



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 30 August 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 30 August shows departures within $\pm 5^{\circ}\text{F}$ of the long-term average this time of year across the West (Fig. 1). ACIS [7-day](#) average temperature anomalies show the greatest positive temperature departures over eastern Wyoming ($>+8^{\circ}\text{F}$). The greatest negative departures occurred over parts of Washington and over southeastern California ($<-4^{\circ}\text{F}$) (Fig. 1a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the bulk of moisture over Arizona courtesy for the Southwest Monsoon (Fig. 2). In terms of percent of normal, this depiction follows suit although some isolated storms extended northward into south-central Idaho and Colorado (Fig. 2a). Since the start of the [2012 Water Year](#) that began on 1 October 2011, the seasonal moisture has continued to favor the Northern Tier States. Over much of the southern half of the West, drier conditions dominate. Values are not expected to change much for the remainder of this Water Year (Fig. 2b). With the close of [August](#), Utah and Arizona are the largest rainfall gainers in the West. Rare rainfall over the western Great Basin resulted in a statistical jump in the percentages but the significance to the water table (e.g. soil moisture, ground water, etc.) is minimal (Fig. 2c).

The West: The active rainfall pattern continued over portions of Arizona, western New Mexico and southern Nevada. Many locations recorded well over 2 inches of rain during the last week and some even over 3 inches. With the recent round of precipitation and a wet pattern for most of the month, categorical improvements were made over central Arizona, western New Mexico and southern Nevada. In southern Arizona, the D3 was completely eliminated. In Colorado, the dry conditions and impacts in the northeast part of the state allowed for the expansion of D4 out of Nebraska, and D3 expanded across much of southeast Wyoming and into Colorado. In southeast Colorado, D4 expanded where conditions continue to worsen. Some improvements were made in central and southwest Colorado where D3 was improved to D2, based upon recent rains.

In Wyoming, the last several months have continued to be dry and many of the indicators were worsening as well. For southwest Wyoming, D2/D3 was expanded to the east and north while D0 was introduced in the far northwest part of the state. Nevada had D3 conditions expand into more of the Great Basin and D2 expanded to the north to include portions of southern Oregon. Author: Brian Fuchs, National Drought Mitigation Center.

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

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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 3e).

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.

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

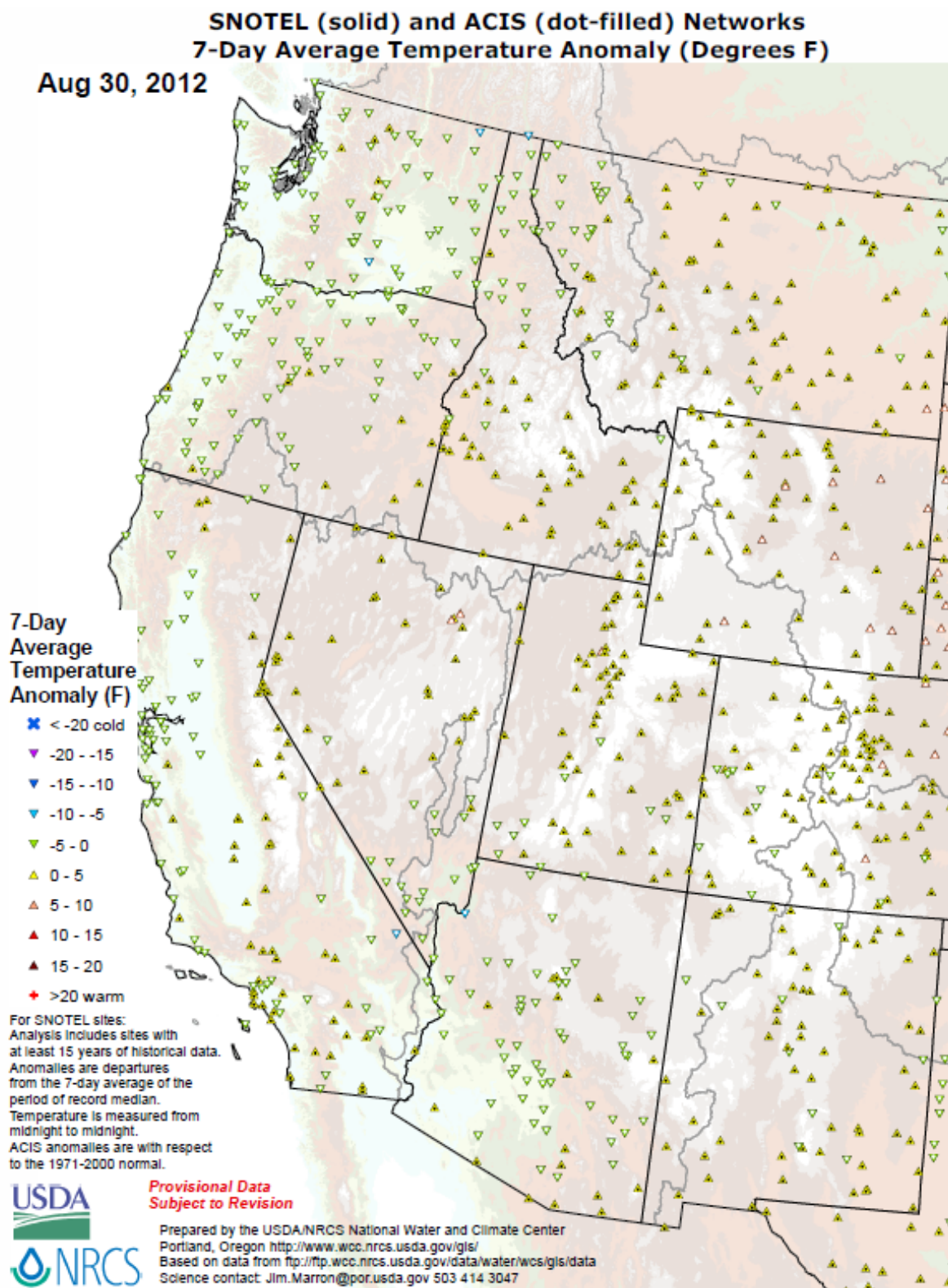
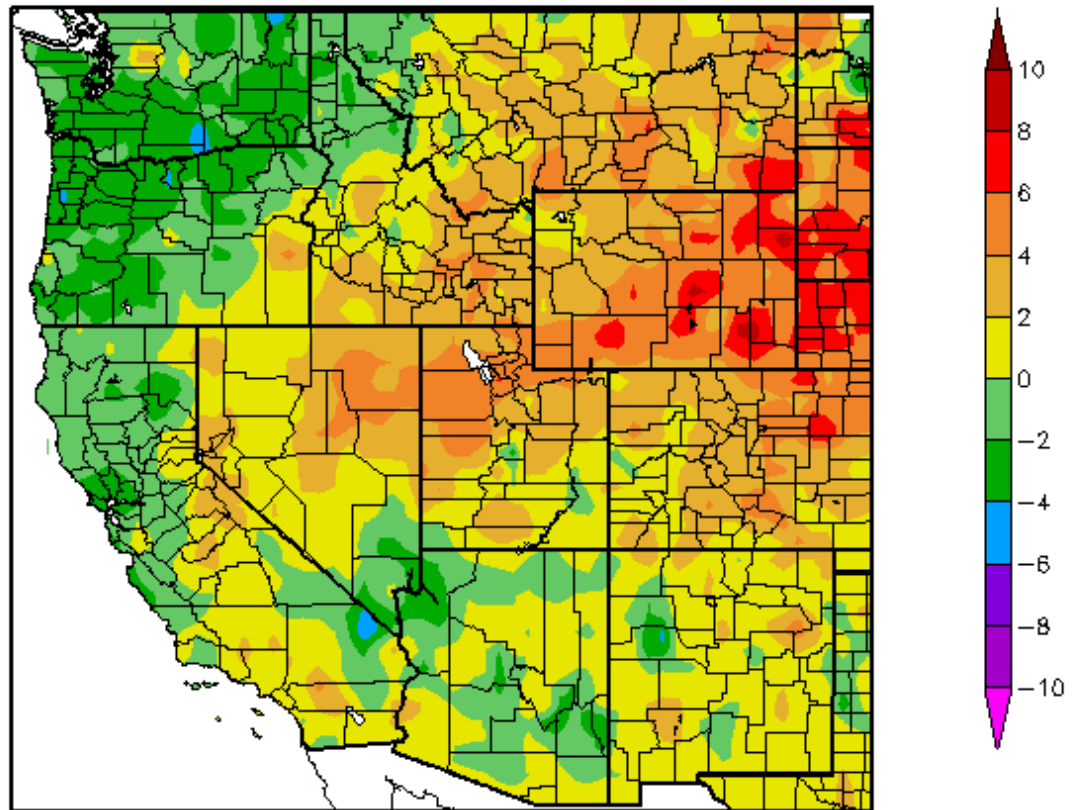


