



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

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**Weekly Report - Snowpack / Drought Monitor Update**      **Date: November 29, 2007**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Snow:** Early into this year's snowfall season, the some of higher SNOTEL sites over northwestern Wyoming continue to show the greatest above normal snow water equivalent values in the West (Fig. 1). However, the remainder of the West is essentially without snow cover except for the higher peaks in the Northwestern States.

**Temperature:** A cooler than average week dominated the West. Temperatures ranged from up to 10 degrees F below normal over northern Idaho, western Montana, and eastern New Mexico up to 4 degrees F above normal over the central California valley region of the state (Fig.2).

**Precipitation:** Drier than average conditions influenced most of the West with the exception of the Southern Rockies this week (Fig. 3). For the 2008 Water Year that began on October 1, 2007, precipitation (rain and snow water equivalent) is above normal over the southern Cascades, Intermountain West (central Idaho) and over the northwestern and Bighorn Mountain Ranges of Wyoming. Dryness persists elsewhere in a typical La Nina pattern with the exception of the Northern Cascades where below normal moisture is occurring (Fig. 3a). An intense weather system is expected to reverse this trend early next week over Washington.

## **WESTERN DROUGHT STATUS**

**The West:** A mostly dry week resulted in few changes to the drought depiction. Dry weather returned to areas from Oregon to Montana, where previous rain and snow had resulted in some drought reductions. In north-central and northeastern Arizona, however, a continuation of dry weather and a reassessment of long-term conditions in various watersheds, including the Little Colorado River basin, led to a broad deterioration from abnormal dryness (D0) to moderate drought (D1).

**Author:** [Brad Rippey, U.S. 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 developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs.4, 4a, 4b, and 4c).

## Weekly Snowpack and Drought Monitor Update Report

### SOIL MOISTURE

Soil moisture (Figs.5 and 5a), 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://www.nifc.gov/information.html>. 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

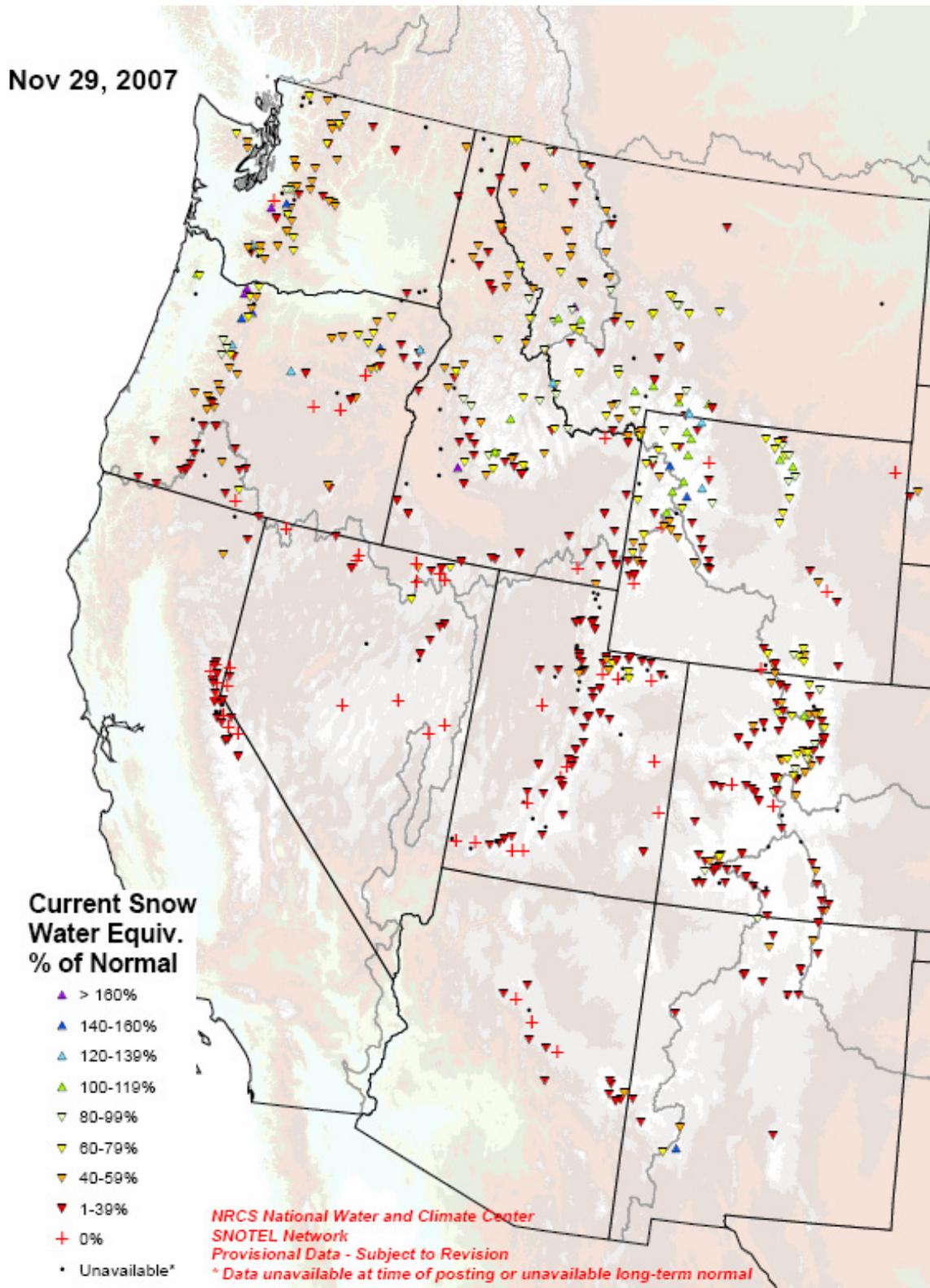


Fig. 1. Early season snow water equivalent percent of normal for the 2008 Water Year that began on October 1, 2007. This map shows what could be considered a dismal start to the snow pack season across the West Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideSWEPercent.pdf>

