



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 13 October 2011

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly shows the greatest positive departures over the Northern Cascades and the greatest negative departures over the 4-Corner States (Fig. 1). [ACIS](#) 7-day average temperature anomalies show the greatest positive temperature departures over parts of eastern Montana ($>+6^{\circ}\text{F}$) and the greatest negative departures over parts of the Great Basin, southeastern California, and Arizona ($<-6^{\circ}\text{F}$) (Fig. 1a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows abundant moisture over northwest Washington, northern California, and the Bighorn Mountains of Wyoming (Fig. 2). In terms of percent of normal, most of the West with the exception of the southern half of Arizona and New Mexico experienced a rather wet week for this time of year (Fig 2a). With the start of the [2012 Water-Year](#) that began on 1 October 2011, any precipitation that falls will skew the statistics since any precipitation that falls is somewhat unusual this time of year over the West. Within the next few weeks, these values will settle down to reflect the typical long-term climatology. Until then, use this product with caution (Fig. 2b).

Weekly Summary: The overall weather pattern for this past week featured a trough across the western half of the contiguous 48 states, a ridge east of the Mississippi River, and a smaller low-pressure system that moved across the Southeast. A low-pressure system that moved out of the western trough brought the first appreciable rains to the central and southern Plains since the second week of August. Dry conditions persisted across much of the Northeast for the entire week, while a storm system brought windy and wet conditions to the Southeast earlier this week.

Rockies and Southwest: Some improvements were made across Colorado and northern New Mexico to reflect recent rains ([SPI-3](#) values near or above 0 and weekly rainfall totals ranging from 0.5 -2.5 inches). Across the San Luis Valley, many areas in D3 (extreme drought) received over 2 inches of rain in the past week. Although top soil moisture in the area is showing near normal conditions, longer term SPIs still depict D2, thus severe drought remained in the region.

Across northern New Mexico, improvements were made to reflect short-term wet conditions. Rainfall totals ranging from 0.9 inch to 2.5 inches were reported for the week. The bulk of the rains fell across Rio Arriba and Taos counties, so that is where the most improvements were made. Longer term indicators ([SPI6](#), [SPI9](#), and soil moisture) all indicate that the recent rains have not overcome longer term deficits.

Across Montana and portions of Idaho, rainfall in excess of 2.0 inches alleviated the abnormal dryness. Dry conditions are indicated from 30-90 days in the past, but beyond 3 months, SPI and percent of normal precipitation all indicate wet conditions. Author: Rich Tinker and Matthew Rosencrans, Climate Prediction Center, NCEP/NWS/NOAA

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 (H, A)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (H, A)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (H, A)** drought are focused on water shortages common and water restrictions imposed and crop or pasture losses likely. The possible impacts associated with **D1 (H, A)** drought are focused on water shortages developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs. 3 through 3b).

Soil Moisture

Soil moisture (Figs. 4a and 4b), 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/cqibin/bor.pl>. Additional information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/> and <http://www.drought.gov>.

For More Information

The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>. Reports from 2007 are available on-line while ones from 2001-2006 can be acquired upon request.