Fig. 1: SNOTEL and ACIS 7-day temperature anomaly ending 30 August shows departures within $\pm 5^{\circ}\text{F}$ of the long-term average this time of year across the West.

Departure from Normal Temperature (F)
8/23/2012 – 8/29/2012



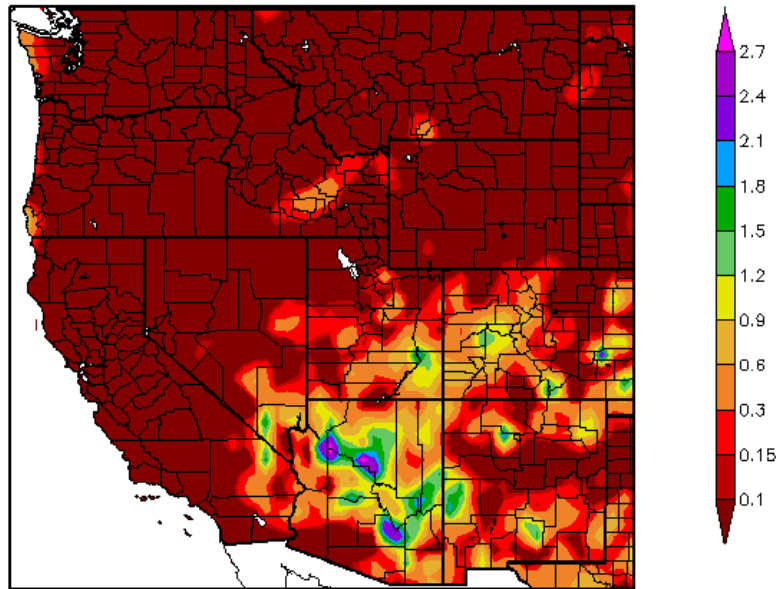
Generated 8/30/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures over eastern Wyoming ($>+8^{\circ}\text{F}$). The greatest negative departures occurred over parts of Washington and over southeastern California ($<-4^{\circ}\text{F}$).

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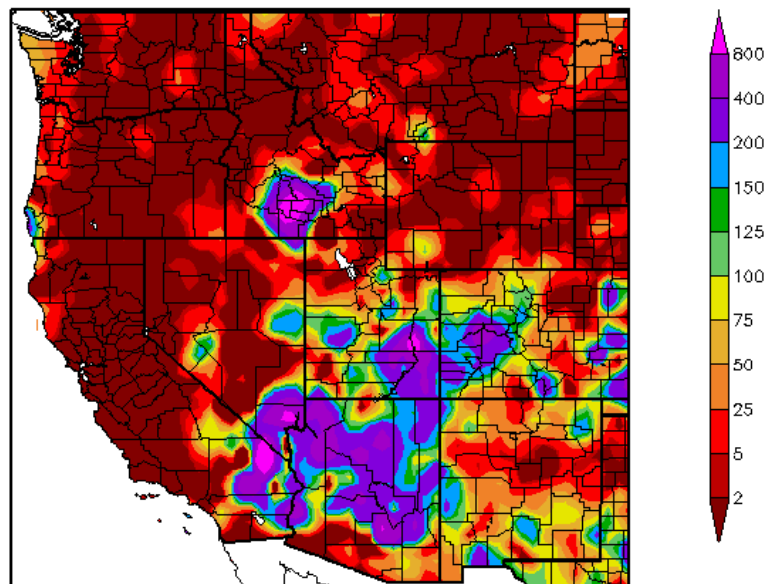
Precipitation (in)
8/23/2012 – 8/29/2012



Generated 8/30/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
8/23/2012 – 8/29/2012



Generated 8/30/2012 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 Arizona courtesy for the Southwest Monsoon (top). In terms of percent of normal, this depiction follows suit although some isolated storms extended northward into south-central Idaho and Colorado (bottom).

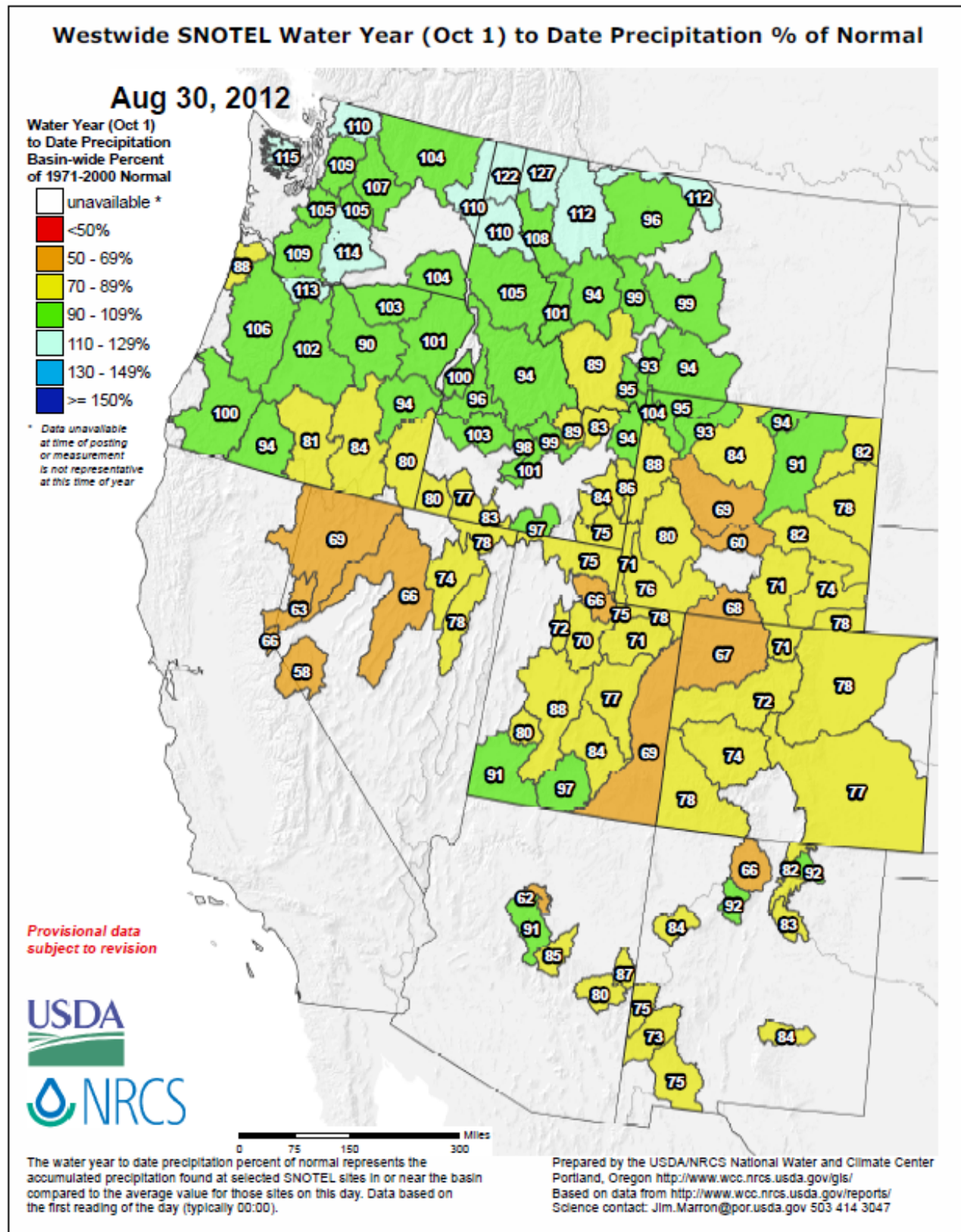


Fig 2b: Since the start of the 2012 Water-Year that began on 1 October 2011, the seasonal moisture has continued to favor the Northern Tier States. Over much of the southern half of the West, drier conditions dominate. Values are not expected to change much for the remainder of this Water Year.

