



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

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## Weekly Report - Snowpack / Drought Monitor Update Date: 27 May 2010

### SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

**Snow:** SNOTEL Snow-Water Equivalent percent of normal values for 27 May 2010 shows a lot of basin to basin variability. Late season snowpack that is normally non-existent will result in skewed percentages. Clearly high percentages indicate late season snow pack with minimal actual SWE (Fig. 1).

**Temperature:** SNOTEL 7-day average temperature departures from normal map reveals cooler temperatures west of the Continental Divide and warmer temperatures over the Central and Southern Rockies (Fig. 2). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over the eastern New Mexico (>+3°F) and the greatest negative departure occurred over the parts of southern Oregon and California (<-12F) (Fig. 2a).

**Precipitation:** ACIS 7-day average precipitation amounts for the period ending 26 May shows the bulk of the heaviest precipitation falling over the Cascades and the Northern High Plains (Fig. 3). In terms of percent of normal, much of the Pacific NW, north coastal California, the Wasatch (UT), the Upper Snake River (ID and WY), and much of the Northern High Plains experienced two to four times the normal precipitation this week. Exceptions (little or no precipitation) dominated over parts of the Southwest, southern Great Basin (NV), and northern Rockies (MT) (Fig 3a). For the 2010 Water-Year that began on 1 October 2009, Arizona, New Mexico, eastern Nevada, the Olympic Range (WA), central Montana, and northeast Wyoming have the largest surpluses while the northern interior and southwestern Oregon have the greatest deficits (Fig. 3b).

### WESTERN DROUGHT STATUS

**The West:** Late-season storminess persisted, with locally heavy rain and snow reported across the northern half of the region. Despite the seasonal melt of mountain snow packs, week-to-week snow depth gains were noted over western Montana, southwestern Wyoming, and northern portions of Colorado, Utah, and Nevada. Precipitation totals in excess of 2 inches led to the reduction of drought intensity and coverage over northern and central portions of the Rockies. Water-year precipitation percentiles remained below the 10th percentile, however, in D2 (Severe Drought) areas of northwestern Wyoming, western Montana, and northeastern Idaho. Improvements were also made in the Abnormally Dry (D0) areas extending from southeastern Oregon into western Utah, based primarily on updated 6-month Standardized Precipitation Indices (SPI); water-year percentiles (mostly 40th percentile or higher); and water-year precipitation near or above 100 percent of normal. Farther south, Abnormally Dry conditions were added to southwestern Colorado to correspond with water-year precipitation totals at or below the 30th percentile, while expanding dryness (D0) in north-central New Mexico corresponded with increasing short-term precipitation deficits as well as declining soil moisture percentiles and corresponding 6-month SPI values. 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.***

## Weekly Snowpack and Drought Monitor Update Report

### **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. 4 and 4a).

### **SOIL MOISTURE**

Soil moisture (Figs. 5a and 5b), 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. 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/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>.

