flooding while wind and wave events were felt as far west as Wisconsin and Illinois. In the Appalachian Mountains unofficial totals of over two feet of snow fell in western Maryland and nearly that amount in parts of West Virginia by Tuesday morning. More than 8.2 million people experienced power outages from the combination of rain, wind, snow, and flooding. Transportation has been disrupted with more than 10,000 flights cancelled and many roads and bridges impassable. Thirty-nine deaths in the U.S. have been attributed to the storm as of Tuesday including at least one from the HMS Bounty, a replica of the 18th-century tall ship that was caught in the storm off the coast of North Carolina.

The West: Severe Drought (D2) conditions in Arizona and New Mexico expanded slightly. Conversely, areas of Extreme (D3) and Severe (D2) Drought in southeast and southwest Wyoming saw improvement from recent precipitation. Author: Michael Brewer, National Climatic Data Center, NOAA

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

Weekly Snowpack and Drought Monitor Update Report

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.

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)

Nov 01, 2012

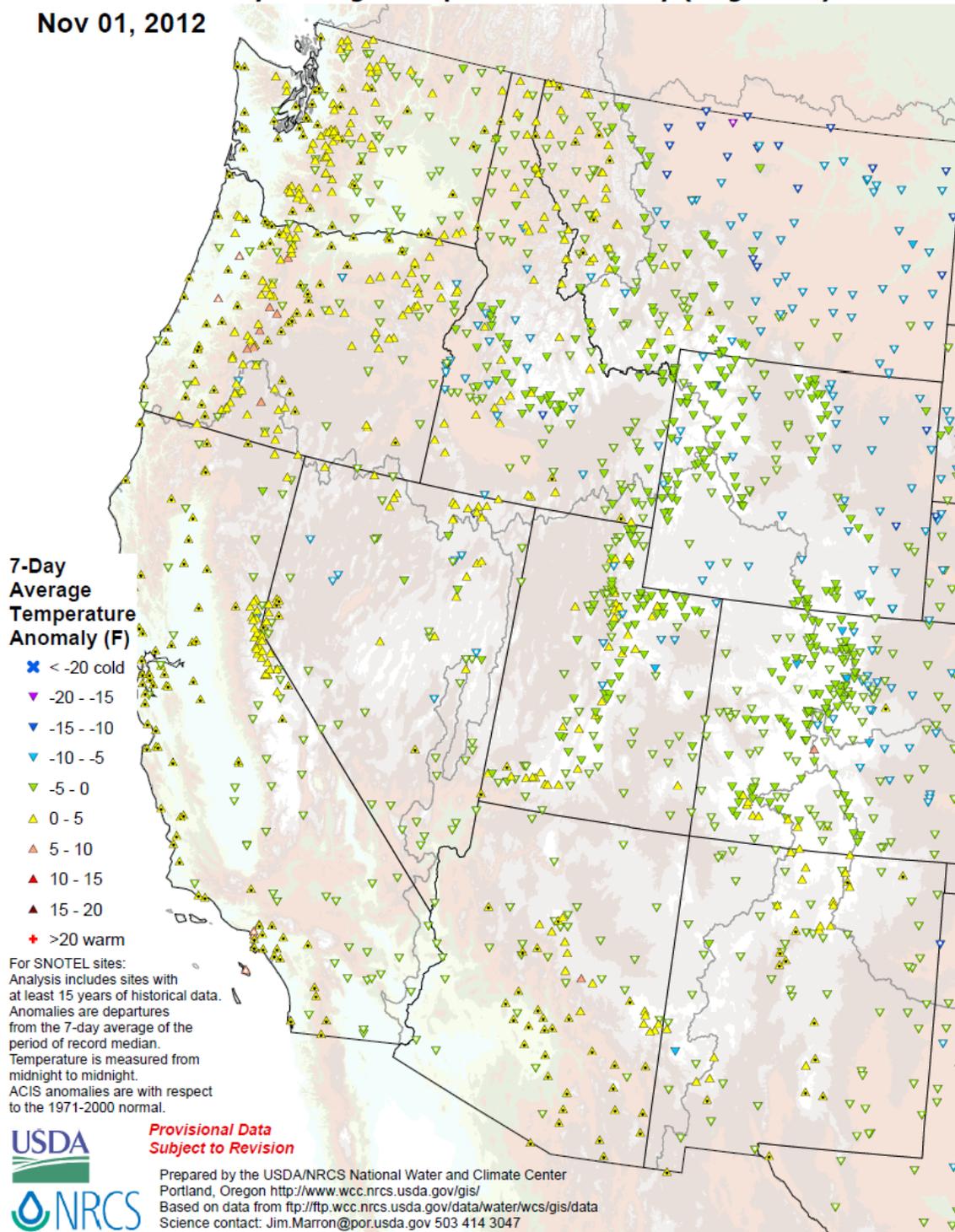
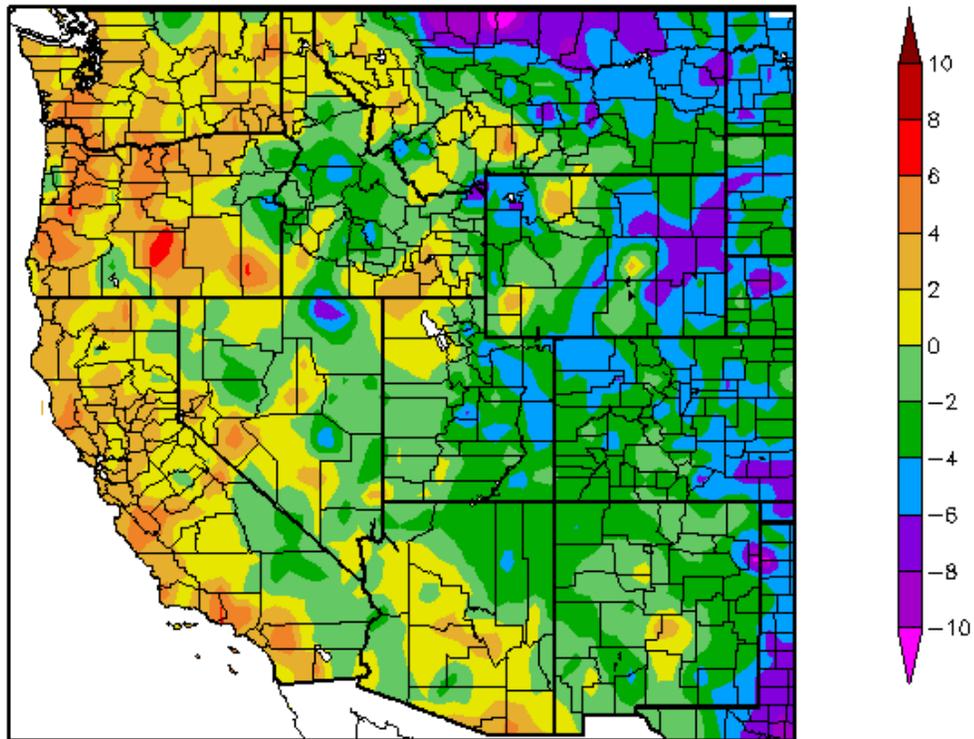


Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 1 November shows cooler conditions over the Northern Plains and warmer conditions over the Cascades and Sierra.

