



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

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**Weekly Report - Snowpack / Drought Monitor Update**      **Date: 13 November, 2008**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Snow:** Snow-water equivalent percent to date continues to show a decline especially over the Pacific Northwest during this week due to warmer than average temperatures. The Central and Southern Rockies are behind in snow accumulation but we are still early into the winter season (Fig 1).

**Temperature:** SNOTEL and ACIS-day station average temperature anomalies were generally within +/- 5 degrees of normal during the past week (Fig. 2). Specifically, the greatest positive temperature departures occurred over the Cascades and Montana Rockies (>+8F) and greatest negative departures occurred over western Colorado and western New Mexico (<-8F) (Fig. 2a).

**Precipitation:** ACIS 7-day average precipitation anomaly for the period ending 12 November shows significant amounts falling over the Pacific Northwest, Northern Rockies, and Great Basin. Mostly dry conditions prevailed over California and the 4-Corner States (Fig. 3). Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2009 Water Year that began on October 1, 2008 shows below normal totals across much of Rockies. Above normal amounts are noted over the Great Basin, Snake River Drainage, Cascades, and the Northern Sierra (Fig. 3a). For precipitation totals, departures, and percent of normal for several time periods see: <http://www.water.gov/> and <http://ciq.mesonet.org/~derek/public/droughtmonitoring/>.

## **WESTERN DROUGHT STATUS**

**The West:** On the heels of heavy rain and snow last week across northern California, generally cooler temperatures prevailed statewide and another round of precipitation fell this past week as well. Totals of 1-4 inches fell across extreme northwest California, from Eureka to points north and east toward Yreka, and along the extreme southwest Oregon coast. After these consecutive soakings, longer-term deficits are being erased and streamflow and soil moisture are responding well. This has led to the removal of D0 and D1 in this corner of California. The same can not be said for points just to the south and east as conditions remain unchanged this week. In fact, a slight expansion of D2 is noted in far northeast California, and farther south, a slight expansion eastward of D2 into the Salton Sea region is depicted this week. Long-term deficits have carried over and are thus far lingering during the young Water Year. In eastern Washington, the recent wetness has led to the removal of D1 and a reduction of the D0 there, but long-term dryness leaves some D0 in its wake for now. 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

## Weekly Snowpack and Drought Monitor Update Report

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, 4a, and 4b).

### 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).

### OBSERVED FIRE DANGER CLASS

The National Interagency Coordination Center provides a variety of products that describe the current wildfire status for the U.S. - [http://activefiremaps.fs.fed.us/lq\\_fire2.php](http://activefiremaps.fs.fed.us/lq_fire2.php). The latest Observed Fire Danger Class is shown in Figs. 6 shows the current active wildfires across the West - <http://geomac.usgs.gov/>.

### U.S. HISTORICAL STREAMFLOW

This map, (Fig. 7) 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.

[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).