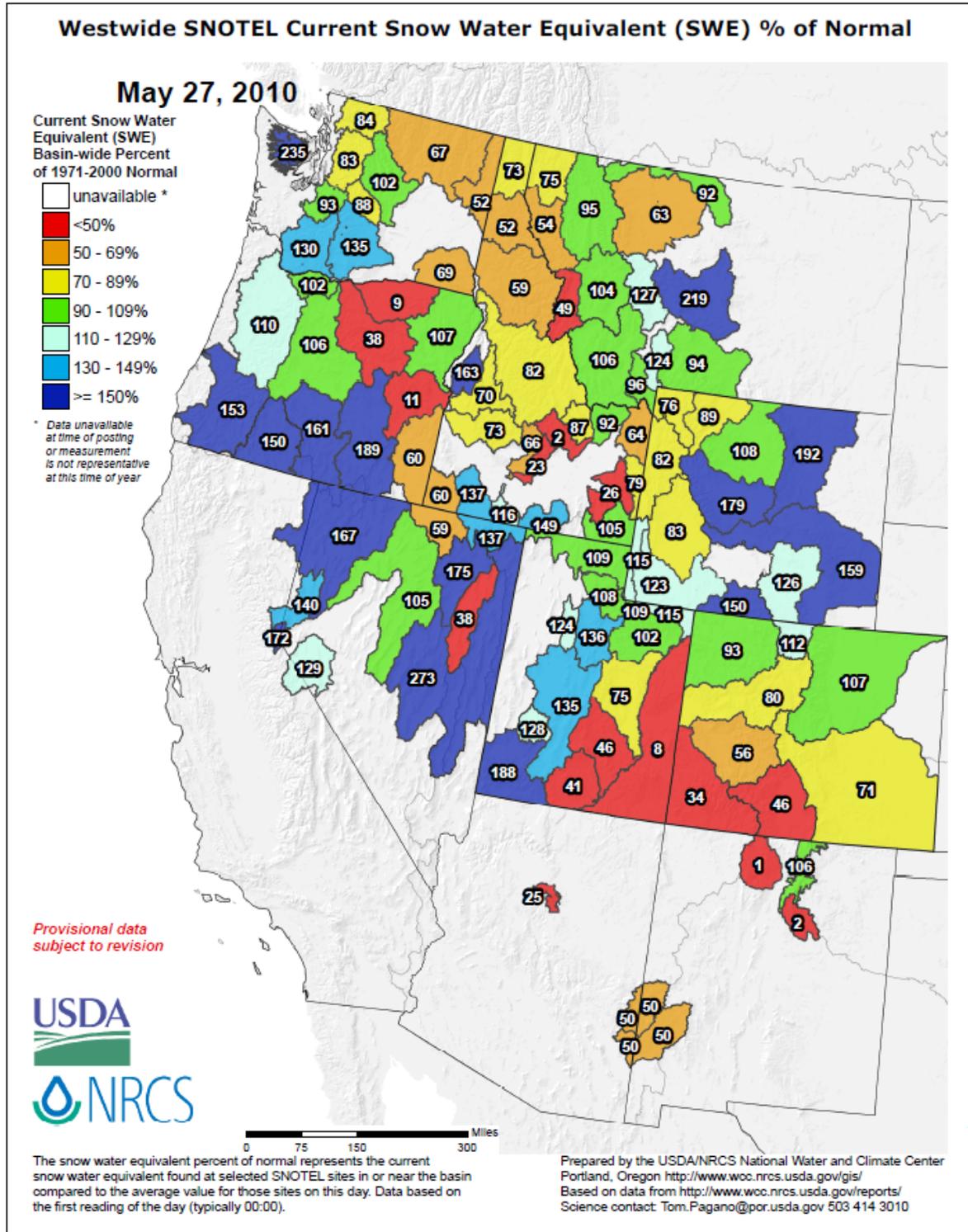
### **FOR MORE INFORMATION**

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/ NOLLER HERBERT  
Director, Conservation Engineering Division

# Weekly Snowpack and Drought Monitor Update Report

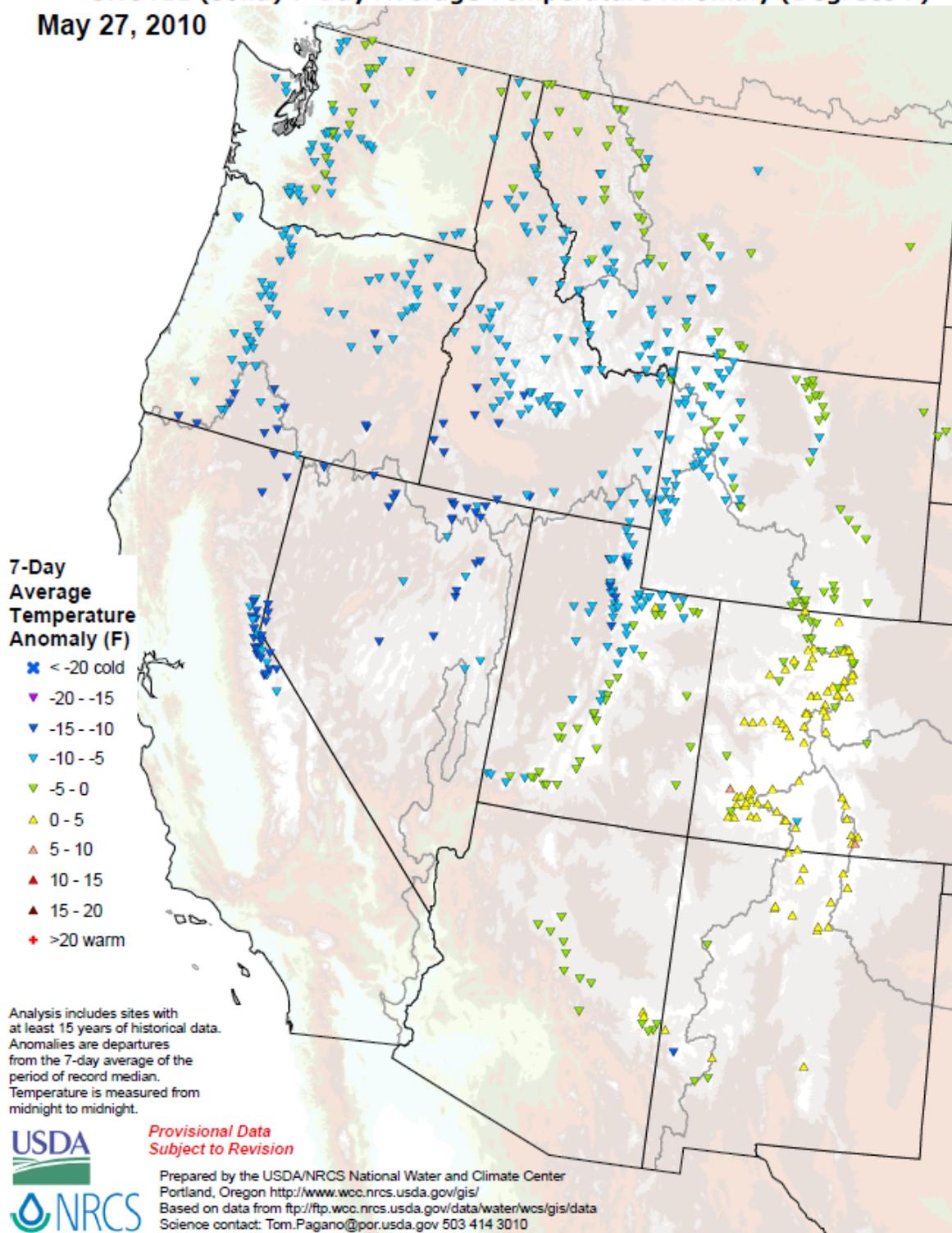


**Fig. 1: SNOTEL Snow-Water Equivalent percent of normal values for 27 May 2010 shows a lot of basin to basin variability. Late season snowpack that is normally non-existent will result in skewed percentages. Clearly high percentages indicate late season snow pack with minimal actual SWE.**

