



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

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**Weekly Report - Snowpack / Drought Monitor Update**

**Date: 28 October 2010**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Temperature:** ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts of Wyoming ( $>+6^{\circ}\text{F}$ ) and the greatest negative departures occurred over California and southern Arizona ( $<-8^{\circ}\text{F}$ ) (Fig. 1).

**Precipitation:** ACIS 7-day average precipitation amounts for the period ending 27 October shows the bulk of the heaviest precipitation confined to the Cascades and Coastal Range in Washington and California (Fig. 2). In terms of percent of normal, a very wet week dominated over all but the extreme Southwest, Northern Rockies, and Colorado High Plains (Fig. 2a). For the new 2011 Water-Year that began on 1 October 2010, statistics are skewed to the extreme as noted by exceptionally large and small percentages. These values will be more meaningful in the coming weeks. Use this figure with caution (Fig. 2b).

## **WESTERN DROUGHT STATUS**

**The West:** Despite the fact it is still very early in the 2010-2011 Water Year, widespread improvements in Abnormal Dryness (D0) or Moderate Drought (D1) were noted as a strong Fall storm impacted the region. Precipitation totals locally exceeded 10 inches in the foothills of the Sierra Nevada, with widespread readings in excess of 4 inches over much of northern California. Farther east, precipitation totals routinely tallied 1 to 5 inches, locally more, from the northern and central Intermountain Region into the central Rockies and Four Corners states. Consequently, D2 and D1 were removed from northern Arizona and northern Nevada, respectively, while lesser reductions in D1 coverage were made in central Colorado and western Wyoming. Large areas of Abnormal Dryness (D0) were likewise eliminated by the unseasonably heavy rain and mountain snow from central Nevada southeastward into northeastern Utah as well as north-central Colorado and south-central Wyoming. Similar, albeit smaller, reductions were made to D0 coverage in the Four Corners Region to correspond with locally heavy precipitation and a favorable start to the Water Year. Temperatures averaged 2 to 5 degrees F above normal, although cooler conditions settled over the western U.S. as the storm passed over the region. Author: Eric Luebehusen, United States Department of Agriculture.

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

### **DROUGHT IMPACTS DEFINITIONS (<http://drought.unl.edu/dm/classify.htm>)**

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

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developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs. 3 and 3a).

### 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/>.

### U.S. HISTORICAL STREAMFLOW

[http://water.usgs.gov/cgi-bin/waterwatch?state=us&map\\_type=dryw&web\\_type=map](http://water.usgs.gov/cgi-bin/waterwatch?state=us&map_type=dryw&web_type=map).

This map, (Fig. 5) 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://drought.gov>.

### FOR MORE INFORMATION

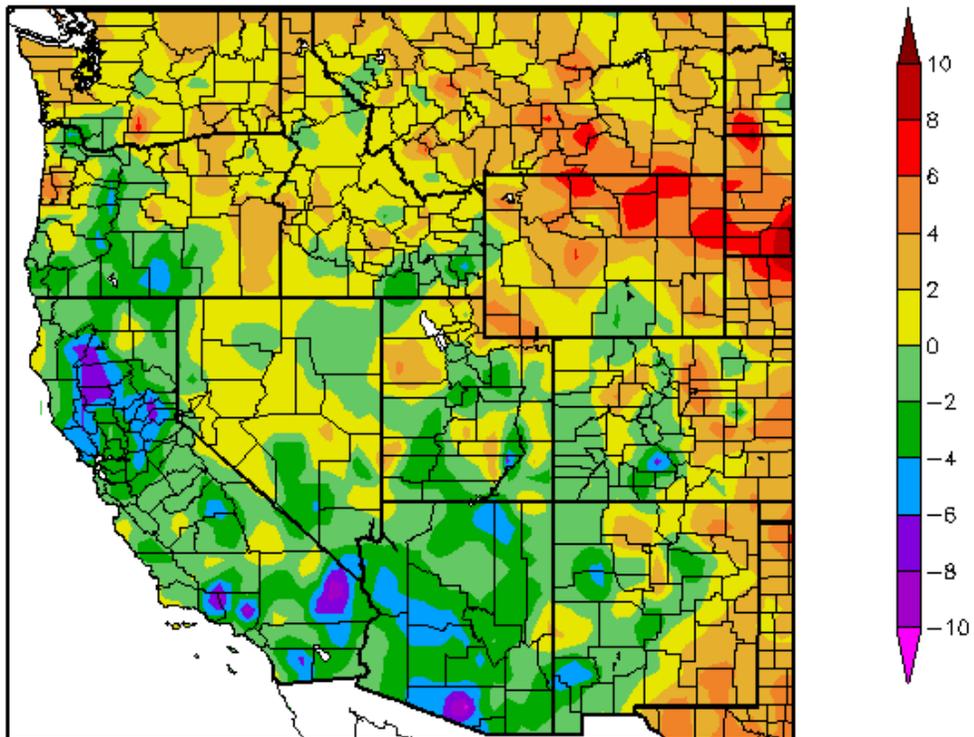
The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>

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

/s/ JEFF GOEBEL  
Acting Director, Resource Inventory Division

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### Departure from Normal Temperature (F) 10/21/2010 – 10/27/2010



Generated 10/28/2010 at HPRCC using provisional data.

