



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

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## Weekly Report - Snowpack / Drought Monitor Update

Date: 27 September 2012

### SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

**Temperature:** [SNOTEL](#) and ACIS 7-day temperature anomaly ending 27 September shows the greatest positive departures over the Northern Rockies and the greatest negative departures over the immediate West Coast (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departures over southern California and north-central Montana ( $>+10^{\circ}\text{F}$ ). Areas that showed the greatest negative departures occurred over the Lower Columbia River and north of San Francisco ( $<-4^{\circ}\text{F}$ ). For the 2012 Water Year that ends this Sunday, ACIS average temperature anomalies show the greatest positive temperature departures over the eastern third of the West and the greatest negative departures over the western third of the West (Fig. 1b).

**Precipitation:** [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the bulk of moisture falling over the Interior West (Fig. 2). In terms of percent of normal, the same region is highlighted with scattered very high percentages (Fig. 2a). With the close of the Water Year, [ACIS](#) (e.g. low elevation stations) showed that the Northwest, Northern Rockies, and parts of Arizona, Utah and the Great Basin exceeded their long term averages. The opposite condition was true over much of the remainder of the West (Fig. 2b). Looking at the high elevation SNOTEL Sites, the seasonal moisture clearly favored the Northern Tier States. Southwest Utah also benefited from the Southwest Monsoon although it experienced an extremely dry spring (Fig. 2c). For [September](#), much of Utah and eastern Colorado have been exceedingly wet as a result of a fairly active Southwest Monsoon. The remainder of the West, especially the Northern Tier States, fared a lot worse (Fig. 2d).

**Weekly Summary:** A series of upper-air troughs and accompanying strong cold fronts moved across the eastern half of the contiguous United States during the past week. The East Coast states, and both the Great Lakes region and Ohio Valley, received beneficial rainfall with the passage of these cold fronts. The West was mostly warm (generally 3-7 degrees above average) and dry, and the monsoonal showers and thunderstorms that occurred 2-3 weeks ago shut down this past week over the Southwest. Temperatures in the eastern half of the country ranged from 4-12 degrees below normal, with the core of the coolest air centered over the central Corn Belt.

**The West:** Relatively warm and dry conditions prevailed across most of the West during the past 7-days. Temperatures generally ranged from 3-7 degrees above average, and 7-9 degrees above average in western Montana. Very minor adjustments to the drought depiction were made in southern Nevada (very modest improvement in part of Clark County) and south-central California (slight degradation in southern Kern County from D0 to D1). Minor adjustments were also made in Montana, and two areas of long-term hydrologic impacts were designated on the depiction in the western part of the state. Author: Anthony Artusa, NOAA/NWS/NCEP/CPC.

***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.

### **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/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.

## **Weekly Snowpack and Drought Monitor Update Report**

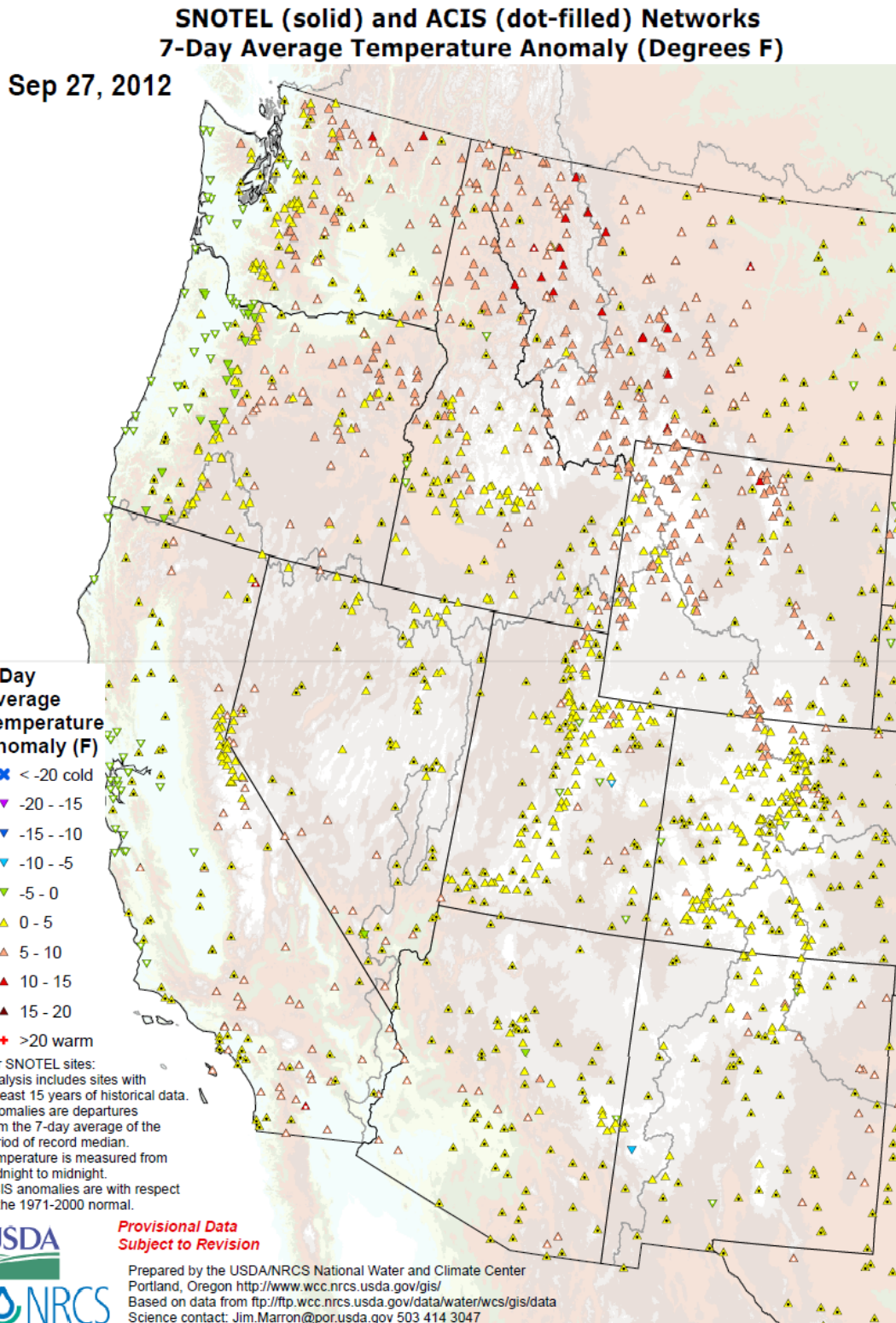
This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/

Micheal L. Golden

Deputy Chief, Soil Survey and Resource Assessment

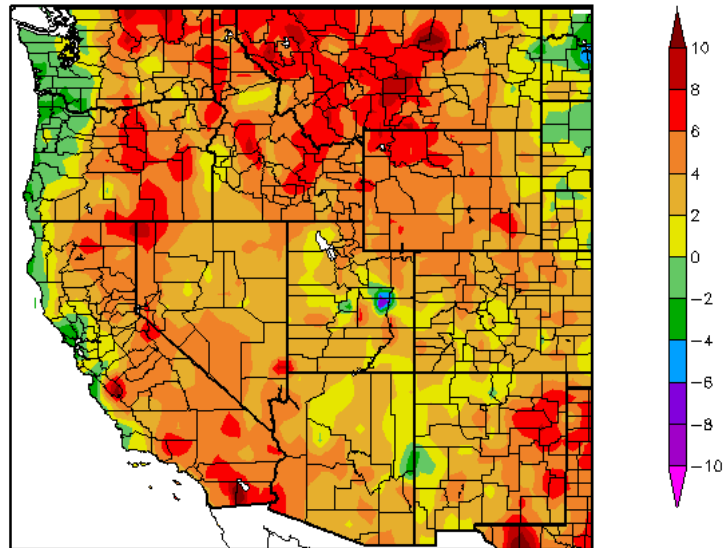
## Weekly Snowpack and Drought Monitor Update Report



**Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 27 September shows the greatest positive departures over the Northern Rockies and the greatest negative departures over the immediate West Coast.**

## Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)  
9/20/2012 – 9/26/2012

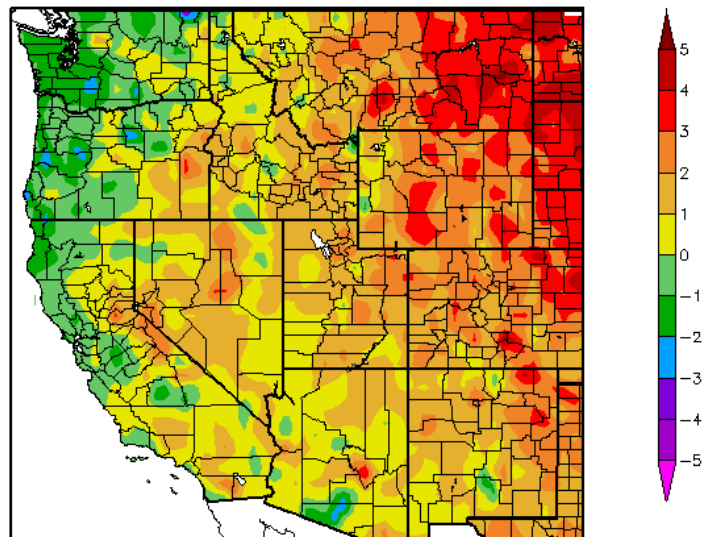


Generated 9/27/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures over southern California and north-central Montana ( $>+10^{\circ}\text{F}$ ). Areas that showed the greatest negative departures occurred over the Lower Columbia River and north of San Francisco ( $<-4^{\circ}\text{F}$ ).**

Departure from Normal Temperature (F)  
10/1/2011 – 9/26/2012



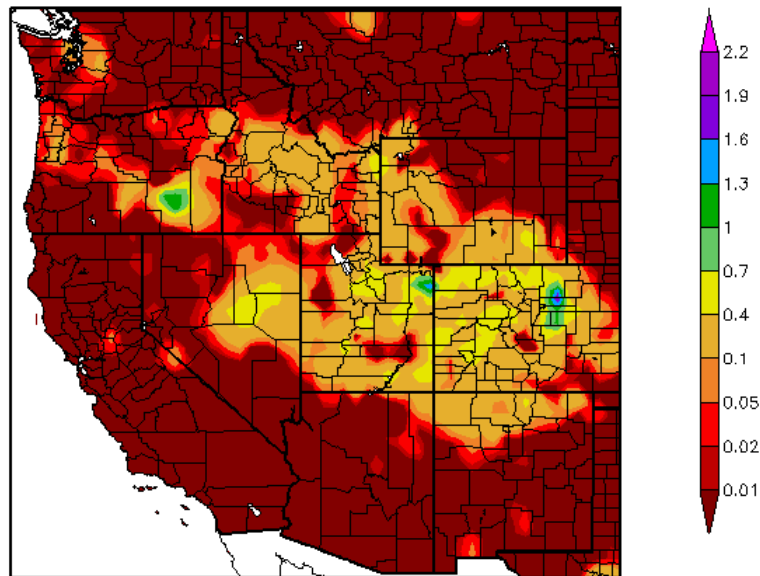
Generated 9/27/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 1b: For the 2012 Water Year that ends this Sunday, ACIS average temperature anomalies show the greatest positive temperature departures over the eastern third of the West and the greatest negative departures over the western third of the West.**

## Weekly Snowpack and Drought Monitor Update Report

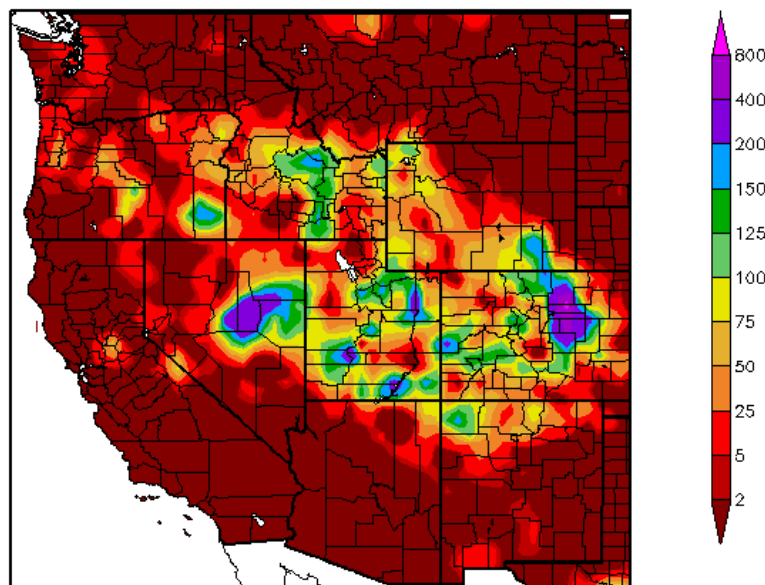
Precipitation (in)  
9/20/2012 – 9/26/2012



Generated 9/27/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
9/20/2012 – 9/26/2012



Generated 9/27/2012 at HPRCC using provisional data.

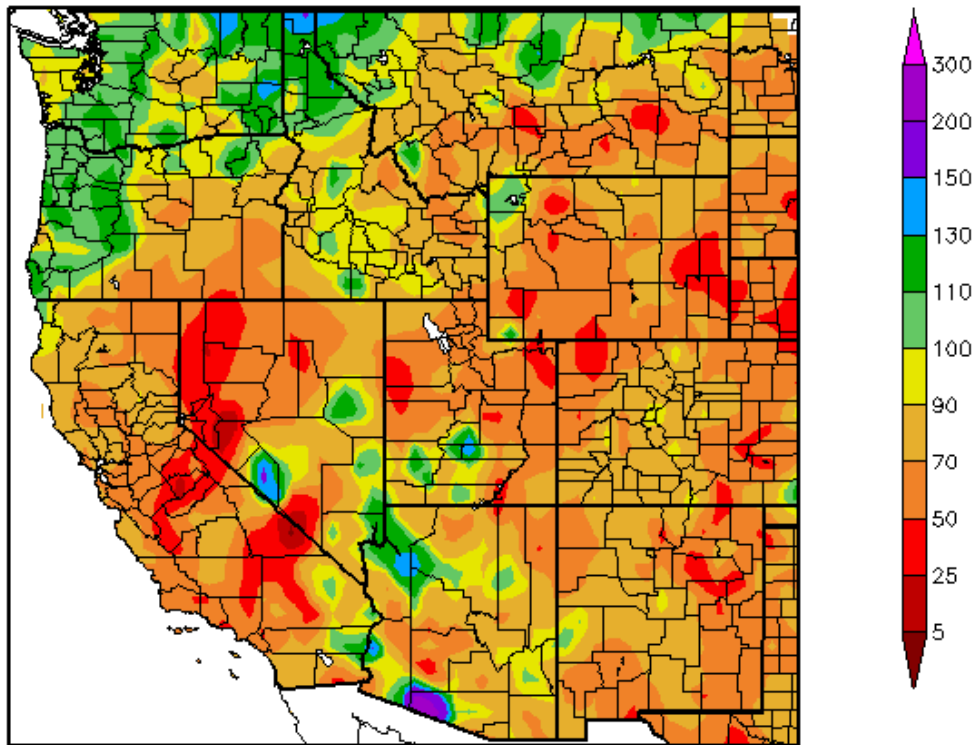
Regional Climate Centers

**Fig. 2 and 2a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the bulk of moisture falling over the Interior West (top). In terms of percent of normal, the same region is highlighted with scattered very high percentages (bottom).**



## Weekly Snowpack and Drought Monitor Update Report

Percent of Normal Precipitation (%)  
10/1/2011 – 9/26/2012



Generated 9/27/2012 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 2b:** With the close of the Water Year, [ACIS](#) (e.g. low elevation stations) showed that the Northwest, Northern Rockies, and parts of Arizona, Utah and the Great Basin exceeded their long term averages. The opposite condition was true over much of the remainder of the West.