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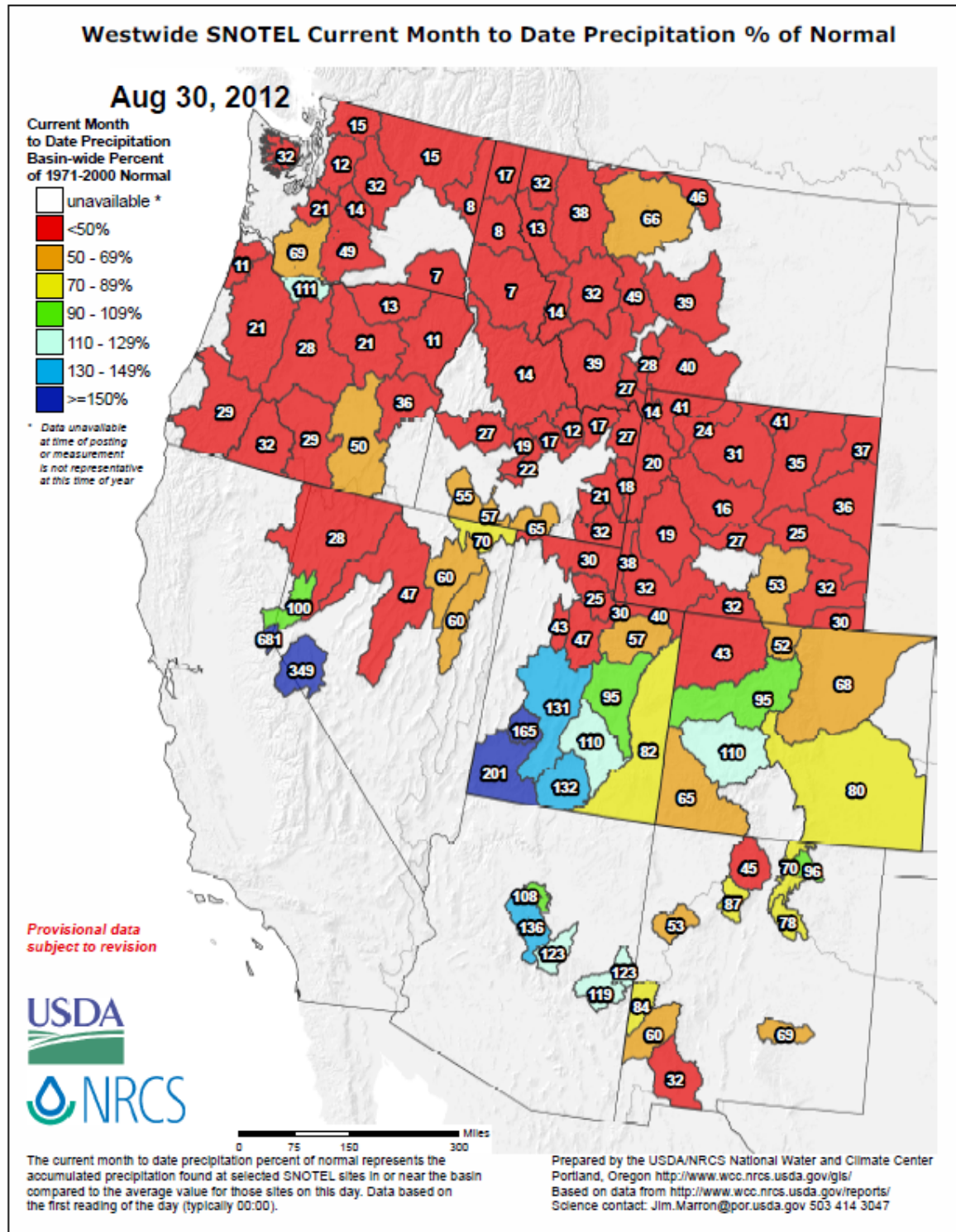


Fig. 2c: With the close of August, Utah and Arizona are the big gainers. Rare rainfall over the western Great Basin resulted in a statistical jump in the percentages but the significance to the water table is minimal.

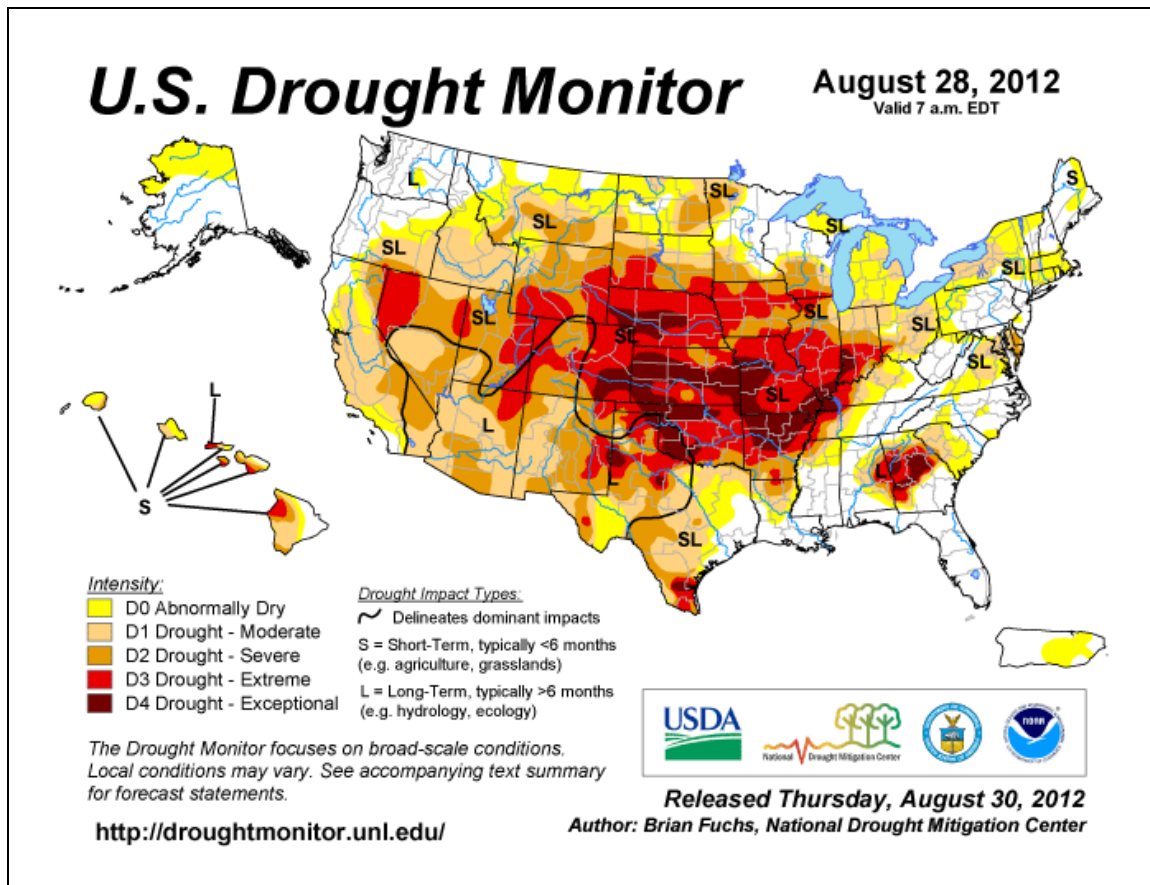


Fig. 3: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over the Southeast and scattered across the corn belt of the Central Plains into Colorado. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California Reservoirs](#).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

Agriculture

[Drought could be a factor in anthrax cases](#) - Aug 18, **Colorado**. Drought may have played a role in the anthrax deaths of more than 100 animals in Colorado and Texas in the past few weeks. At least 60 cattle on three different ranches in Logan County, Colorado died. Roughly 40 sheep died on a ranch near Mertzon, Texas in July. Anthrax outbreaks are not uncommon west of the Mississippi River and often occur during drought when anthrax bacteria generate more spores, which become airborne when the soil is disturbed. Animals frequently come into contact with the spores by ingesting or inhaling them.