### 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/>

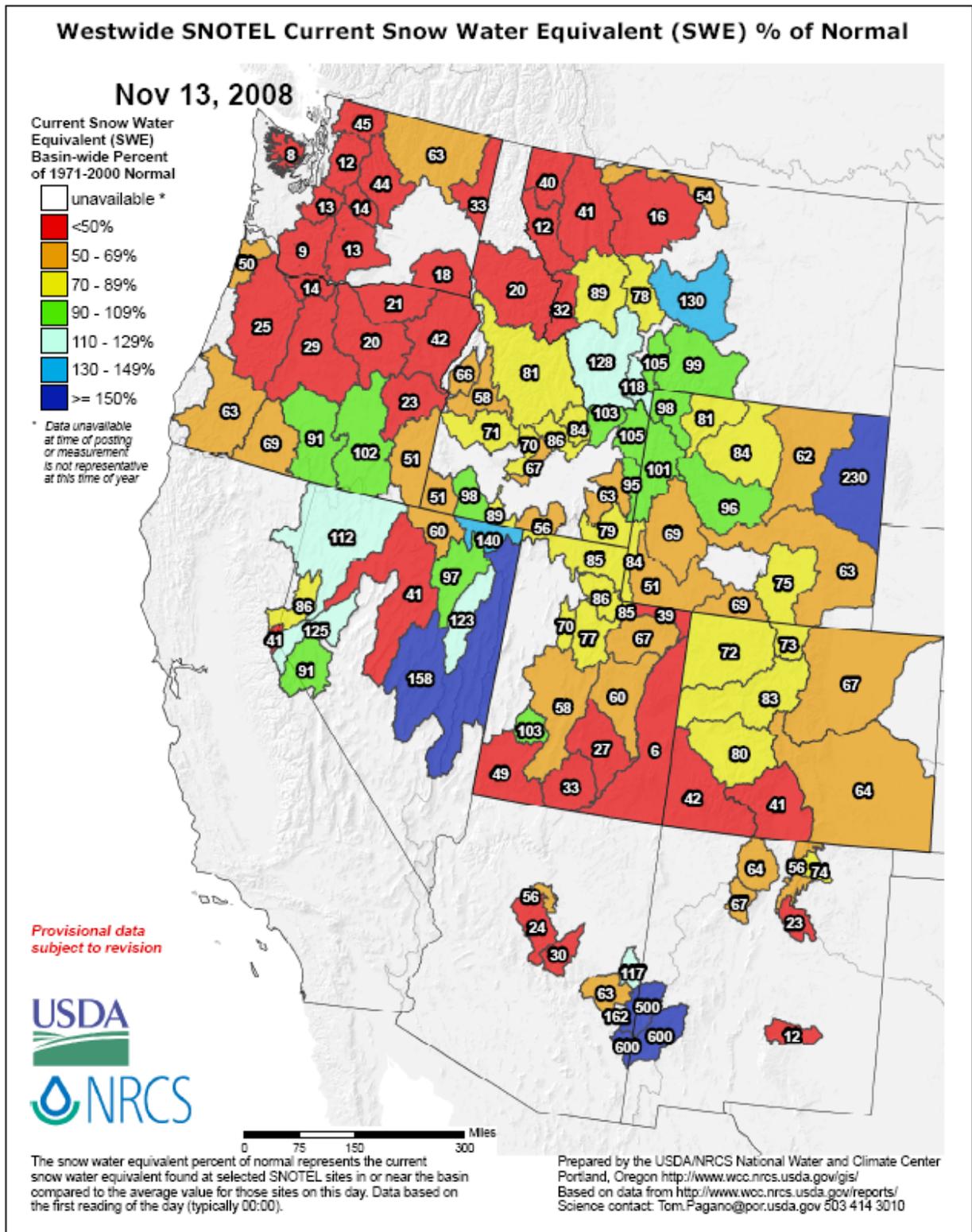
### FOR MORE INFORMATION

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



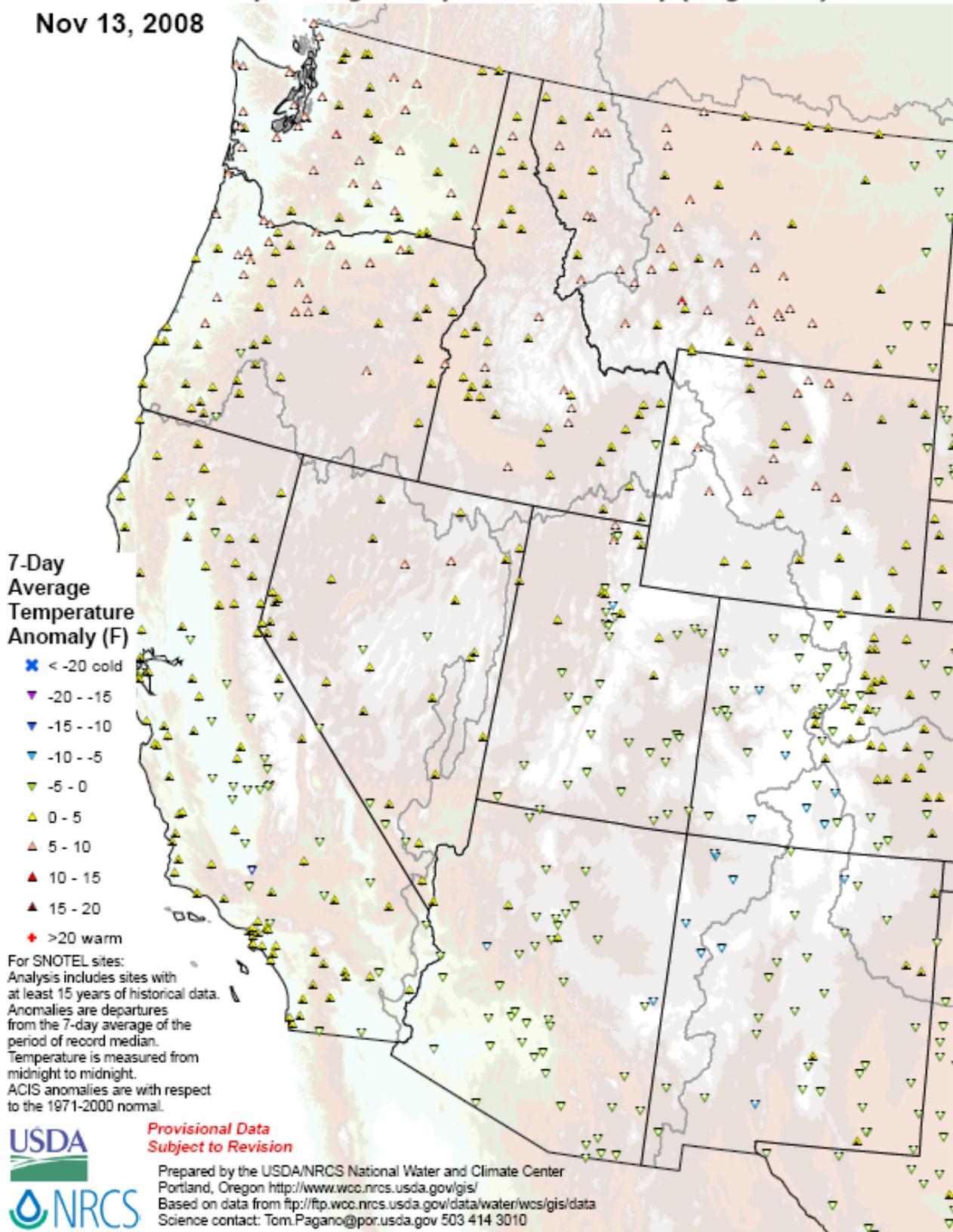
**Fig. 1. Snow-water equivalent percent to date continues to show a decline especially over the Pacific Northwest during this week. The high values over the Arizona-New Mexico region are subject to early season statistical anomalies that have little relationship to the longer term seasonal averages. The Central and Southern Rockies are behind in snow accumulation but we are still early into the winter season.**

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) and ACIS (dot-filled) Networks 7-Day Average Temperature Anomaly (Degrees F)