Nov 29, 2007

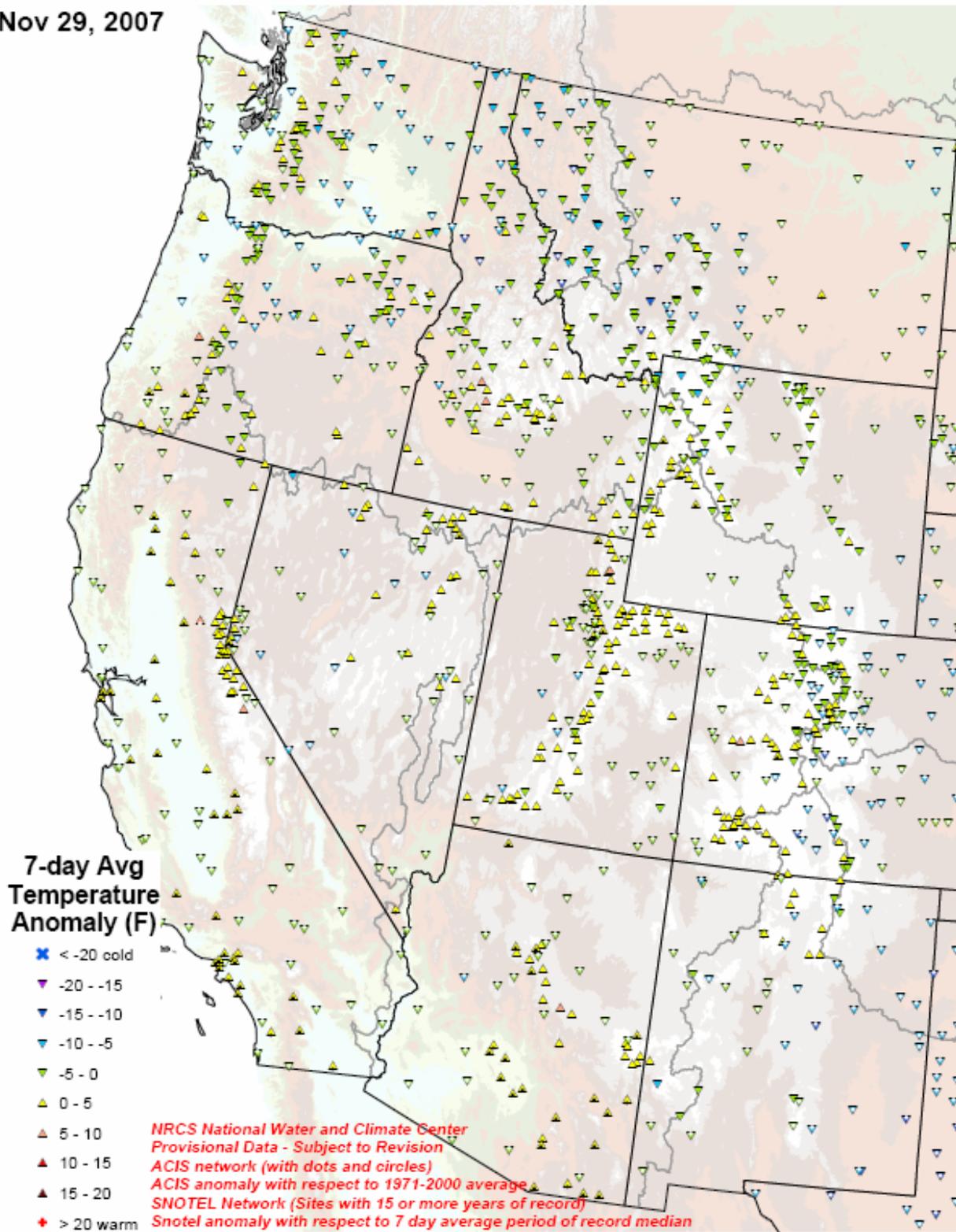
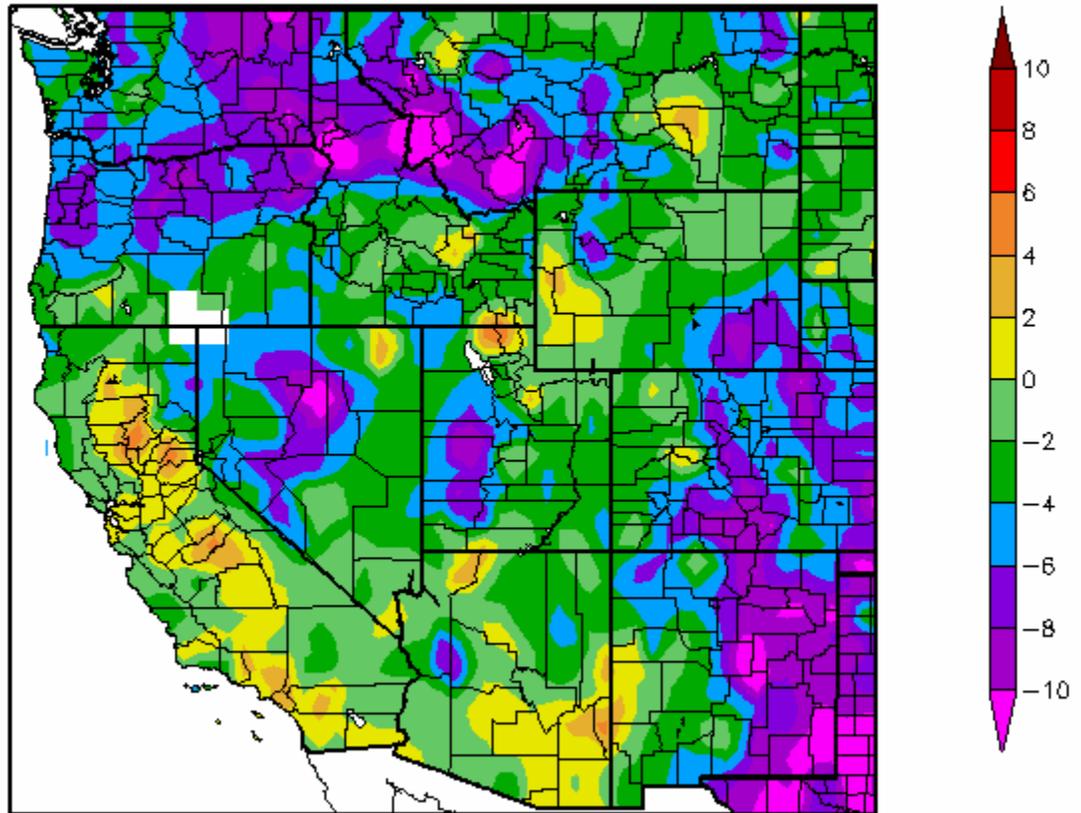


Fig. 2. SNOTEL & ACIS 7-stations day average temperature anomaly: Generally a cooler than average week dominated most of the West.