Departure from Normal Temperature (F)
10/25/2012 – 10/31/2012



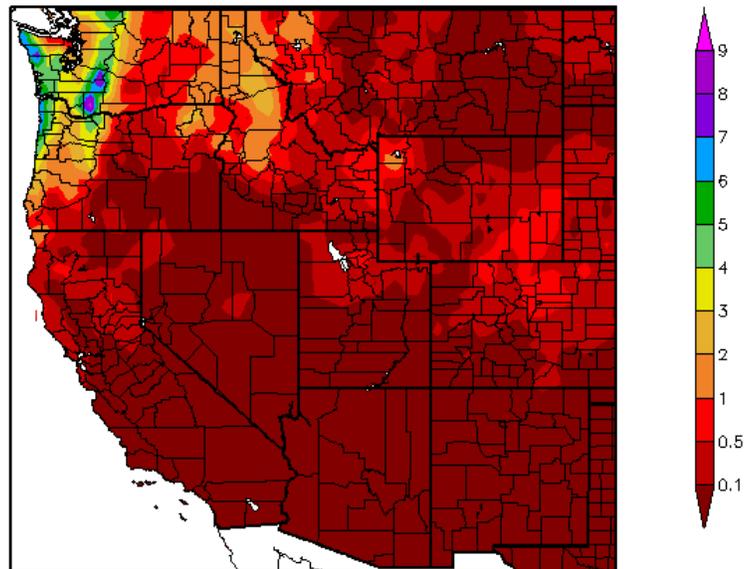
Generated 11/1/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departure over central Oregon (>+6°F). The greatest negative departures occurred over north-central Montana (<-10°F).

Weekly Snowpack and Drought Monitor Update Report

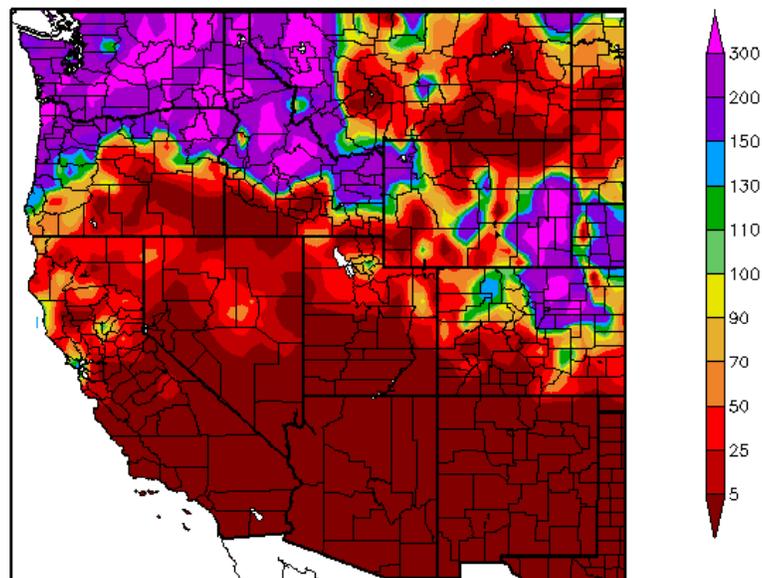
Precipitation (in)
10/25/2012 – 10/31/2012



Generated 11/1/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
10/25/2012 – 10/31/2012



Generated 11/1/2012 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 (mostly rain) over the Northern Cascades and Coastal Range of Washington (top). In terms of percent of normal, quite a lot of precipitation fell across the Pacific Northwest, Upper Snake River and the Eastern Plains of Wyoming and Colorado (bottom). This precipitation pattern certainly suggests a La Niña-like pattern continues to dominating.