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

# Weekly Snowpack and Drought Monitor Update Report

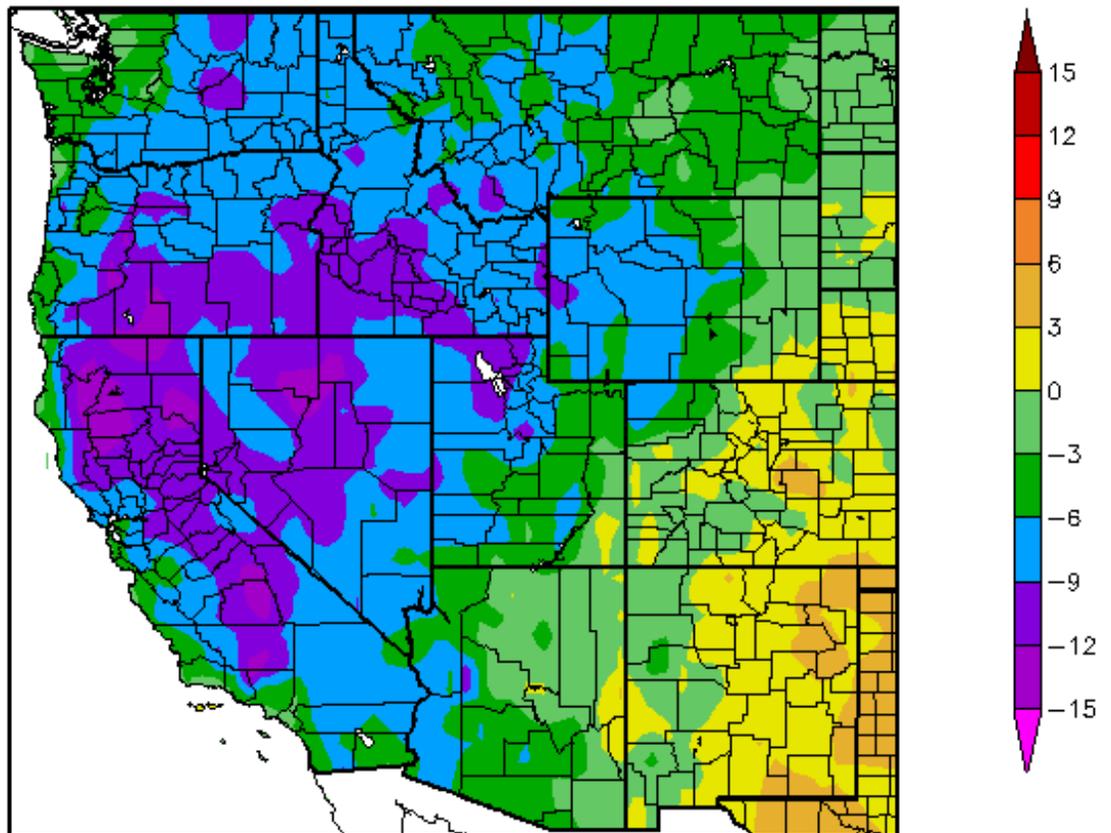
## SNOTEL (solid) 7-Day Average Temperature Anomaly (Degrees F) May 27, 2010



**Fig. 2: SNOTEL 7-day average temperature departures from normal map reveals cooler temperatures west of the Continental Divide and warmer temperatures over the Central and Southern Rockies.**

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

Departure from Normal Temperature (F)  
5/20/2010 – 5/26/2010



Generated 5/27/2010 at HPRCC using provisional data.

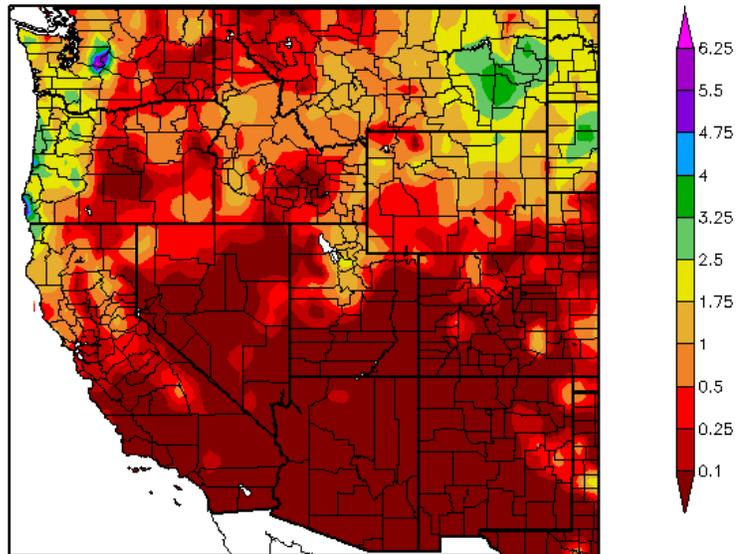
NOAA Regional Climate Centers

**Fig. 2a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over the eastern New Mexico (>+3°F) and the greatest negative departure occurred over the parts of southern Oregon and California (<-12F).**

