



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

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

**Date: 4 November 2010**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Temperature:** SNOTEL temperature anomalies for the week ending 4 November reveals most sites within  $\pm 5^{\circ}\text{F}$  with the below normal departures over the high country of Utah, Colorado, and western Wyoming (Fig. 1). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over northeast Wyoming ( $>+8^{\circ}\text{F}$ ) and the greatest negative departures occurred over central Utah ( $<-2^{\circ}\text{F}$ ) (Fig. 1).

**Precipitation:** ACIS 7-day average precipitation amounts for the period ending 3 November shows the bulk of the heaviest precipitation confined to the Cascades and Coastal Range of Washington to northern California (Fig. 2). In terms of percent of normal, a very wet week dominated over these same areas as well as southern California and eastern Washington (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:** After a beneficial early storm system brought improvements to last week's map, this week holds steady after a much quieter week over our defined dry/drought regions across the West. Author: Mark Svoboda, 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 (<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 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/>.

## Weekly Snowpack and Drought Monitor Update Report

### 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/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://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

# Weekly Snowpack and Drought Monitor Update Report

## SNOTEL (solid) 7-Day Average Temperature Anomaly (Degrees F) Nov 04, 2010

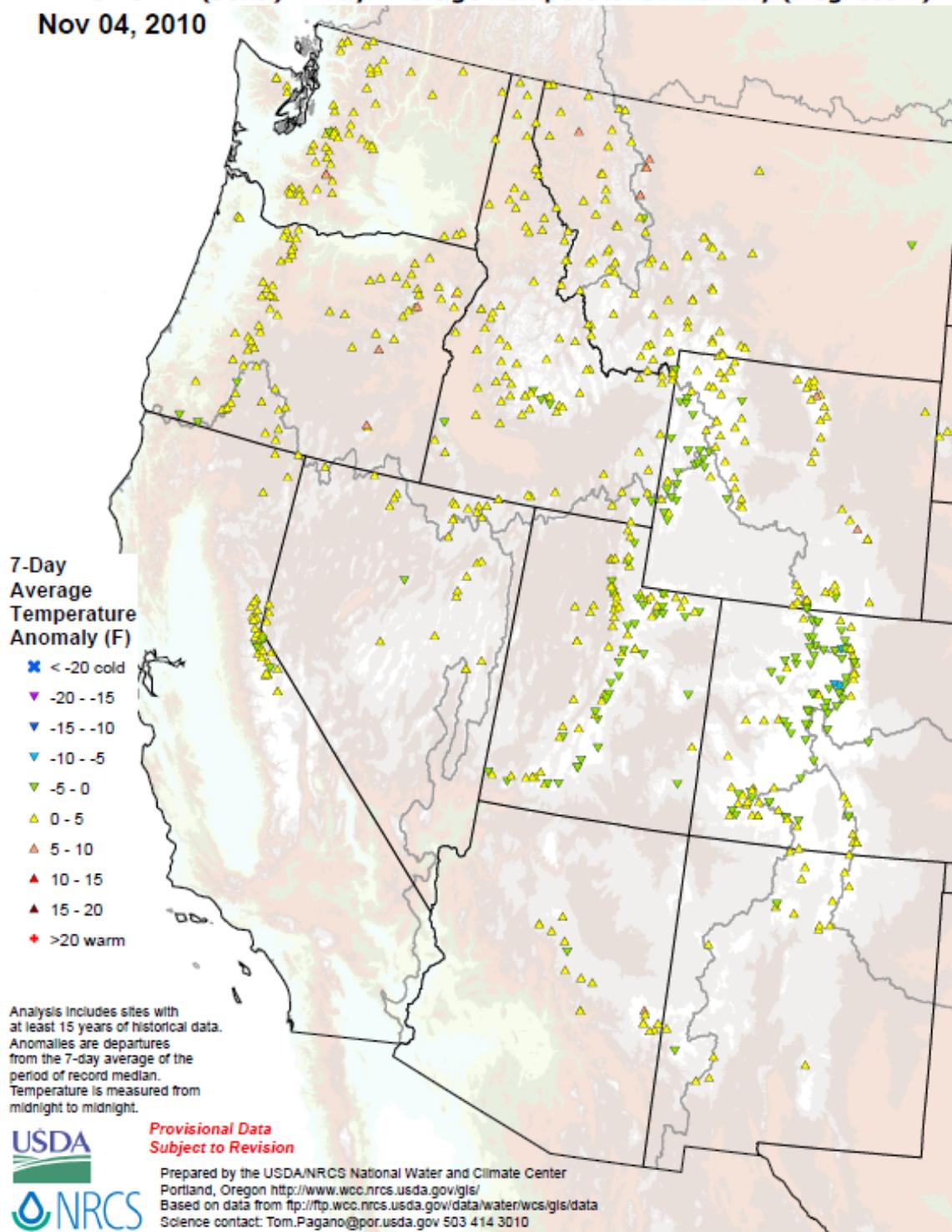
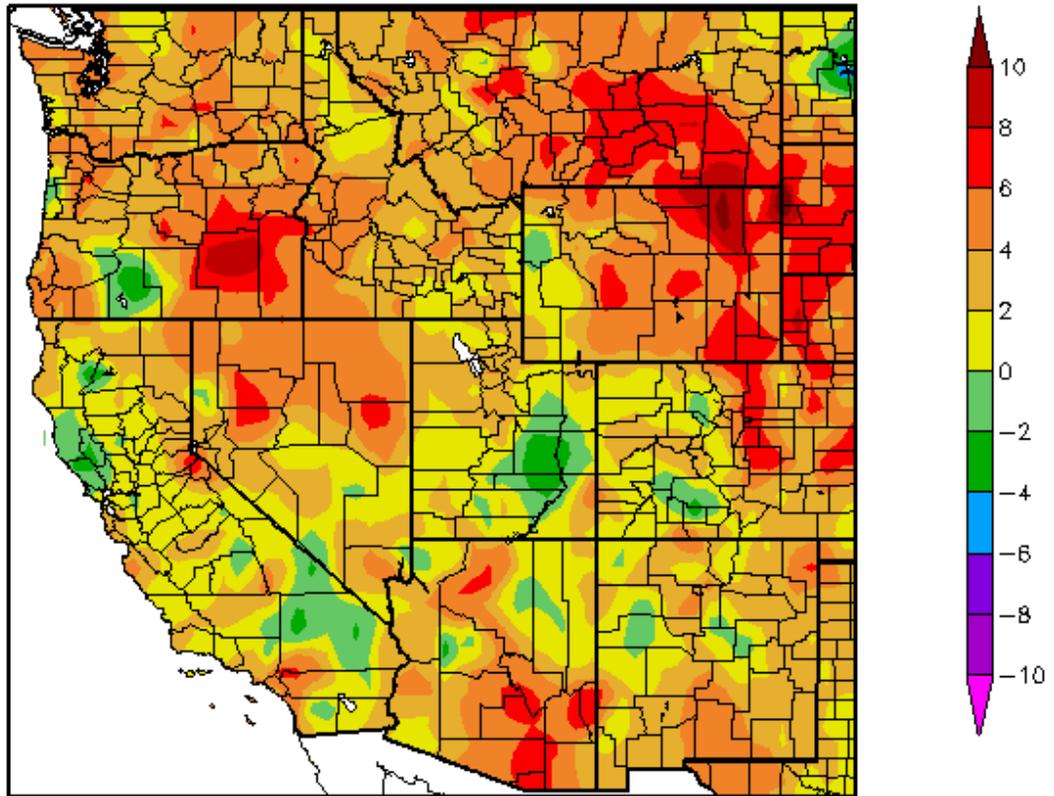