Weekly Snowpack and Drought Monitor Update Report

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

/s/

Douglas Lawrence

Deputy Chief, Soil Survey and Resource Assessment

Weekly Snowpack and Drought Monitor Update Report

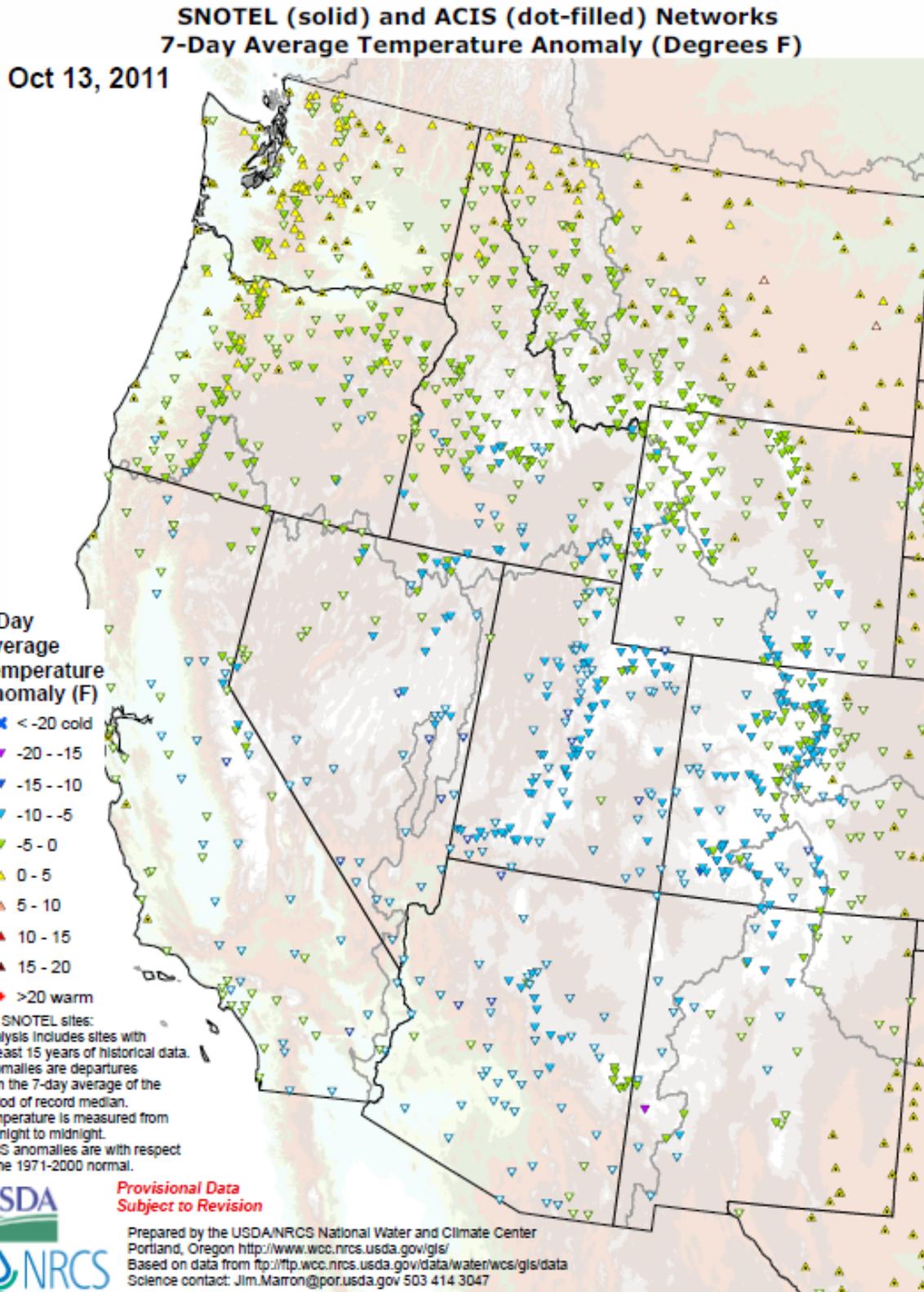
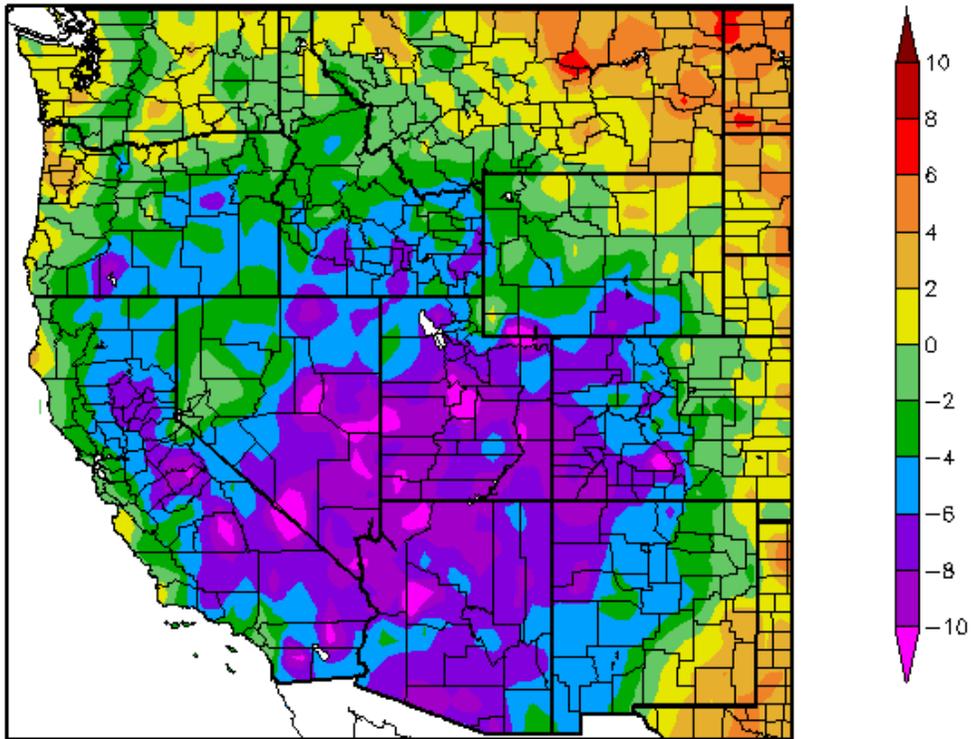


Fig. 1: **SNOTEL** and ACIS 7-day temperature anomaly shows the greatest positive departures over the Northern Cascades and the greatest negative departures over the 4-Corner States.

Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)
10/6/2011 – 10/12/2011



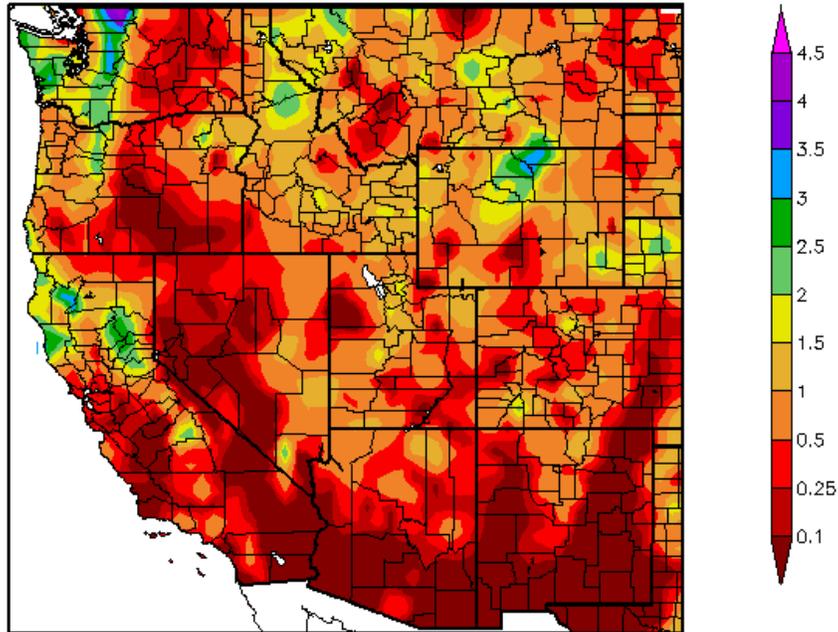
Generated 10/13/2011 at HPRCC using provisional data.

Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures over parts of eastern Montana (>+6°F) and the greatest negative departures over parts of the Great Basin, southeastern California, and Arizona (<-6°F).