[Drought could produce good wine in Missouri, Midwest](#) - Aug 23, **Missouri**. A vintner in Hermann who grows Norton and Chardonnay grapes said that drought reduced the size of his grapes by two-thirds, while other grapes shriveled like raisins. He expects to get fewer cases of wine from his crop—possibly just 2,500 cases—rather than 4,000 cases like usual. Drought often concentrates sweetness and flavors of some fruits, like grapes, and could lead to particularly nice wines.

[Wyoming faces worst hay crop in decades](#) - Aug 18, **Wyoming**. Dry conditions have hurt the Wyoming hay crop, driving estimates down to an expected yield of 925,000 acres of hay and an overall tonnage of 1.82 million tons, 23 percent lower than the 2011 harvest. If this comes to pass, it will be the worst hay acreage in almost 80 years and the worst production since 2002.

See the latest [Agriculture Crop in Drought Report](#)

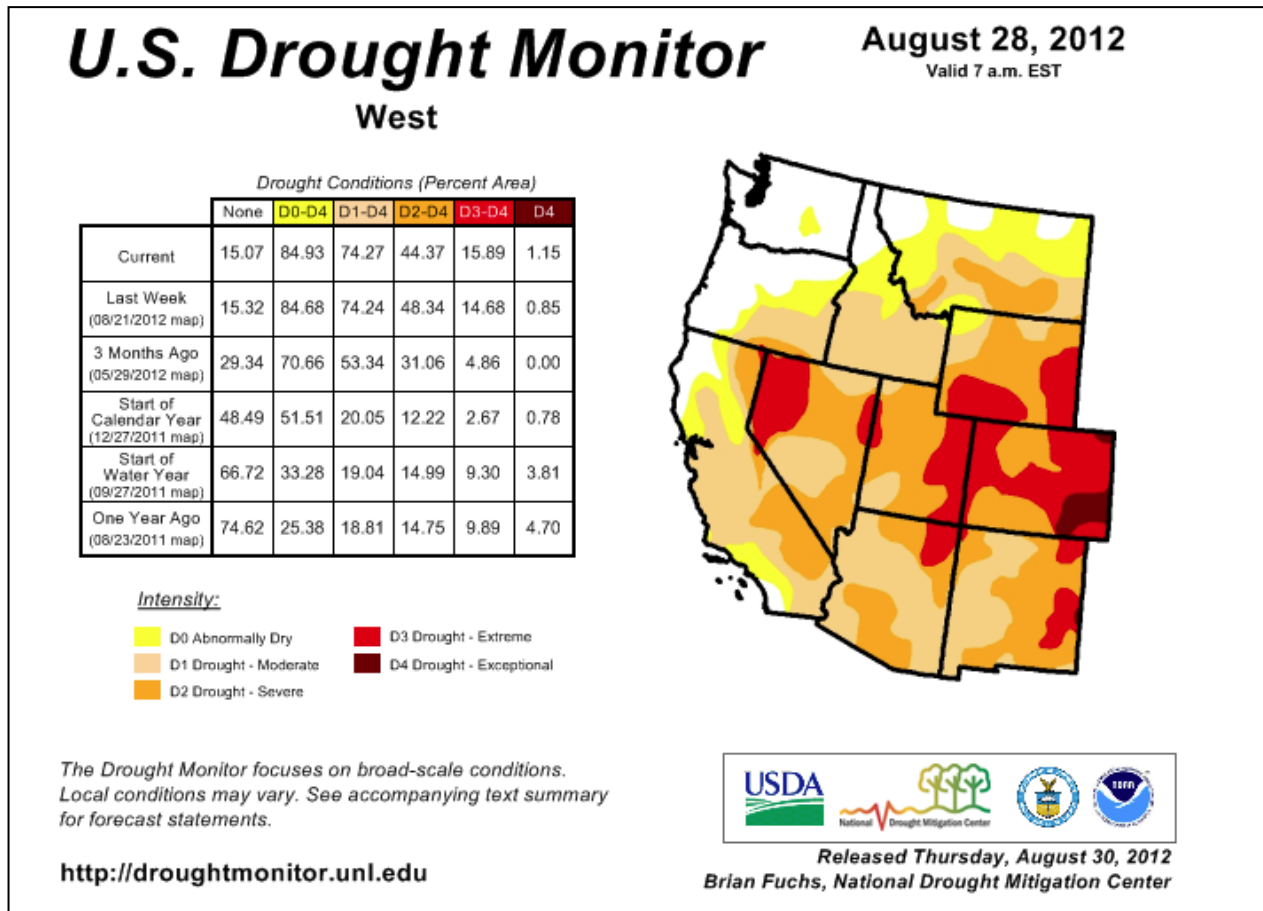


Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Some deterioration in D3 and D4 and slight improvement in D1 and D2 occurred this week. Note D4 is confined to southeastern and northeastern Colorado.

[Drought dries New Mexico's largest rivers](#) - Aug 22, **New Mexico**. A 30-mile section of the Pecos River between the Bitter Lakes National Wildlife Refuge and Roswell went dry beginning in July, threatening the survival of the rare [Pecos Bluntnose shiner](#). The U.S. Bureau of Reclamation has purchased and leased water rights to supplement flow in the river, but the river continued to go dry. Biologists from the U.S. Fish and Wildlife Service were planning to collect and save the fish. The Rio Grande River south of Albuquerque was drying in two sections for a total of about 50 miles of dry riverbed.

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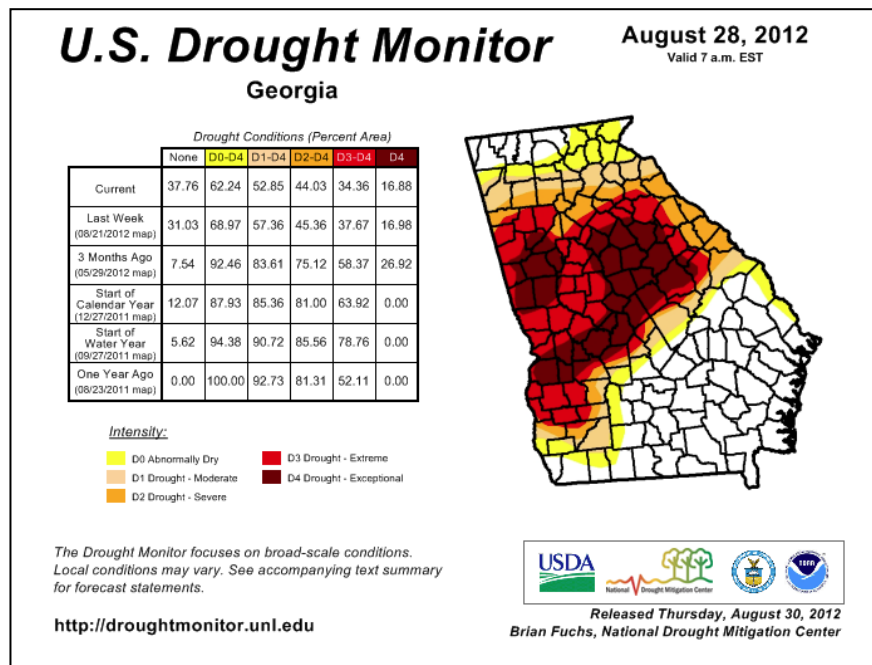


Fig. 3b: Drought Monitor for [Georgia](#) with statistics over various time periods. Note this state is the only state in the Southeast with D4 conditions. See the Weekly GridSAT Output Products: <http://gridssat.nsstc.uah.edu/> for more details.