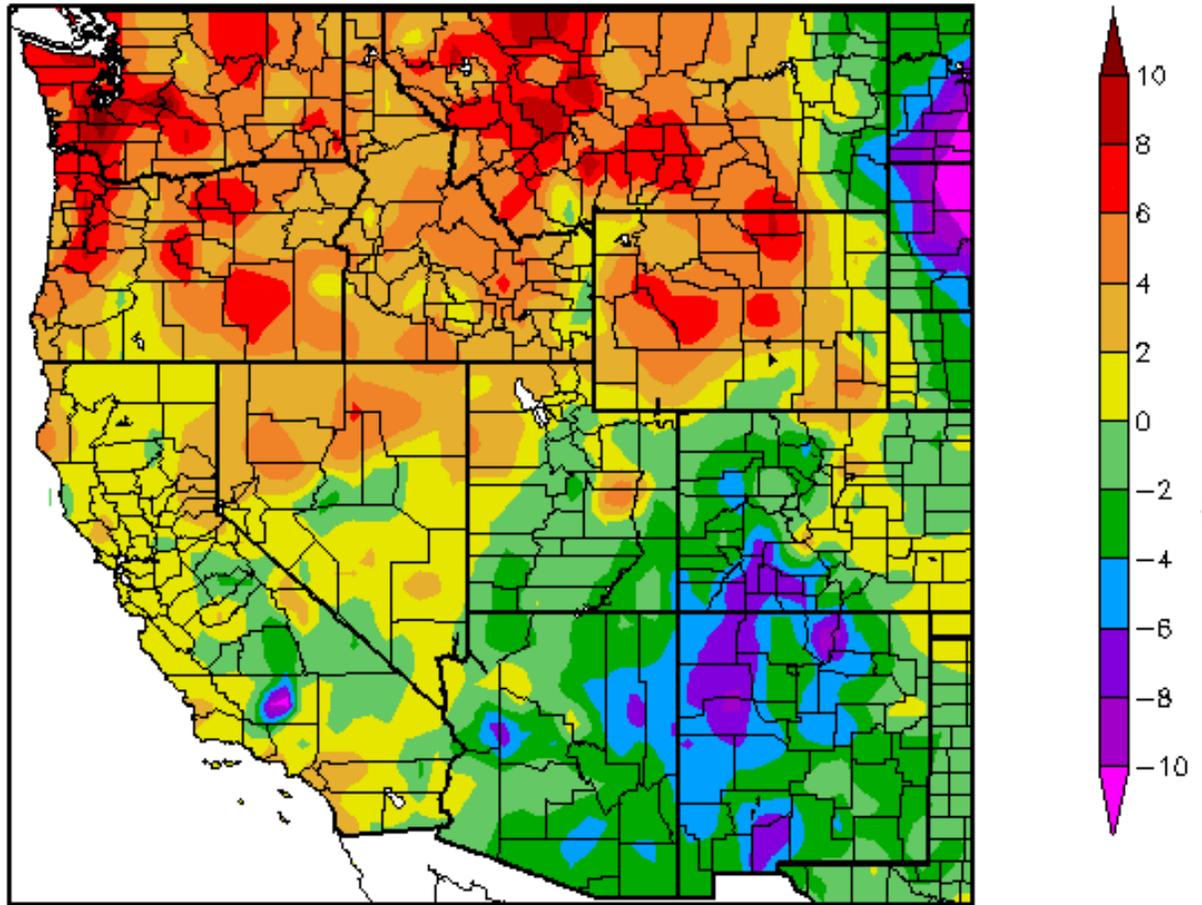
Nov 13, 2008



**Fig. 2. SNOTEL and ACIS-day station average temperature anomalies were generally within +/- 5 degrees of normal during the past week.**

Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>

Departure from Normal Temperature (F)  
11/6/2008 – 11/12/2008



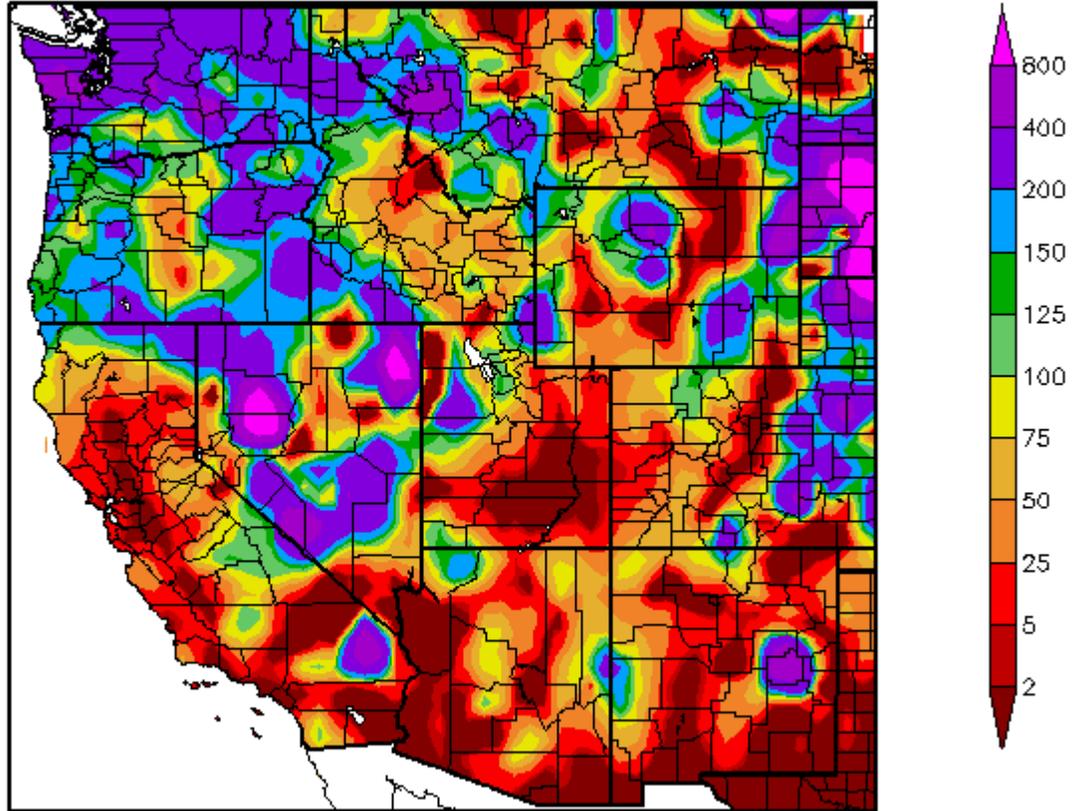
Generated 11/13/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 2a. ACIS 7-day average temperature anomalies: Greatest positive temperature departures occurred over the Cascades and Montana Rockies (>+8F) and greatest negative departures occurred over western Colorado and western New Mexico (<-8F).**

Ref: [http://www.hprcc.unl.edu/maps/current/index.php?action=update\\_product&product=TDdept](http://www.hprcc.unl.edu/maps/current/index.php?action=update_product&product=TDdept)