Weekly Snowpack and Drought Monitor Update Report

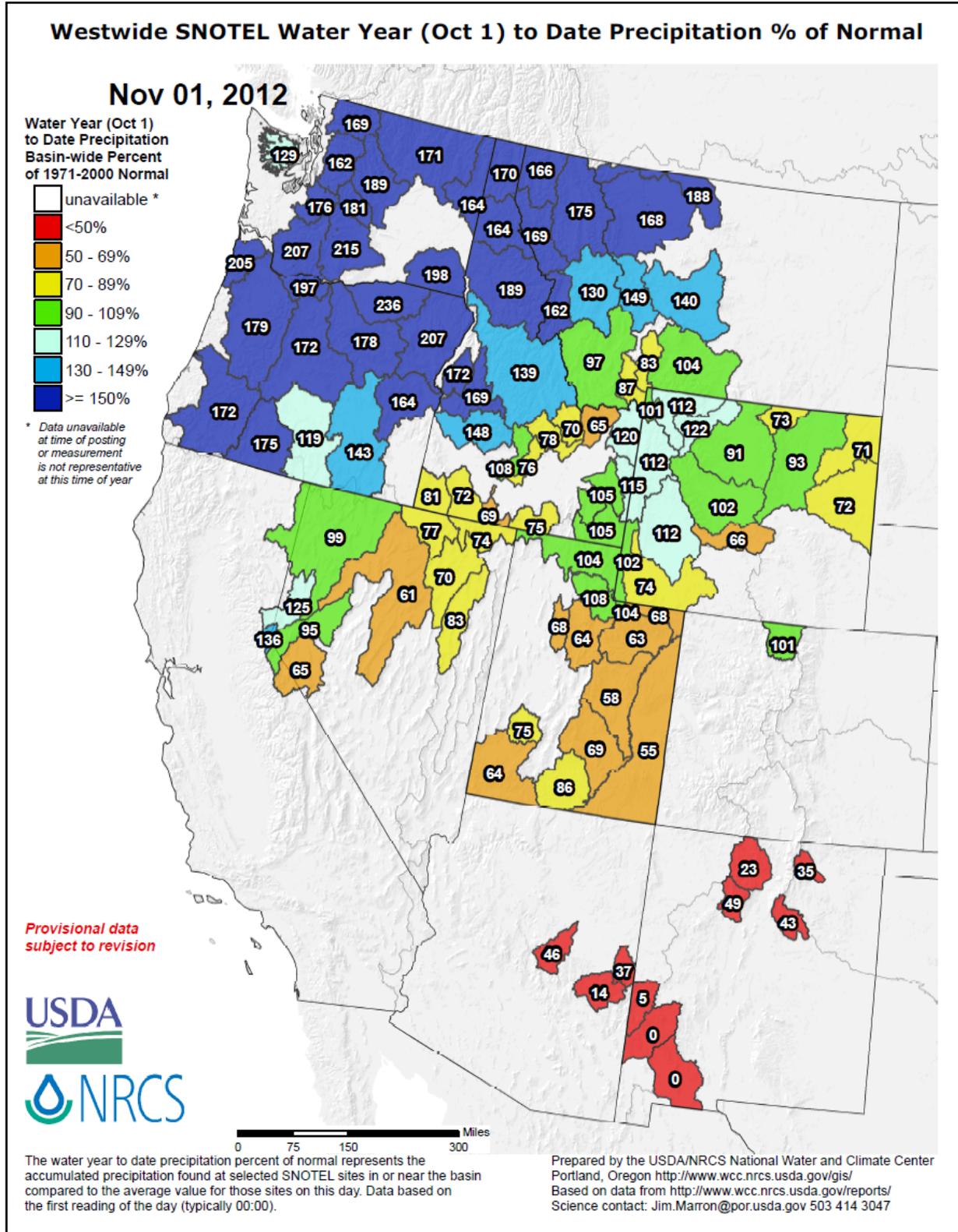


Fig. 2b: For the [2013 Water-Year](#) that began on 1 October 2012, statistics are starting to reveal a La Niña-like precipitation pattern that is favoring the Northern Tier States. However, we are still very early into the snow accumulation season and these values can still change rapidly.

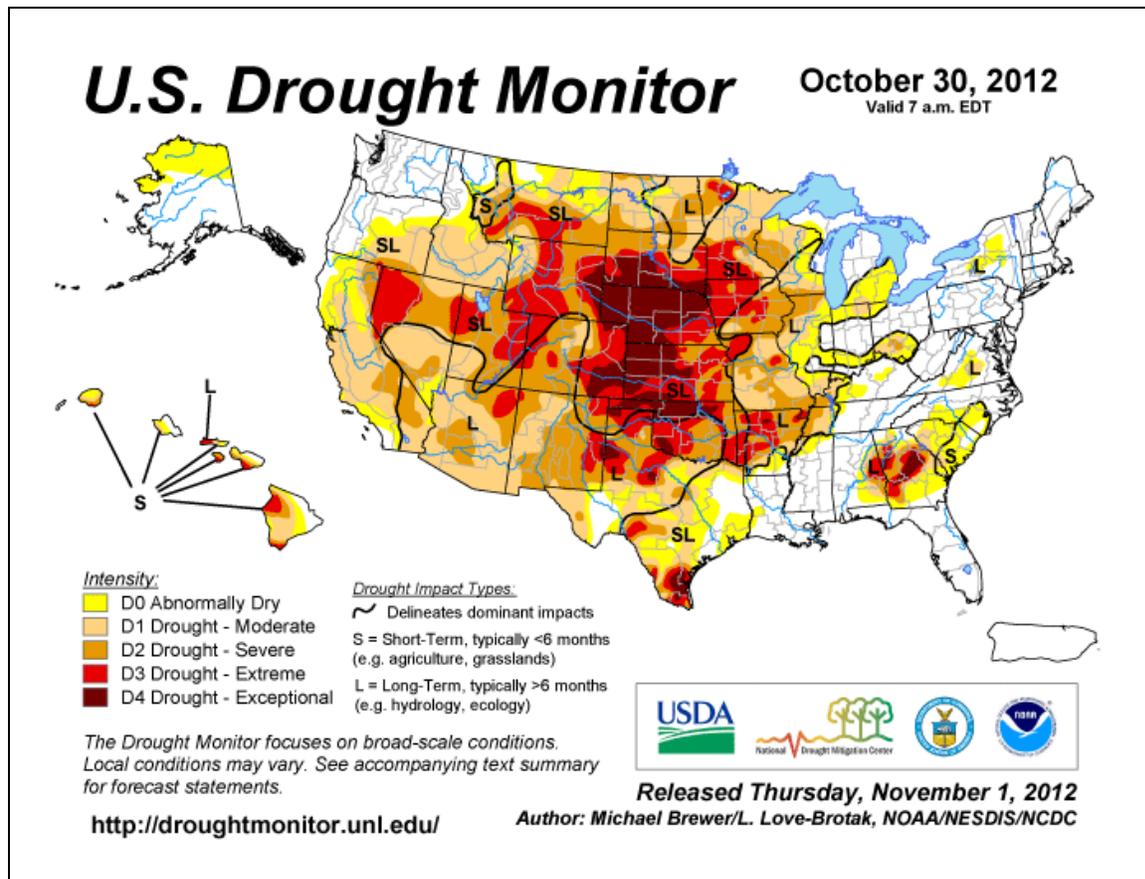


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and scattered across the western corn belt of the Central Plains into Colorado and Wyoming. A small D4 area continues over southern Texas. For more drought news, see [Drought Impact Reporter](#).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

Agriculture

- [Drought holds its grip as growers pivot to wheat](#) - Oct 26, **US**.
- [Drought prompts ranchers to sell off sheep](#) - Oct 22, **South Dakota**.
- [Milking for all it's worth](#) - Oct 19, **Kansas**.
- [Sale barns see record numbers](#) - Oct 23, **Nebraska Panhandle**.
- [US beef industry rocked by drought effects](#) - Oct 26, **US**.