Fig. 1: SNOTEL temperature anomalies for the week ending 4 November reveals most sites within  $\pm 5^{\circ}\text{F}$  with the below normal departures over the high country of Utah, Colorado, and western Wyoming.

Ref: <http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf>

Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)  
10/28/2010 – 11/3/2010



Generated 11/4/2010 at HPRCC using provisional data.

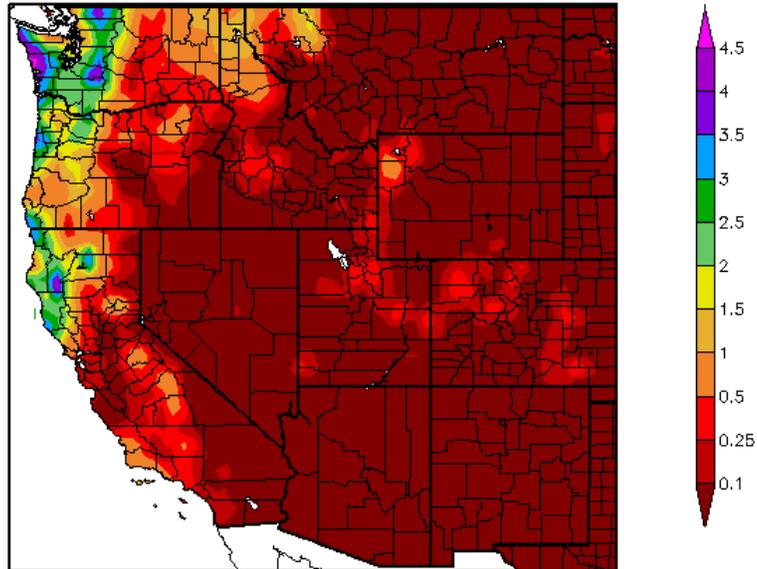
Regional Climate Centers

**Fig. 1a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over northeast Wyoming (>+8°F) and the greatest negative departures occurred over central Utah (<-2°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)