## Weekly Snowpack and Drought Monitor Update Report

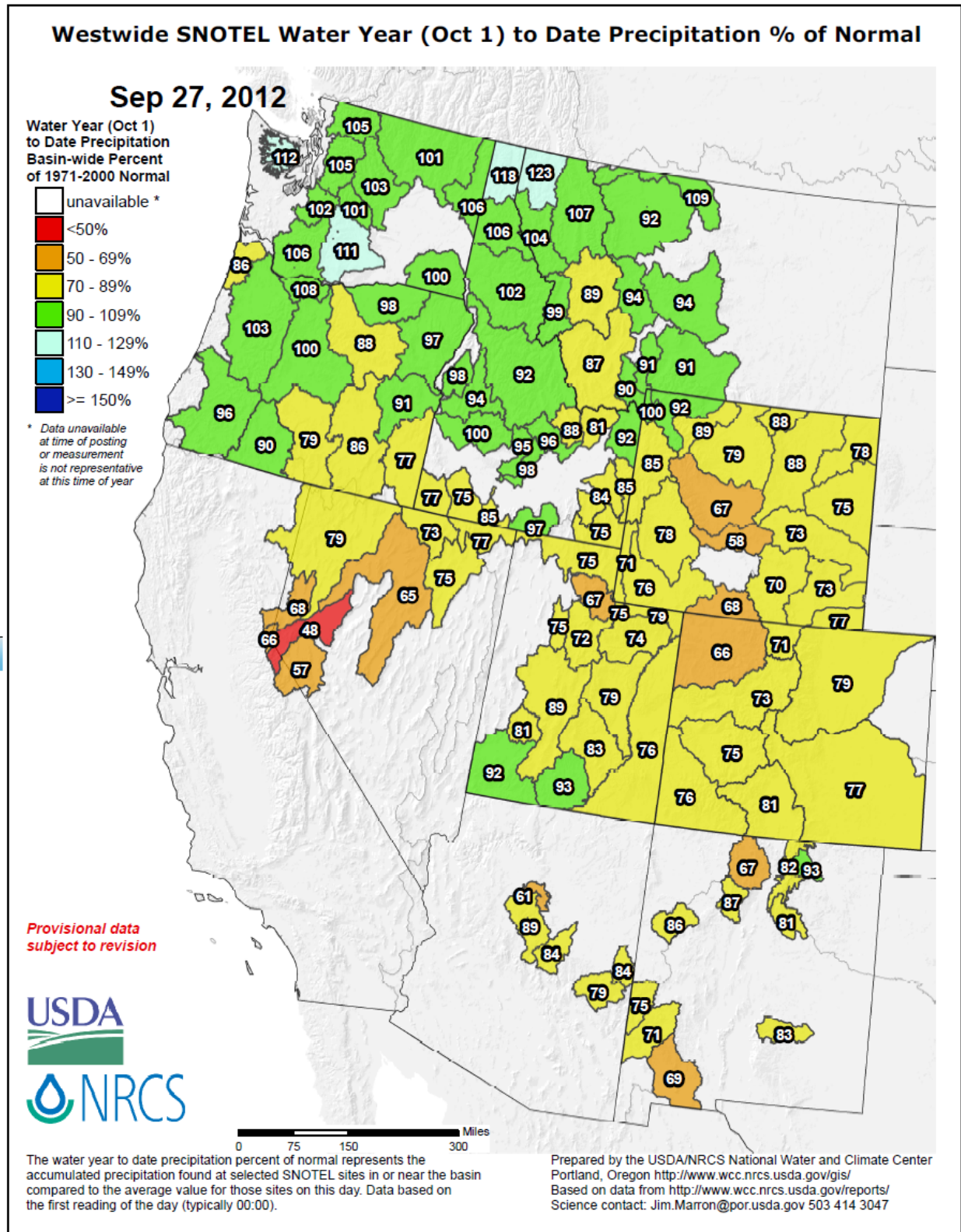


Fig. 2c: As we end the [2012 Water Year](#) that began on 1 October 2011, the seasonal moisture favored the Northern Tier States. Southwest Utah also benefited from the Southwest Monsoon although it experienced an extremely dry spring.



## Weekly Snowpack and Drought Monitor Update Report

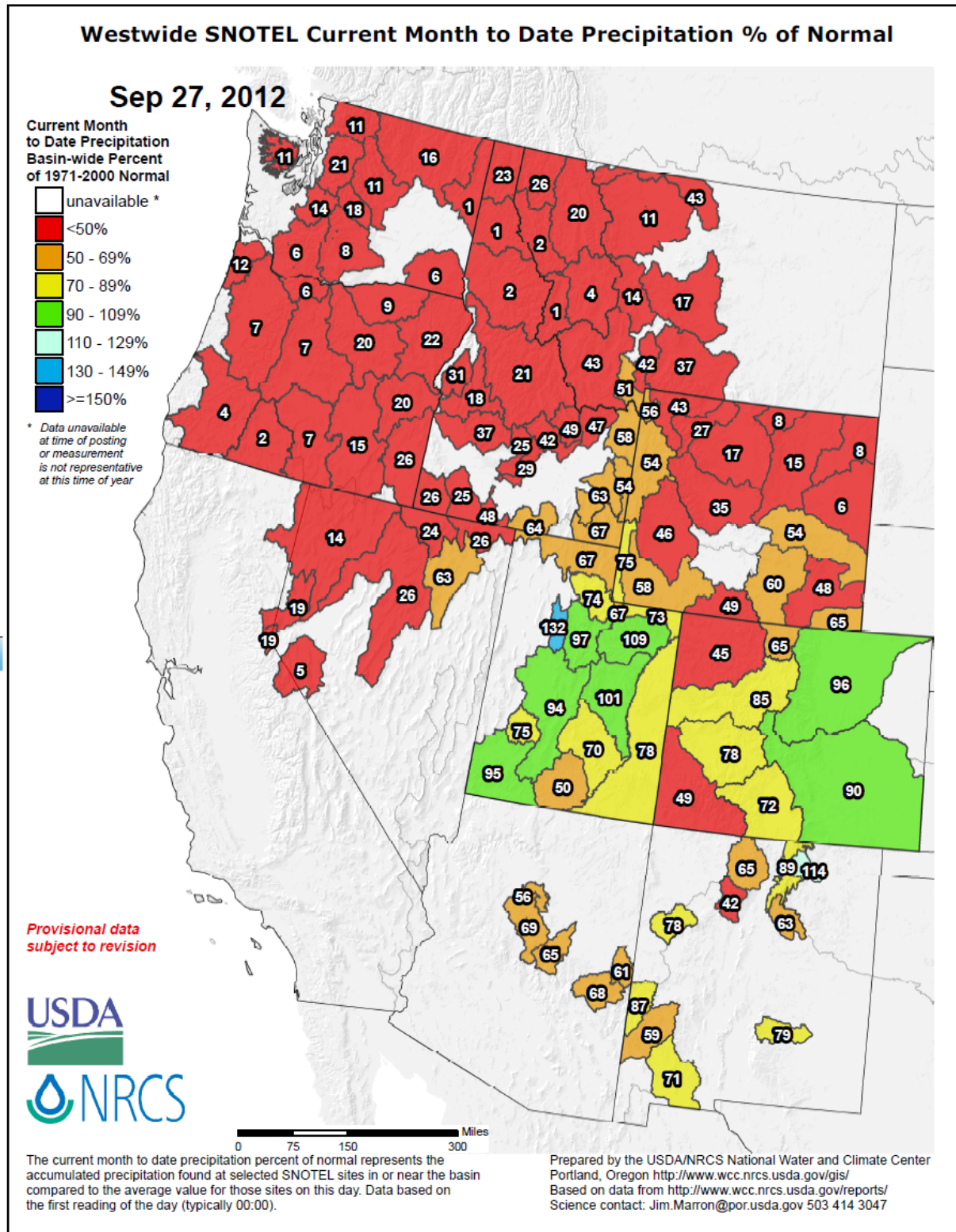


Fig. 2d: For **September**, much of Utah and eastern Colorado have been exceedingly wet as a result of a fairly active Southwest Monsoon. The remainder of the West, especially the Northern Tier States, fared a lot worse.