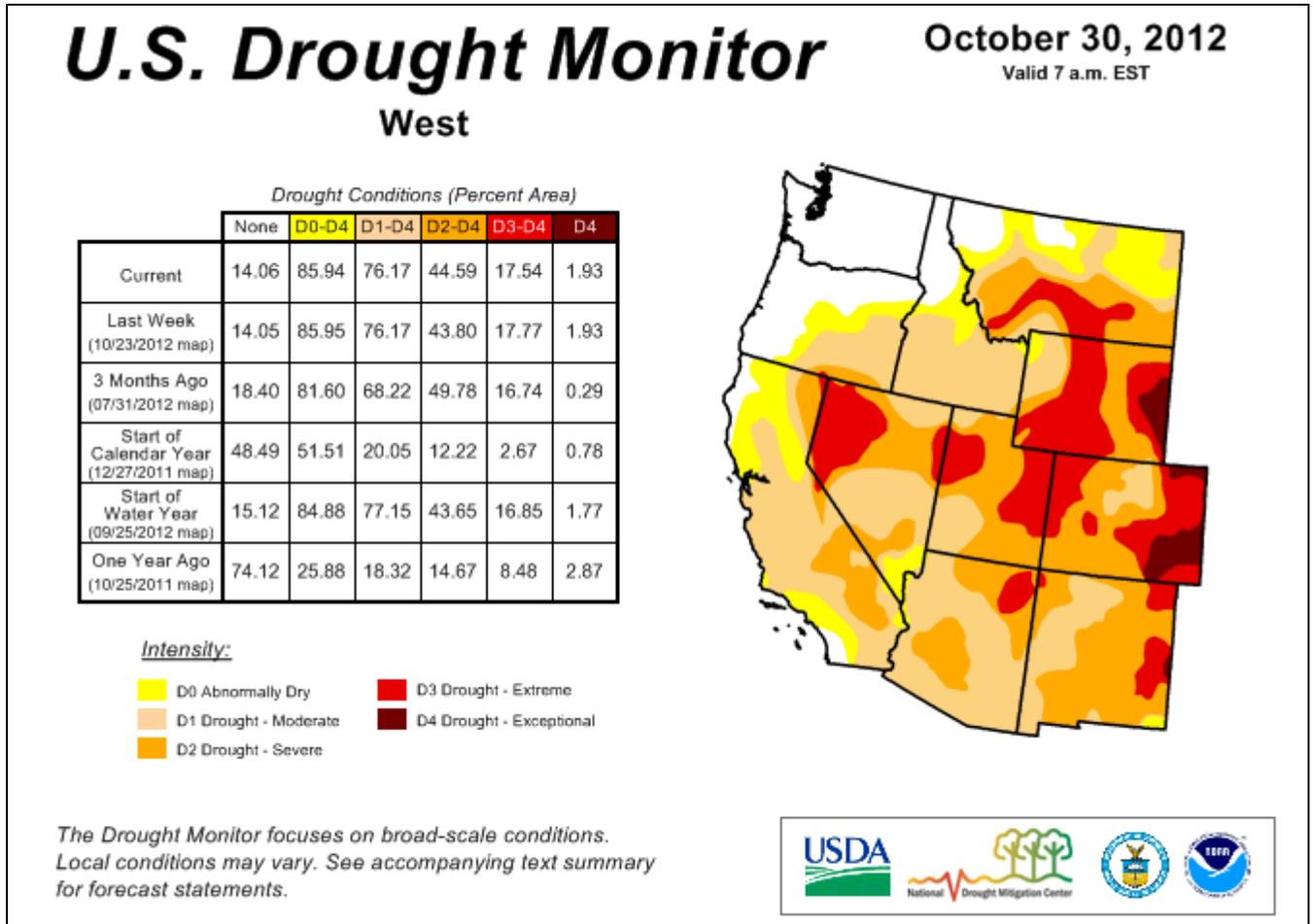


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. No significant changes are noted this week.

Weekly Snowpack and Drought Monitor Update Report

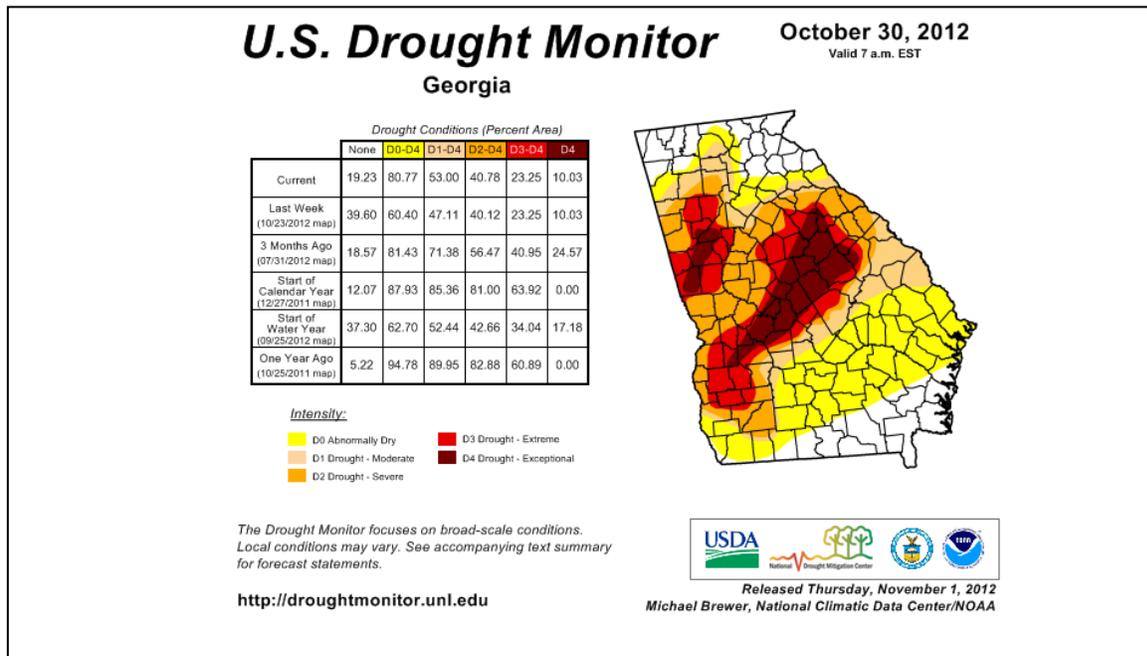


Fig. 3b: Drought Monitor for [Georgia](#) with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions that are deteriorating (~10%). See the Weekly GridSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

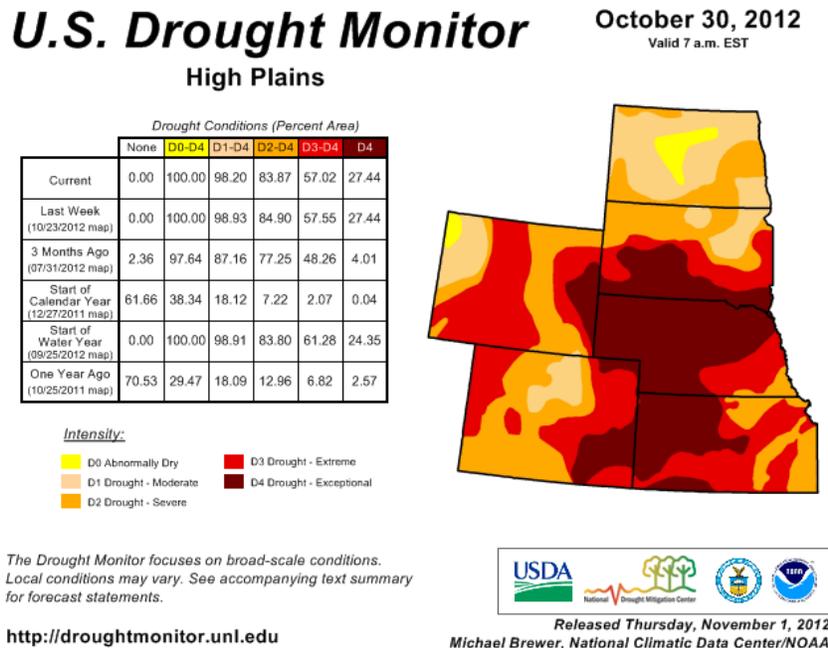


Fig. 3c: Drought Monitor for the [High Plains](#) with statistics over various time periods. No changes noted this week. D4 has remained near 27.5%. See the latest [Kansas Drought Report](#).