## Weekly Snowpack and Drought Monitor Update Report

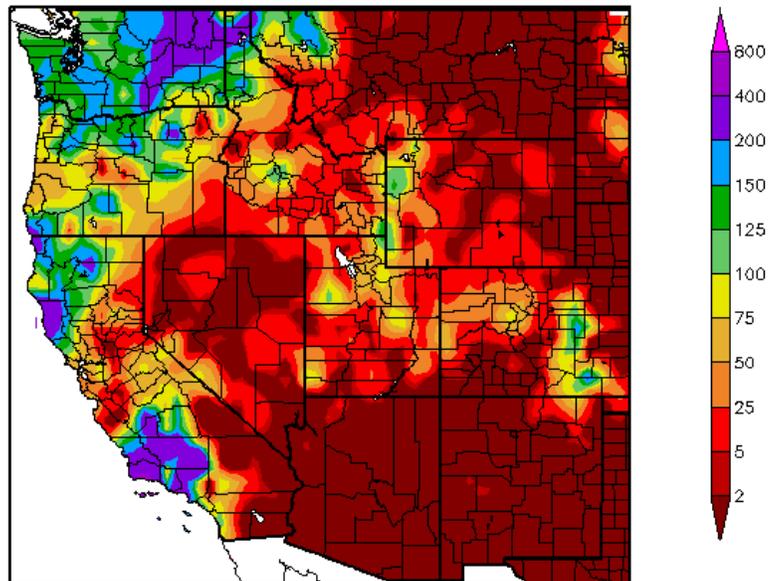
Precipitation (in)  
10/28/2010 - 11/3/2010



Generated 11/4/2010 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
10/28/2010 - 11/3/2010



Generated 11/4/2010 at HPRCC using provisional data.

Regional Climate Centers

**Fig. 2 and 2a: ACIS 7-day average precipitation amounts for the period ending 3 November shows the bulk of the heaviest precipitation confined to the Cascades and Coastal Range of Washington to northern California (Fig. 2). In terms of percent of normal, a very wet week dominated over these same areas as well as southern California and eastern Washington (Fig. 2a).**