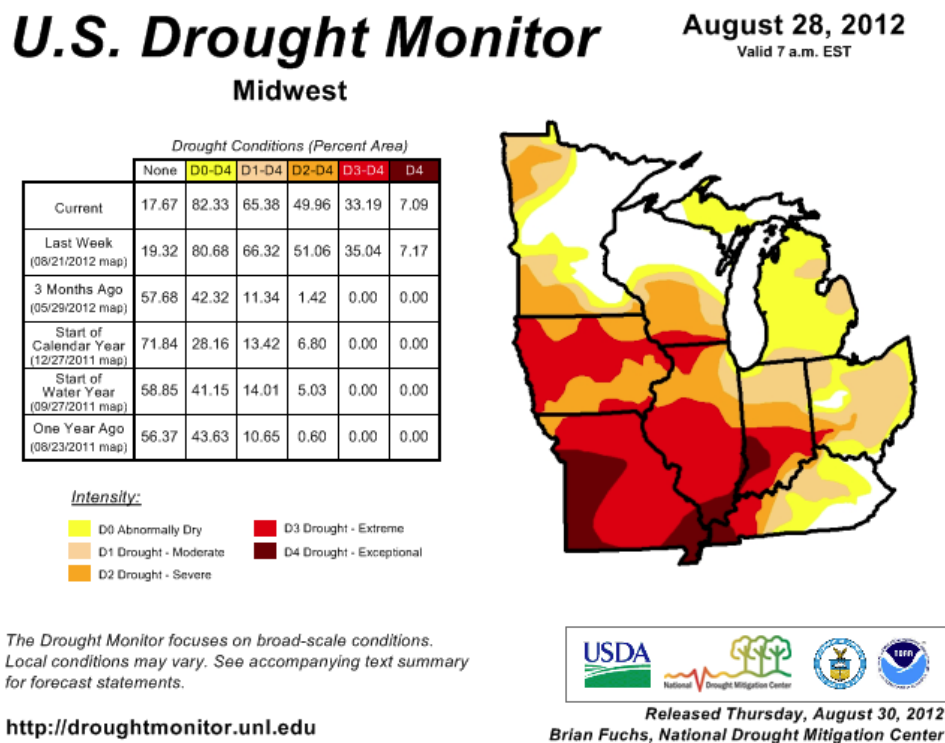


Fig. 3c: Drought Monitor for the [Mid-West](#) with statistics over various time periods. Note generally status quo for changes this week.

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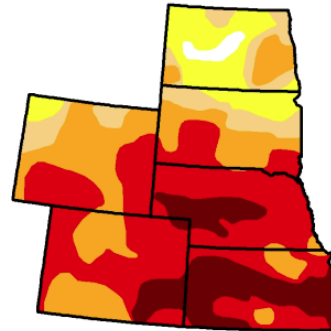
U.S. Drought Monitor High Plains

August 28, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	1.25	98.75	88.07	79.12	54.19	14.97
Last Week (08/21/2012 map)	4.31	95.69	87.49	76.96	51.72	16.20
3 Months Ago (05/29/2012 map)	34.45	65.55	31.55	7.60	2.03	0.00
Start of Calendar Year (12/27/2011 map)	61.66	38.34	18.12	7.22	2.07	0.04
Start of Water Year (09/27/2011 map)	70.09	29.91	17.44	11.97	6.22	2.96
One Year Ago (08/23/2011 map)	75.80	24.20	15.99	12.64	6.24	2.59

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, August 30, 2012
Brian Fuchs, National Drought Mitigation Center

Fig. 3d: Drought Monitor for the [High Plains](#) with statistics over various time periods. Note some deterioration in all but the D4 category this week. See the latest [Kansas Drought Report](#).

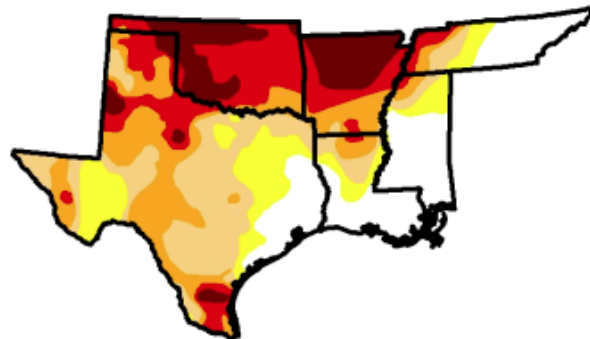
U.S. Drought Monitor South

August 28, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	20.94	79.06	66.22	46.19	28.33	11.29
Last Week (08/21/2012 map)	21.86	78.14	66.80	45.62	27.98	11.71
3 Months Ago (05/29/2012 map)	12.92	87.08	43.29	15.05	5.57	0.37
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 (08/23/2011 map)	6.38	93.62	83.57	74.13	65.66	50.93

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.

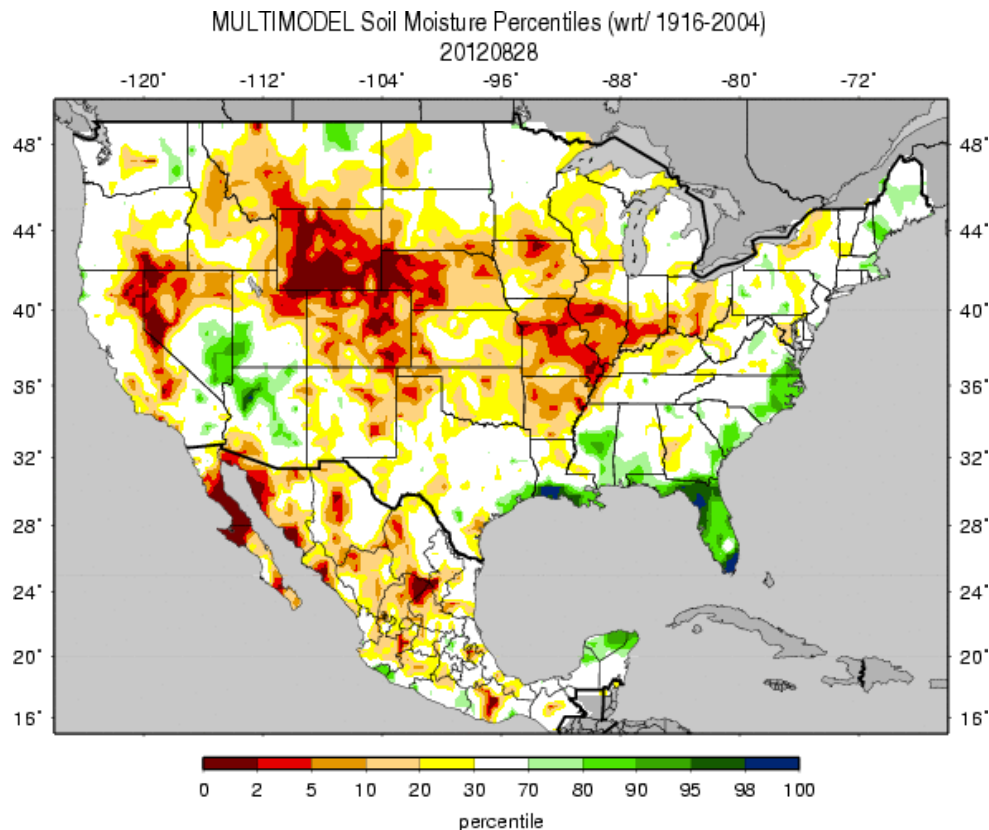
<http://droughtmonitor.unl.edu>



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Fig. 3e: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note that there were no significant changes this week.