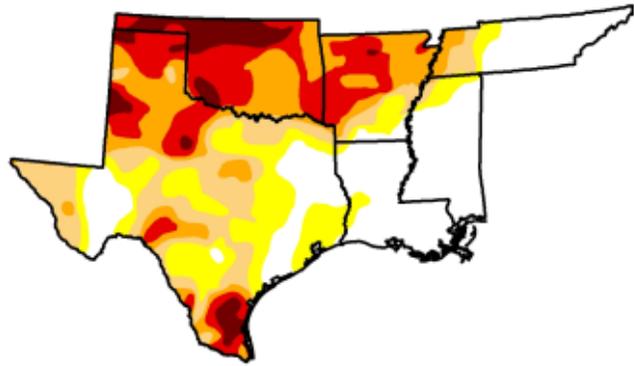
U.S. Drought Monitor

South

October 30, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.27	69.73	53.05	37.39	20.81	5.53
Last Week (10/23/2012 map)	29.65	70.35	54.93	37.22	20.52	5.29
3 Months Ago (07/31/2012 map)	20.27	79.73	66.42	43.64	24.13	5.72
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 (10/25/2011 map)	13.04	86.96	77.92	70.89	62.67	45.84



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.

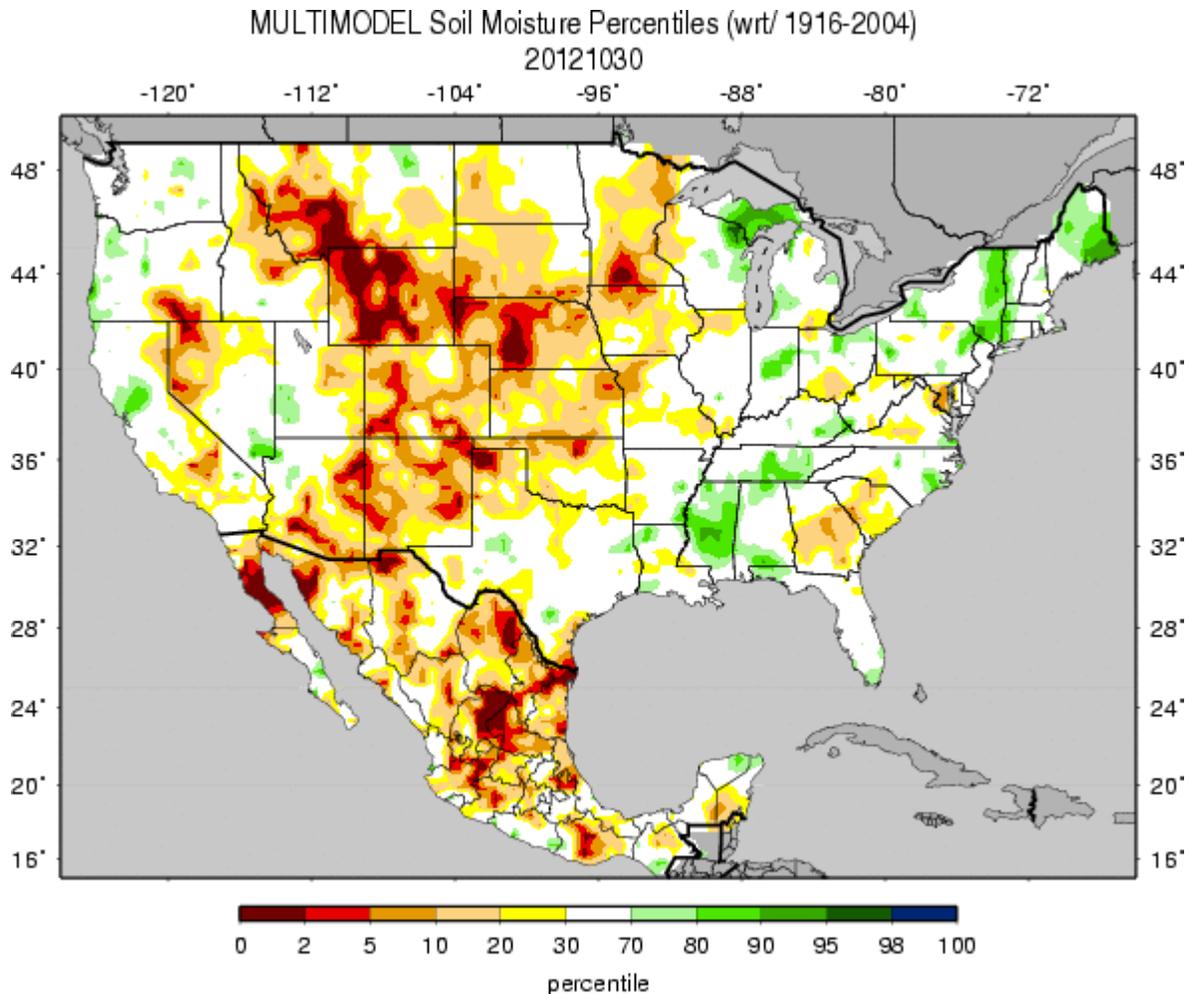
<http://droughtmonitor.unl.edu>



Released Thursday, November 1, 2012
Michael Brewer, National Climatic Data Center/NOAA

Fig. 3d: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note no significant change this week. D4 is holding ~5.5%.

Weekly Snowpack and Drought Monitor Update Report



Figs. 4: Soil Moisture ranking in [percentile](#) as of 30 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](#).