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

Weekly Snowpack and Drought Monitor Update Report

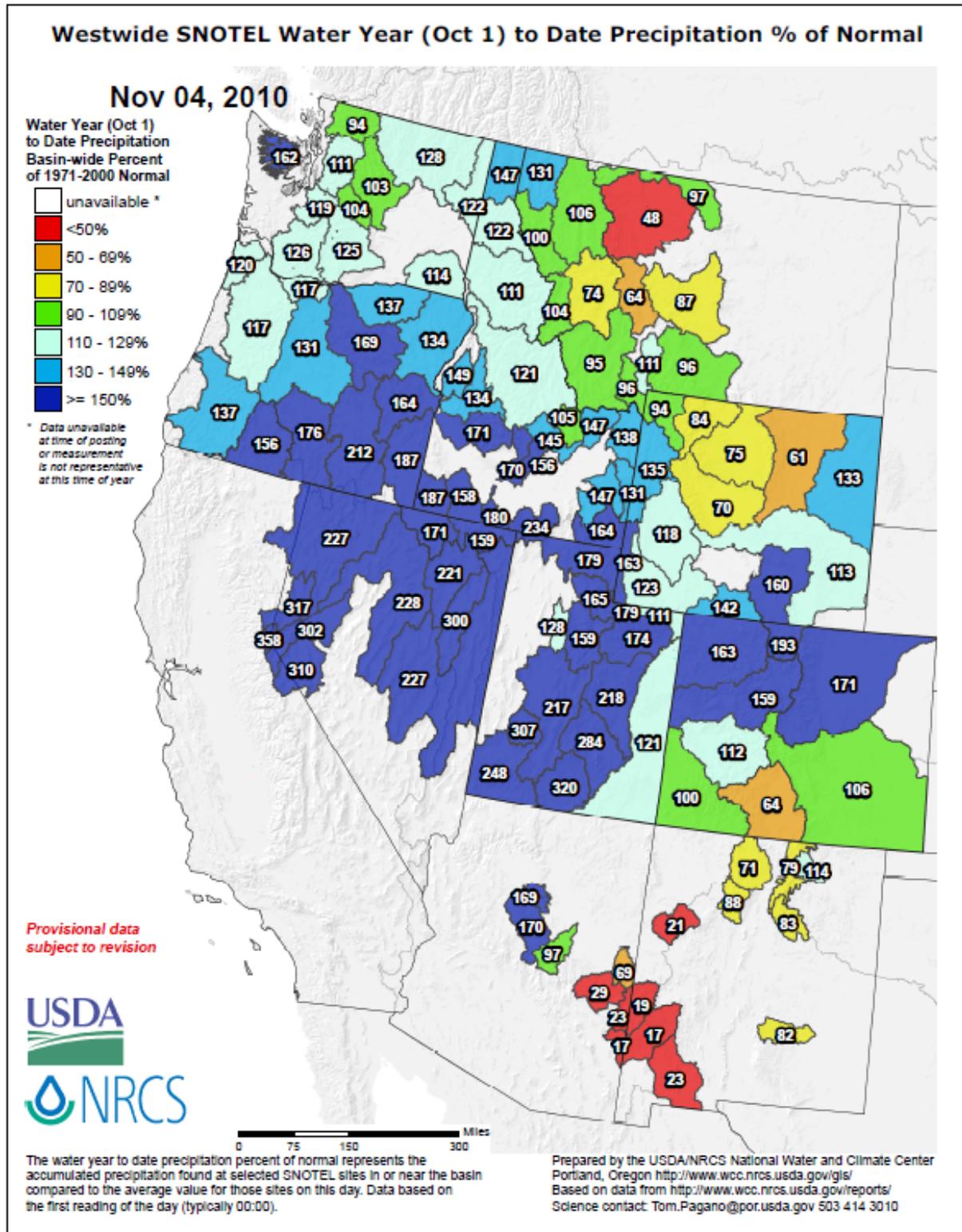


Fig 2b: For the new 2011 Water-Year that began on 1 October 2010, statistics are skewed to the extreme as noted by exceptionally large and small percentages. These values will be more meaningful in the coming weeks. **Use this figure with caution!**

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

# U.S. Drought Monitor

November 2, 2010

Valid 8 a.m. EDT

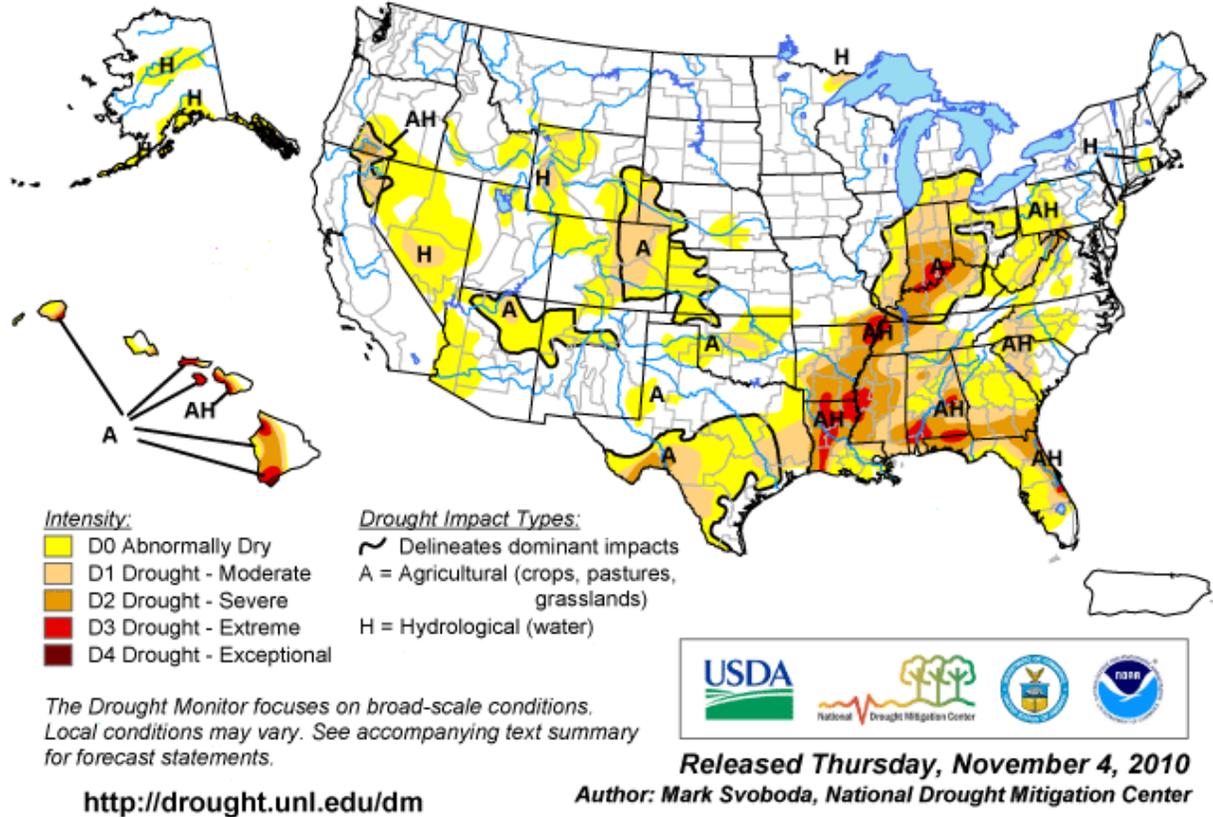


Fig. 3: Current Drought Monitor weekly summary. The severest D3 levels of drought dominate Hawaii, northern Louisiana, western Tennessee, and southeastern Alabama.