Weekly Snowpack and Drought Monitor Update Report

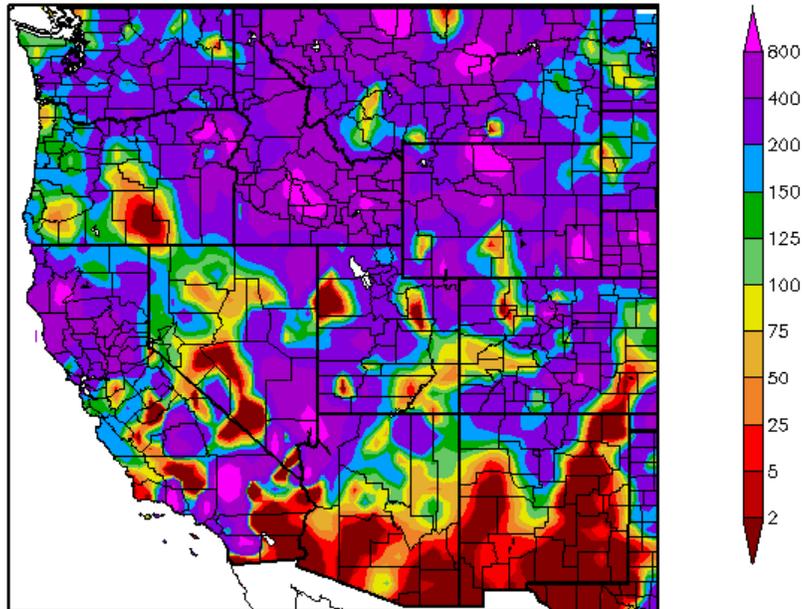
Precipitation (in)
10/6/2011 – 10/12/2011



Generated 10/13/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
10/6/2011 – 10/12/2011



Generated 10/13/2011 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2 and 2a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows abundant moisture over northwest Washington, northern California, and the Bighorn Mountains of Wyoming (Fig. 2). In terms of percent of normal, most of the West with the exception of the southern half of Arizona and New Mexico experienced a rather wet week for this time of year (Fig 2a).

Weekly Snowpack and Drought Monitor Update Report

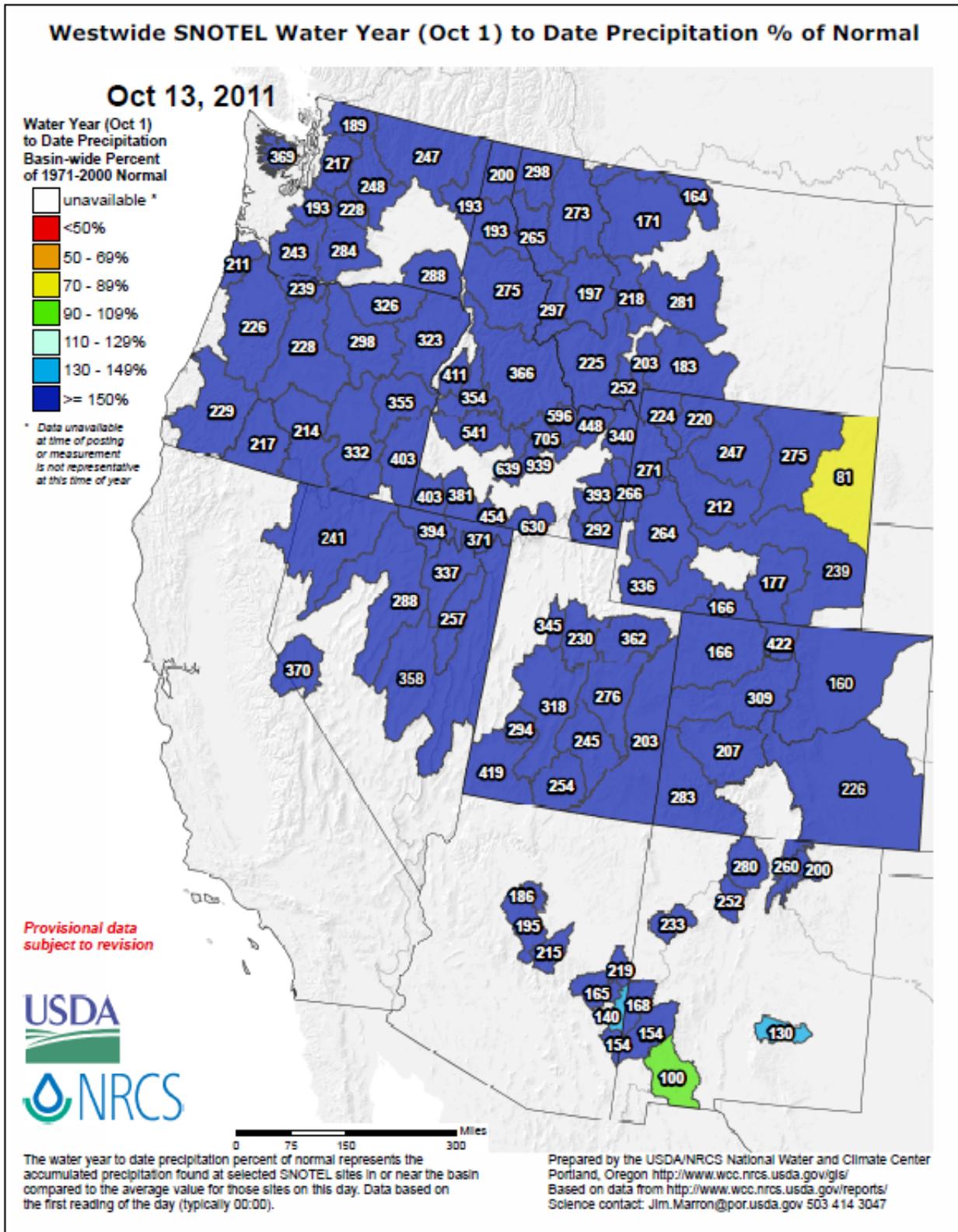


Fig 2b: With the start of the 2012 Water-Year that began on 1 October 2011, any precipitation that falls will skew the statistics since any precipitation that falls is somewhat unusual this time of year over the West. Within the next few weeks, these values will settle down to reflect the typical long-term climatology. Until then, use this product with caution.