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

Departure from Normal Temperature (F)  
11/22/2007 – 11/28/2007



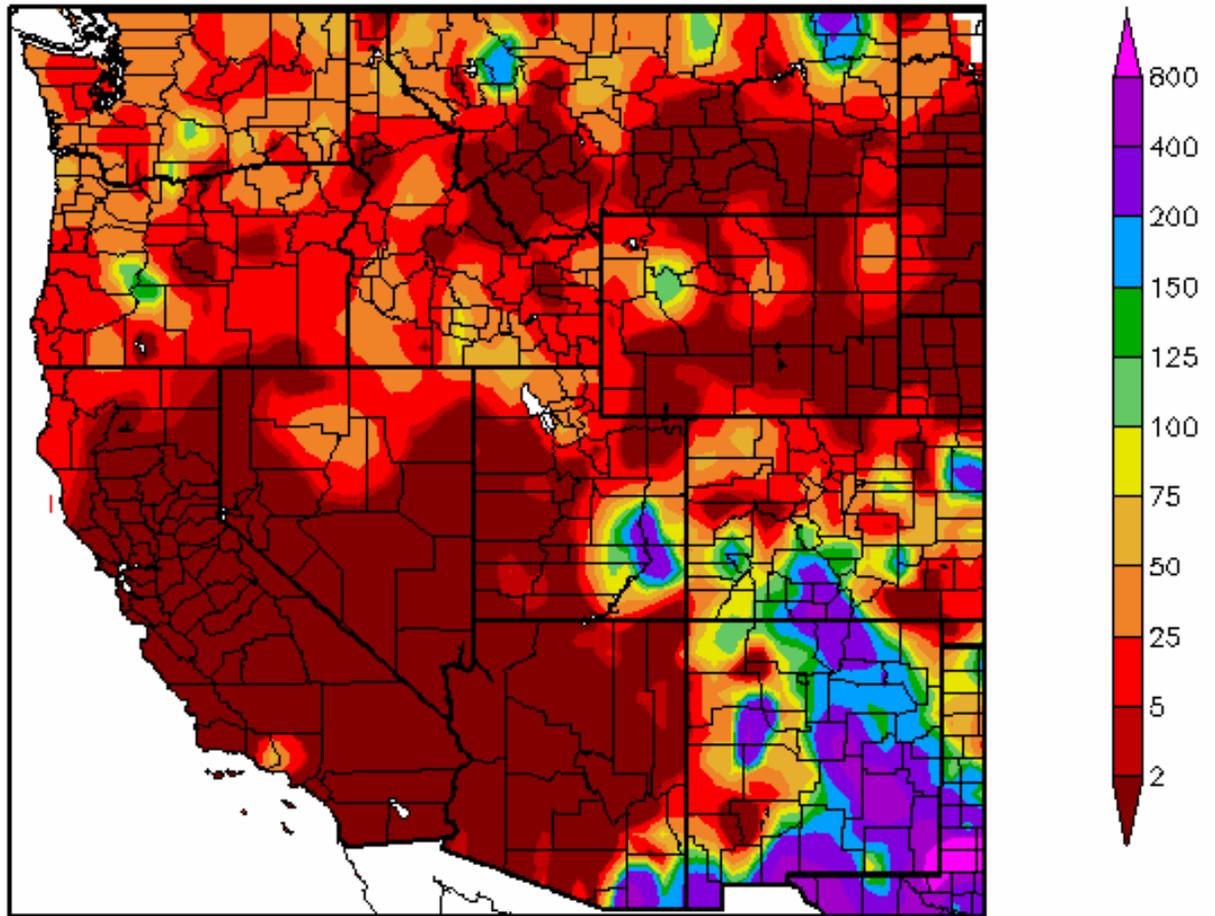
Generated 11/29/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 2a. ACIS 7-day average temperature anomaly: Generally a cooler than average week dominated most of the West.**

Ref: [http://www.hprcc.unl.edu/maps/index.php?action=update\\_region&region=WRCC](http://www.hprcc.unl.edu/maps/index.php?action=update_region&region=WRCC).

Percent of Normal Precipitation (%)  
11/22/2007 – 11/28/2007

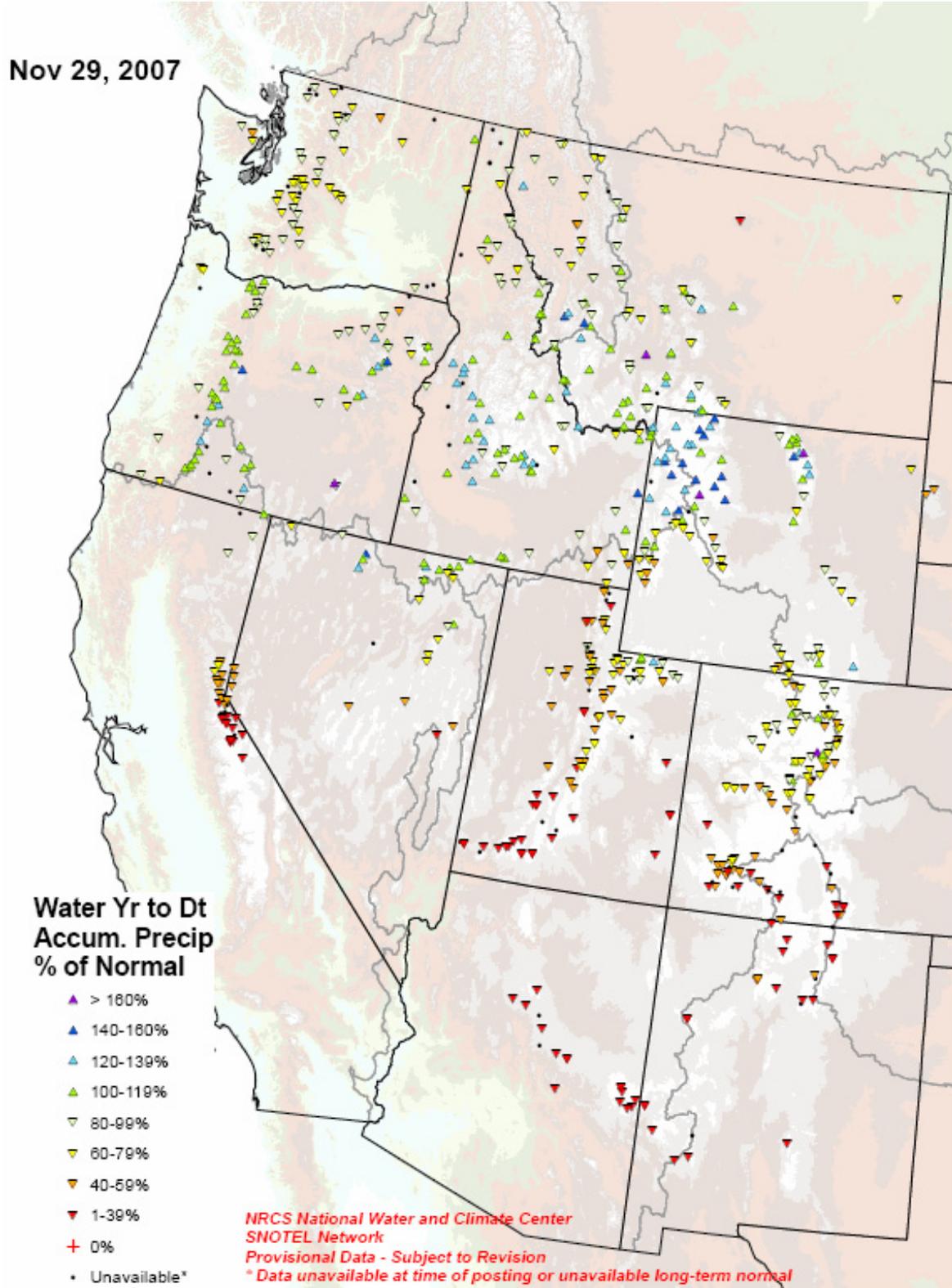


Generated 11/29/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 3. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 28 November shows significant precipitation across New Mexico but mostly dry elsewhere.** 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.** Early season precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007. Despite a lack of snowfall, above normal moisture has fallen over the southern Cascades, Intermountain West (Idaho), and Wyoming Rockies. La Nina dryness pattern persists south of 39N.