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Figs. 4: Soil Moisture ranking in [percentile](#) as of 28 August shows dryness over much of the Interior US. Hurricane Isaac's feeder band caused significant flooding over parts of [Florida](#) and southern Louisiana.

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 (2082) MONTH=2012-07-31 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Aug 30 08:13:51 PDT 2012

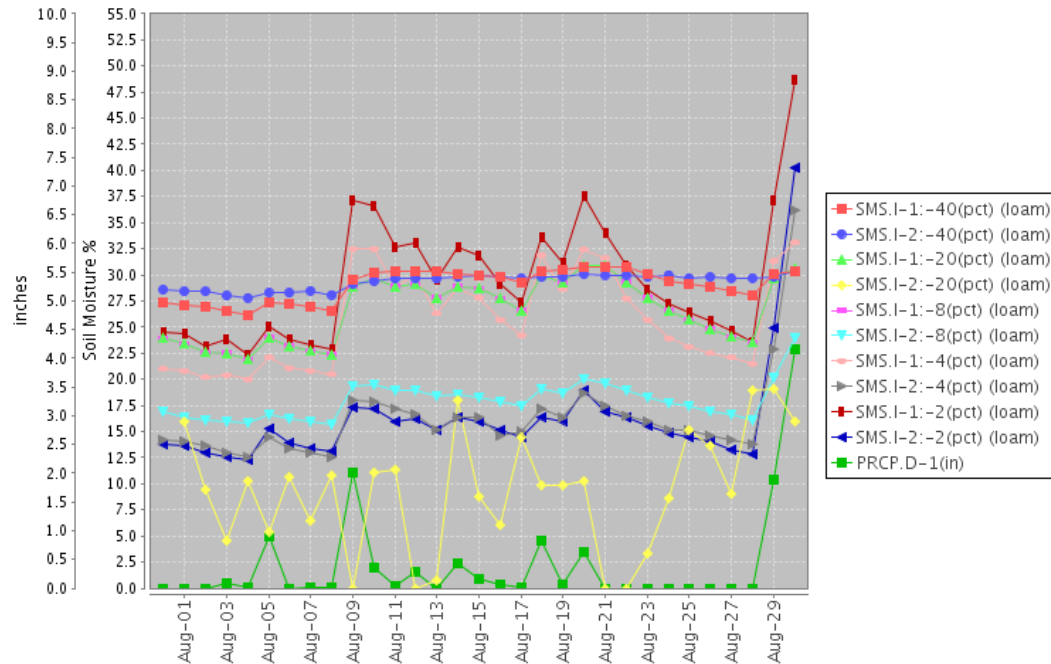


Fig. 5: This NRCS resource shows a site over the [southern Mississippi](#) and how the heavy rains from Hurricane Isaac impacted the soil moisture.

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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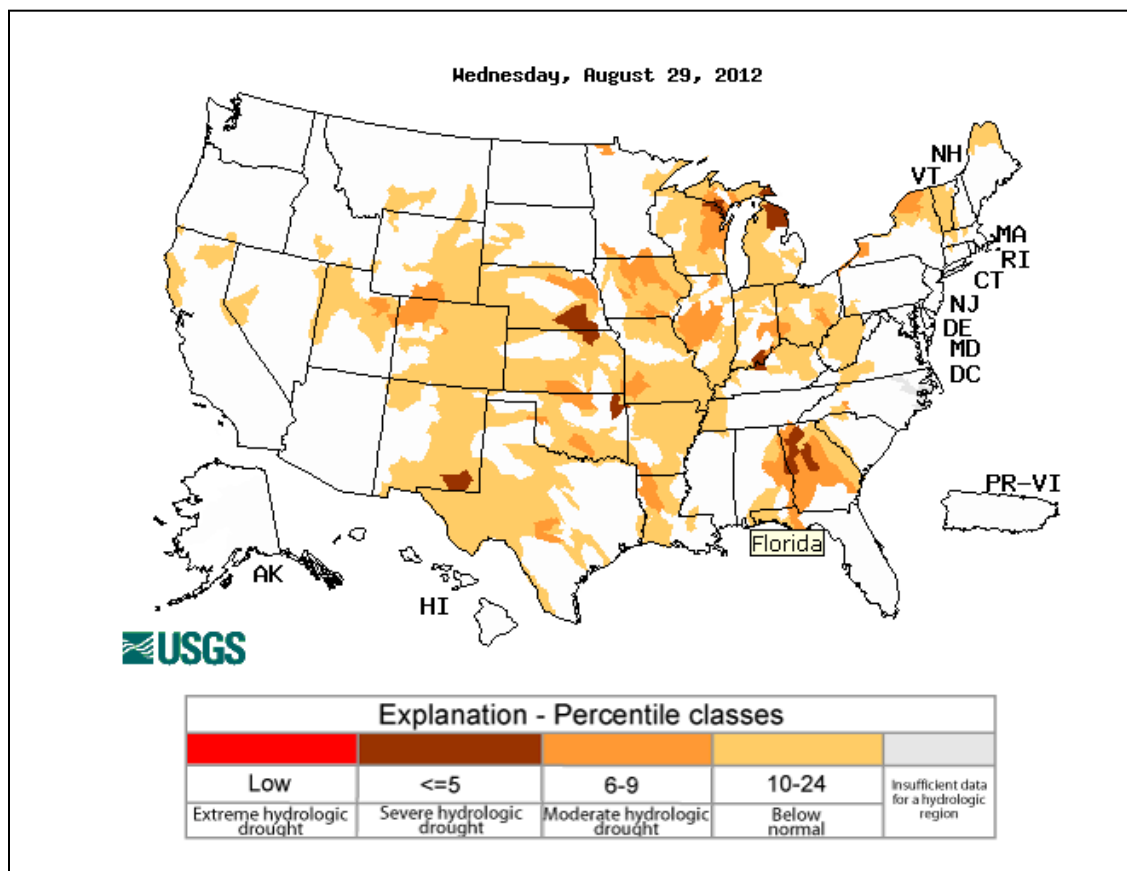


Fig. 6: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. **Severe** conditions exist over parts of Kansas, Nebraska, New Mexico, Oklahoma, Wisconsin, Michigan, Indiana, and Georgia.