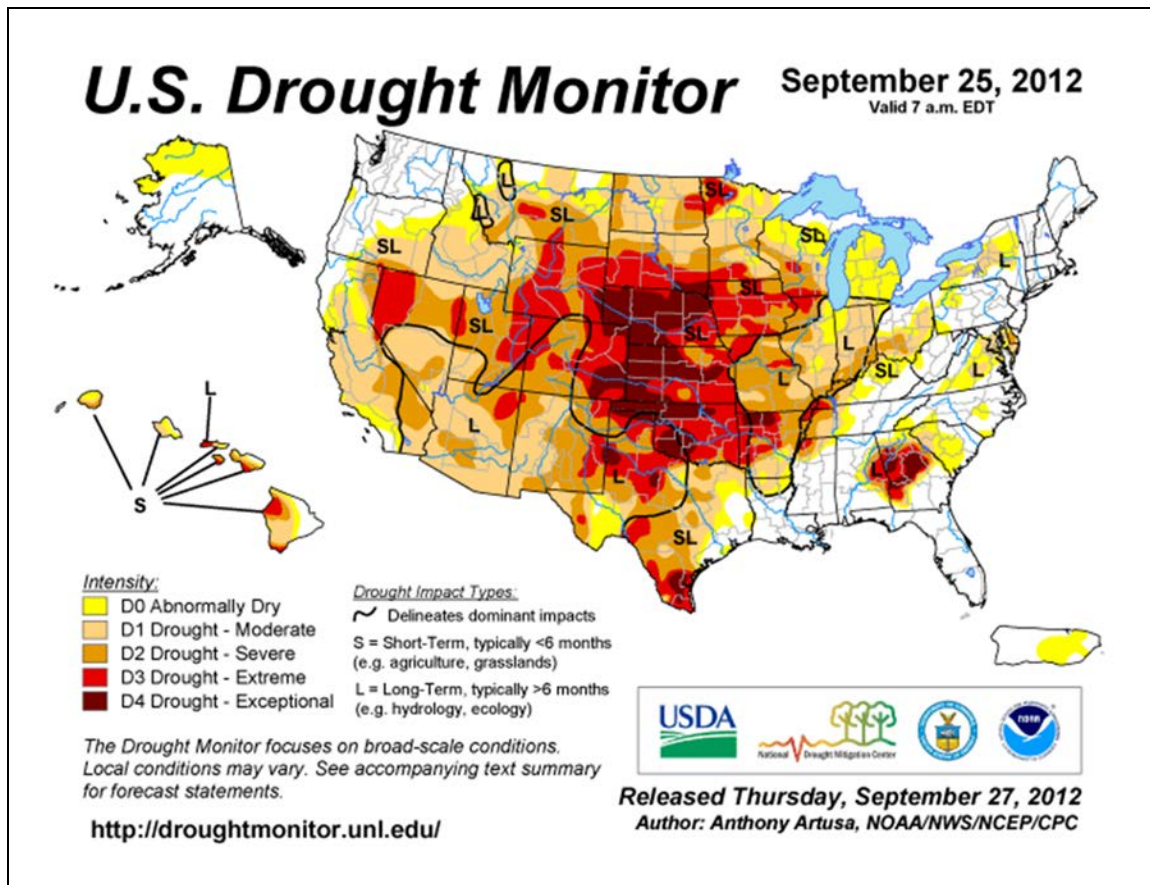


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia and scattered across the corn belt of the Central Plains into Colorado. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California Reservoirs](#).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

## Agriculture

### [Apples sweeter thanks to dry, hot summer](#)

Sept 23, **Illinois**. Apples from a Carlinville orchard were sweeter than usual, thanks to drought early in the growing season, according to the grower. He said, "When there's not as much moisture, the sugars and carbohydrates are more focused. The apples are really sweet this year."

### [Corn, bean harvest now looking up](#)

Sept 19, **Iowa**. The early results of the corn harvest are a pleasant surprise after the harsh summer and dim outlook held by many about the corn crop. Some farmers have gotten as much as 200 bushels per acre, but many have found that their yields are down somewhat from average.

### [Pig Slaughter Shrinks Supply to 1975 Low in Drought: Commodities](#)

Sept 25, **US**. High feed costs are forcing hog farmers to slaughter more animals.

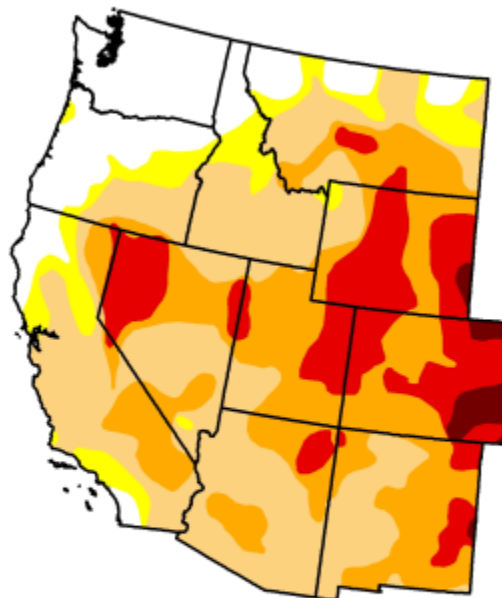
# U.S. Drought Monitor

## West

September 25, 2012

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	15.12	84.88	77.15	43.65	16.85	1.77
Last Week (09/18/2012 map)	15.26	84.74	76.89	43.64	16.85	1.77
3 Months Ago (06/26/2012 map)	36.55	63.45	62.69	45.38	12.44	0.00
Start of Calendar Year (12/27/2011 map)	48.49	51.51	20.05	12.22	2.67	0.78
Start of Water Year (09/27/2011 map)	66.72	33.28	19.04	14.99	9.30	3.81
One Year Ago (09/20/2011 map)	73.65	26.35	19.04	14.99	9.30	3.81

Intensity:

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, September 27, 2012  
Anthony Artusa, NOAA/NWS/NCEP/CPC

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

See the [September Southwest Climate Outlook](#)

## Weekly Snowpack and Drought Monitor Update Report

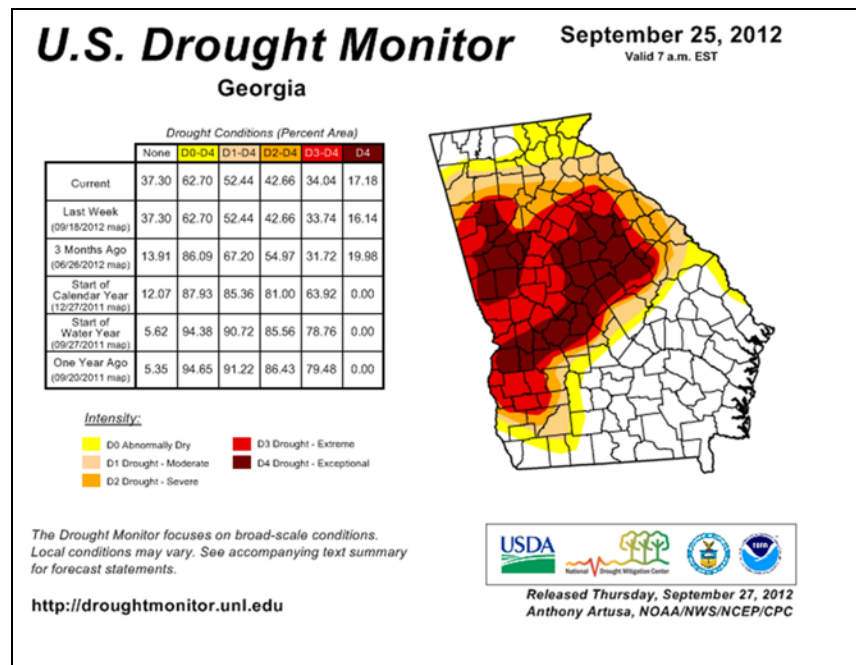


Fig. 3b: Drought Monitor for **Georgia** with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions >17%). See the Weekly GridSSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