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

# U.S. Drought Monitor

November 27, 2007  
Valid 7 a.m. EST

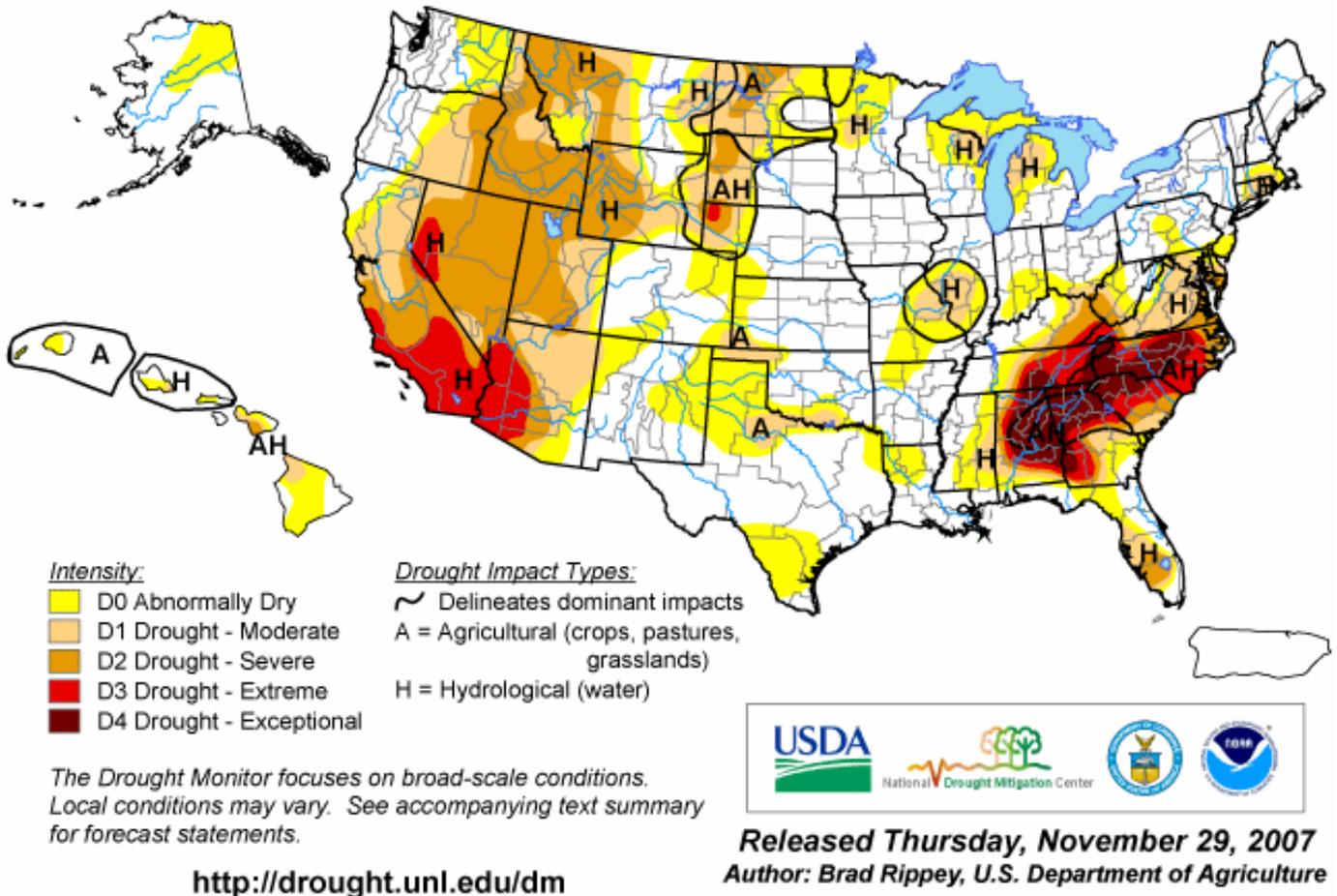
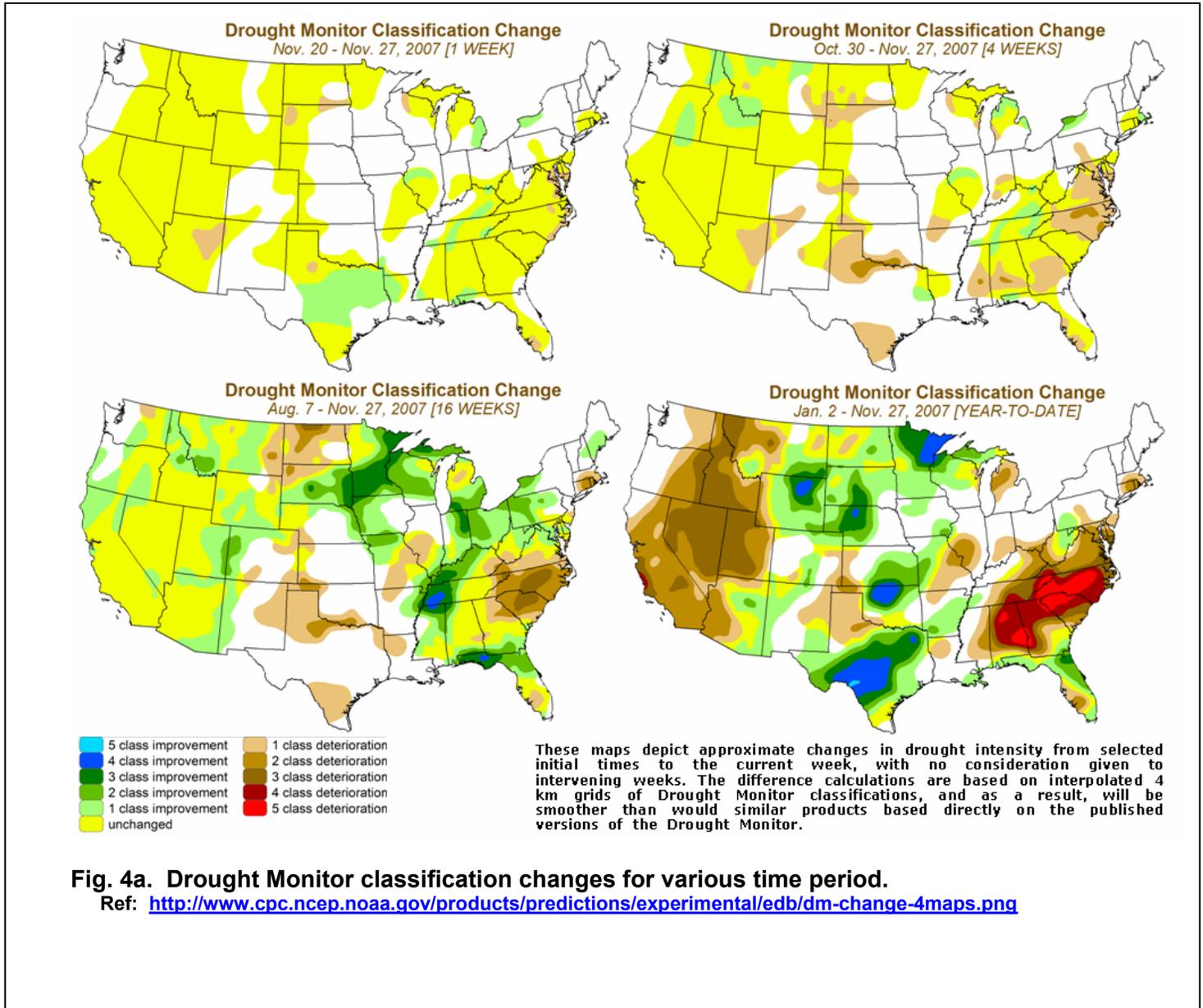