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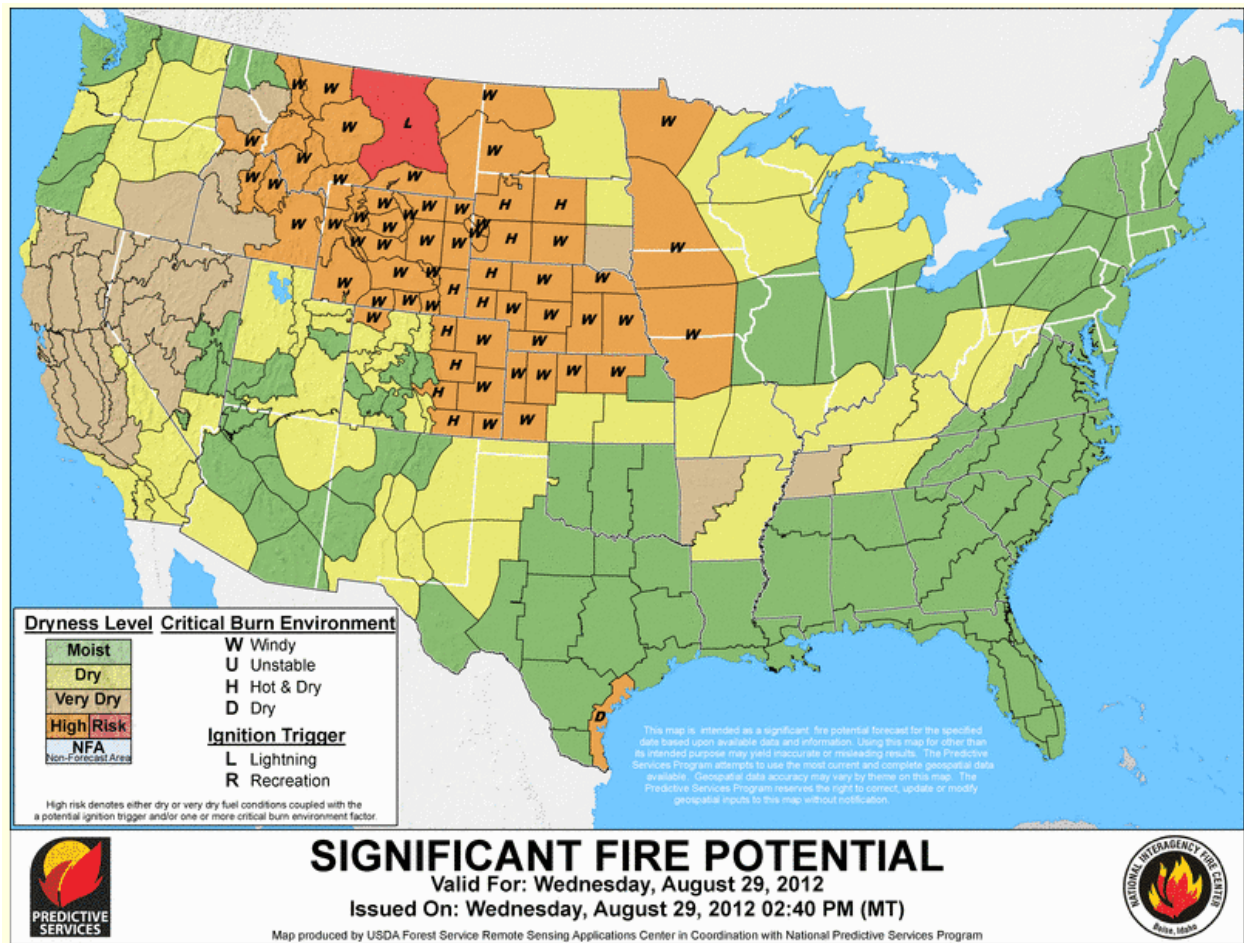


Fig. 7: **Significant fire potential** for yesterday. This resource also provides forecasts out to 7 days. Also check out: [NOAA's Fire Server](#). Risk has increased over the Northern Rockies. Also see: [Experimental Southwest area wildland fire smoke impact awareness page](#) and the latest, [National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

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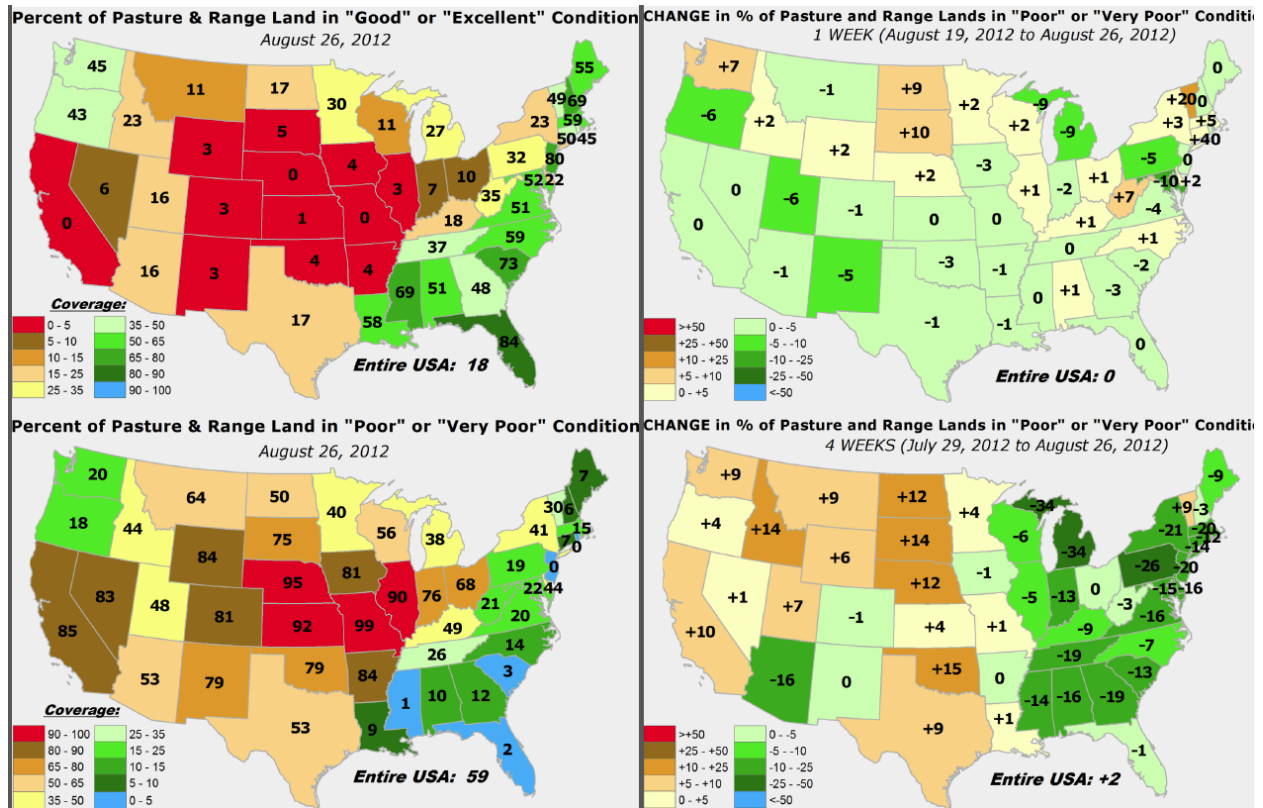


Fig. 8: Pasture and rangeland conditions show the impact of the Great Plains and Mid-West drought. Some improvement during the past week is noted over Oregon, Utah, and New Mexico (note: upper right panel).