Percent of Normal Precipitation (%)  
11/6/2008 – 11/12/2008



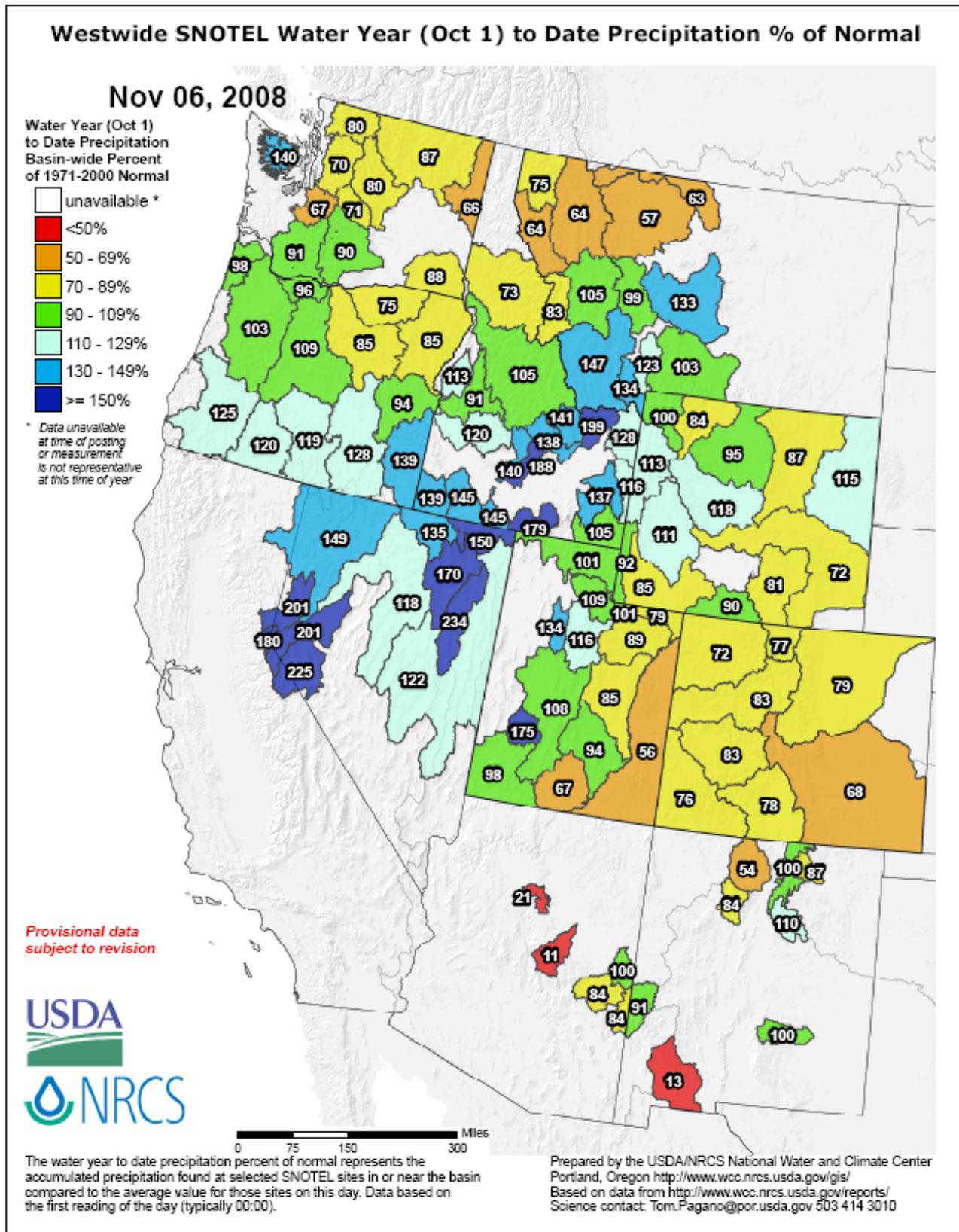
Generated 11/13/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 3. ACIS 7-day average precipitation anomaly for the period ending 12 November shows significant amounts falling over the Pacific Northwest, Northern Rockies, and Great Basin. Mostly dry conditions prevailed over California and the 4-Corner States.**

Ref: [http://www.hprcc.unl.edu/maps/index.php?action=update\\_product&product=PNorm](http://www.hprcc.unl.edu/maps/index.php?action=update_product&product=PNorm)