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

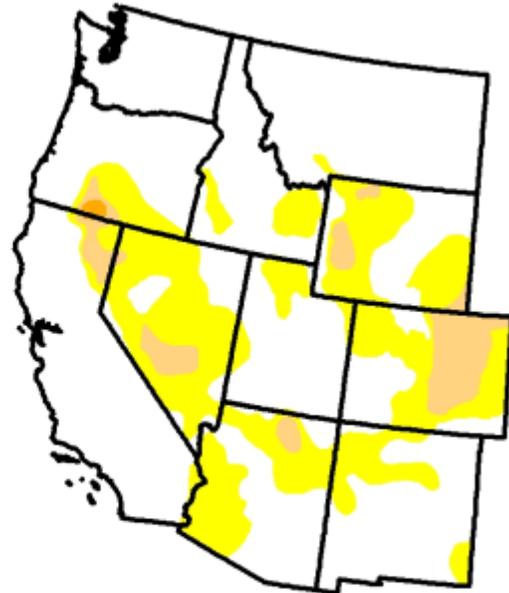
# U.S. Drought Monitor

## West

November 2, 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 (10/26/2010 map)	69.0	31.0	5.4	0.2	0.0	0.0
3 Months Ago (08/10/2010 map)	73.9	26.1	6.4	0.5	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 (11/03/2009 map)	52.4	47.6	25.4	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>

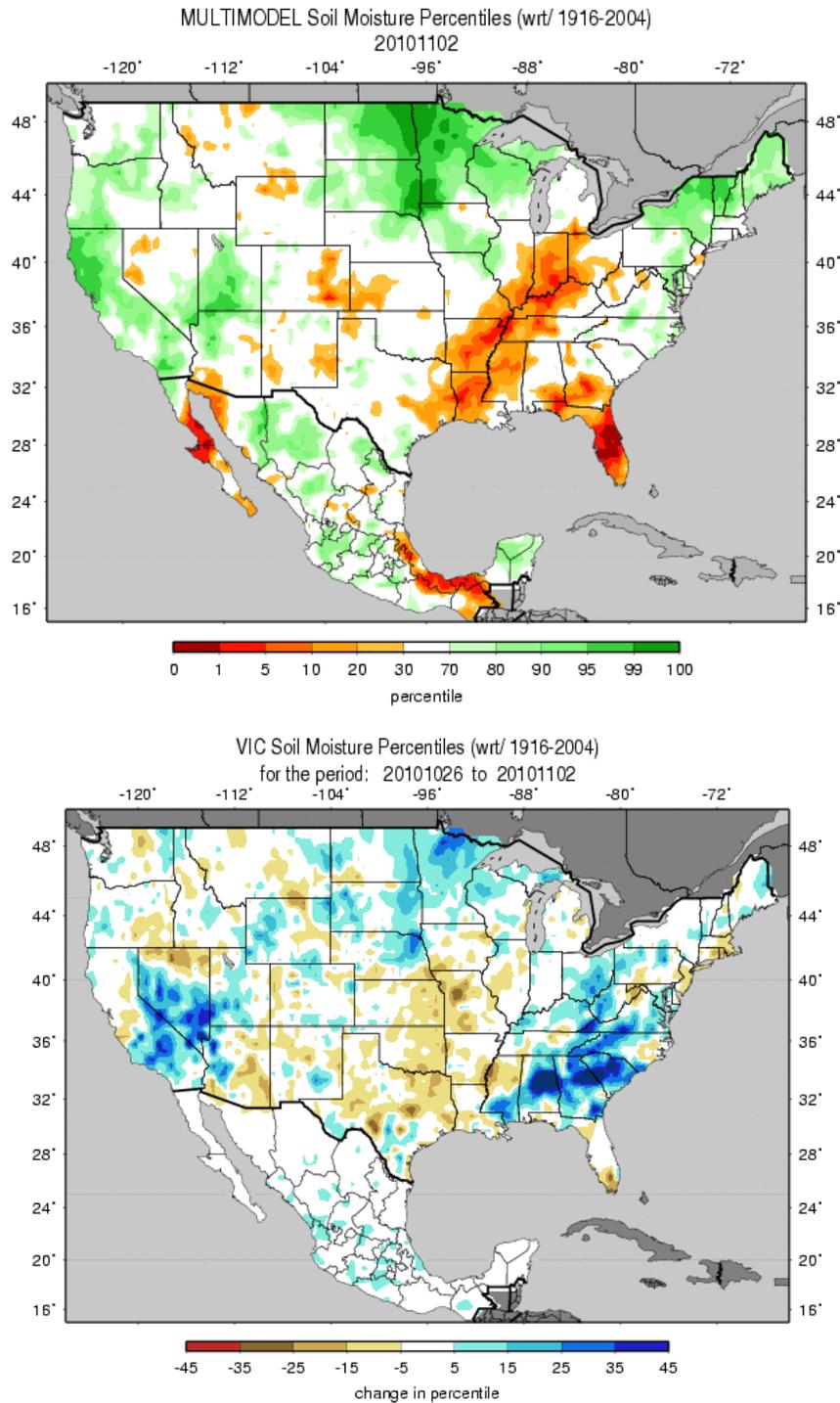


**Released Thursday, November 4, 2010**  
Author: Mark Svoboda, National Drought Mitigation Center

**Fig. 3a: Drought Monitor for the Western States with statistics over various time periods. Regionally there were no changes during the past week.**