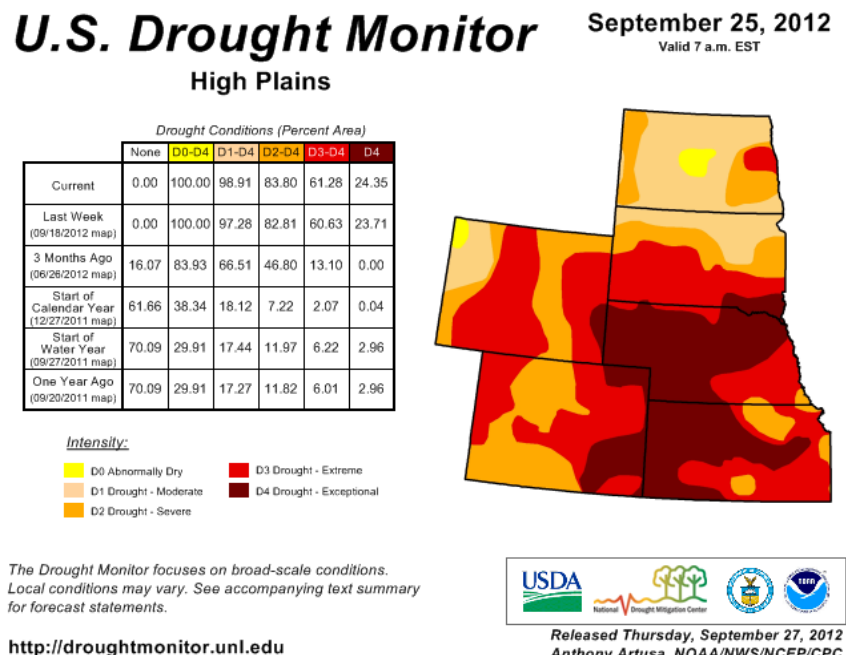


Fig. 3c: Drought Monitor for the **High Plains** with statistics over various time periods. No significant change this week. See the latest [Kansas Drought Report](#). D4 is >24%.

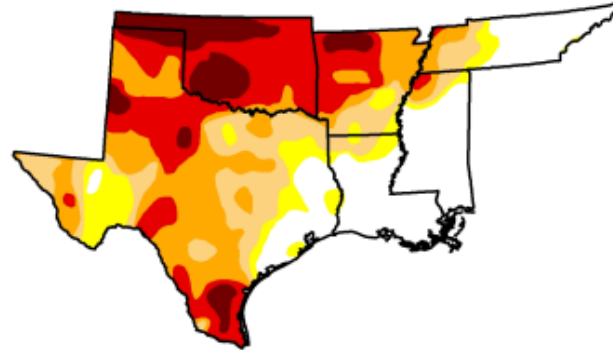


# U.S. Drought Monitor

## South

September 25, 2012  
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.13	75.87	66.61	51.50	29.86	9.11
Last Week (09/18/2012 map)	25.06	74.94	65.27	48.67	28.85	8.96
3 Months Ago (06/26/2012 map)	9.65	90.35	62.79	31.30	7.83	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 (09/27/2011 map)	18.34	81.66	76.26	70.61	63.67	53.77
One Year Ago (09/20/2011 map)	18.41	81.59	76.35	69.79	64.54	53.61



### Intensity:

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

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

<http://droughtmonitor.unl.edu>

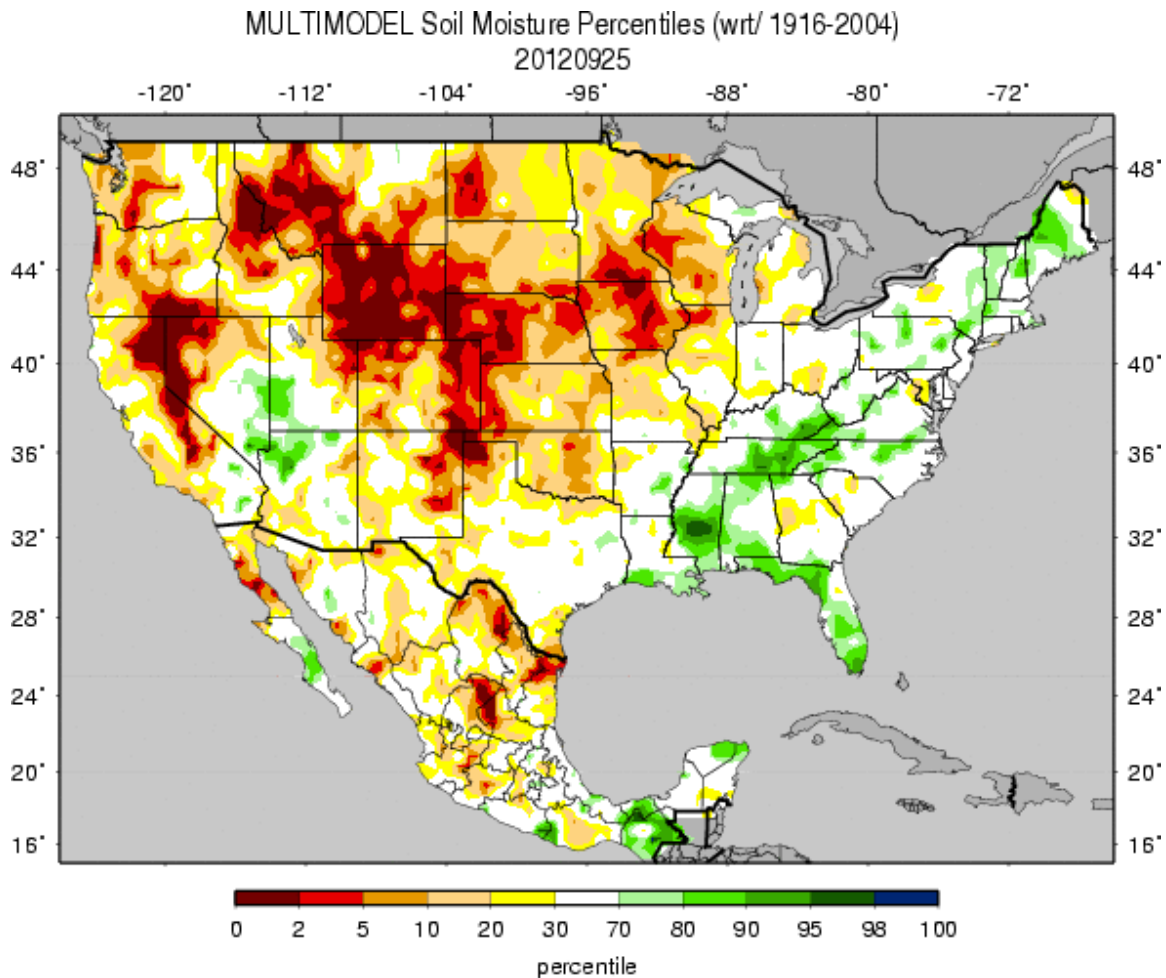


Released Thursday, September 27, 2012  
Anthony Artusa, NOAA/NWS/NCEP/CPC

Fig. 3e: Drought Monitor for the South-Central Region with statistics over various time periods. Note no significant changes this week. D4 is now >9%.