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

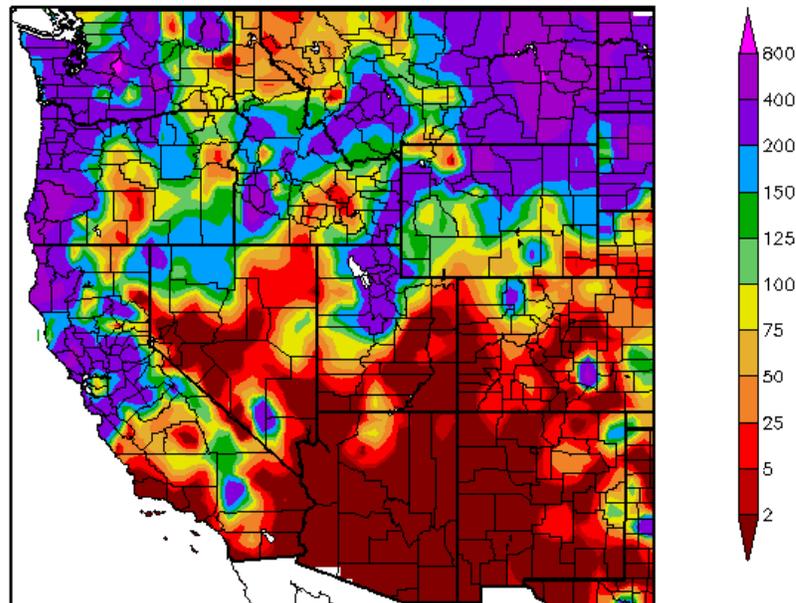
Precipitation (in)  
5/20/2010 - 5/26/2010



Generated 5/27/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)  
5/20/2010 - 5/26/2010

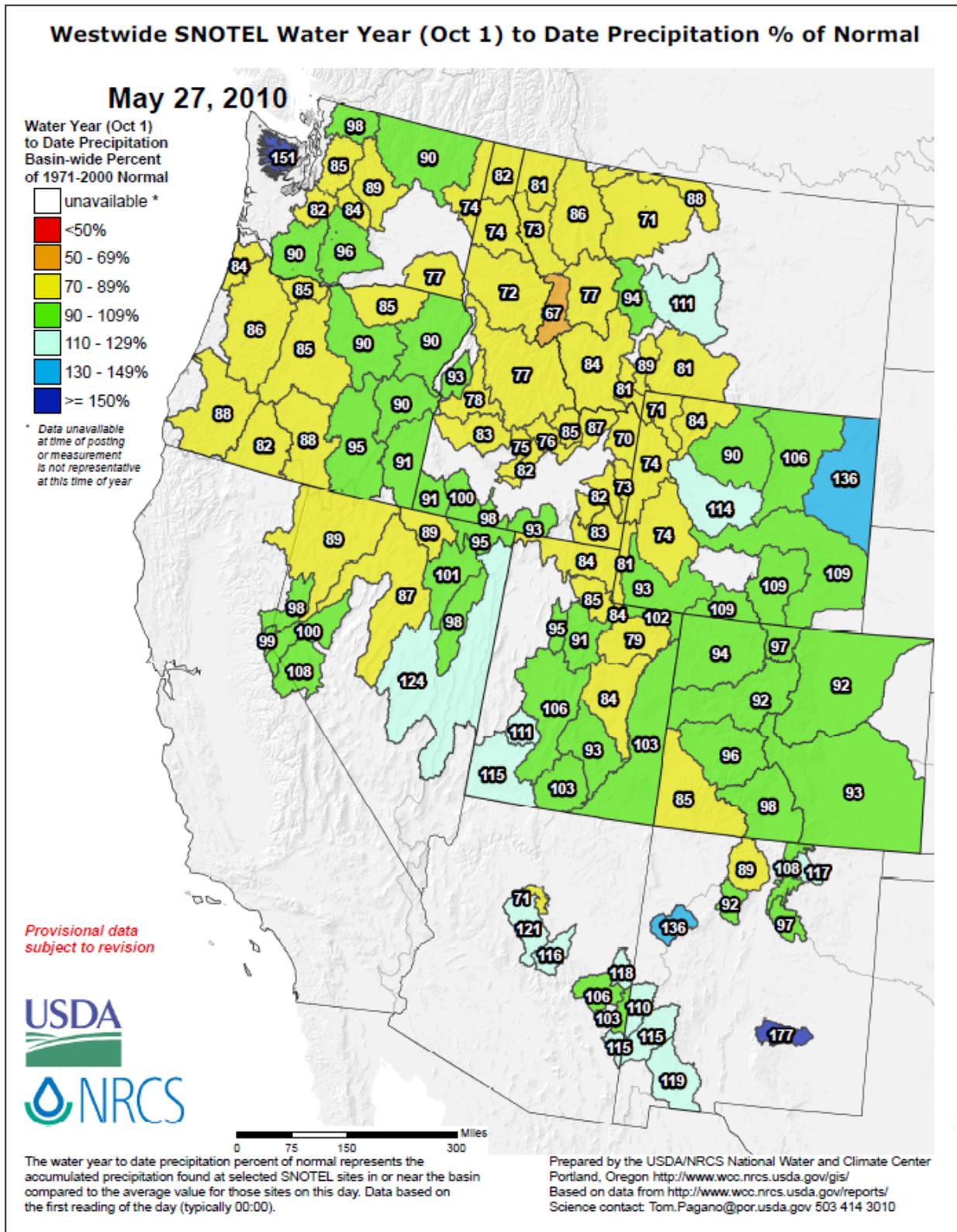


Generated 5/27/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 3 and 3a:** ACIS 7-day average precipitation amounts for the period ending 26 May shows the bulk of the heaviest precipitation falling over the Cascades and the Northern High Plains. In terms of percent of normal, much of the Pacific NW, north coastal California, the Wasatch (UT), the Upper Snake River (ID and WY), and much of the Northern High Plains experienced two to four times the normal precipitation this week. Exceptions dominated over parts of the Southwest, southern Great Basin (NV), and northern Rockies (MT). Ref: <http://www.hprcc.unl.edu/maps/current/>