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

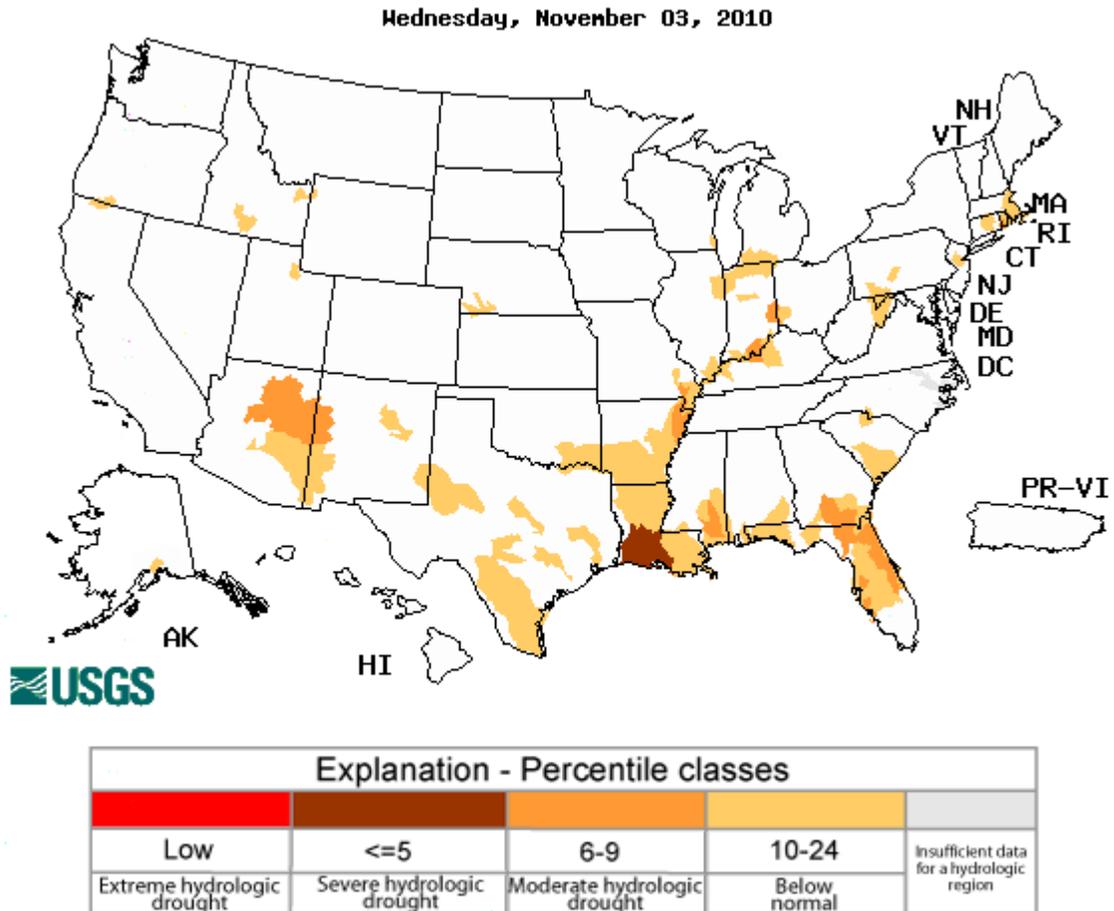
## Weekly Snowpack and Drought Monitor Update Report



**Figs. 4a and 4b: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 2 November. 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 and central Florida has worsened (Fig. 4a). During the past week, excessive moisture has increased over the southern Great Basin and much of the Southeast (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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**Fig. 5: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Clearly, the southern Louisiana is experiencing the severest flows this week. Significant improvements have occurred over South Carolina since last week.**