## Weekly Snowpack and Drought Monitor Update Report



**Figs. 4:** Soil Moisture ranking in [percentile](#) as of 25 September shows dryness over much of the Northern and Central Rockies, Western High Plains (including Iowa), northern California, and the Western Great Basin. Hurricane Isaac's moisture from 4 weeks ago still persists over Mississippi.

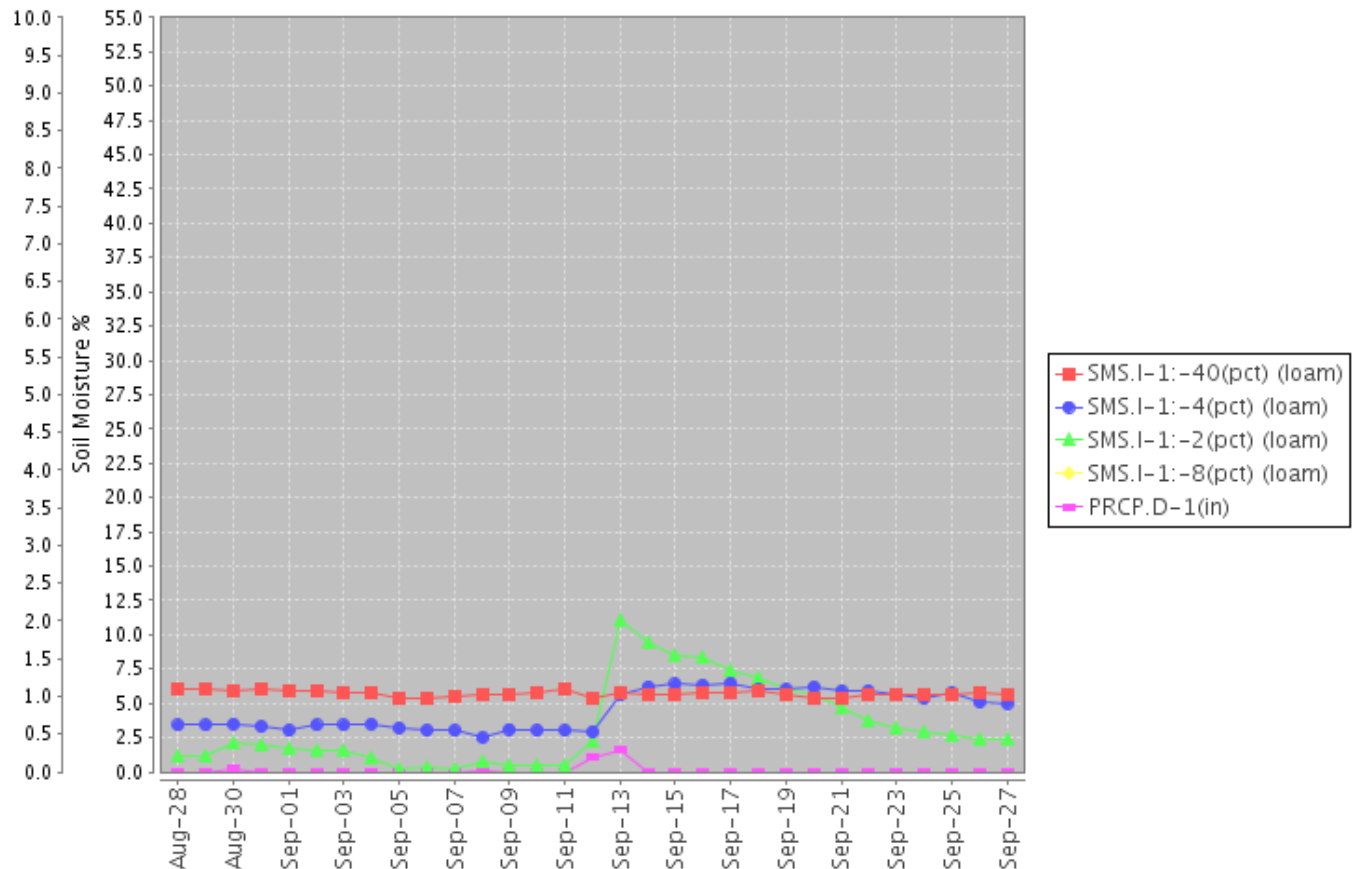
### Useful [Hydrological Links](#):

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](#))

ition (2018) MONTH=2012-08-28 (Daily) NRCS National Water and Climate Center – Provisional Data – subject to revision  
Thu Sep 27 08:26:09 PDT 2012



**Fig. 5:** This NRCS resource shows a site over [Southeast Wyoming](#) with extremely dry soils.

#### 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

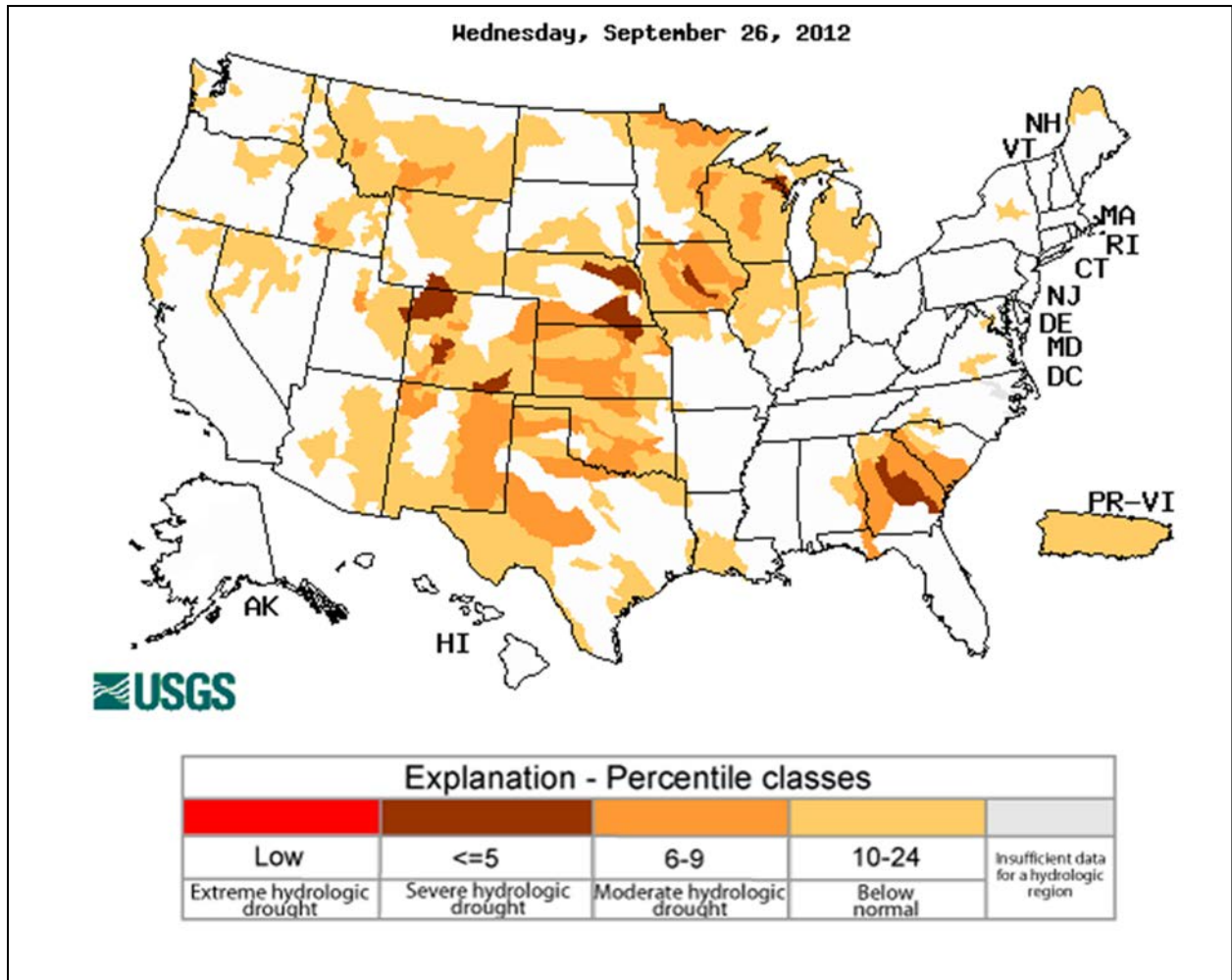


Fig. 6: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over parts of northern Kansas and east Nebraska, northern Wisconsin, Iowa, UP of Michigan, Colorado, south-central Wyoming, and Georgia. See new USGS [National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