Weekly Snowpack and Drought Monitor Update Report

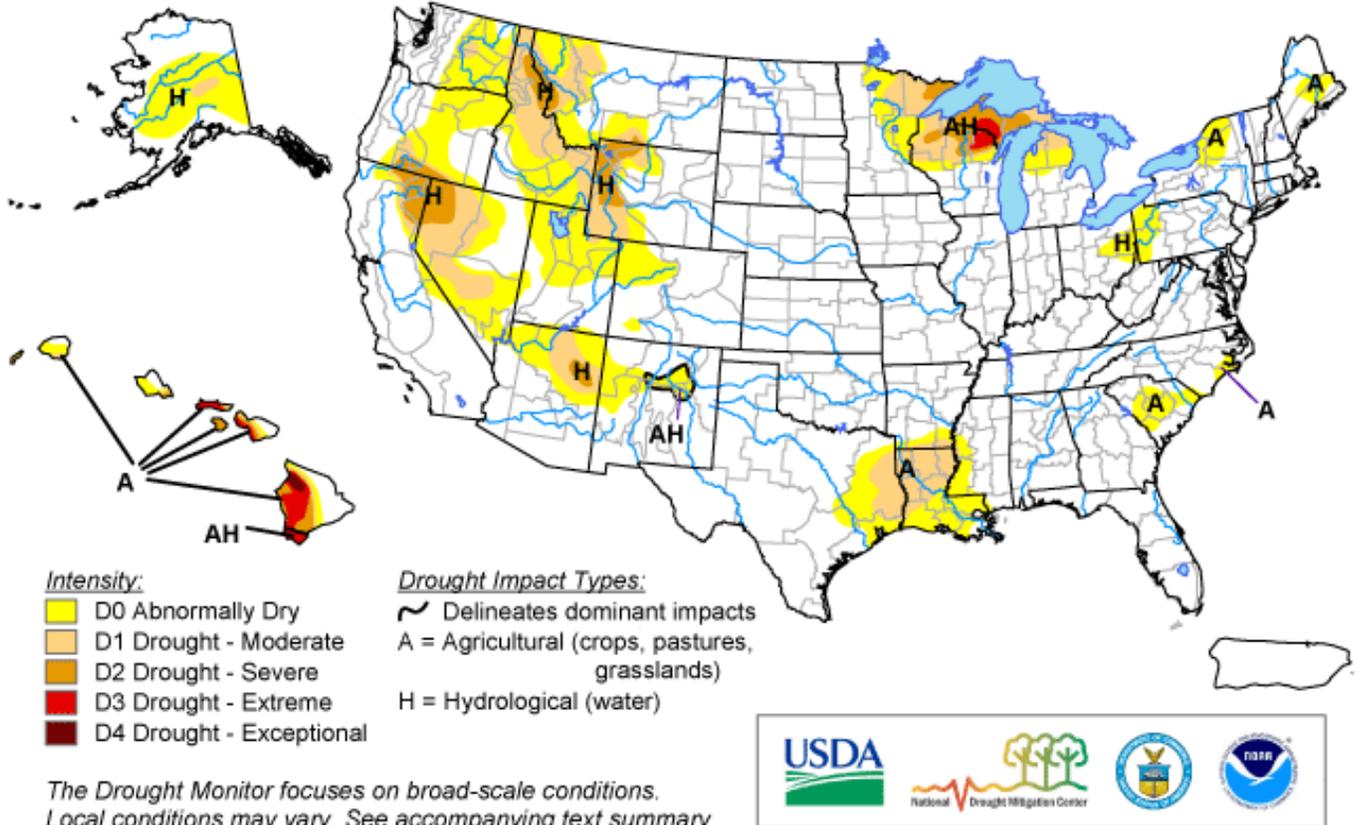


**Fig 3b:** For the 2010 Water-Year that began on 1 October 2009, Arizona, New Mexico, eastern Nevada, the Olympic Range (WA), central Montana, and northeast Wyoming have the largest surpluses while the northern interior and southwestern Oregon have the greatest deficits.

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

May 25, 2010  
Valid 8 a.m. EDT



Released Thursday, May 27, 2010

Author: Eric Luebehusen, U.S. Department of Agriculture

<http://drought.unl.edu/dm>

Fig. 4: Current Drought Monitor weekly summary.

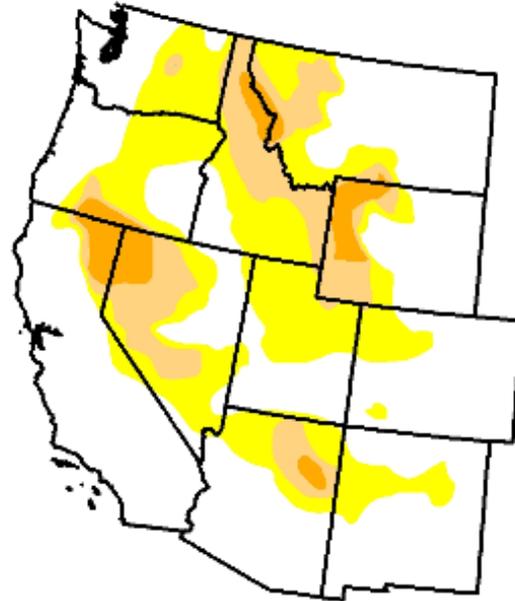
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

# U.S. Drought Monitor West

May 25, 2010  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	60.0	40.0	15.1	4.1	0.0	0.0
Last Week (05/18/2010 map)	56.8	43.2	17.7	4.8	0.0	0.0
3 Months Ago (03/02/2010 map)	34.9	65.1	21.1	3.8	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 (10/06/2009 map)	42.1	57.9	25.4	8.5	0.0	0.0
One Year Ago (05/26/2009 map)	50.7	49.3	22.6	6.6	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*