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

# Weekly Snowpack and Drought Monitor Update Report

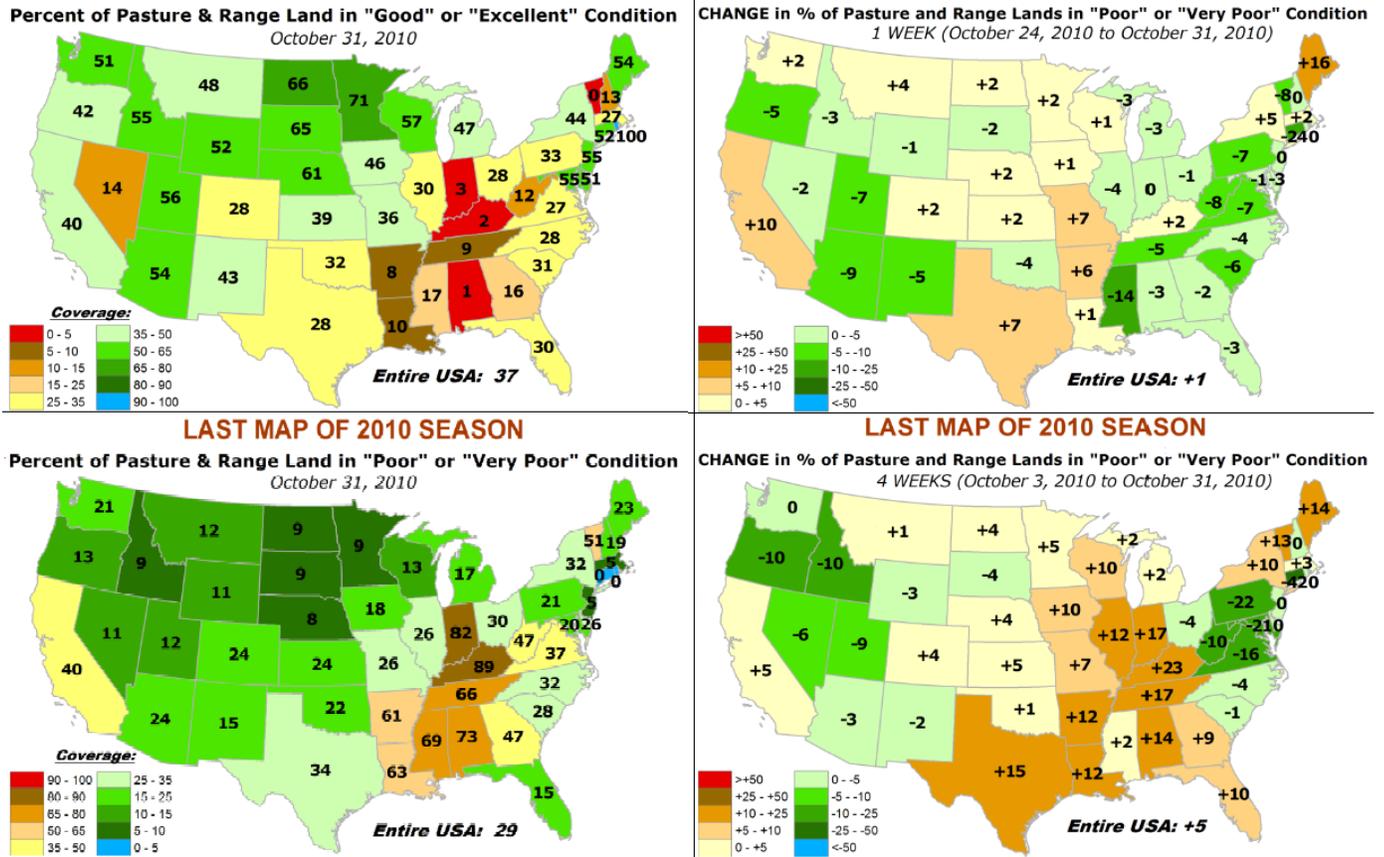


Fig. 6: Pasture and range lands are in good shape for all but Nevada and Colorado this week (upper left). During the past week, California degraded by 10 percentage points while Arizona improved by 9 percent in the total poor or very poor categories (upper right).

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

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- November 2, 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/>.*

**The Northeast and Mid-Atlantic:** After some improvement last week, a relatively quiet week ensued, which leads to no changes in the map in the Northeast. A mixed bag of weather brings mixed changes to the Mid-Atlantic, where southern and southwestern Virginia saw 2-3 inches of rain or more in places. Above-normal temperatures (2-5 degrees) were widespread as well. This led to the removal of some of the D0 along the central stretch of the Virginia-North Carolina border. The D0 depiction for the rest of VA remains unchanged this week.

More changes are reflected this week across the Carolinas, mostly in the way of improvements after a narrow band of 3-5 inches of rain fell across western North Carolina and some 1-2 inch plus rains fell in central South Carolina. These areas saw a 1-category improvement from D2/D1 down to D1/D0. In eastern North Carolina, the rains haven't materialized much over the past two months or so, leading to a slight push of D0 to the east. Another area that missed out on the heavy rains to the east in northwestern North Carolina (Blue Ridge vicinity) goes from D0 to D1 this week as well.

**The Southeast and Gulf Coast:** The biggest benefactors last week were found in parts of central and northern Alabama along with northern Georgia, where rainfall totals of 1-4 inches were reported in many locales. The areas under the heavier rains (2-3 inches or more) were reduced one category, leading to some trimming of D0-D2 in those regions. However, D2-D3 remains well in place across southern Alabama and parts of the Florida Panhandle. Other parts of the Southeast weren't as fortunate as the dryness and above-normal temperatures of the past 60-90 days (due to a lack of tropical moisture this hurricane season) are beginning to really dry things out, particularly range and pasture lands. Tennessee, Mississippi and Alabama are all reporting (via USDA) around 70% of Pasture and Range Land as in "Poor or "Very Poor" condition as of October 31. D1 and D2 continue to work their way west and north across Arkansas as streamflow levels continue to sag. In Louisiana, heavy rains across southwestern and south-central parishes led to a 1-category improvement in those areas seeing 3-5 inches. Heavy rains (2-4 inches) also fell across northwestern Louisiana, leading to some trimming of the D1-D3 found there. These rains were badly needed, but the core of this drought still remains across much of central and western Louisiana and more rains would be welcomed.