Weekly Snowpack and Drought Monitor Update Report

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

(2039) MONTH=2012-10-02 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Nov 01 08:00:16 PDT 2012

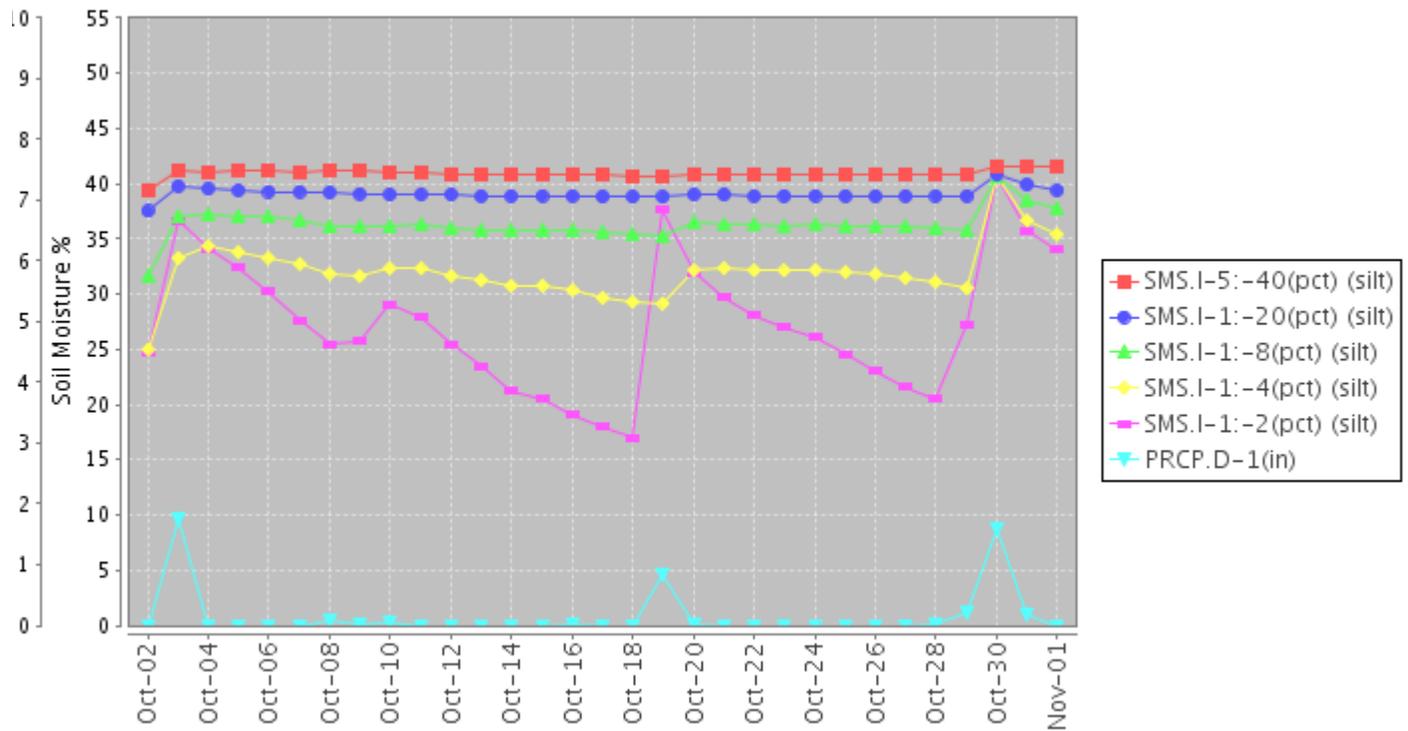


Fig. 5: This NRCS resource shows a site over [central Virginia](#) with soil moisture near the surface responding to significant precipitation events in early, mid, and late October.

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

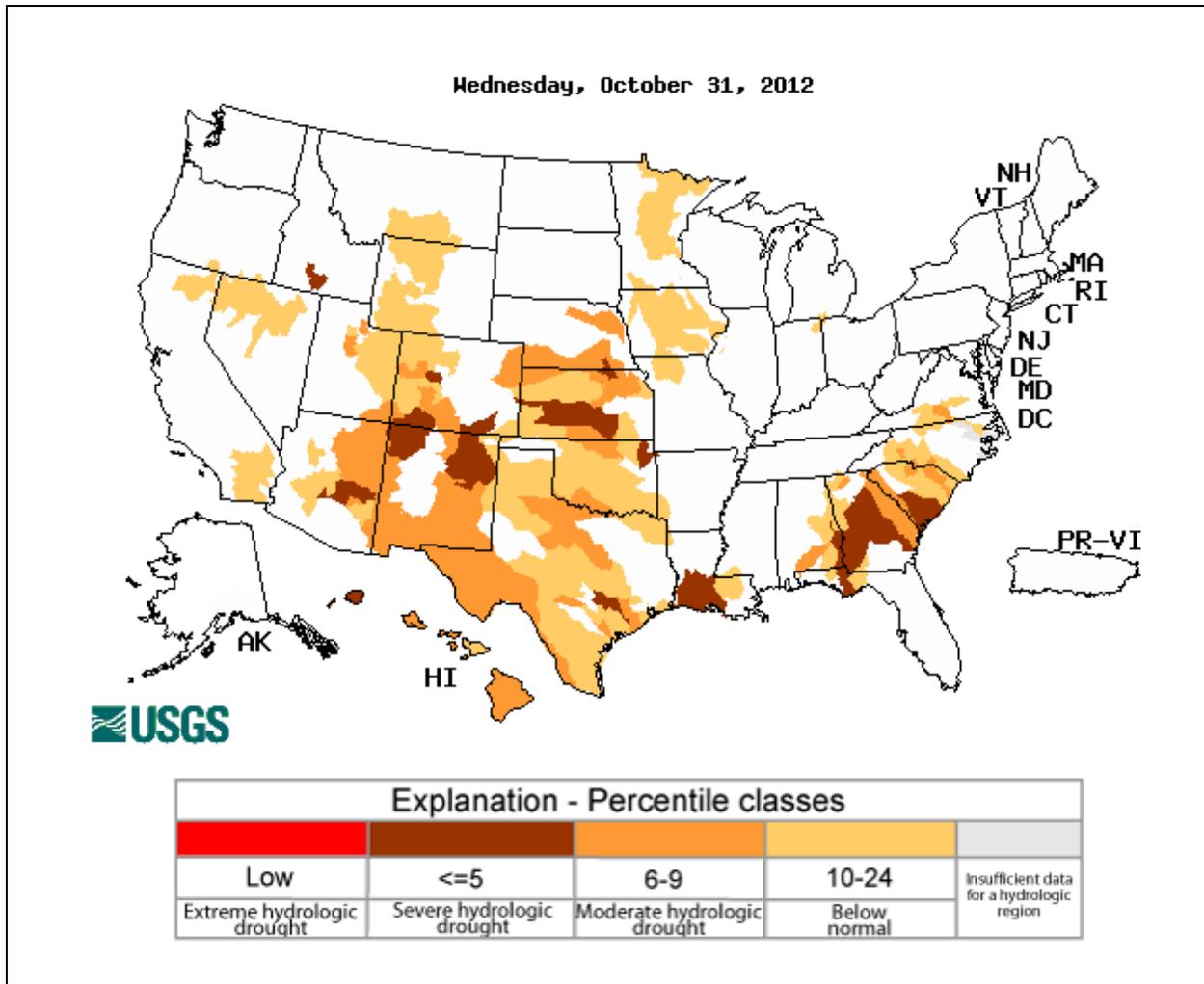


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of central Kansas and southeast Nebraska, south-central Idaho, southeast Texas, southeast-southwest Colorado, northeast-northwest New Mexico, central Arizona, Louisiana, Florida Panhandle, Georgia, and South Carolina. See new USGS [National Water Information System Mapper](#).