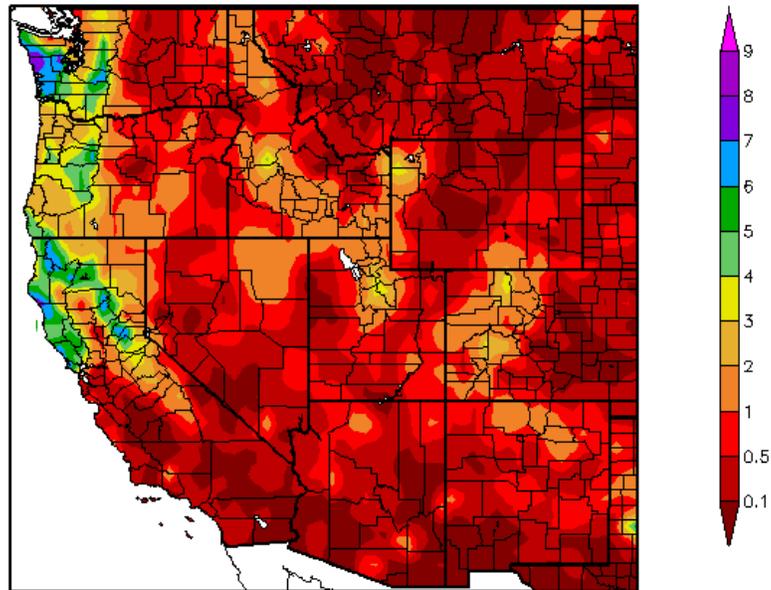
Regional Climate Centers

**Fig. 1: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts of Wyoming (>+6°F) and the greatest negative departures occurred over California and southern Arizona (<-8°F).**

Ref: [http://www.hprcc.unl.edu/maps/current/index.php?action=update\\_daterange&daterange=7d](http://www.hprcc.unl.edu/maps/current/index.php?action=update_daterange&daterange=7d)

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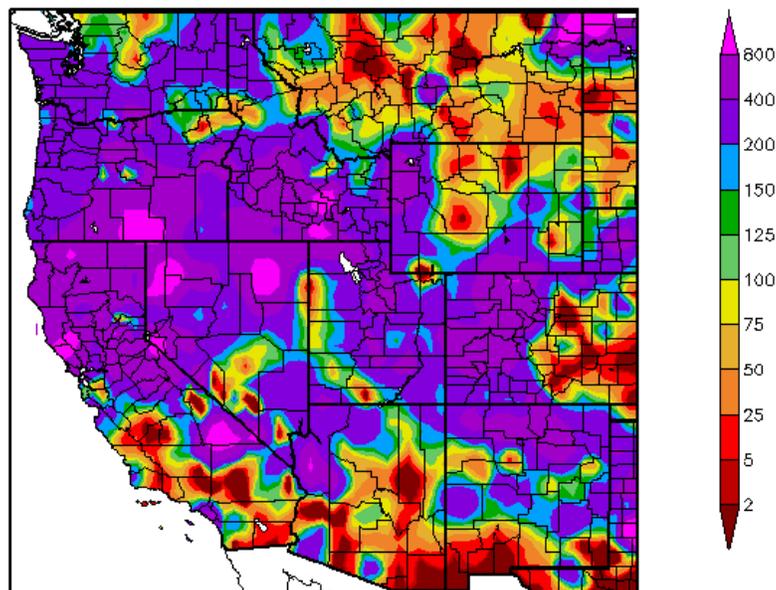
Precipitation (in)  
10/21/2010 – 10/27/2010



Generated 10/28/2010 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
10/21/2010 – 10/27/2010