U.S. Drought Monitor

October 11, 2011
Valid 8 a.m. EDT

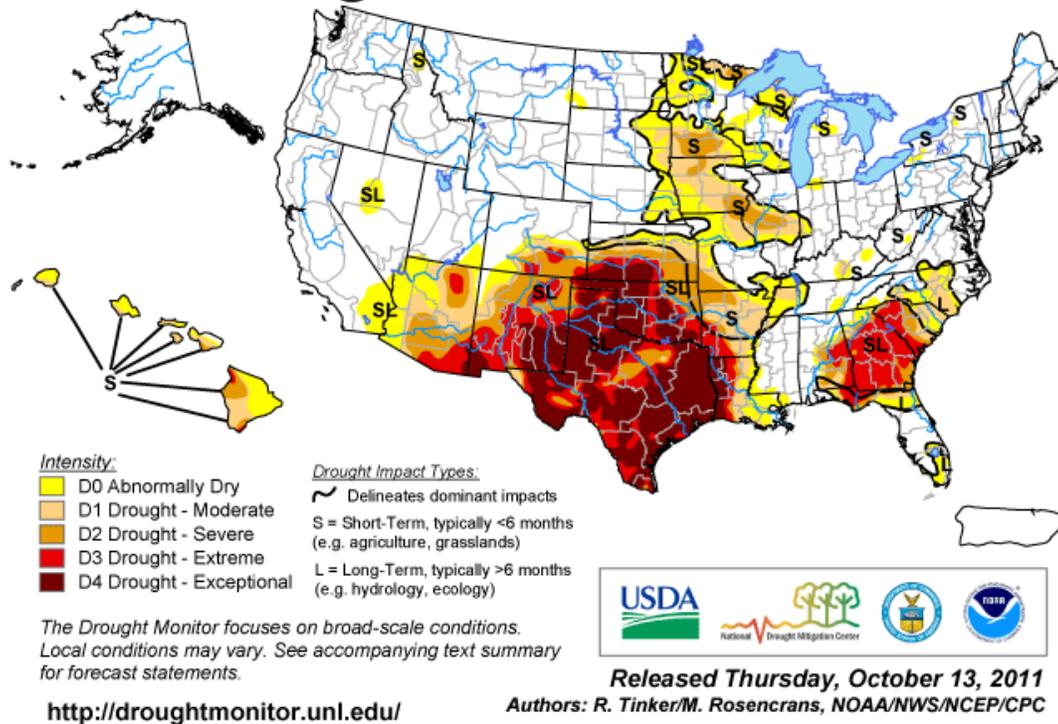


Fig. 3: Current **Drought Monitor** weekly summary. The exceptional D4 levels of drought are found over extreme southeast Arizona, New Mexico, Texas, Oklahoma, Kansas, and western Louisiana.

Drought Impact Reporter

[Crop proves tough amidst drought](#)

Sept 22, Sulphur Springs, Texas. This type of sesame grew fairly well with some reduction in yield during a season when the rainfall amounted to just 3.92 inches.

[Dry weather stressing crops, cattle in South Dakota](#)

Oct 3, South Dakota. Respiratory problems have arisen among cattle in dry, dusty parts of South Dakota.

[South Georgia pecans to receive record price](#)

Oct 6, Georgia. Georgia pecan growers who irrigate are thrilled about high pecan prices, which were high in part due to poor pecan production in Texas.

[State harvests on target: winter wheat behind for planting, emergence](#)

Oct 3, Montana. Spring wheat growers in Montana noticed crop damage from drought and grasshoppers, according to the Montana Field Office of the National Agricultural Statistics Service. Dry conditions also delayed the planting of the winter wheat crop.

[Study shows heifers don't have to be pigs at the feed bunk](#)

Oct 2, Research from Montana State University. Heifers can consume 20 percent less during the seven month period between weaning and breeding without any ill effects. This discovery could benefit producers during drought, allow them to purchase less hay and save money.

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U.S. Drought Monitor

West

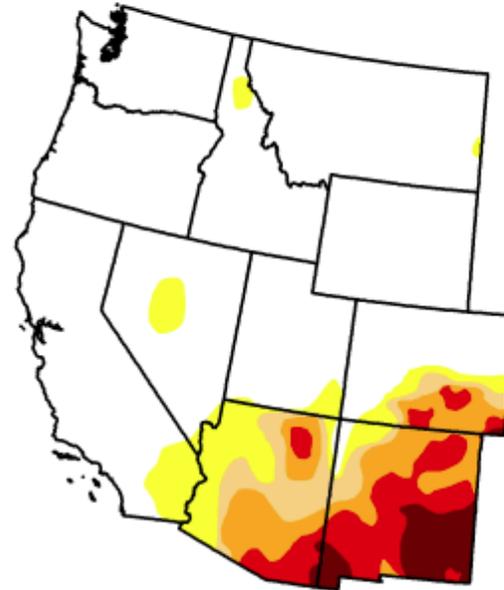
October 11, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	74.00	26.00	18.63	14.79	8.48	2.87
Last Week (10/04/2011 map)	66.39	33.61	19.04	14.99	9.30	3.90
3 Months Ago (07/12/2011 map)	75.10	24.90	19.04	15.69	11.02	5.60
Start of Calendar Year (12/28/2010 map)	73.26	26.74	11.98	0.89	0.00	0.00
Start of Water Year (09/27/2011 map)	66.72	33.28	19.04	14.99	9.30	3.81
One Year Ago (10/05/2010 map)	62.50	37.50	8.41	0.56	0.00	0.00

Intensity:

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



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



Released Thursday, October 13, 2011

<http://droughtmonitor.unl.edu>

Fig. 3a: Drought Monitor for the [Western States](#) with statistics over various time periods. Regionally there was little change in drought condition this week.