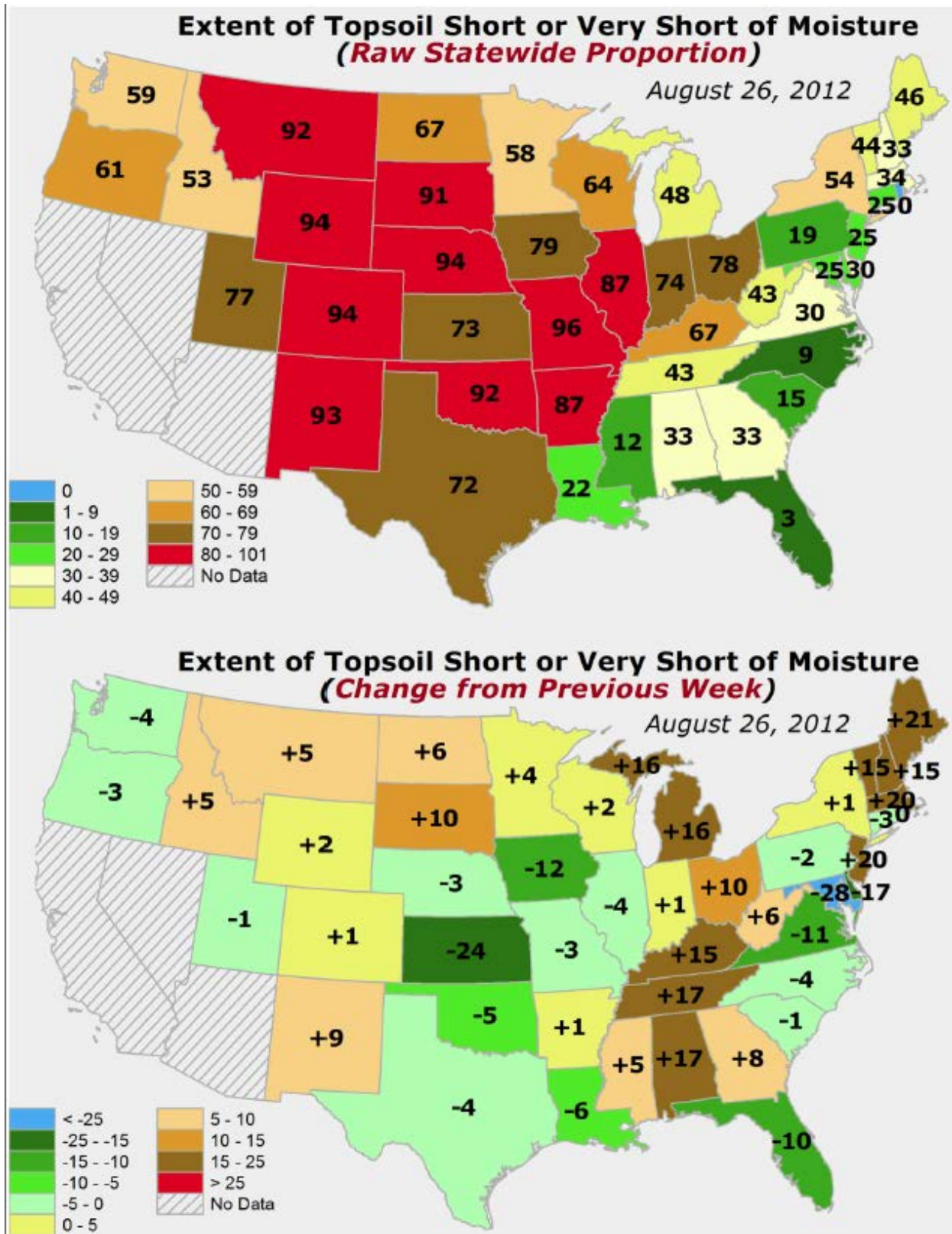


Fig. 9: Top soil conditions are consistent with Fig. 8 above. However, significant improvement is noted over Kansas and to a less extent over Iowa this week (note lower panel).

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National Drought Summary -- August 28, 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/>.

The Northeast: A fairly dry week over much of the region did not warrant any large-scale changes. Some rains late in the period did allow for some improvements over southern New York and north central Pennsylvania, where several counties were removed from D0 status and some improvements were made to D1 conditions. Lingering dryness over the short term did allow for some introduction of D0 conditions in northern Vermont this week.

Mid-Atlantic: Heavy rains, with some amounts approaching 12 inches, helped to ease some of the drought issues in the Delmarva region. Categorical improvements were made where the greatest amounts of rain occurred and other areas were adjusted throughout Maryland, Delaware, and Virginia. Short-term conditions throughout much of the area are recovering while long-term issues are lingering.

Southeast: As tropical storm Isaac sent some initial rain bands through the region, areas of south Florida picked up over 5 inches of rain. Since January 1, the Miami International airport has recorded 68.48 inches of rain, compared to a normal of 39.45 inches and 38.82 inches last year. With the last remaining areas of D0 conditions removed this week, this is the first time since June 29, 2010, that no abnormally dry or drought conditions are being depicted in Florida. Rains throughout much of eastern Georgia allowed for some easing of drought conditions there, and improvements were made to D3/D4 areas along the South Carolina coast. In North Carolina, D1 was eliminated and much of the remaining D0 was improved as well.

South: The Gulf coast of Louisiana as well as portions in east Texas continued in a wet pattern. At the end of the current U.S. Drought Monitor period, Hurricane Isaac was making landfall along the Louisiana and Mississippi coasts. The full impact of this storm and inland remnants will be considered next week for possible improvements.

Midwest: After a very dry summer, some areas have been in a wetter and cooler pattern over the last several weeks. Over the last week, the heaviest rains were recorded from northeast Kansas into southern Iowa and into central Illinois and northwest Indiana. Where the heaviest rains occurred, improvements were made, but it should be noted that many of the row crops will not benefit from these rains and pastures have had minimal improvement so far. Improvements were made in Michigan as an assessment of the impact of rains over the last several weeks allowed for the removal of D2 and a reduction of D1 conditions as well. Slight improvements were made over portions of southern Minnesota by removing the D3 from the southwest corner of the state while D1 was expanded in the central portion of the state.

The Plains: Another mostly dry week over most of the plains states. Areas of Kansas, extreme southeast Nebraska, and portions of Oklahoma did record precipitation amounts that approached 4 inches in places. In these areas, full categorical improvements were shown

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specifically in northeast and south central Kansas, southeast Nebraska and central Oklahoma. In North Dakota, dry conditions led to the expansion of D0 conditions in the western half of the state and D2 expanded in the southwest. In the northeast portion of North Dakota, D1 also expanded. In South Dakota, D3 expanded in the western portion of the state while D1 expanded in the north central. More water restrictions were going to take effect in Sioux Falls as the flow on the Big Sioux River was below 50 cfs. In portions of southeast Oklahoma, D4 was expanded to include more of the area that has been missing out on the recent rains. Even with rains in portions of Texas, the consensus was that the impacted grazing lands are not showing much change, so no improvements were made. Degradation was shown in west Texas into New Mexico where a new area of D4 was introduced. Conditions also intensified and expanded in south Texas where another new area of D4 was introduced and all drought intensity levels pushed farther to the north. Some improvements were shown to D0 and D1 levels in central and eastern Texas as the area was refined to account for the most recent precipitation in the area.

The West: The active rainfall pattern continued over portions of Arizona, western New Mexico and southern Nevada. Many locations recorded well over 2 inches of rain during the last week and some even over 3 inches. With the recent round of precipitation and a wet pattern for most of the month, categorical improvements were made over central Arizona, western New Mexico and southern Nevada. In southern Arizona, the D3 was completely eliminated. In Colorado, the dry conditions and impacts in the northeast part of the state allowed for the expansion of D4 out of Nebraska, and D3 expanded across much of southeast Wyoming and into Colorado. In southeast Colorado, D4 expanded where conditions continue to worsen. Some improvements were made in central and southwest Colorado where D3 was improved to D2, based upon recent rains.

In Wyoming, the last several months have continued to be dry and many of the indicators were worsening as well. For southwest Wyoming, D2/D3 was expanded to the east and north while D0 was introduced in the far northwest part of the state. Nevada had D3 conditions expand into more of the Great Basin and D2 expanded to the north to include portions of southern Oregon.

Hawaii, Alaska and Puerto Rico: No changes were made in Hawaii, Alaska or Puerto Rico this week.

Looking Ahead: Over the next five days (August 29-September 2) the remnants of Hurricane Isaac will continue to move inland and impact the area from Louisiana into Arkansas and portions of Missouri, Illinois, and Indiana. Areas of the Midwest may see up to 7 inches of rain as the system moves through the region. The southwestern United States looks to stay in an active pattern with scattered showers from Arizona up into Utah and Idaho. Temperatures look to be well above normal over much of the country, with departures of 6-9 degrees Fahrenheit over the High Plains.

The CPC 6-10 day forecast (September 3-7): Temperatures are expected to be above normal over most of the southern and eastern United States as well as through the Rocky Mountains, with portions of Alaska, the West Coast, and Midwest having a chance for below-normal temperatures. The best chance of above-normal temperatures is along the southern Plains and into the Southeast. The best chances for above-normal precipitation are in the Central Plains and into New England. Below-normal precipitation can be expected over the western United States and Texas.

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Author: [Brian Fuchs, National Drought Mitigation Center](#)

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 August 29, 2012