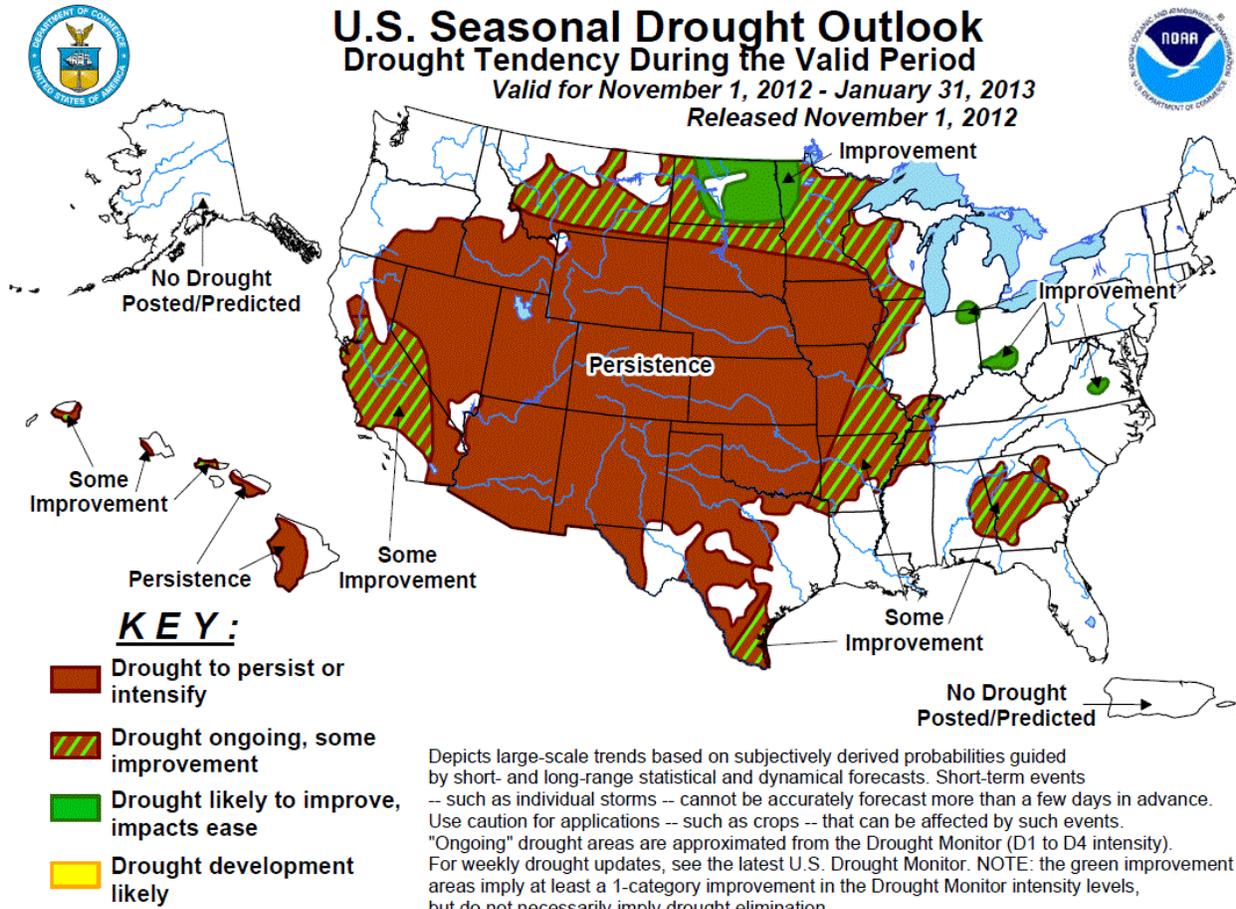


Fig. 7: [U.S. seasonal Drought Outlook](#) released (today, 1 November 2012).

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- October 30, 2012

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

This U.S. Drought Monitor week has been dominated primarily by the passing of the Hurricane Sandy and her remnants. This powerful, far-reaching storm passed along the East Coast before making landfall near Atlantic City, New Jersey on Monday and combining with a mid-latitude Low pressure system as it continued its trek through the Mid-Atlantic and into the Northeast. In its wake, the storm dumped up to over eight inches of rain in Virginia, Maryland, and Delaware. The highest total, 9.57 inches as of Tuesday morning, fell at the Oceana NAS/Soucek airport in Virginia. States up the coastline from North Carolina to New York, Connecticut, and Rhode Island experienced significant flooding while wind and wave events were felt as far west as Wisconsin and Illinois. In the Appalachian Mountains unofficial totals of over two feet of snow fell in western Maryland and nearly that amount in parts of West Virginia by Tuesday morning. More than 8.2 million people experienced power outages from the combination of rain, wind, snow, and flooding. Transportation has been disrupted with more than 10,000 flights cancelled and many roads and bridges impassable. Thirty-nine deaths in the U.S. have been attributed to the storm as of Tuesday including at least one from the HMS Bounty, a replica of the 18th-century tall ship that was caught in the storm off the coast of North Carolina.

The Southeast: With the exception of the East Coast of Florida and coastal North Carolina, beneficial precipitation largely eluded the Southeast. Along coastal North Carolina, including the Outer Banks, Abnormal Dryness (D0) was alleviated. Conversely, in central North Carolina, Abnormal Dryness (D0) expanded. Areas of northern, eastern, and southern Georgia and southern Alabama saw expansion of Moderate Drought (D1) and Abnormal Dryness (D0) as precipitation deficits mount and impacts begin to be felt again.

The Northeast and Mid-Atlantic: With the exception of areas of central Virginia and Upstate New York, the remnant of hurricane Sandy erased all Moderate Drought (D1) and Abnormal Dryness (D0) in the region.

The South and Southern Plains: In Oklahoma, Extreme Drought (D3) expanded slightly in the center of the state as many areas have now gone more than 30 days without rainfall and soil moisture impacts are intensifying. In Texas, drought conditions improved in the eastern and central part of the state, while Exceptional Drought (D4) intensified slightly along the south coast. Drought in other parts of the region remained the same.

The Central and Northern Plains and Midwest: More widespread rains in the Midwest alleviated some D2-D0 Drought through Ohio, Indiana, Illinois, Wisconsin, Minnesota, Michigan, and Iowa. North Dakota saw a minor alleviation of Severe (D2) and Moderate Drought (D1) in the north and central parts of the state.

The West: Severe Drought (D2) conditions in Arizona and New Mexico expanded slightly. Conversely, areas of Extreme (D3) and Severe (D2) Drought in southeast and southwest Wyoming saw improvement from recent precipitation.