## Weekly Snowpack and Drought Monitor Update Report

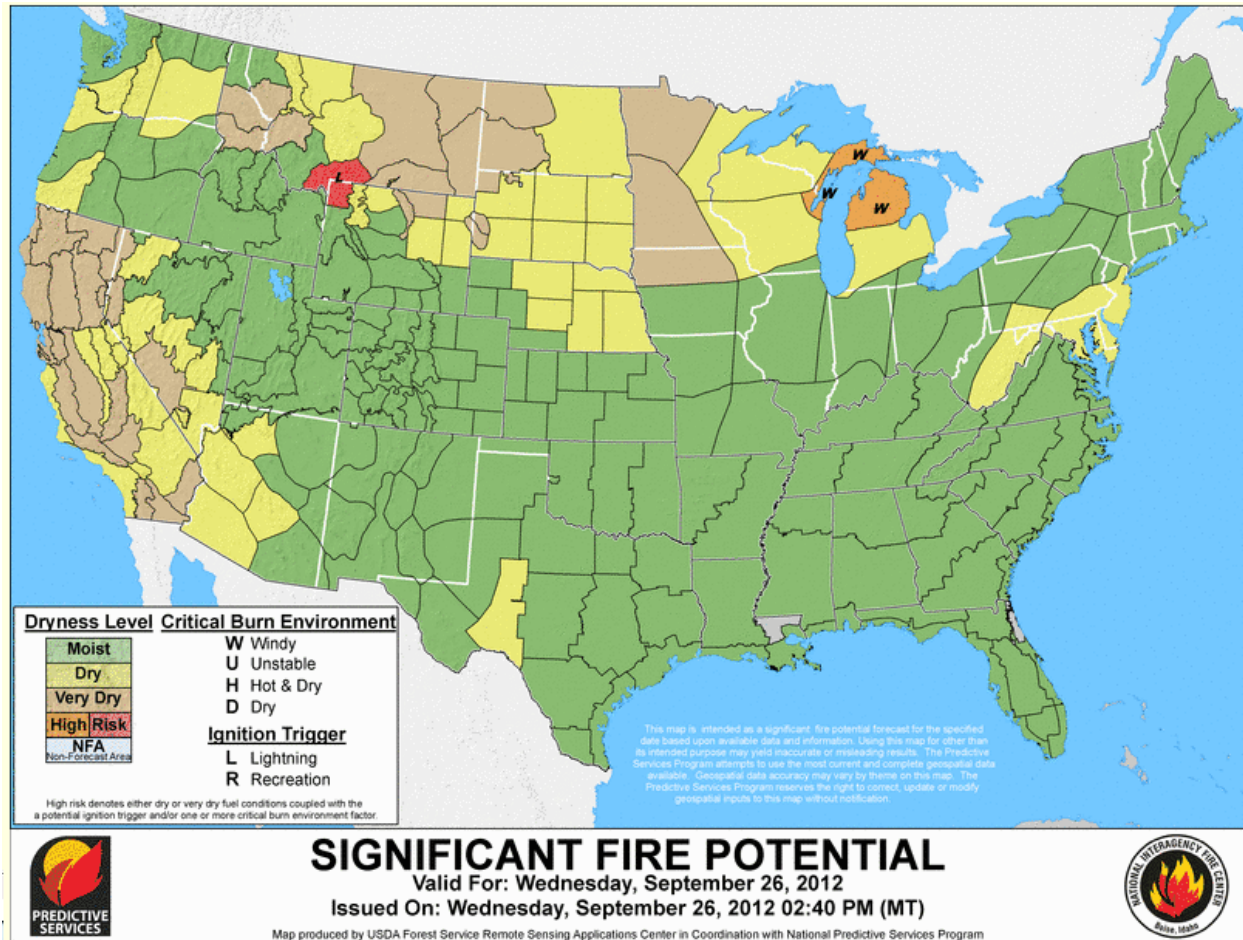


Fig. 7: **Significant fire potential** for yesterday. This resource also provides forecasts out to 7 days. Also check out: [NOAA's Fire Server](#). High risk continues over northwest Wyoming, Idaho, and Montana. Also see: [Experimental Southwest area wildland fire smoke impact awareness page](#) and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



## Weekly Snowpack and Drought Monitor Update Report

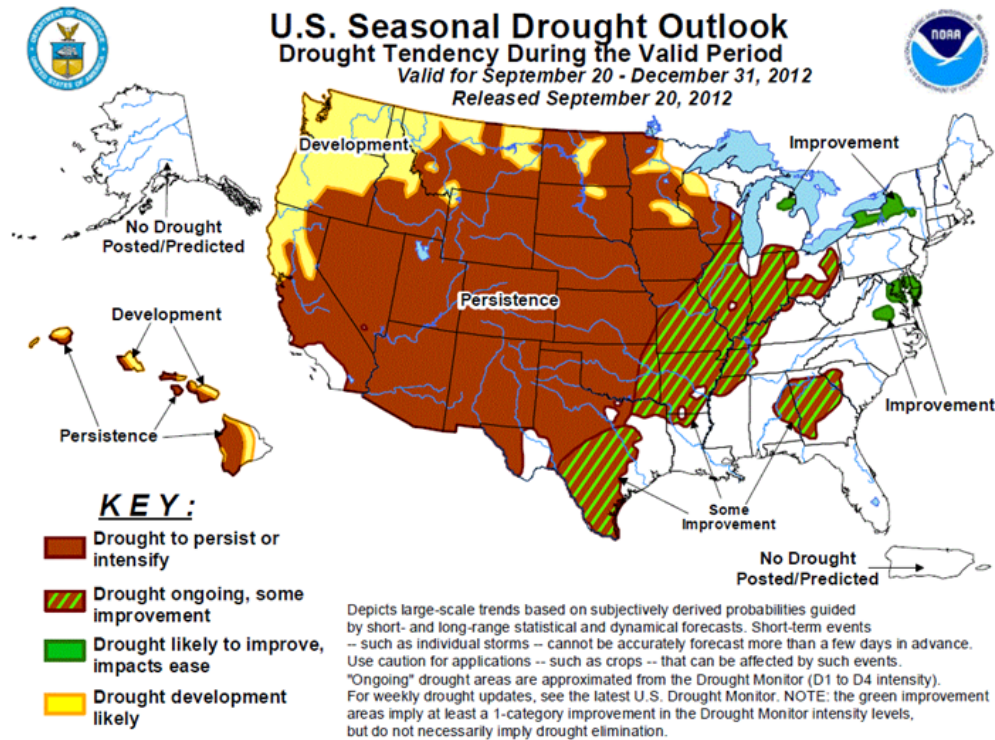


Fig. 8: [U.S. seasonal Drought Outlook](#) released 20 September 2012.



## Weekly Snowpack and Drought Monitor Update Report

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- September 25, 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:** A series of upper-air troughs and accompanying strong cold fronts moved across the eastern half of the contiguous United States during the past week. The East Coast states, and both the Great Lakes region and Ohio Valley, received beneficial rainfall with the passage of these cold fronts. The West was mostly warm (generally 3-7 degrees above average) and dry, and the monsoonal showers and thunderstorms that occurred 2-3 weeks ago shut down this past week over the Southwest. Temperatures in the eastern half of the country ranged from 4-12 degrees below normal, with the core of the coolest air centered over the central Corn Belt.