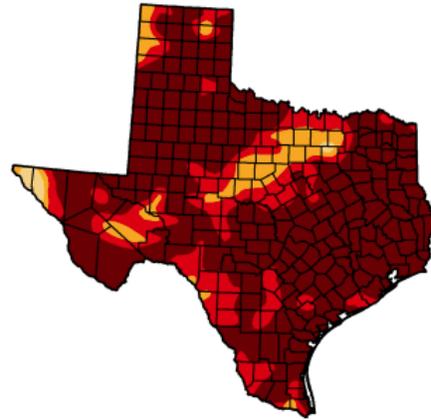
Weekly Snowpack and Drought Monitor Update Report

U.S. Drought Monitor Texas

October 11, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	99.15	91.96	73.13
Last Week (10/04/2011 map)	0.00	100.00	100.00	99.16	96.99	87.99
3 Months Ago (07/12/2011 map)	0.00	100.00	97.43	95.78	90.97	71.66
Start of Calendar Year (12/28/2010 map)	7.89	92.11	69.43	37.46	9.59	0.00
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	99.16	96.65	85.75
One Year Ago (10/05/2010 map)	75.60	24.40	2.43	1.01	0.02	0.00

Intensity:



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<http://droughtmonitor.unl.edu>



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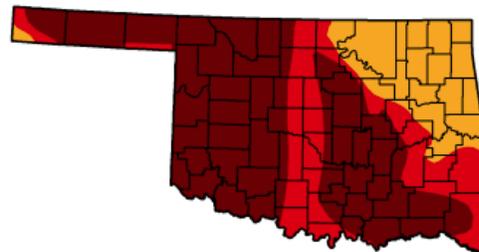
Fig. 3b(1): Currently, 73% of **Texas** is experiencing “Exceptional” D4 drought. ~92% of the state is in D3 and D4 drought! This represents a marked improvement since last week.

U.S. Drought Monitor Oklahoma

October 11, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	100.00	80.31	59.10
Last Week (10/04/2011 map)	0.00	100.00	100.00	100.00	78.97	69.82
3 Months Ago (07/12/2011 map)	0.00	100.00	98.46	76.84	58.04	42.94
Start of Calendar Year (12/28/2010 map)	13.82	86.18	47.90	1.50	0.00	0.00
Start of Water Year (09/27/2011 map)	0.00	100.00	100.00	100.00	78.97	66.42
One Year Ago (10/05/2010 map)	66.29	33.71	4.21	0.00	0.00	0.00

Intensity:



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<http://droughtmonitor.unl.edu>



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Fig. 3b(2) Currently, over 59% of **Oklahoma** is experiencing “Exceptional” D4 drought. Over 80% of the state is in D3 and D4 drought! Heavy rainfall in the middle of the state helped to reduced D4 this week.

Weekly Snowpack and Drought Monitor Update Report

U.S. Drought Monitor

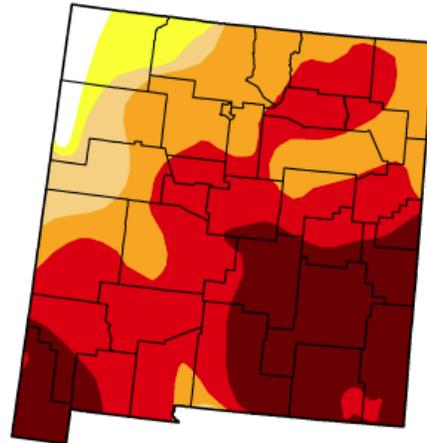
New Mexico

October 11, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.29	97.71	93.25	87.07	63.02	26.35
Last Week (10/04/2011 map)	0.00	100.00	96.40	88.99	69.61	36.04
3 Months Ago (07/12/2011 map)	0.00	100.00	100.00	93.96	79.01	48.21
Start of Calendar Year (12/28/2010 map)	6.16	93.84	40.40	0.00	0.00	0.00
Start of Water Year (09/27/2011 map)	0.00	100.00	96.40	88.99	69.61	35.13
One Year Ago (10/05/2010 map)	76.66	23.34	0.00	0.00	0.00	0.00

Intensity:

- | | |
|--|---|
| <p> D0 Abnormally Dry</p> <p> D1 Drought - Moderate</p> <p> D2 Drought - Severe</p> | <p> D3 Drought - Extreme</p> <p> D4 Drought - Exceptional</p> |
|--|---|



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



Released Thursday, October 13, 2011

<http://droughtmonitor.unl.edu>

Fig. 3b(3): Currently, 26% of **New Mexico** is experiencing “Exceptional” D4 drought. Over 63% of the state is in D3 and D4 drought. This represents some improvement change this week.

U.S. Drought Monitor

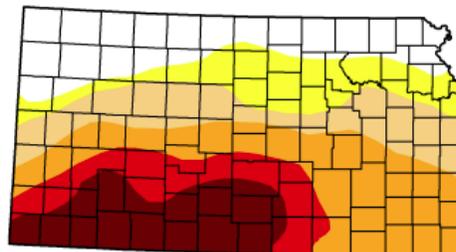
Kansas

October 11, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	20.75	79.25	65.80	49.58	25.96	15.16
Last Week (10/04/2011 map)	7.42	92.58	75.02	53.96	32.83	17.69
3 Months Ago (07/12/2011 map)	33.86	66.14	48.63	34.36	17.08	8.66
Start of Calendar Year (12/28/2010 map)	17.82	82.18	43.85	3.48	0.00	0.00
Start of Water Year (09/27/2011 map)	16.39	83.61	66.03	48.78	28.54	17.63
One Year Ago (10/05/2010 map)	83.23	16.77	0.00	0.00	0.00	0.00

Intensity:

- | | |
|--|---|
| <p> D0 Abnormally Dry</p> <p> D1 Drought - Moderate</p> <p> D2 Drought - Severe</p> | <p> D3 Drought - Extreme</p> <p> D4 Drought - Exceptional</p> |
|--|---|