Hawaii, Alaska and Puerto Rico: Drought conditions remained unchanged in Alaska and Hawaii this week. Another week of beneficial, above-normal precipitation has eradicated the Abnormal Dryness

Weekly Snowpack and Drought Monitor Update Report

(D0) in Puerto Rico.

Looking Ahead: During the November 1 - 5, 2012 time period, there is an enhanced probability of precipitation from the Southern Plains, extending up through the Great Lakes and into northern New England. A second area of enhanced precipitation probabilities is expected in the Northwest. Above-normal temperatures are expected in a large swath from the Southern Plains into the High Plains and the West. Below-normal temperatures will mostly be constrained to the North and the East.

For the ensuing 5 days (November 6 – November 10, 2012), the odds favor normal to above normal temperatures across the CONUS with the exception of the Southeast, where the odds favor below normal temperatures. Normal to below-normal precipitation is expected from the Tennessee Valley, through the South and Central Plains, and across most of the West. The odds of above-normal precipitation are greatest across the northern Plains, into the Great Lakes, all down the East Coast, and in southern Texas. In Alaska, temperatures are expected to be normal to above-normal in the north and below-normal in the south. Precipitation is expected to be above-normal in northern Alaska and normal to below-normal across the rest of the state.

Author: [Michael Brewer, National Climatic Data Center, NOAA](#)

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

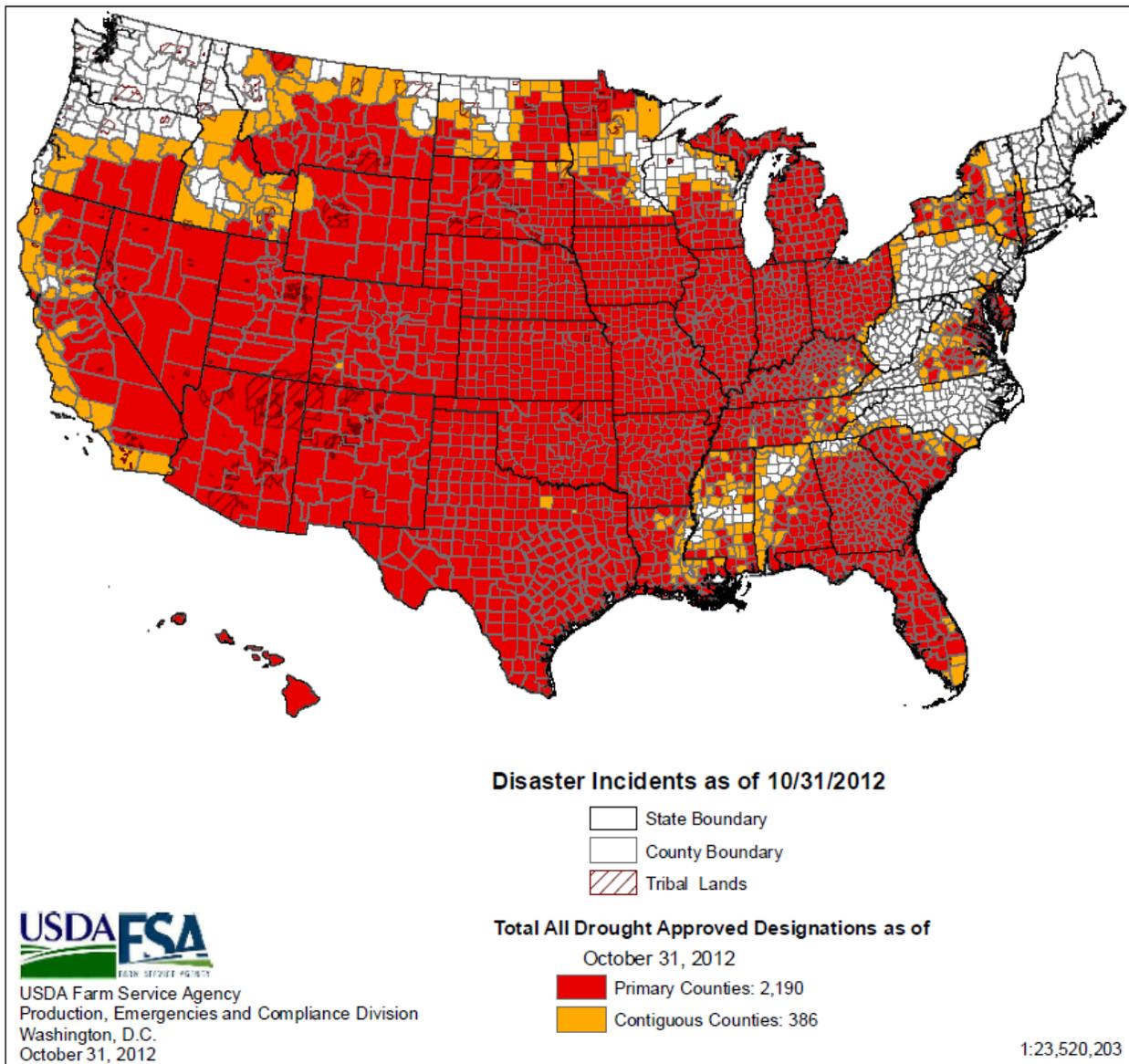
Drought or Dryness Types

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

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

Updated October 31, 2012

2012 Secretarial Drought Designations - All Drought



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

Special Feature

Do you have any questions about our data or would you like to learn more about our drought assistance in general? Let us know, we'd love to help as you start coding!

Some tools we'd love to see include apps that provide "one-click" access to the nearest USDA service centers and available drought programs; county-level drought disaster designations and program

Weekly Snowpack and Drought Monitor Update Report

eligibility; information on Federal assistance available based on location and sector; types of loans or refinance options available with a handy repayment calculator and eligibility requirements; drought maps; and localized weather outlooks. These are just a few of our ideas but we're confident that you have even better ones—so get coding!

To get started, check out these publicly available data sets in the Natural Hazards Data Community on Safety.Data.gov and on the [USDA drought website](#):

- [USDA Service Center Locator](#)
- USDA Secretarial [County Disaster Designations](#)
- [Monthly Crop Production Reports](#)
- [Weekly Crop Progress and Condition Reports](#)
- [Hay Stocks](#)
- [National Integrated Drought Information System](#)

- National Water and Climate Center data including [SNOWpack TELemetry Network](#) (SNOTEL) and [Soil Climate Analysis Network](#) (SCAN)

We encourage developers to use other freely available resources on safety.data.gov or the USDA website as well—including [Agriculture Weather and Drought Outlook blog posts](#) and [Drought Assistance Programs](#) and Information sites—and any other data resources that would be helpful to those affected by the drought.

[Read the original blog post](#) launching the code sprint and visit usda.gov/drought for more information on how USDA and other federal agencies are taking steps to help farmers, ranchers, and small businesses wrestling with this crisis.