**Released Thursday, May 27, 2010**

*Author: Eric Luebehusen, U.S. Department of Agriculture*

<http://drought.unl.edu/dm>

**Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there were some improvements since last week.**

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

## Drought Monitor Classification Changes for Selected Time Periods

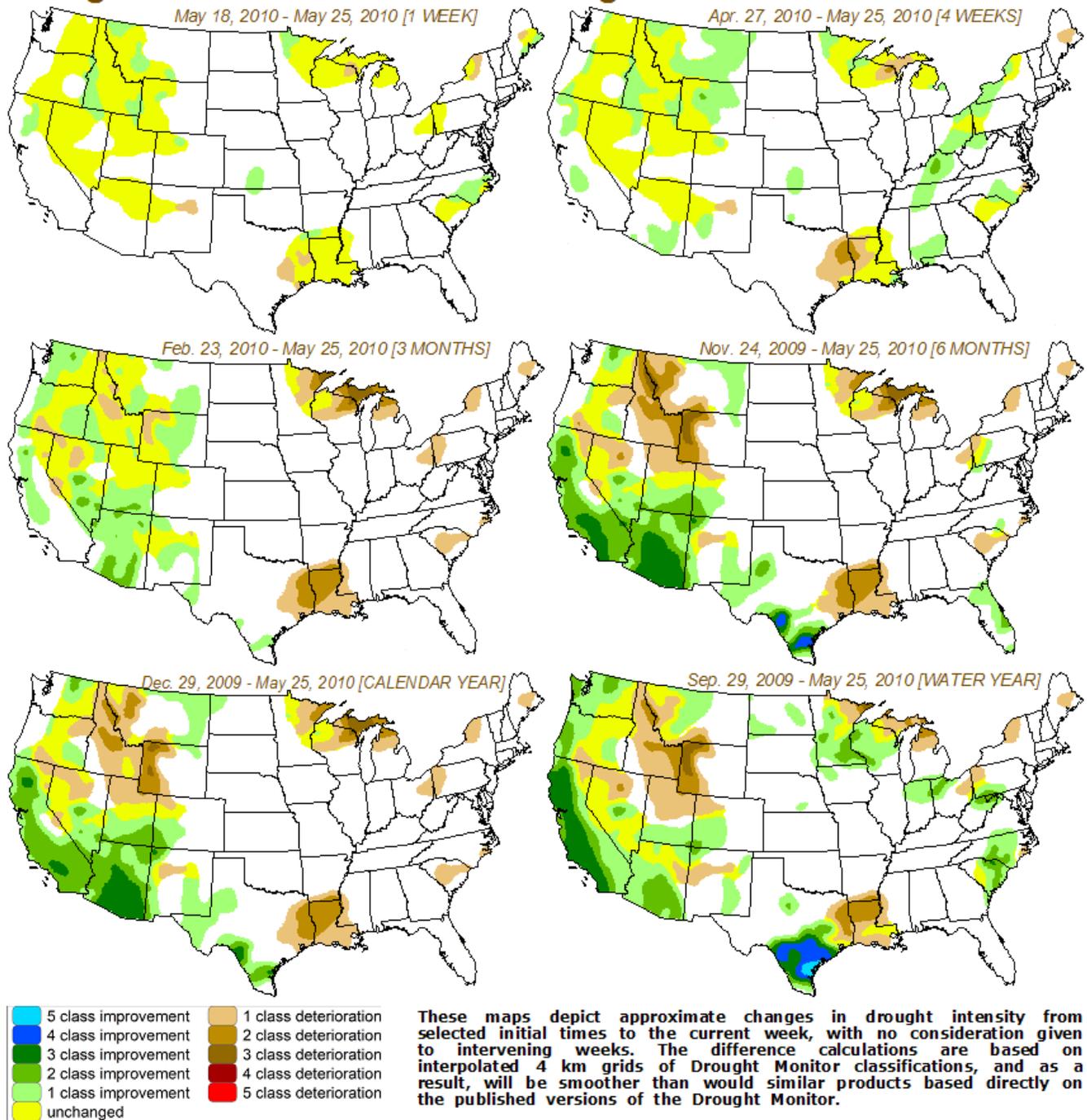
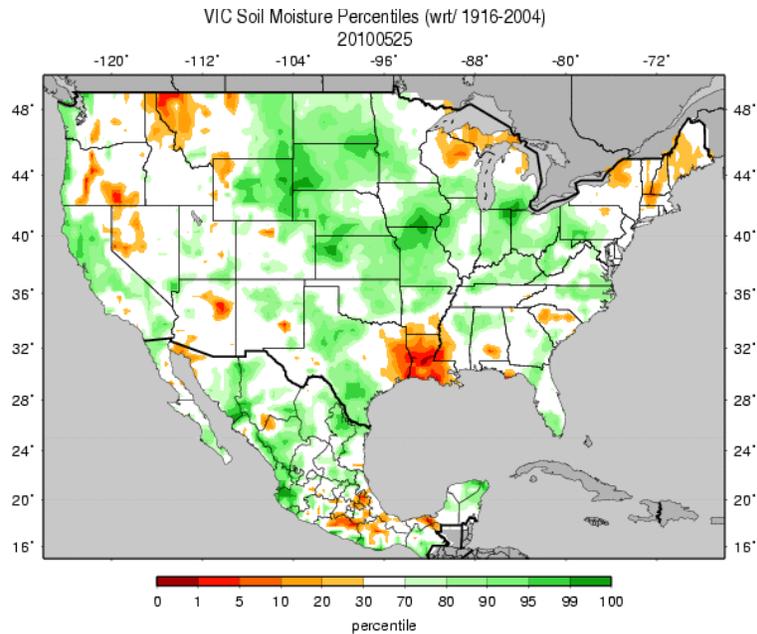


Fig. 4b : Drought Monitor Classification Changes show little change over the US this week.