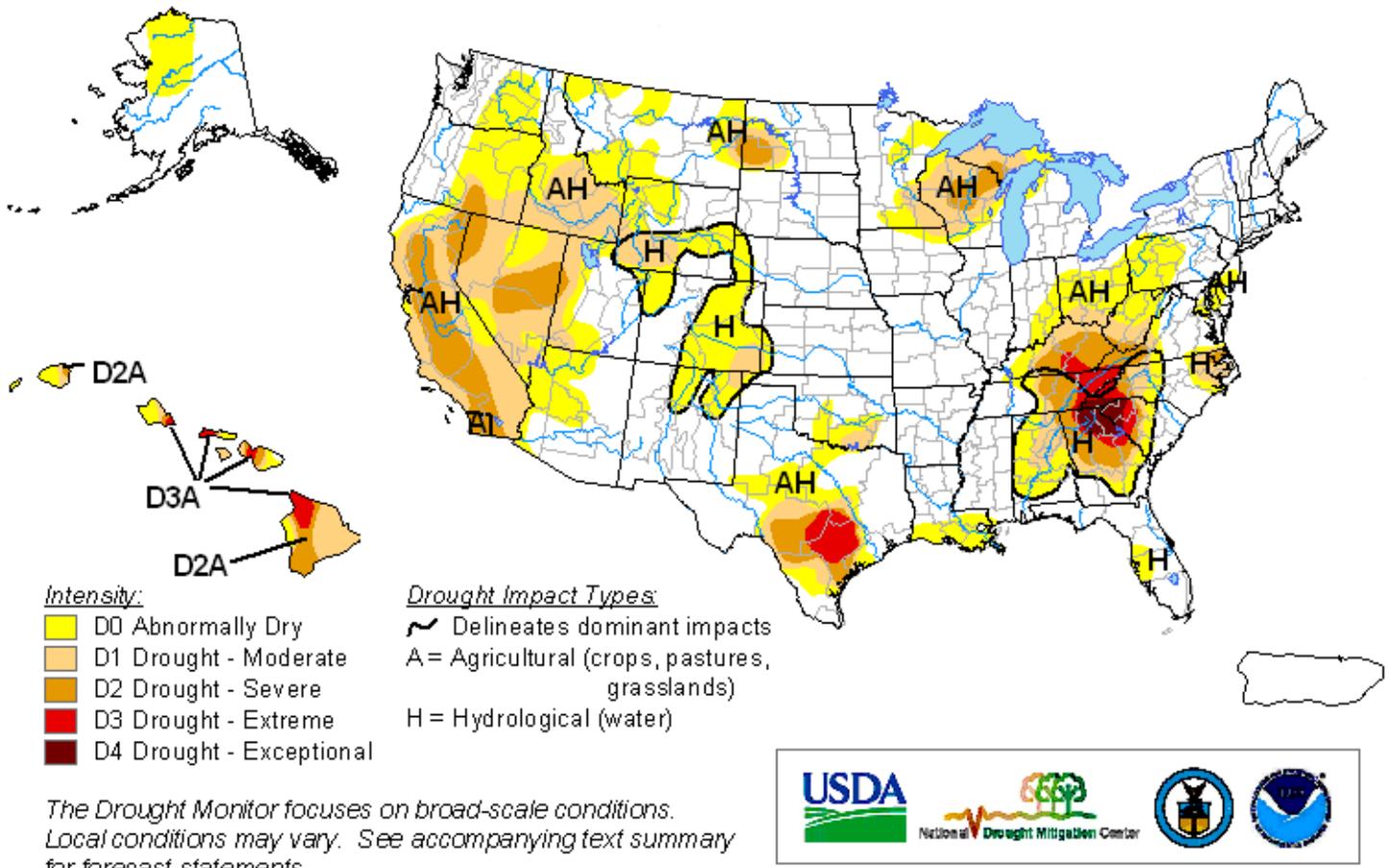
Weekly Snowpack and Drought Monitor Update Report



**Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2009 Water Year that began on October 1, 2008 shows below normal totals across much of Rockies. Above normal amounts are noted over the Great Basin, Snake River Drainage, Cascades, and the Northern Sierra.**  
Ref: [ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west\\_wytdprecptnormal\\_update.pdf](ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecptnormal_update.pdf)

# U.S. Drought Monitor

November 11, 2008  
Valid 8 a.m. EST



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

Released Thursday, November 13, 2008

Author: Mark Svoboda, National Drought Mitigation Center

**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

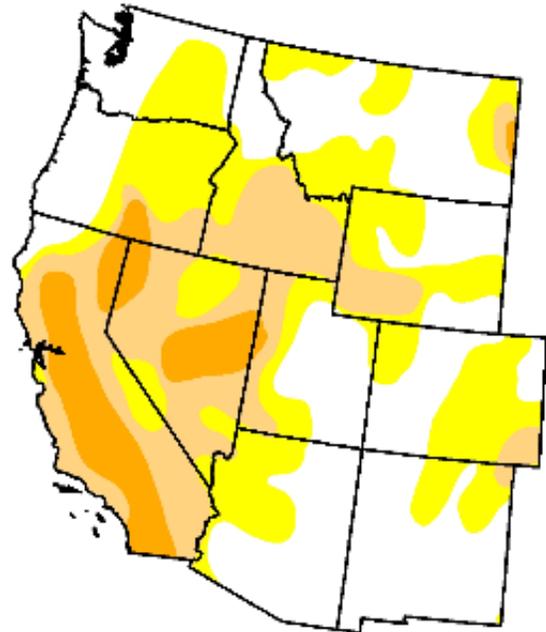
## West

November 11, 2008

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.9	58.1	28.4	8.7	0.0	0.0
Last Week (11/04/2008 map)	39.9	60.1	29.6	8.5	0.0	0.0
3 Months Ago (08/19/2008 map)	34.7	65.3	29.8	9.7	0.2	0.0
Start of Calendar Year (01/01/2008 map)	26.3	73.7	54.7	33.1	2.7	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (11/13/2007 map)	25.6	74.4	56.9	38.7	7.9	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 13, 2008**

Author: Mark Svoboda, National Drought Mitigation Center

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note slight improvement (D1-D4) since last week. Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)

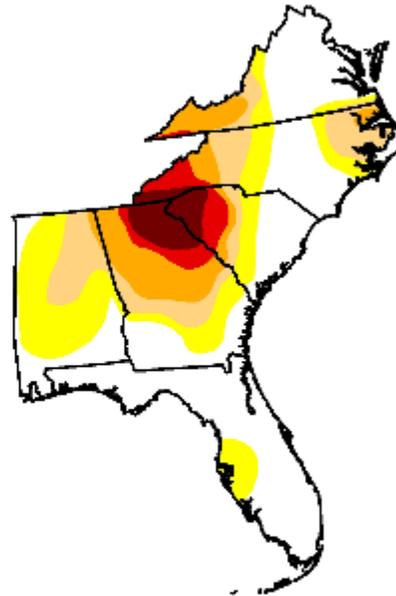
# U.S. Drought Monitor

## Southeast

November 11, 2008  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	47.3	52.7	32.3	19.1	8.8	4.6
Last Week (11/04/2008 map)	47.3	52.7	30.0	19.1	8.8	2.0
3 Months Ago (08/19/2008 map)	22.8	77.2	61.2	41.5	15.5	7.5
Start of Calendar Year (01/01/2008 map)	9.6	90.4	74.3	58.5	41.0	22.0
Start of Water Year (10/07/2008 map)	35.2	64.8	41.8	20.8	9.4	1.9
One Year Ago (11/13/2007 map)	11.3	88.7	73.6	53.8	36.3	23.1