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

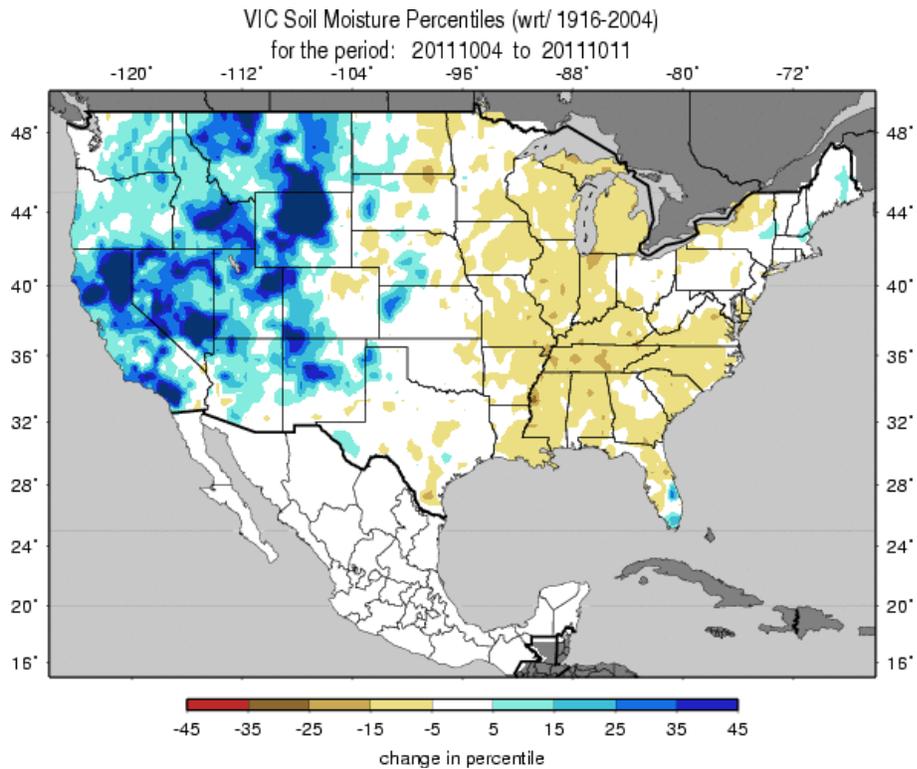
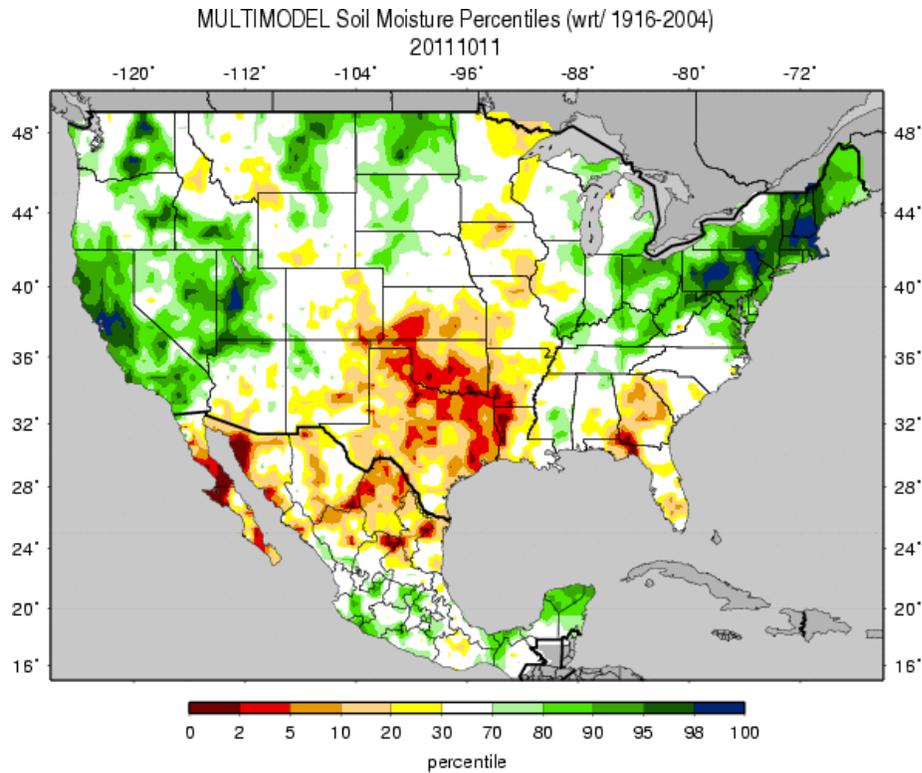


Released Thursday, October 13, 2011

<http://droughtmonitor.unl.edu>

Fig. 3b(4): Currently, 15% of **Kansas** is experiencing “Exceptional” D4 drought ~26% of the state is in D3 and D4 drought. This represents some improvement change this week.

Weekly Snowpack and Drought Monitor Update Report



Figs. 4a and 4b: Soil Moisture ranking in percentile as of 11 October (top) shows accumulated moist conditions continuing over of New England. During the week, significant increases in moisture are noted over much of the Western states while a drying trend is seen over the Eastern States.

Weekly Snowpack and Drought Monitor Update Report

Soil Climate Analysis Network (SCAN)

Station (2117) MONTH=2011-09-13 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Oct 13 08:07:12 PDT 2011