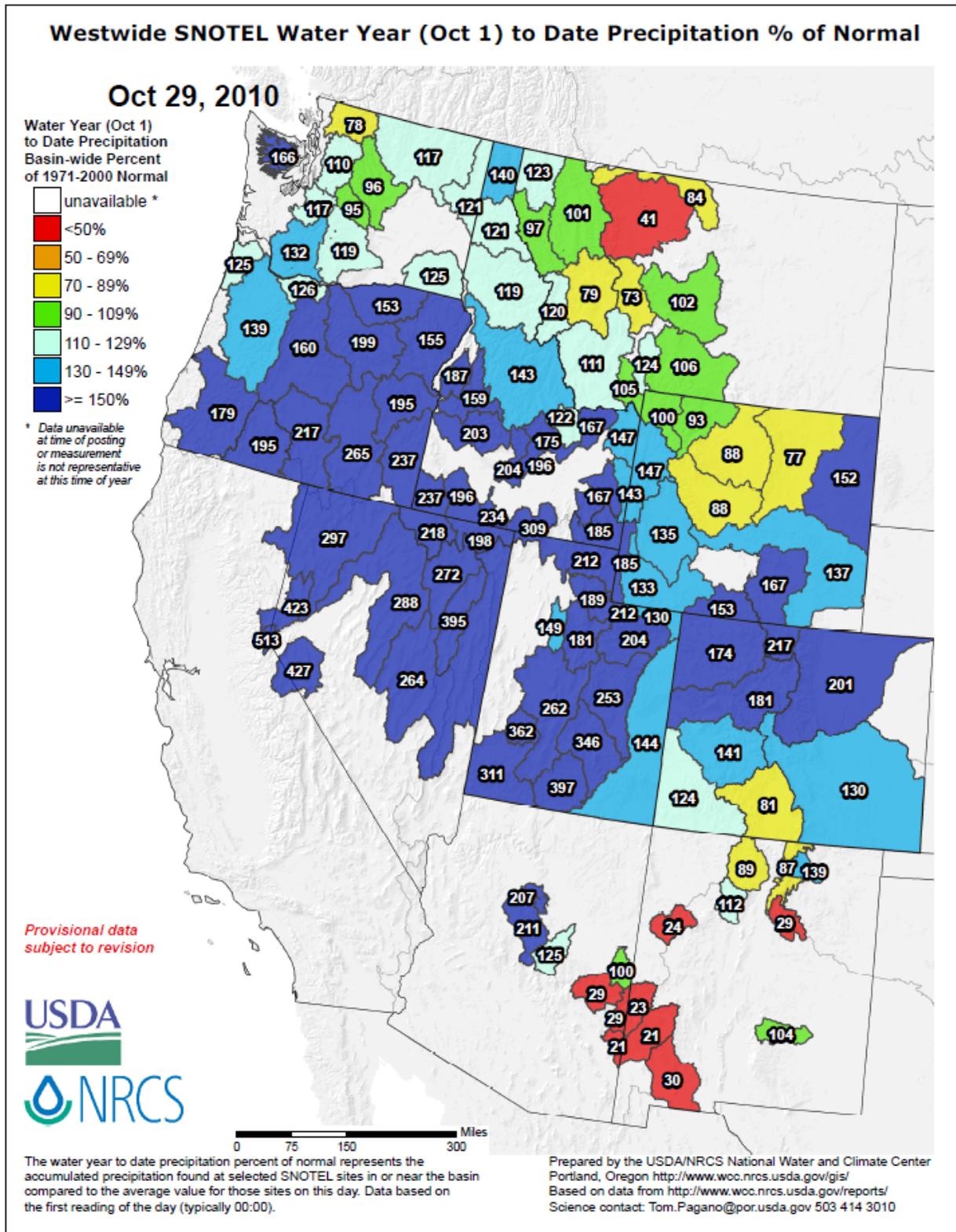
Generated 10/28/2010 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 2 and 2a: ACIS 7-day average precipitation amounts for the period ending 27 October shows the bulk of the heaviest precipitation confined to the Cascades and Coastal Range in Washington and California (Fig. 2). In terms of percent of normal, a very wet week dominated over all but the extreme Southwest, Northern Rockies, and Colorado High Plains (Fig. 2a).**

Ref: <http://www.hprcc.unl.edu/maps/current/>

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**Fig 2b: For the new 2011 Water-Year that began on 1 October 2010, statistics are skewed to the extreme as noted by exceptionally large and small percentages. These values will be more meaningful in the coming weeks. Use this figure with caution!**

Ref: [ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west\\_wytdprecpcnormal\\_update.pdf](ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf)