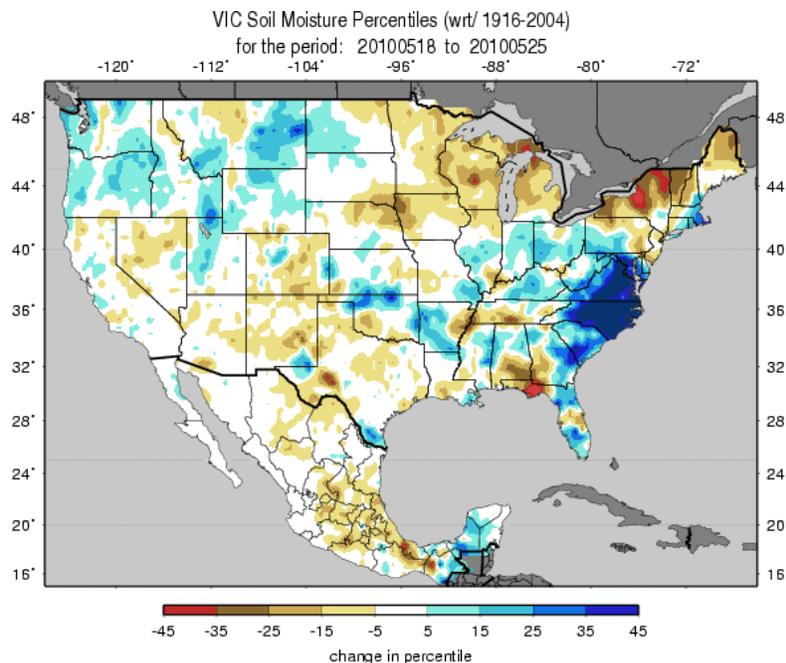
Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

## Weekly Snowpack and Drought Monitor Update Report



**Figs. 5a:** Soil Moisture ranking in percentile based on 1916-2004 climatology as of 25 May. Excessive moisture and dryness patterns are generally mixed across the U.S with the worst conditions over Louisiana, Mid-Atlantic, and Northern Rockies and the best conditions over the Northern and Central Plains.

Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm\\_qnt.gif](http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.gif)

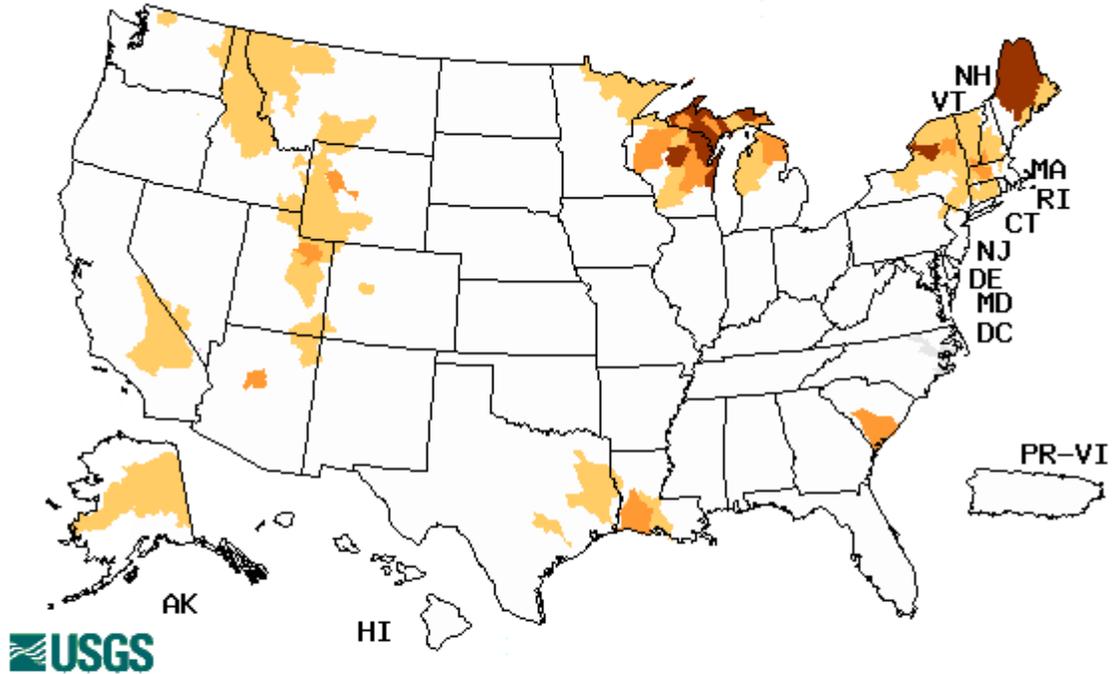


**Figs. 5b:** Soil Moisture change in percentile based on 1916-2004 climatology for the week shows extreme moistening over the Mid-Atlantic States. A dry week dominated New York and Upper Michigan.

Ref: <http://www.emc.ncep.noaa.gov/mmb/nldas/drought/> (very useful resource) and [http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm\\_qnt.1wk.gif](http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.1wk.gif)

# Weekly Snowpack and Drought Monitor Update Report

Wednesday, May 26, 2010



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. Significant worsening of conditions is noted over Michigan and Maine.