Fig. 4. Current Drought Monitor weekly summary.

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

## Weekly Snowpack and Drought Monitor Update Report



**Fig. 4a. Drought Monitor classification changes for various time period.**

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

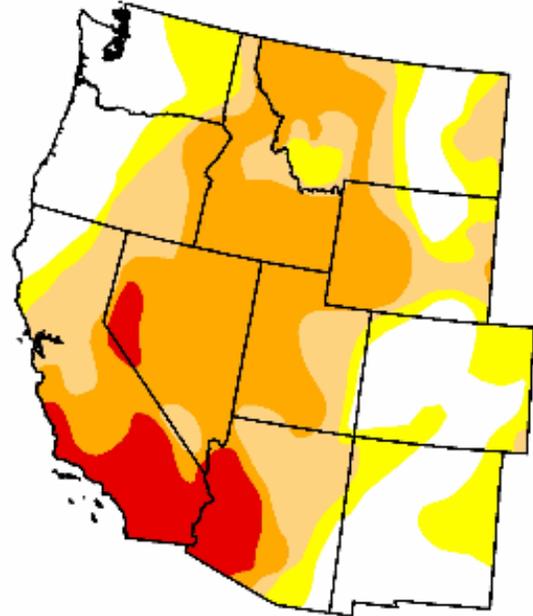
# U.S. Drought Monitor

## West

November 27, 2007  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	25.4	74.6	58.4	38.1	7.9	0.0
Last Week (11/20/2007 map)	25.4	74.6	56.6	38.1	7.9	0.0
3 Months Ago (09/04/2007 map)	21.1	78.9	63.9	49.4	12.5	0.0
Start of Calendar Year (01/02/2007 map)	51.2	48.8	25.8	9.4	4.0	0.0
Start of Water Year (10/02/2007 map)	22.0	78.0	62.3	44.7	12.4	0.0
One Year Ago (11/28/2006 map)	58.9	41.1	23.9	10.8	4.8	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 29, 2007**  
Author: Brad Rippey, U.S. Department of Agriculture

**Fig. 4b. Drought Monitor for the Western States with statistics over various time periods. Note no change since last week. Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)**

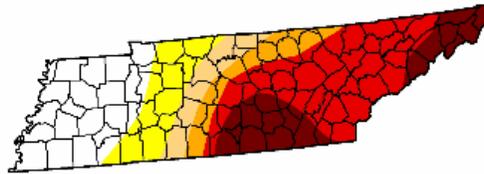
Weekly Snowpack and Drought Monitor Update Report

**U.S. Drought Monitor**  
Tennessee

November 27, 2007  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	25.6	74.4	61.8	54.5	46.6	16.5
Last Week (11/20/2007 map)	17.7	82.3	66.3	61.2	50.3	23.9
3 Months Ago (09/04/2007 map)	0.0	100.0	100.0	100.0	99.1	62.2
Start of Calendar Year (01/02/2007 map)	37.7	62.3	0.0	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	100.0	85.7	61.3
One Year Ago (11/28/2006 map)	100.0	0.0	0.0	0.0	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>



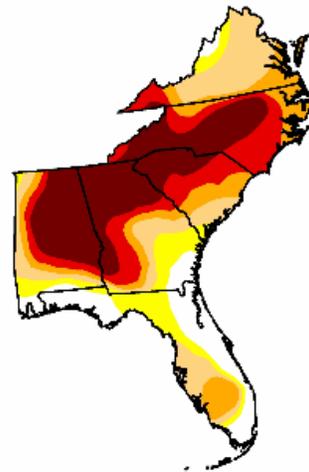
Released Thursday, November 29, 2007  
Author: Brad Rippey, U.S. Department of Agriculture

**U.S. Drought Monitor**  
Southeast

November 27, 2007  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	13.0	87.0	76.2	58.0	43.5	27.8
Last Week (11/20/2007 map)	11.3	88.7	75.6	55.4	41.7	27.2
3 Months Ago (09/04/2007 map)	6.1	93.9	75.9	54.5	34.7	15.8
Start of Calendar Year (01/02/2007 map)	52.2	47.8	10.2	1.5	0.0	0.0
Start of Water Year (10/02/2007 map)	10.1	89.9	77.9	63.8	45.2	24.0
One Year Ago (11/28/2006 map)	78.9	21.1	8.6	1.7	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