# U.S. Drought Monitor

October 26, 2010  
Valid 8 a.m. EDT

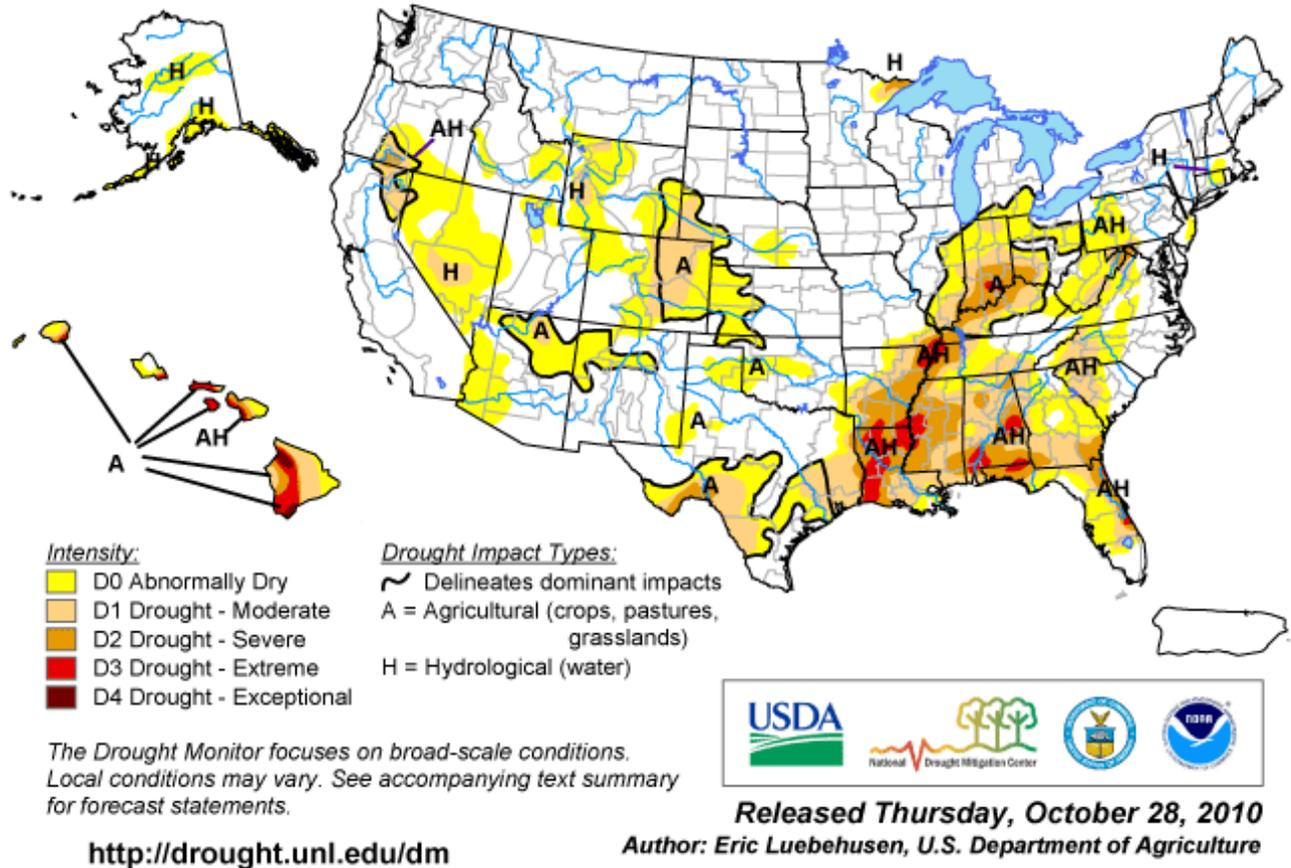


Fig. 3: Current Drought Monitor weekly summary. Hawaii is only state that has a D4 drought level. D3 levels dominate northern Louisiana, western Tennessee, and southeastern Alabama.

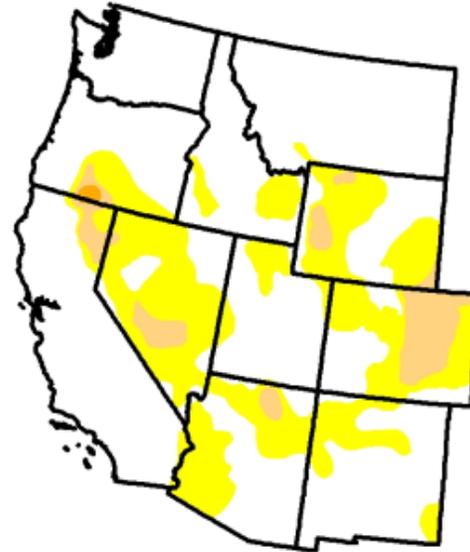
Ref: <http://www.drought.unl.edu/dm/monitor.html>

# U.S. Drought Monitor West

October 26, 2010  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	69.0	31.0	5.4	0.2	0.0	0.0
Last Week (10/19/2010 map)	62.3	37.7	6.0	0.6	0.0	0.0
3 Months Ago (08/03/2010 map)	73.8	26.2	7.3	0.6	0.0	0.0
Start of Calendar Year (01/05/2010 map)	40.1	59.9	30.6	9.9	0.5	0.0
Start of Water Year (10/05/2010 map)	62.5	37.5	8.4	0.6	0.0	0.0
One Year Ago (10/27/2009 map)	51.0	49.0	22.9	8.9	0.0	0.0