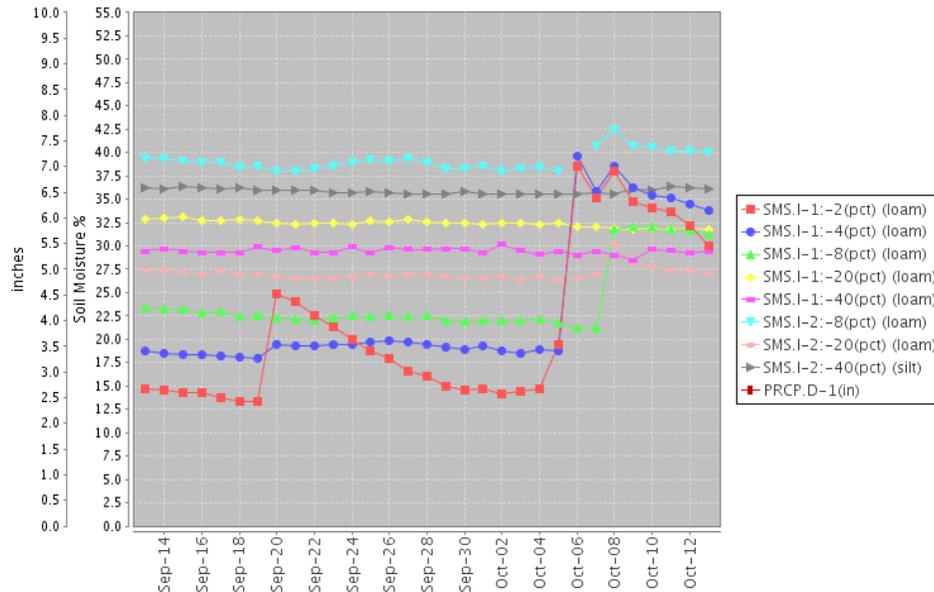


Fig. 5a: This NRCS resource shows a site in [western Montana](#) with moistening soil due to recent rains.

Station (2087) MONTH=2011-09-13 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Oct 13 08:08:39 PDT 2011

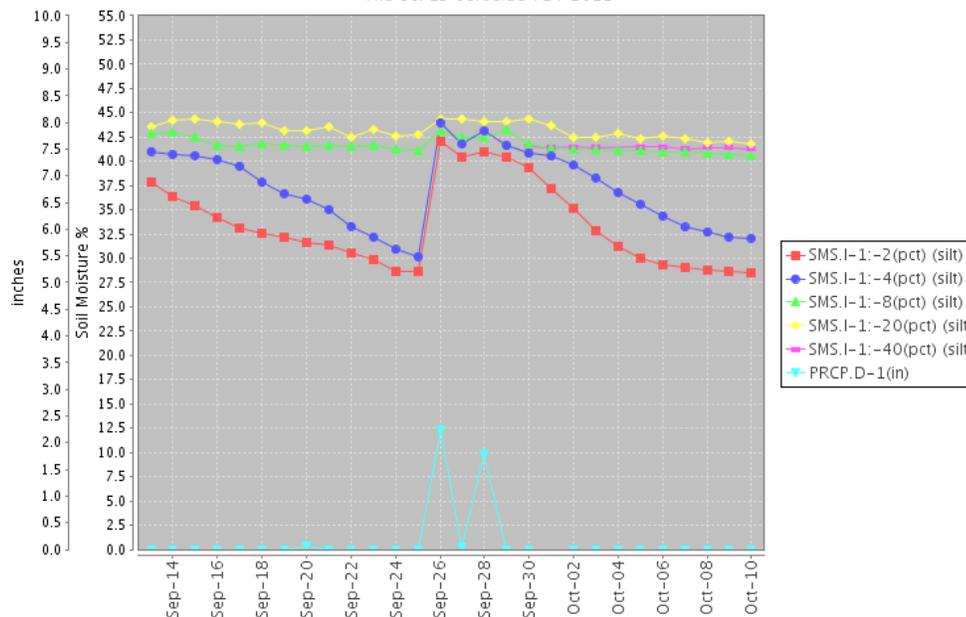
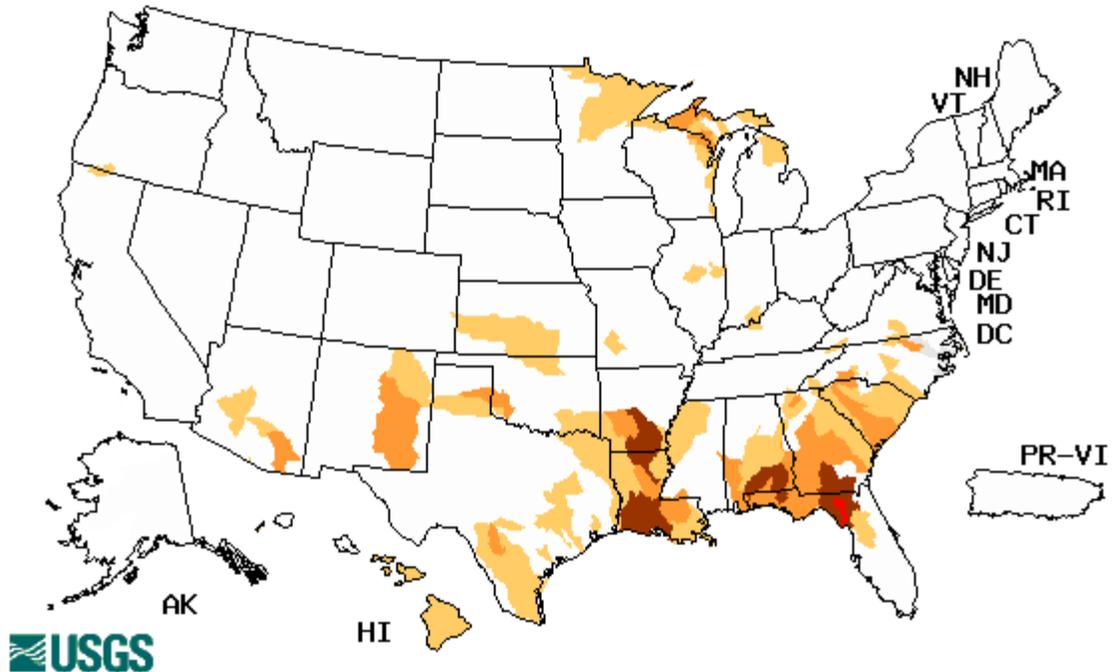


Fig. 5b: This SCAN station is located in [western Mississippi](#) shows drying soil in the top layers since late September.