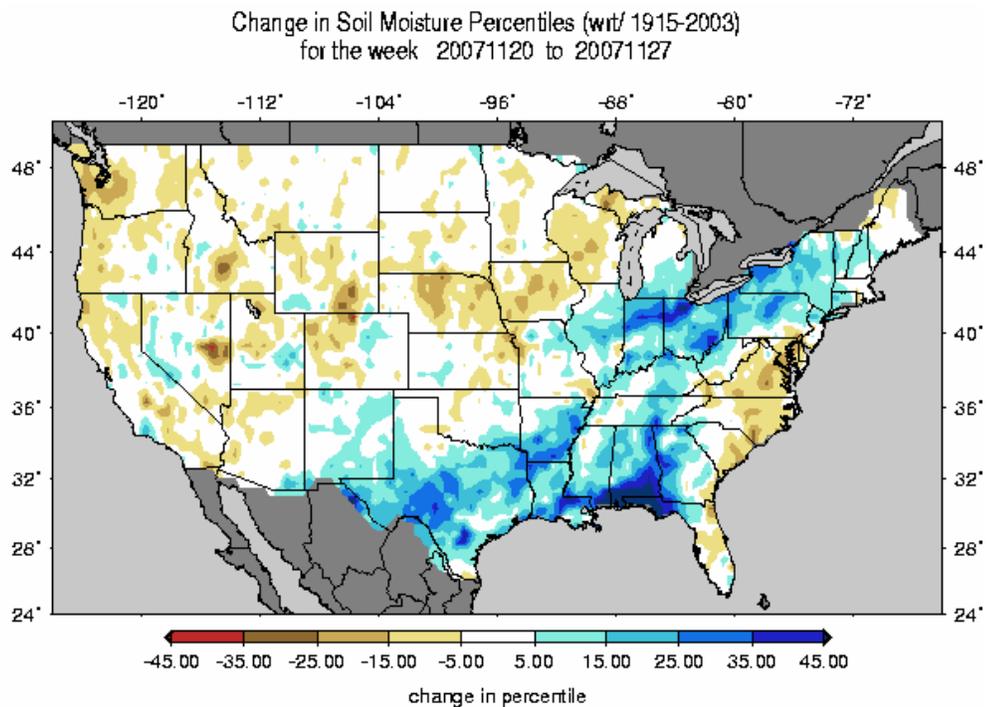
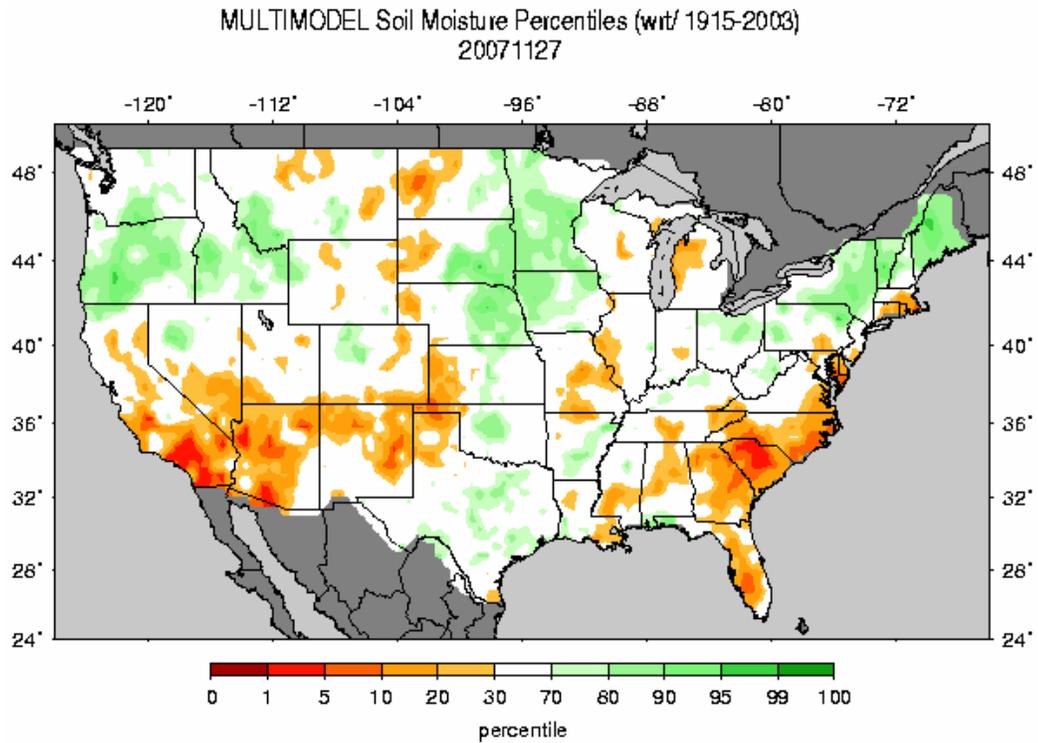
<http://drought.unl.edu/dm>



Released Thursday, November 29, 2007  
Author: Brad Rippey, U.S. Department of Agriculture

**Fig. 4c. Drought Monitor for Tennessee and the Southeastern States with statistics over various time periods shows some of the severest drought conditions in the US. Note some improvement for Tennessee and slight worsening over the Southeast during the past week. Ref: [http://www.drought.unl.edu/dm/DM\\_southeast.htm](http://www.drought.unl.edu/dm/DM_southeast.htm)**

## Weekly Snowpack and Drought Monitor Update Report



**Figs. 5 & 5a: Soil Moisture Ranking Percentile based on 1915-2003 climatology. Note some deterioration over much of themed-Atlantic States, and scattered areas over the West. Marked improvement is noted from Texas to New England including the Gulf Coast.**