**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://drought.unl.edu/dm>

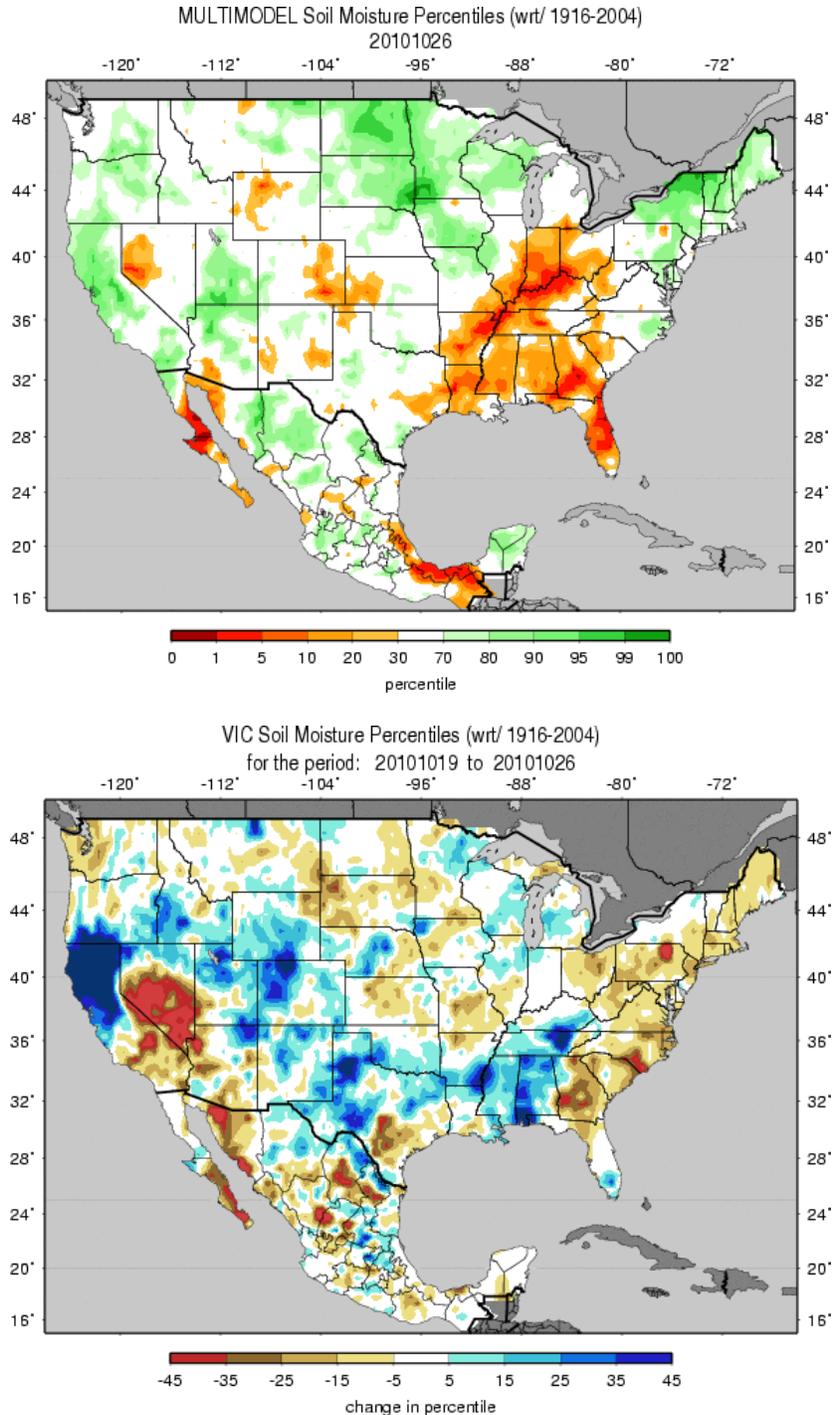


**Released Thursday, October 28, 2010**  
Author: Eric Luebehusen, U.S. Department of Agriculture

**Fig. 3a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was some improvements this week especially in the D0 category.**

Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)

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**Figs. 4a and 4b: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 26 October. Excessive moisture dominates over the Northern High Plains, New York, and Northern California. Dry soils dominate over the Ohio Valley and Lower Mississippi River Valley into Florida (Fig. 4a). During the past week, excessive moisture has increased over California and excessive drying over Nevada (Fig. 4b).**

Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/main\\_sm.multimodel.shtml](http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/main_sm.multimodel.shtml)