A bit to the east and south, D2 now stretches across the southern tier counties of Georgia, and D0 now covers all of central Georgia in a change from last week. Florida also sees more in the way of worsening drought conditions in both the south and north. Southern Florida sees a slight expansion of D0 south and east across the peninsula. In the northern half of the state, D0-D2 now covers the entire Big Bend region in a push to the west as the lack of rain over the past 30-90 days is coupled with low streamflow values as well. Flows in and around the Lower Suwannee are at 10-year lows, and in the Upper Suwannee and Santa Fe, flows are

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approaching record lows from 2007, according to the Suwannee River Water Management District. The Panhandle remains in D2-D3 this week.

**The Midwest and Great Lakes:** Improvement is noted this week across the Arrowhead region of Minnesota in the removal of D2 and a reduction of D1 and D0 on the southern edge. Recent rains have helped ease the hydrological situation in that region. After some locally beneficial rains last week held deterioration at bay across much of Indiana, a return this week to little in the way of rains, coupled with above-normal temperatures, led to an expansion northward of D1 and D2. All but extreme northwestern Indiana is now in at least D1, with the southern half of the state in D2 and/or D3 along the Ohio River valley region. The D0-D1 has also encroached upon southern Michigan after a short reprieve. To the west of Indiana, eastern Illinois also sees more nudging of D1 to the west across the southern half of the state. Kentucky also continues to see warm temperatures and spotty rains with the general conditions still trending toward intensification. In fact, the latest press release (October 28) out of the Kentucky Governor's Energy and Environment Cabinet (Drought Task Force input) shows 50 counties in a Level 2 designation (Level 3 being the worst) along with another 42 counties at Level 1. The D0-D2 in Kentucky has pushed more south and east this week and the same holds true for western and central Tennessee, where D1-D2 now blankets this region. Things continue to be warm and dry across the Bootheel region of Missouri as well and D2-D3 continues to expand and entrench itself this fall. Streamflow (lowest 2-5 percentiles) and soil moisture readings are quite low in the drought regions outlined above as we head into the critical soil recharge season. One general positive out of the recent dryness, though, has been found in the form of excellent harvesting conditions.

**The Plains:** Most of the central Plains remain unchanged this week. A small amount of D0 has moved over the border from Oklahoma into southeastern Kansas.

**Texas & Oklahoma:** Dry weather dominated the landscape last week for all but parts of southeastern Texas (3-4 inches in and around the Houston metro and points north and east of the vicinity). In Oklahoma, D0 expands mostly to the north and east into southeastern Kansas and extreme southwestern Missouri. As we move south into Texas, it was more of a mixed bag with heavy rains leading to 1- to 2-category improvements (D1 to no dryness/drought locally) in and around the Houston vicinity where the heaviest rains (3-5 inches or more) fell. In general, conditions eased somewhat as you moved north and east from there toward Louisiana, with a trimming on the south edge of the D1. As for the rest of Texas, expansion is on the plate this week with a push of D0 north toward Dallas and a push south along the Rio Grande toward Brownsville.

**The West:** After a beneficial early storm system brought improvements to last week's map, this week holds steady after a much quieter week over our defined dry/drought regions across the West.

**Hawaii, Alaska and Puerto Rico:** In Hawaii, good trade wind rains on the windward sides of the Big Island, Maui, Molokai and Oahu lead to improvements on this week's map in the form of general 1-category improvements. The Big Island saw a good chunk of D3/D4 removed and the windward side is free and clear of drought/dryness at this time. The same goes for windward Maui, Molokai and Oahu where a retreat of D0-D3 was seen, leaving the windward sides clear of D0. Streamflows and reservoirs have been responding favorably in the areas showing improvement. The lee sides remain in D0-D3, thus mitigation measures and mandatory water restrictions remain in place as a precaution.

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Alaska and Puerto Rico remain unchanged from last week.

**Looking Ahead:** The forecast for the next five days (through November 8) is showing a large bubble of above-normal (3-12 degrees) temperatures falling across the entire West, with cooler temperatures (3-9 degrees) expected east of the Mississippi River valley. Most of the West (except for coastal plains and interior Pacific NW) and central U.S. are expected to be high and dry over this period. East of the Mississippi and up the Atlantic Seaboard, moderate rains (spotty in nature) are forecasted.

The CPC 6-10 day forecast (November 9-15) calls for a flip-flop of temperatures from the 5-day forecast above, with below-normal readings likely in the West and above-normal temperatures highly likely in the East, particularly the Midwest and Northeast. As for precipitation, below-normal rains are expected across the coastal Pacific NW, the Southwest, the entire Gulf Coast region from Texas to Florida and up the Atlantic coast into southern Georgia and the eastern Carolinas.

Alaska looks to be both cooler and drier over the 6-10 day period.

**Author:** [Mark Svoboda, 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

A ... Agricultural

H ... Hydrological

Updated November 4, 2010