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

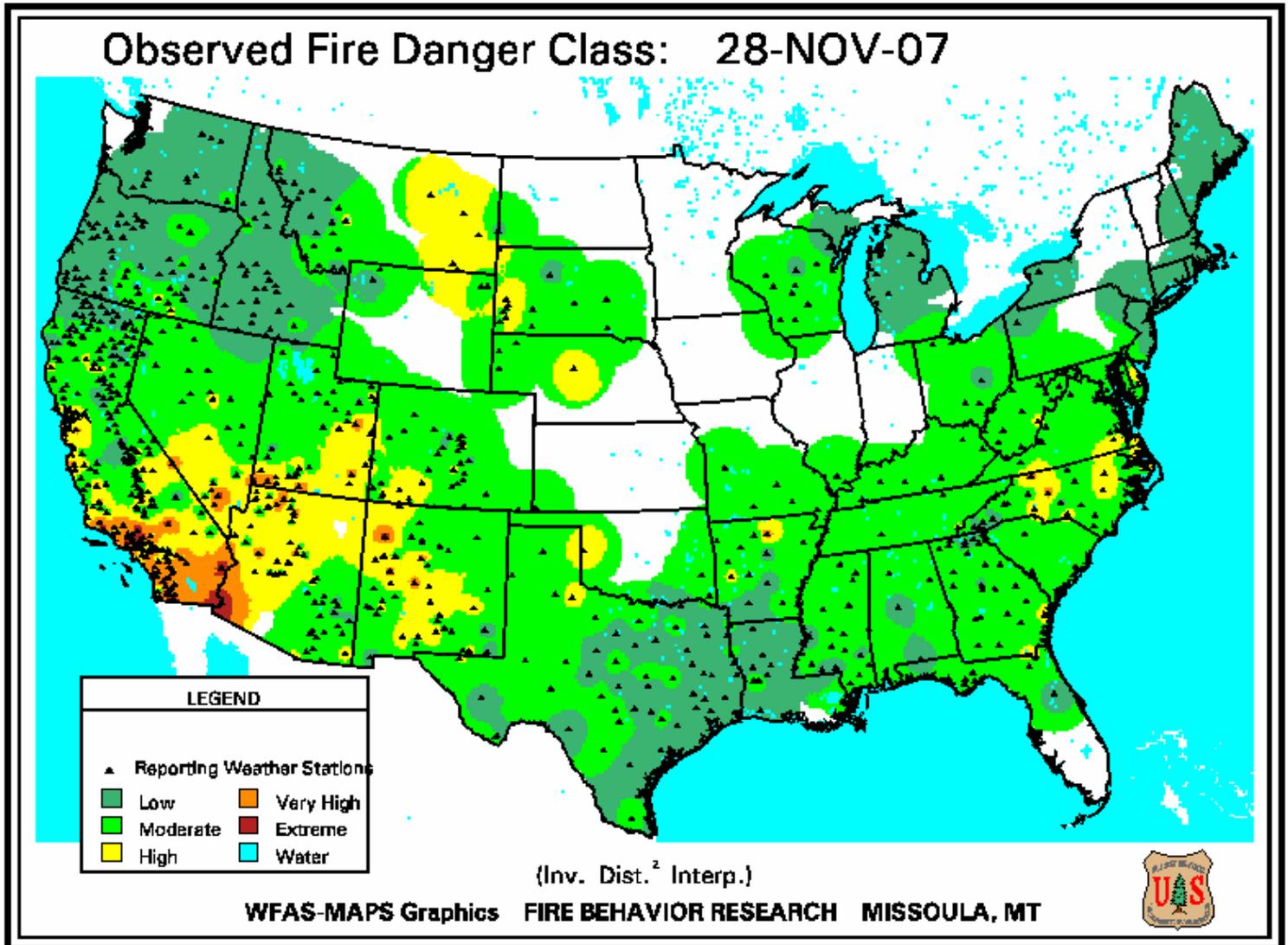


Fig. 6. Observed Fire Danger Class. Conditions have improved over northern Texas, New Mexico, and Colorado since last week. Southern California remains vulnerable to fires. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: [http://www.fs.fed.us/land/wfas/fd\\_class.gif](http://www.fs.fed.us/land/wfas/fd_class.gif)

# Weekly Snowpack and Drought Monitor Update Report

Wednesday, November 28, 2007

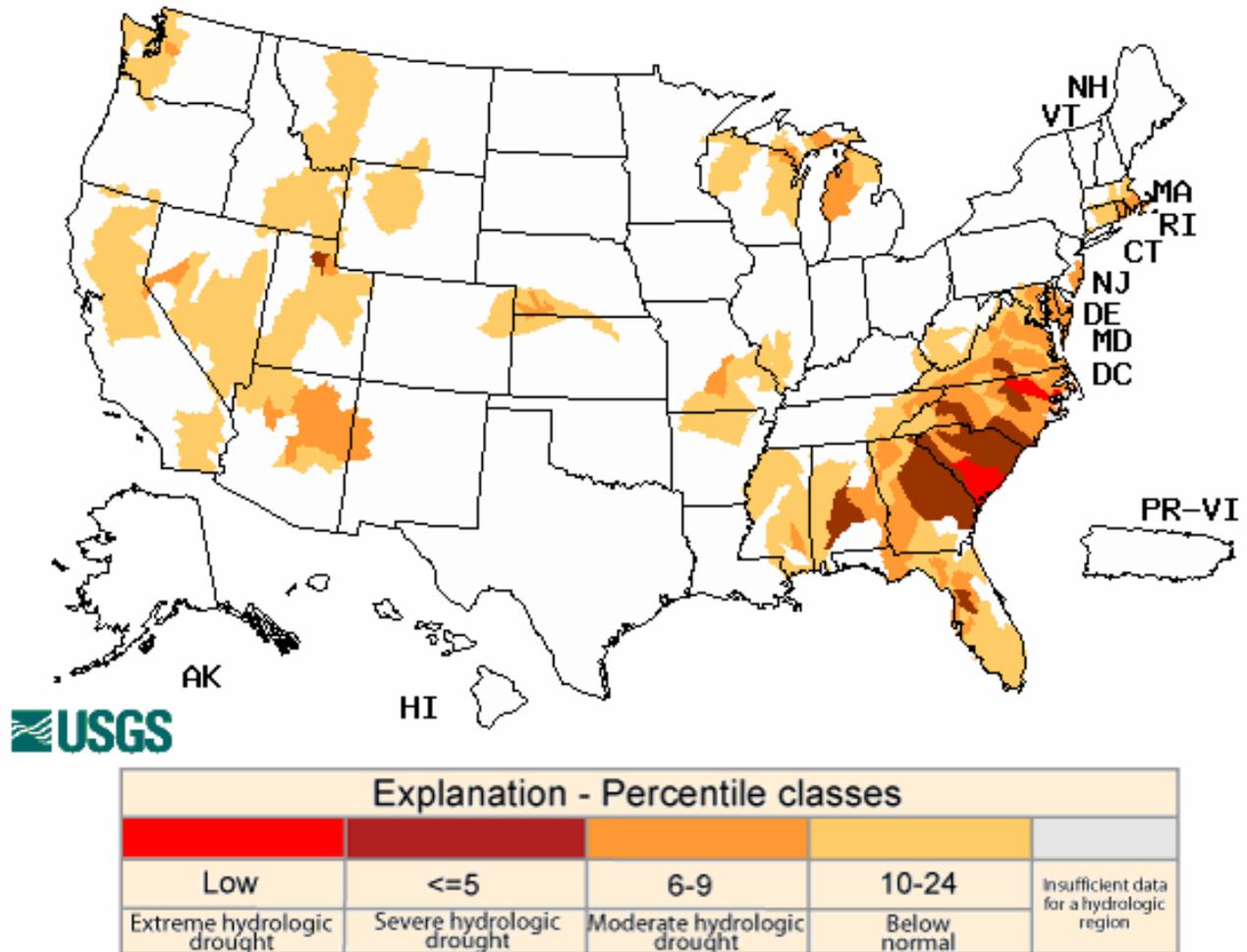


Fig. 7. This week's map shows continued severe to extreme conditions over portions of the Southeastern and Mid-Atlantic States.