**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>



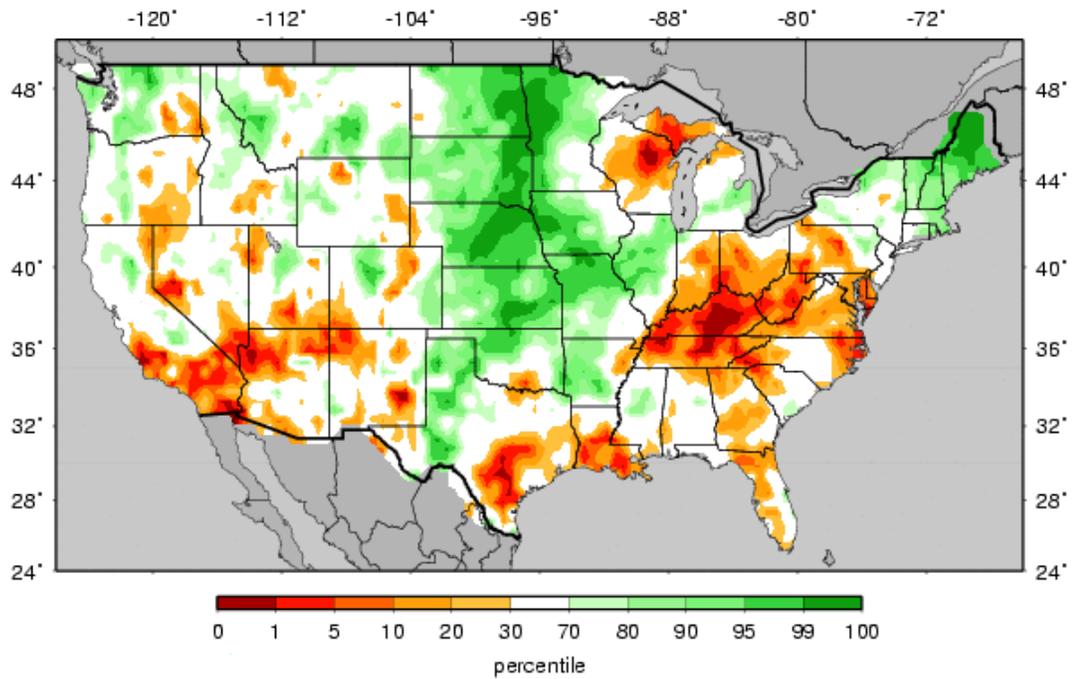
**Released Thursday, November 13, 2008**  
Author: Mark Svoboda, National Drought Mitigation Center

**Fig. 4b: Drought Monitor for the Southeast shows some deterioration (D4) since last week. This D4 area has now expanded into northern Georgia.**

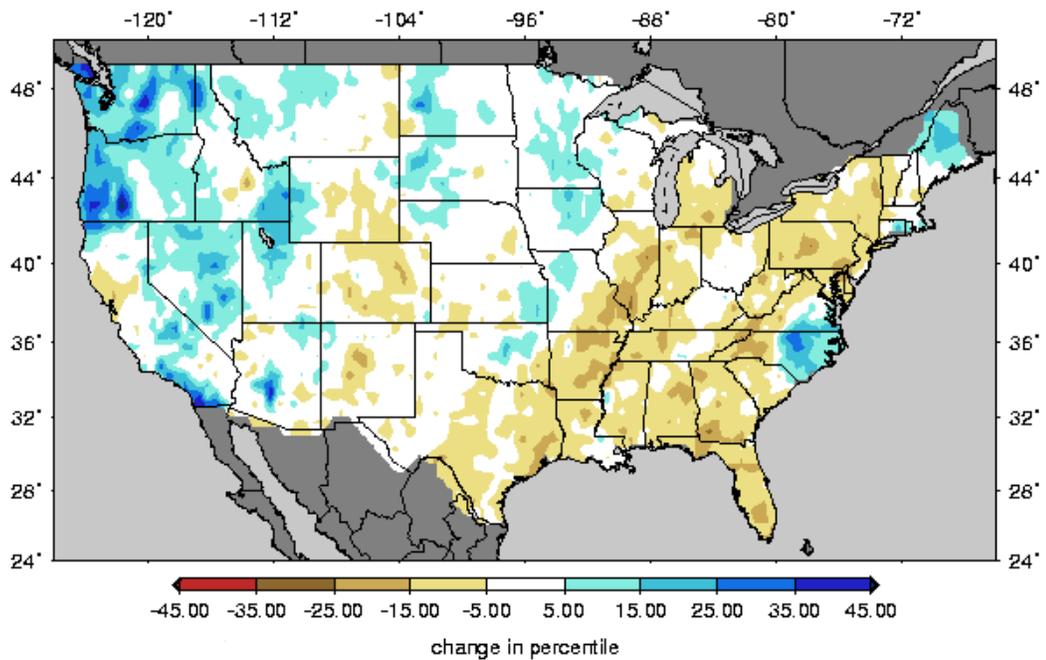
Ref: [http://www.drought.unl.edu/dm/DM\\_southeast.htm](http://www.drought.unl.edu/dm/DM_southeast.htm)

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MULTIMODEL Soil Moisture Percentiles (wrt/ 1920-2003)  
20081111



Change in Soil Moisture Percentiles (wrt/ 1915-2003)  
for the week 20081104 to 20081111



**Figs. 5a & 5b: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. The only significant change since last week has been an improvement in Oregon and Washington (Fig. 5a and 5b).**

Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.multimodel.sm\\_gnt.gif](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.multimodel.sm_gnt.gif)  
[http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.vic.sm\\_gnt.1wk.gif](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.vic.sm_gnt.1wk.gif)