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Wednesday, October 27, 2010

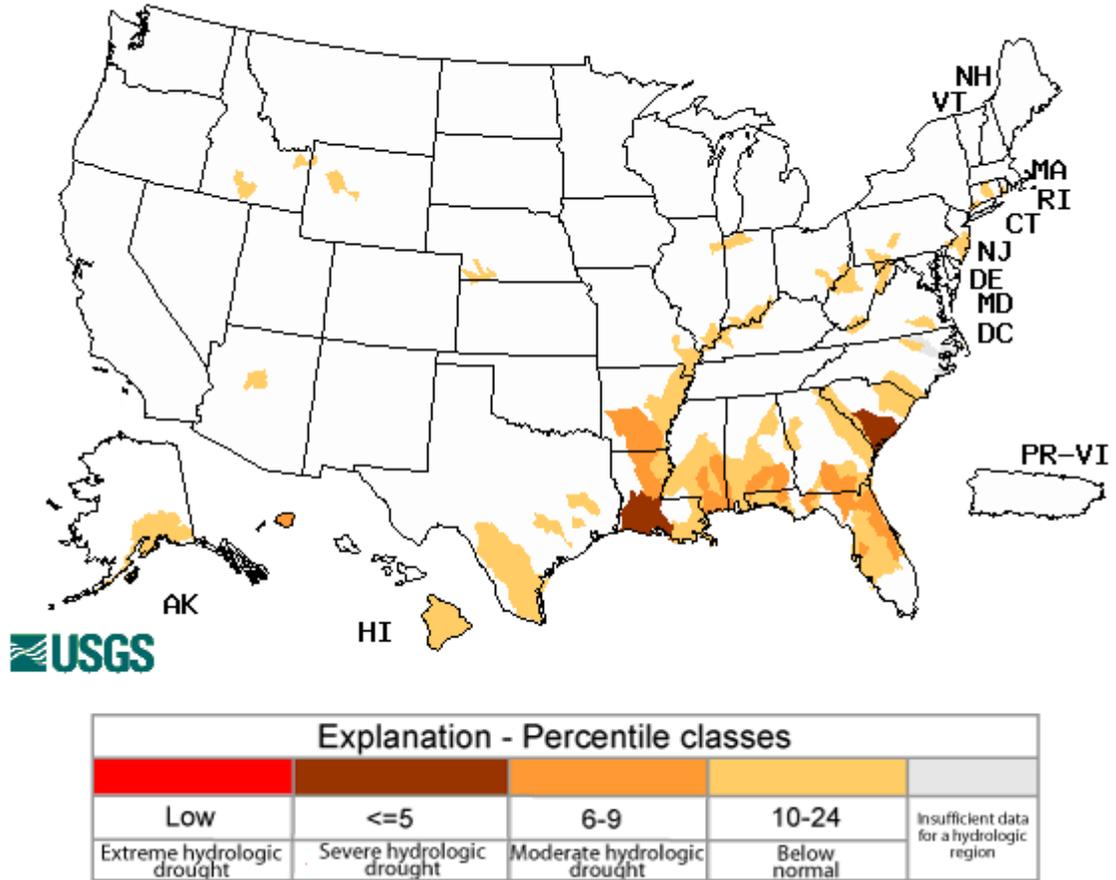


Fig. 5: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Clearly, the southern Louisiana and southern South Carolina are experiencing the severest flows this week.

Ref: <http://waterwatch.usgs.gov/?m=dryw&r>

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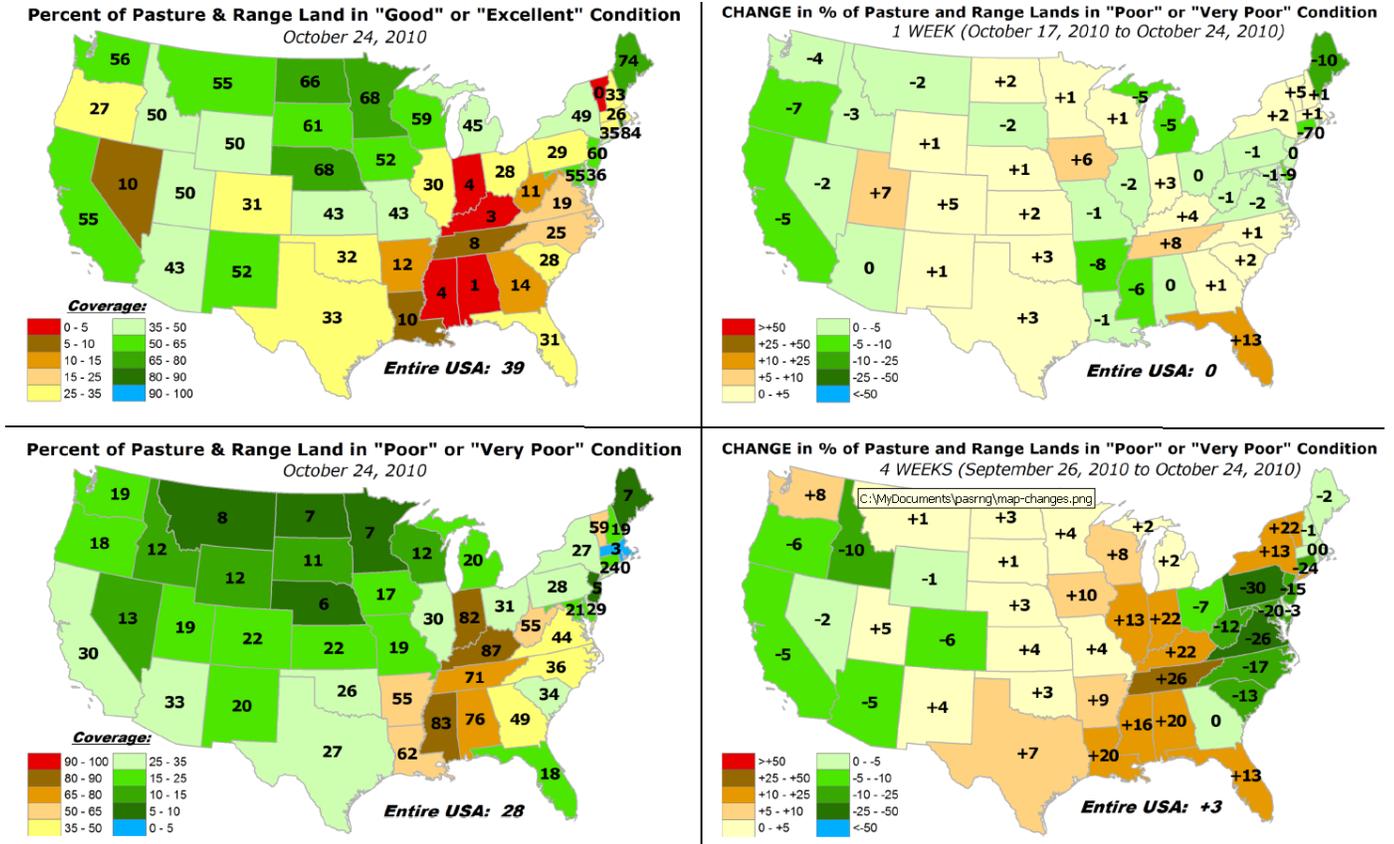