**The Northeast:** Widespread heavy rain (2 inches or more) and improving stream flows this past week have resulted in 1-category improvements across parts of the region. Residual abnormal dryness (D0) has been removed from southern New England and portions of New York and western Pennsylvania.

**Mid-Atlantic:** Heavy rain (2 inches or more) fell across the higher terrain of western Virginia this past week, with mostly moderate (0.5 to 2 inches) rain elsewhere in Virginia, and portions of West Virginia. Accordingly, the abnormally dry (D0) areas in West Virginia and in western Virginia were reduced in size. In southern Virginia, 1-category improvements were made in the I-85 corridor from Mecklenburg County northeastward to Charles City and James City Counties just east of Richmond. In Maryland, short-term improvements have been offsetting long-term rainfall deficits. As a result, the moderate drought (D1) designation from last week has been retained.

**The Southeast:** Based on Percent of Normal Precipitation (PNP) patterns over different time periods, mostly near-normal stream flows, and a pronounced lack of major impacts, a large portion of the D0 area in western North Carolina and a small portion of north-central South Carolina were removed. Rainfall departures over the coastal plain of North Carolina have become more of a concern recently, especially during the past 30-days. In the absence of significant precipitation in the next 7-days, some degradation in the drought depiction may be needed in this area next week. Continuing dryness in Georgia prompted degradation from D3 to D4 conditions in the west-central counties of Clayton and Paulding.

**The Ohio Valley:** Recent precipitation allowed for a 1-category improvement in the drought depiction across north-central and northeastern Ohio, and northwestern Pennsylvania. In southwestern Indiana, a large surplus (5-8 inches in the past 30-days) of precipitation will help to recharge soils. This area will be reassessed next week, with improvements likely.

**The Midwest/Upper Great Lakes:** Significant changes were deemed necessary this week to the regional drought depiction, especially for far southwestern and northwestern portions of

## Weekly Snowpack and Drought Monitor Update Report

Minnesota, where extreme drought (D3) was introduced. In general, a one-category degradation was made to a large portion of the state, including the addition of D1 conditions to the Arrowhead region. In the Upper Peninsula of Michigan, significant improvement is noted as recent synoptic and lake-enhanced precipitation (weekly totals of 1-4 inches for the northern half of Upper Michigan) helped to trim back the area of D0 conditions, now confined mainly to Iron, Dickinson, and Menominee counties. The Menominee River (along the border with northern Wisconsin) is very low, and at some points near record low levels. D0 was also removed from northern Door County (north of Sturgeon Bay) due to recent rainfall. In east-central and south-central Illinois, recent rains prompted a 1-category upgrade from moderate drought (D1) to abnormal dryness (D0), with additional upgrades possible next week pending reassessment of conditions.

**The Northern Plains:** In eastern North Dakota, an area of extreme drought (D3) was introduced to the counties of Nelson, Grand Forks, Griggs, Steele, and Trail. In addition to Year-To-Date precipitation deficits ranging from 6-12 inches, significant reduction in sub-surface water has also been noticed. Central portions of the state have experienced additional drying, prompting a reduction in D0 coverage which now includes only Sheridan, northern Burleigh, eastern McLean, and northwestern Wells counties. In central and eastern South Dakota, 1-category degradations were made in response to a continuing lack of rain.

**The Central and Southern Plains:** Little or no rainfall this week resulted in mostly minor degradations across parts of North-, East-, and South Texas.

**The West:** Relatively warm and dry conditions prevailed across most of the West during the past 7-days. Temperatures generally ranged from 3-7 degrees above average, and 7-9 degrees above average in western Montana. Very minor adjustments to the drought depiction were made in southern Nevada (very modest improvement in part of Clark County) and south-central California (slight degradation in southern Kern County from D0 to D1). Minor adjustments were also made in Montana, and two areas of long-term hydrologic impacts were designated on the depiction in the western part of the state.

**Hawaii, Alaska, and Puerto Rico:** No changes were made to the depictions for these regions.

**Looking Ahead:** In the ensuing 5 days, areas of heavy rainfall (2 inches or more) are predicted in a band from Rhode Island southwestward to the Washington, D.C. area, as well as in a horseshoe-shaped pattern from the Texas Coast westward across southern Texas, then heading northward across the Texas Panhandle and then curving east-northeastward across much of Oklahoma and southeastern Kansas to southern Missouri. The southern Plains can certainly use the rain. Unfortunately, little if any rain is expected to fall across the hard-hit drought areas in the eastern Dakotas, eastern Nebraska, and the Upper Mississippi Valley/Upper Great Lakes region.

The CPC 6-10 Day Precipitation Outlook is projecting elevated odds of above-median precipitation across the East Coast states and upper Ohio Valley, with the highest probabilities (50-percent) in the Northeast. There are elevated odds of below-median precipitation over most areas west of the Mississippi River, with the exception of near-median precipitation forecast over Montana, North Dakota, and Minnesota.

## Weekly Snowpack and Drought Monitor Update Report

**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

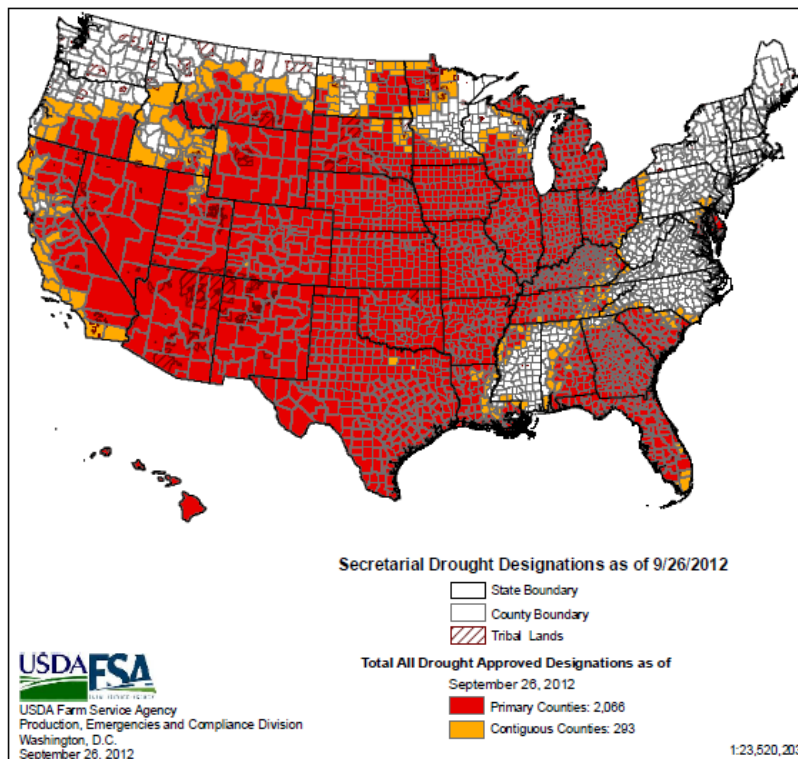
### **Drought or Dryness Types**

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

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

*Updated September 26, 2012*

### 2012 Secretarial Drought Designations - All Drought



## Special Drought Information

### Drought and Drought Assistance

This page provides resources and information related to the current drought crisis from across the Government. Throughout much of the country, communities are struggling with one of the worst droughts to strike the U.S. in decades. The lack of rain and high temperatures have done considerable damage to crops -- particularly those in the Midwest. USDA and other federal agencies are taking steps to help farmers, ranchers, and small businesses wrestling with this crisis.

### Drought Code Sprint

Through the [Drought Code Sprint](#) we're making the call to developers across the country to use publicly available government information to help farmers, ranchers, and others to gain quick and reliable "one-click" access to information on drought conditions and Federal drought relief.

[Submit your app](#) by October 5, 2012 and we'll highlight some of the submissions on our Drought web pages.