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Wednesday, October 12, 2011



Explanation - Percentile classes				
Low	≤5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Fig. 6: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Extreme conditions continue over parts of northern Florida.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- October 11, 2011

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: The overall weather pattern for this past week featured a trough across the western half of the contiguous 48 states, a ridge east of the Mississippi River, and a smaller low-pressure system that moved across the Southeast. A low-pressure system that moved out of the western trough brought the first appreciable rains to the central and southern Plains since the second week of August. Dry conditions persisted across much of the Northeast for the entire week, while a storm system brought windy and wet conditions to the Southeast earlier this week.

Southeast and Mid-Atlantic: A low-pressure system brought significant rains to much of Florida and the Southeast. Most locations reported between 1.0 and 3.0 inches with some locations across Florida reporting up to 10 inches of rain through the data cutoff (8am Tuesday). Improvements were made across Florida and Georgia to reflect these beneficial rains. These heavy rains were especially beneficial, falling on the Kissimmee River basin and the Chain of Lakes.

Farther north, across the Carolinas, the drought depiction reflected continued dry conditions, with interspersed periods of wetness leading to some disagreement among the indicators. Many of the United States Geological Survey (USGS) stream gauges across central and eastern North Carolina are reporting below-normal flows and longer-term Standardized Precipitation Index (SPI) values indicate very dry conditions. More recently, eastern North Carolina and central and eastern South Carolina have reported near or above-normal rainfall, indicated by SPI values greater than 0.

Abnormal dryness returned across much of Louisiana in the wake of Tropical Storm Lee during early September. Statewide rainfall deficits, as measured from September 6, 2011 are averaging 3.61 inches, with some climate divisions having precipitation deficits in excess of 4.0 inches.

Northern Great Plains and Upper-Midwest: The drought conditions across much of the upper Mississippi River Valley deteriorated as rainfall was near 0 for much of the region, highs nearly reached 90 degree F, and weekly temperatures averaged 5 to 15 degrees F above normal.

The above-normal temperatures increased the demand for water. Pan evaporation, measured at the University of Minnesota St. Paul Campus Climate Observatory, set a record of 2.32 inches from October 1-10 with data going back to 1972.

A small area of significant rainfall occurred across Nebraska and South Dakota, but the heaviest rains missed the current drought areas. D0 (abnormal dryness) was removed from the western portions of South Dakota and Nebraska to reflect what rains did fall across those locations. The

Weekly Snowpack and Drought Monitor Update Report

impacts were more mixed across eastern South Dakota as improvements were made east of Aberdeen, but near Sioux Falls D1 (moderate drought) conditions were expanded to reflect the on-going short-term dryness and warm temperatures.

Southern Great Plains: Significant rains (0.75 inch to over 7.0 inches) fell across an area from Kansas to central Texas. One category improvements were made across central Kansas and Oklahoma, with isolated areas of 2-category improvements across Texas. Some areas received very little rain so the improvements were minimal in spatial extent.

Across Oklahoma, only Great Salt Plains Lake and Arcadia Lake showed any appreciable response to wide swath of 3-5 inches of rain. Most of the rain was absorbed locally, with locations across the panhandle and farther east receiving little rain.

Lubbock received 0.16 inch and now has deficits of 13.10 inches (normal is 16.26 inches for the year). Childress reported over 1.5 inches but continues to have a deficit of nearly 14 inches. Aspermont, TX, in Stonewall County, received over 2.75 inches. A few of the West Texas Mesonet sites had modest soil moisture in the upper part of the profile, but of the rainfall was absorbed by the soil and did not contribute to significant run-off to recharge streams and lakes. The biggest beneficiaries to this week's rains would be pastures, ranges, and winter wheat.

Rockies and Southwest: Some improvements were made across Colorado and northern New Mexico to reflect recent rains (SPI-3 values near or above 0 and weekly rainfall totals ranging from 0.5 -2.5 inches). Across the San Luis Valley, many areas in D3 (extreme drought) as of last week, received over 2 inches of rain in the past week. Although top soil moisture in the area is showing near normal conditions, longer term SPIs still depict D2, thus severe drought remained in the region.

Across northern New Mexico, improvements were made to reflect short-term wet conditions. Rainfall totals ranging from 0.9 inch to 2.5 inches were reported for the week. The bulk of the rains fell across Rio Arriba and Taos counties, so that is where the most improvements were made. Longer term indicators (SPI6, SPI9, and soil moisture) all indicate that the recent rains have not overcome longer term deficits.

Across Montana and portions of Idaho, rainfall in excess of 2.0 inches alleviated the abnormal dryness. Dry conditions are indicated from 30-90 days in the past, but beyond 3 months, SPI and percent of normal precipitation all indicate wet conditions.

Hawaii: Drought conditions expanded slightly across Hawaii as rainfall has been sparse across many locations. SPI3 and SPI6 indicate mostly near normal conditions, except for the southwest portions of the Big Island, where SPI3 shows dry conditions. Weekly rainfall totals were less than 0.5 inch for most leeward stations, so drought conditions expanded slightly on the leeward sides of Oahu and Maui.

Looking Ahead: October 13-20, 2011 – Early in the period, a pair of storm systems will generate widespread, locally heavy showers from the Midwest and Mississippi Valley into the mid-Atlantic and Northeast, with lighter showers falling across the Gulf Coast and Southeast. Over the weekend, breezy, cooler conditions will settle over much of the eastern U.S., while a weak Pacific disturbance will bring light rain – and perhaps even some wet snow – to northern portions of the Rockies and Great Plains. Elsewhere, high pressure will maintain dry, increasingly warm weather from the central and southern Pacific Coast into the central and

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southern Plains, including the Four Corners Region. The NWS 6- to 10-day outlook for October 18-22 calls for drier-than-normal conditions from the Pacific Coast to the southern Plains. Conversely, wetter-than-normal weather is expected across the Midwest, Southeast, and northern Plains. Above-normal temperatures across much of the western U.S. will contrast with cooler-than-normal weather from the central and southern Mississippi Valley into the Southeast.

Author: [Rich Tinker and Matthew Rosencrans, Climate Prediction Center, NCEP/NWS/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)

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