Fig. 6: Pasture and range lands are in good shape for all but Nevada, Colorado, and Oregon this week (upper left). During the past week, Utah degraded by 7 percentage points while Oregon improved by 7 percent in the total poor or very poor categories (upper right).

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/pasture-range-statewide-conditions.pdf>

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### National Drought Summary -- October 26, 2010

*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/>.*

**Overview:** Stormy weather provided some drought relief, although areas along the Gulf Coast remained unfavorably dry.

**The Northeast and Mid-Atlantic:** Generally dry weather prevailed, although streamflows and soil moisture continued to improve on the heels of recent rainfall. Most drought indices (Standardized Precipitation Indices, Soil Moisture Percentiles, Blends, etc) have returned to D0 (Abnormal Dryness) levels in New Jersey, where Moderate Drought (D1) was removed. There are still lingering long-term (90- and 180-day) precipitation deficits in the remaining D0 areas, although year-to-date precipitation is now near normal. Farther south, a narrow but well-placed band of an inch or more of rain provided additional relief from Abnormal Dryness in central Virginia and the lower Delmarva.

**Midwest:** Locally heavy showers and thunderstorms were approaching the region as of Tuesday morning, October 26, but rain had not reached the primary drought areas as of the Drought Monitor's 8 am, EST, cutoff. Consequently, any drought improvement from this system will be noted in next week's Drought Monitor. However, showers (locally in excess of 2 inches) provided relief from Abnormal Dryness in north-central Illinois, while somewhat lighter rain (an inch or less) eased D0 in south-central Illinois. Rain (1-4") also alleviated Abnormal Dryness in southern Michigan and northwestern Indiana, while locally more than 2 inches of rainfall in northeastern Minnesota reduced long-term hydrological drought.

**Southeast:** Widespread showers (0.50-1.50 inches) helped stabilize conditions in North and South Carolina, so no changes were made to the current drought designation. Nevertheless, 7-day average streamflows below the 10th percentile over much of central South Carolina and south-central North Carolina were indicative of the need for additional rainfall to prevent further drought expansion in this region. Farther south, D2 (Severe Drought) was expanded northward along the Georgia coast in response to a lack of rainfall over the past 90 days (40-60 percent of normal), with Standardized Precipitation Indices indicating D2 or greater over numerous timescales.

**Eastern Gulf Coast:** Mostly dry, warmer-than-normal weather (up to 4 degrees F above normal) led to an increase in drought across eastern portions of the region. In eastern Florida, 7-day average streamflows continued to decline steadily, with values now consistently below the 5th percentile in the expanded Severe Drought (D2) and the newly introduced D3 (Extreme Drought) areas. Along central portions of Florida's eastern coast, precipitation has totaled less than 50 percent of normal over the past 180 days, with deficits during that timeframe in excess of 16 inches. In southern Florida, Abnormal Dryness and Moderate Drought were likewise expanded to account for the declining streamflows and increasing precipitation deficits. From the northern Florida into Alabama, the drought designation was expanded or increased for a

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second consecutive week to reflect declining soil moisture, low streamflows, and below-normal rainfall. In these northern D3 (Extreme Drought) areas, precipitation over the past 90 days has averaged 20 to 40 percent of normal, with deficits locally in excess of 8 inches. Streamflows and soil moisture are likewise in the 20th percentile or lower in these areas.

**Delta and Interior Southeast:** Heavy showers and thunderstorms were observed from southern Arkansas and northern Louisiana into Tennessee and southern Kentucky. Rain was heaviest (locally more than 4 inches) in a narrow east-west band in northern Alabama, which led to a modest reduction of Moderate Drought. Elsewhere in the region, reports from the field indicate that the rain offered little significant drought relief, but rather stabilized streamflows and soil moisture in the short term. Consequently, reductions in drought intensity and coverage were minor, and generally confined to areas where rain exceeded 2 inches. Outside of the main rain shield, drought indices continued to depict a worsening picture, with Standardized Precipitation Indices and 7-day streamflows indicating Severe Drought (D2) or greater over southern portions of Mississippi and Louisiana. Consequently, Extreme Drought (D3) was expanded into west-central Mississippi, while D2 coverage was increased in eastern and southeastern portions of the state.