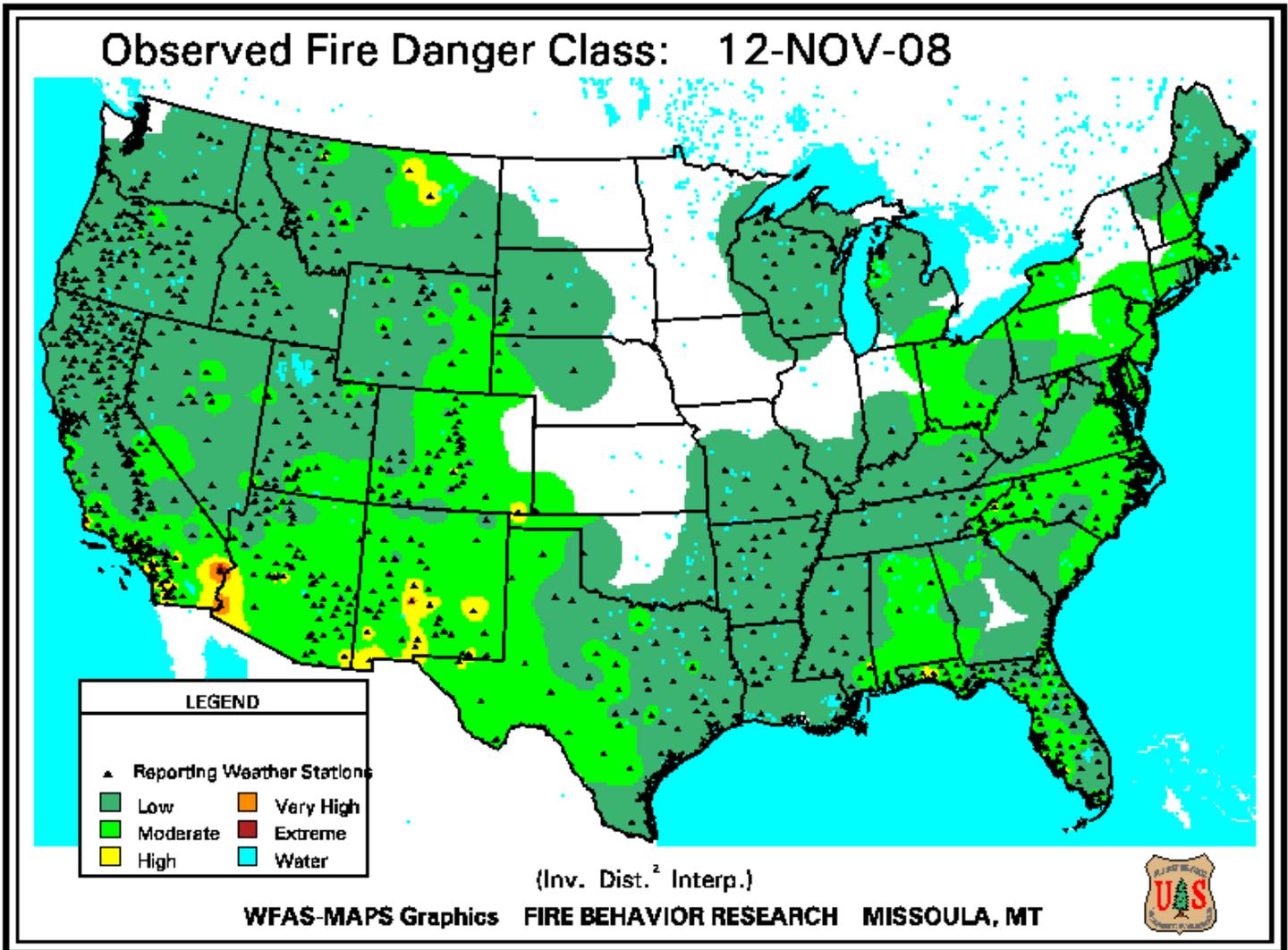
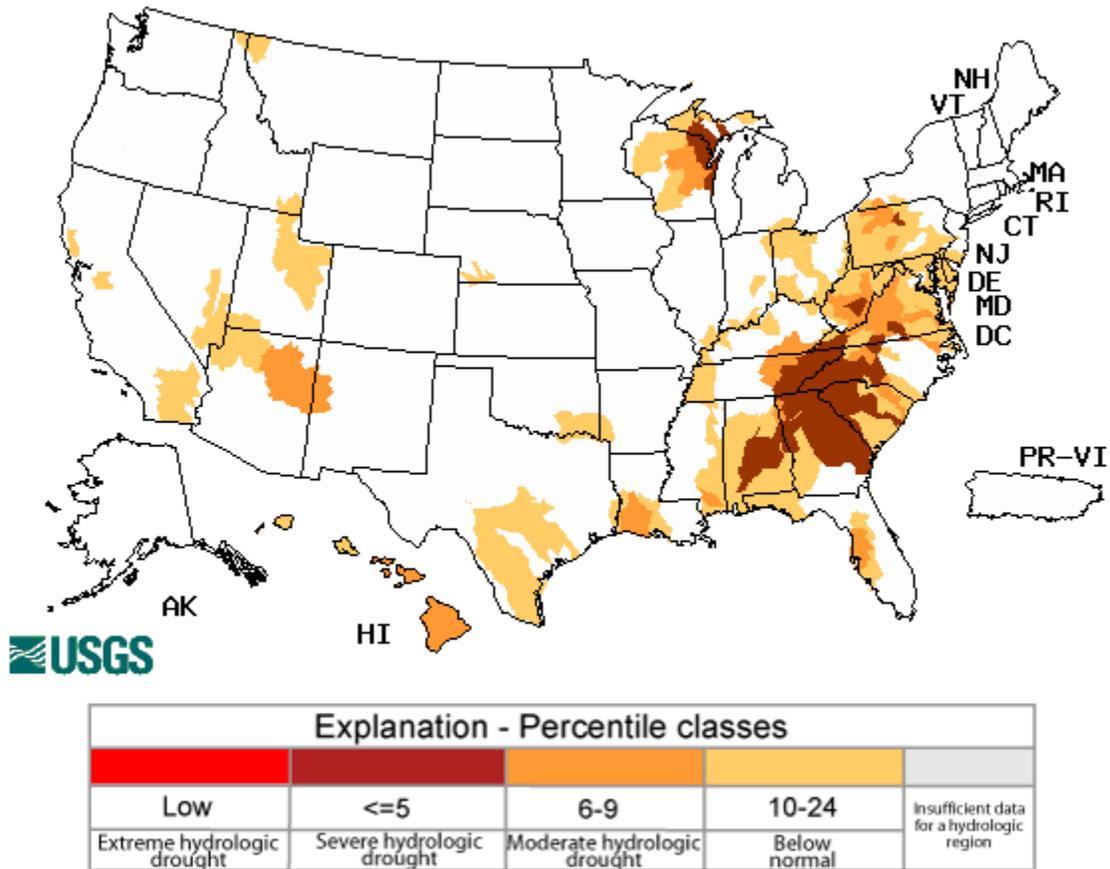


Fig. 6. Observed Fire Danger Class. Note most of the US has improved since last week. Extreme southeast California is still maintaining a very high fire threat. Source: Forest Service Fire Behavior Research – Missoula, MT.