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

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- May 25, 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:** Warmer-than-normal conditions returned, with showers in southern and eastern portions of the region contrasting with increasing dryness across northern New England. Up to an inch of rain fell in southern Maine, easing Abnormal Dryness (D0) in coastal portions of the state, while declining streamflows and a lack of rainfall farther north led to a northward expansion of D0 into central Maine. Meanwhile, increasing dryness in north-central New York led to an expansion of D0, with stream flows in the lowest 10th percentile across much of the Abnormally Dry area. Widespread showers (locally more than 1.5 inches) continued across western Pennsylvania, West Virginia, and Ohio, reducing the coverage of D0. Lingering long-term deficits (last 365 days) persist in portions of Ohio and western Pennsylvania, indicating that despite two weeks of beneficial rainfall, Abnormal Dryness has not been completely erased from these areas.

**The Southeast:** Widespread showers were reported over most of the region, with 2 to locally more than 5 inches of rain tallied in the D0 (Abnormally Dry) areas of North Carolina and northeastern South Carolina. Consequently, the coverage of D0 was reduced significantly for the second straight week. However, dryness persisted in central and western South Carolina, where D0 was either retained or expanded slightly.

**Gulf Coast:** Mostly dry, hot weather prevailed across central and western portions of the region, while showers were observed in eastern-most Moderate Drought (D1) areas. The rain, which ranged from a trace to locally more than 2 inches, was not sufficient to offer significant drought relief. However, with modest improvements in streamflows and soil moisture, drought coverage and intensity were not increased in northern Louisiana and adjacent portions of Mississippi. In eastern Texas, D0 and D1 were expanded westward to account for increasing precipitation deficits on numerous timescales (in particular, 90-day rainfall averaging 8 to 12 inches below normal). In addition, declining streamflows were noted in eastern Texas, while Standardized Precipitation Indices (SPI) likewise supported D0 and D1 expansion. Given the increasingly high water demands associated with late spring and early summer, rain will be needed in this region soon to stave off rapid expansion of drought.

**Great Plains:** Locally heavy downpours (1 to 6 inches) in northern Oklahoma and southern Kansas replenished soil moisture and, in many areas, eliminated lingering precipitation deficits. With 7-day average streamflows now above the 40th percentile (in some cases above the 70th percentile), D0 was removed from the south-central Plains.

**Upper Midwest:** For the second straight week, drought reduction in western portions of the region contrasted with expanding drought farther east. Moderate to very heavy rain (1 to 5 inches) in northern Minnesota further eased Moderate Drought (D1), with 1-category improvements made over northern portions of the state. Meanwhile, dry, warmer-than-normal weather (temperatures more than 10°F above normal) increased drought intensity and coverage over northern portions of Wisconsin and Michigan. In particular, 7-day average streamflows fell below the 2nd percentile in northeast Wisconsin.

## Weekly Snowpack and Drought Monitor Update Report

and the Upper Peninsula of Michigan, with Standardized Precipitation Indices valid out to 12 months indicating that drought is intensifying rapidly.

**The West:** Late-season storminess persisted, with locally heavy rain and snow reported across the northern half of the region. Despite the seasonal melt of mountain snow packs, week-to-week snow depth gains were noted over western Montana, southwestern Wyoming, and northern portions of Colorado, Utah, and Nevada. Precipitation totals in excess of 2 inches led to the reduction of drought intensity and coverage over northern and central portions of the Rockies. Water-year precipitation percentiles remained below the 10th percentile, however, in D2 (Severe Drought) areas of northwestern Wyoming, western Montana, and northeastern Idaho. Improvements were also made in the Abnormally Dry (D0) areas extending from southeastern Oregon into western Utah, based primarily on updated 6-month Standardized Precipitation Indices (SPI); water-year percentiles (mostly 40th percentile or higher); and water-year precipitation near or above 100 percent of normal. Farther south, Abnormally Dry conditions were added to southwestern Colorado to correspond with water-year precipitation totals at or below the 30th percentile, while expanding dryness (D0) in north-central New Mexico corresponded with increasing short-term precipitation deficits as well as declining soil moisture percentiles and corresponding 6-month SPI values.

**Hawaii, Alaska and Puerto Rico:** In Hawaii, dry, warm conditions (1 to 3°F above normal) maintained Extreme (D3) to Exceptional Drought (D4) over Molokai, Maui, and the Big Island. In Alaska, warm, mostly dry weather prevailed, with Moderate Drought (D1) added to central portions of the state to correspond with water-year precipitation totals and 7-day average streamflows below the 25th percentile. In Puerto Rico, locally heavy showers (up to 4 inches) maintained favorable streamflows and soil moisture.

**Looking Ahead:** Unsettled weather will continue across northern portions of the West, with locally heavy precipitation likely from the Pacific Northwest into the northern Rockies. In contrast, mostly dry, hot weather will prevail across the western and central Gulf Coast region, while showers dot the southeastern quarter of the nation. Dry, increasingly warm weather is anticipated across the drought areas of the Upper Midwest, although a few showers may accompany a cool front during the latter half of the weekend. Elsewhere, dry, generally cool weather is anticipated over the Southwest, while a late-spring Northeastern heat wave gives way to cooler, mostly dry conditions over the weekend.

The CPC 6-10 day forecast (June 1–5) calls for above-normal temperatures from southern California into the central and southern Rockies, while cooler-than-normal conditions prevail in the Pacific Northwest and across northeastern quarter of the nation. Near- to above-normal precipitation is expected across much of the lower 48, with the greatest likelihood for wetter-than-normal weather centered in the Northwest and Ohio River valley. In Alaska, drier- and mostly warmer-than-normal weather is anticipated.

**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

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D3 ... Extreme Drought

D4 ... Exceptional Drought

### **Drought or Dryness Types**

A ... Agricultural

H ... Hydrological

Updated May 26, 2010