**Texas & Oklahoma:** Rainy weather in northern portions of the region contrasted with expanding drought farther south. Locally heavy showers and thunderstorms (weekly totals in excess of 3.5 inches) provided widespread relief from Abnormal Dryness and Moderate Drought (D0 and D1) across much of Oklahoma and northern Texas. A secondary area of showers and thunderstorms was also beneficial for modest drought reduction in south-central Texas, although D2 (Severe Drought) region on the Edwards Plateau remained unfavorably dry. Across the remainder of eastern and southern Texas, increasing short-term deficits (60-day rainfall less than 70 percent of normal, locally less than 40 percent) led to the introduction or expansion of D0 and D1. Along the Louisiana border, D2 (Severe Drought) was nudged westward to account for dryness as depicted in the Standardized Precipitation Indices at 6, 9 and 12 months.

**Central Plains:** In central and eastern portions of Kansas and Nebraska, showers (widespread 0.50 inch or more, locally in excess of 2 inches) boosted soil moisture for winter wheat establishment. In contrast, increasingly dry conditions were noted in western portions of the region. The latest 3-month Standardized Precipitation Index depicted an increasing area of Moderate Drought (D1) in western Nebraska, which was supported by 90-day rainfall of 50 percent of normal or less in the expanded D1 area. A modest increase in Abnormal Dryness in western Kansas and south-central Nebraska was in response to declining soil moisture and short-term dryness (less than 40 percent of normal precipitation over the past 60 to 90 days). Meanwhile, a Moderate Drought (D1) was expanded over much of eastern Colorado, where rainfall over the past 2 months has been largely absent (20 percent of normal or less).

**The West:** Despite the fact it is still very early in the 2010-2011 Water Year, widespread improvements in Abnormal Dryness (D0) or Moderate Drought (D1) were noted as a strong Fall storm impacted the region. Precipitation totals locally exceeded 10 inches in the foothills of the Sierra Nevada, with widespread readings in excess of 4 inches over much of northern California. Farther east, precipitation totals routinely tallied 1 to 5 inches, locally more, from the northern and central Intermountain Region into the central Rockies and Four Corners states. Consequently, D2 and D1 were removed from northern Arizona and northern Nevada, respectively, while lesser reductions in D1 coverage were made in central Colorado and western Wyoming. Large areas of Abnormal Dryness (D0) were likewise eliminated by the unseasonably heavy rain and mountain snow from central Nevada southeastward into

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northeastern Utah as well as north-central Colorado and south-central Wyoming. Similar, albeit smaller, reductions were made to D0 coverage in the Four Corners Region to correspond with locally heavy precipitation and a favorable start to the Water Year. Temperatures averaged 2 to 5 degrees F above normal, although cooler conditions settled over the western U.S. as the storm passed over the region.

**Hawaii, Alaska and Puerto Rico:** In Hawaii, mostly dry conditions persisted, maintaining Exceptional Drought (D4) on Maui and the Big Island. In Alaska, unseasonably warm weather was accompanied by light to moderate showers (0.50-2.0 inches) over the southern Abnormally Dry (D0) areas, while scattered showers fell in central portions of the state. Consequently, no changes were made to the drought depiction in Alaska. In Puerto Rico, mostly dry weather prevailed, although feedback from the field indicated the island was still shy of slipping into Abnormal Dryness (D0).

**Looking Ahead:** A powerful Fall storm will continue to lift northeastward across southern Canada, with generally light rain and snow showers across the upper Midwest giving way to drier, albeit cool weather. Meanwhile, following the passage of a cold front and its associated shower activity, unfavorably dry conditions will quickly return to much of the South. Drier weather is also expected from the Plains to the Intermountain West, although a weak Pacific disturbance may generate light showers in the central Rockies over the weekend. Showers will linger along the Pacific Coast, primarily from northern California into the Northwest. By early next week, there are some indications a storm may develop over the Southeast.

The CPC 6-10 day forecast (November 2-6) calls for drier-than-normal conditions across much of the central U.S., including the Plains, Corn Belt, and northern Delta. In contrast, near- to above-normal precipitation will be confined to the Northwest and along the Eastern Seaboard. Abnormal warmth will encompass most of the western and north-central portions of the nation, while cooler-than-normal weather settles over the Gulf and Atlantic Coast States.

**Author:** [Eric Luebehusen, United States Department of Agriculture](#)

### Dryness Categories

D0 ... Abnormally Dry ... used for areas showing dryness but not yet in drought, or for areas recovering from drought.

### Drought Intensity Categories

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

### Drought or Dryness Types

A ... Agricultural

H ... Hydrological

Updated October 27, 2010