Ref: [http://www.fs.fed.us/land/wfas/fd\\_class.gif](http://www.fs.fed.us/land/wfas/fd_class.gif)

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Hednesday, November 12, 2008



**Fig. 7. Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Note persistent low flows over the Southeastern States (expanding), and over Wisconsin-Upper Peninsula of Michigan. Hawaii is also showing signs of drying conditions.**

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

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary – November 11, 2008

*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 Southeast, Tennessee and Ohio valleys and mid-Atlantic Coast:** Much of the mid-Atlantic and Northeast enjoyed warmer than normal temperatures, but very little in the way of precipitation last week. Dryness over the past 30 to 90 days, coupled with lingering deficits that date back 6 months now, have led to the expansion of D0 across most of western Pennsylvania. The noted long-term dryness has also led to the changing of the impact type in the Ohio Valley region to “AH” instead of just “A” to reflect the duration aspect of the dryness in the region. The other change of note this week is reflected in yet more expansion of D4 across northern Georgia, where year-to-date rainfall deficits are now on the order of 12 to 16 inches or more (50-70% of normal) in Georgia and the western Carolinas. Two-year departures are a staggering two feet across much of the Southeast, leaving the hydrological drought well entrenched. To the east, D1 has again pushed south and west across more of Alabama and D0 continues to inch northward in Louisiana in response to dry conditions over the past 30-90 days. The time of year and cooler temperatures have helped somewhat, but extensive off-season rains will be needed to help reverse the course of the drought before heading into 2009. This is evident in the near-record to record low levels of both rivers/streams and surface storage across much of the region.

**Great Lakes Region and upper Midwest:** Unseasonably warm temperatures (6 to 10 degrees above normal) covered the region last week. For the most part, this was coupled with very little in the way of precipitation. The exceptions were in parts of northern and southern Minnesota, where 1-2 inches fell. As a result, D1 has been removed from the Arrowhead of northern Minnesota and the D0-D1 has been trimmed and refined in the southern half of the state in order to better reflect the recent improvements along with the longer-term deficits and concerns heading into the recharge season.

**The Plains:** A substantial blizzard in the northern Plains brought heavy snows and did lead to some improvement in the Panhandle of Nebraska (slight removal of D0 there) and in southwest North Dakota as well, where the D0-D2 was trimmed on the southern and eastern flanks in response to the recent wetness there. Year-to-date deficits are still in the 3-6 inch range (50-70% of normal) and these are only worse in the 12- to 24-month time frames, so the drought remains.

The southern Plains were greeted with a warm week and heavy late period rains (November 10-11), which have altered the drought depiction there. Specifically, in Oklahoma, D1 has been removed in the north-central counties and the D0 has been reduced slightly in both the north and the east. It should be noted that the D1 in the southern reaches of Oklahoma actually expanded this week as the rains missed them and concerns continue because of the lack of cool-season recharge needed for helping winter wheat and easing grass fires. The fact that the dryness now extends back six months across southern Oklahoma led to a change in the impact label from “A” to “AH”, which is consistent with the impact depiction found in Texas.

Speaking of Texas, the benefits were a bit more obvious to the south across the Red River into northern-northeastern Texas and along parts of the middle coast of Texas as well. Heavy rains on the order of 2 to 4 inches fell in both of these regions, leading to the pushing back of D0 to the west in north-central Texas. This was accompanied by a slight trimming of D1 along the Red River around the Oklahoma-Texas border. Along the middle Gulf Coast, the heavy rains helped in the

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short term, but longer-term deficits are still persisting within the core of D1-D3 located here. These rains did help tighten the D0-D3 gradient found along the coast between Houston and Corpus Christi.

**The West:** On the heels of heavy rain and snow last week across northern California, generally cooler temperatures prevailed statewide and another round of precipitation fell this past week as well. Totals of 1-4 inches fell across extreme northwest California, from Eureka to points north and east toward Yreka, and along the extreme southwest Oregon coast. After these consecutive soakings, longer-term deficits are being erased and streamflow and soil moisture are responding well. This has led to the removal of D0 and D1 in this corner of California. The same can not be said for points just to the south and east as conditions remain unchanged this week. In fact, a slight expansion of D2 is noted in far northeast California, and farther south, a slight expansion eastward of D2 into the Salton Sea region is depicted this week. Long-term deficits have carried over and are thus far lingering during the young Water Year. In eastern Washington, the recent wetness has led to the removal of D1 and a reduction of the D0 there, but long-term dryness leaves some D0 in its wake for now.

**Alaska and Hawaii:** No changes are noted in the drought depiction this week within Alaska or Hawaii.

**Looking Ahead:** During the next 5 days (November 13-17), significant precipitation is expected in and around southern Louisiana, the Carolina coastlines, and the mid-Atlantic. Temperatures for most locales east of the Mississippi are expected to be normal to slightly below normal. Above-normal temperatures are forecasted for areas west of the Mississippi, with the greatest warmth expected across California and into the Great Basin.

The CPC 6-10 day forecast (November 18-22) calls for better chances of above-normal temperatures west of the Rockies (including eastern Alaska), while the Great Plains and all points eastward to the Atlantic can expect to see below-normal readings. Precipitation breaks down into a north-south line, with those in the South, Southeast, Southwest and West having better odds of being below normal. Parts of the western Dakotas and eastern Montana could see above-normal precipitation during this period, as could the eastern Great Lakes states.

**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 14 November 2008