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

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- November 27, 2007

*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 Southeastern and Mid-Atlantic States:** The historic and intense drought that has been affecting the Southeast for much of the year seems to be shifting eastward in recent weeks. Since mid-October, periodically significant rains have been falling across the western slopes of the Appalachians, particularly from western and central Tennessee into the interior Northeast. As a result, the latest storm system to pass through the region brought some further reductions in the coverage and intensity of drought as far east as Kentucky, Tennessee, northern and southern Alabama, and far southwestern North Carolina. Nevertheless, some exceptional drought (D4) persisted in central and northeastern Alabama, southeastern and northeastern Tennessee, and southwestern Virginia. Farther east, a continuation and slight expansion of D4 was noted from northern and western Georgia into parts of North Carolina. Through November 27, year-to-date precipitation deficits were in excess of 20 inches in locations such as Anniston, Alabama (28.33 inches below normal; 40 percent of normal), Tuscaloosa, Alabama (28.27 inches below normal; 45 percent of normal), and Greenville-Spartanburg, South Carolina (20.09 inches below normal; 56 percent of normal). Meanwhile, soil moisture shortages, meager streamflows, and both long- and short-term precipitation deficits supported the expansion of moderate to severe drought (D1 to D2) across the Mid-Atlantic coastal plain.

Although hydrological impacts were dominant in most drought-affected areas, some serious agricultural drought effects were still evident in the middle and southern Atlantic coastal plain. According to USDA, 81 percent of North Carolina's pastures were rated in very poor to poor condition on November 25. Six weeks ago, on October 14, North Carolina's number stood at 93 percent. Elsewhere on November 25, pastures rated very poor to poor stood at 75 percent in Virginia, 74 percent in South Carolina, and 71 percent in Georgia. Since mid-October, pasture conditions improved slightly in Virginia and South Carolina, but deteriorated (from 55 to 71 percent very poor to poor) in Georgia. Another drought-related agricultural impact was delayed emergence of winter wheat. Wheat planting was ahead of the 5-year average in Georgia and North Carolina, while emergence trailed the normal pace. In South Carolina, half of the wheat was planted (vs. the 5-year average of 58 percent) by November 25, but the crop was only 19 percent emerged (vs. the average of 43 percent).

**The Great Lakes and Ohio Valley:** A pair of storm systems produced widespread precipitation across the Ohio and middle Mississippi valleys, as well as the lower Great Lakes region, resulting in reductions in the coverage of dryness (D0) and moderate to severe drought (D1 to D2). The most significant changes occurred in southern Ohio, southeastern Michigan, and north and northeast of St. Louis, Missouri. In particular, D0 was erased from southeastern Michigan by precipitation totals of at least 1 to 2 inches. More than 2 inches soaked much of southern Ohio. In contrast, a continuation of dry weather resulted in a slight expansion of D1 in west-central Michigan and D0 and D1 in northern Wisconsin.

## Weekly Snowpack and Drought Monitor Update Report

**The Northeast:** Significant precipitation also fell in much of the Northeast, shaving the coverage of abnormal dryness (D0) in central Pennsylvania and erasing it from western New York. However, only light rain (mostly less than 1 inch) fell in southern New England, where low streamflows and precipitation deficits at various time scales continued to support some moderate drought (D1).

**The Plains and Gulf Coast States:** Light snow fell in many locations on the Plains, but liquid totals were generally less than one-quarter inch except in Montana and south of Lubbock, Texas. For the most part, snow prevented further intensification of the dryness (D0) and moderate drought (D1) that has developed this autumn on the High Plains. In Texas, the percentage of the winter wheat crop rated very poor to poor by USDA rose from 29 percent on October 28 to 53 percent on November 25. During the same 4-week period, Oklahoma wheat rated very poor to poor increased from 18 to 30 percent, while Kansas and Colorado wheat rated very poor to poor climbed from 10 to 15 percent. By November 25, topsoil moisture rated very short to short in Kansas stood at 100 percent in the southwest, 86 percent in the south-central region, 82 percent in the west-central region, and 72 percent in the northwest. (The Kansas state average was 53 percent very short to short on topsoil moisture.) Wheat was struggling to grow on the southern High Plains, where Texas' emergence stood at 70 percent on November 25, compared to the 5-year average of 85 percent. Similarly, Oklahoma's wheat was 83 percent emerged, compared to the 5-year average of 95 percent. Another complication of the Plains' dry autumn has been a rash of grass fires. During the week ending November 23, the Aetna fire burned 5,000 acres of vegetation in southern Kansas, while the Wild Hog fires (two separate incidents) charred at least 3,400 acres in northern Texas.

Some minor changes occurred on the northern Plains, including the introduction of severe drought (D2) in parts of western South Dakota. Farther south, significant precipitation fell south of the primary winter wheat belt, but soaked (or blanketed) areas from western Texas to the lower Mississippi Valley. In Midland, Texas, the normal annual snowfall of 5.2 inches was surpassed November 22-25, when 6.2 inches fell. El Paso, Texas, received 5.3 inches of snow on November 24-25, representing its heaviest November snowfall since 1976, when 6.7 inches fell on the 27th and 28th. Farther east, the former area of abnormal dryness and moderate drought (D0 and D1) covering more than 70 percent of Texas was cut in two. D0 persisted across southern Texas, while a slight expansion of D1 was noted across north-central Texas. In contrast, the area of moderate drought covering parts of northeastern Texas, northwestern Louisiana, and the southwestern corner of Arkansas was eliminated by 1 to 3 inches of rain. Meanwhile, heavy rain dented dryness and drought in western Florida and southern portions of Alabama and Mississippi. Mostly dry weather persisted, however, across Florida's peninsula, where moderate to severe drought (D1 to D2) expanded to the west. Naples, on Florida's Gulf Coast, received just 34.06 inches of rain (68 percent of normal) from January 1 to November 27. Southern Florida's Lake Okeechobee remained unusually low for this time of year, with the November 27 average surface elevation of 10.29 feet being about 5 feet below the late-November historical average. The lake has rebounded less than 18 inches from the all-time record low of 8.82 feet set on July 3.

**The West:** A mostly dry week resulted in few changes to the drought depiction. Dry weather returned to areas from Oregon to Montana, where previous rain and snow had resulted in some drought reductions. In north-central and northeastern Arizona, however, a continuation of dry weather and a reassessment of long-term conditions in various watersheds, including the Little Colorado River basin, led to a broad deterioration from abnormal dryness (D0) to moderate drought (D1).

## Weekly Snowpack and Drought Monitor Update Report

**Alaska, Hawaii, and Puerto Rico:** Conditions did not warrant any changes to the drought depiction this week in Alaska and Hawaii, while Puerto Rico remains free of abnormal dryness and drought.

**Looking Ahead:** The key weather system over the next few days will be a storm moving from the Four Corners region to the Great Lakes States. Locally heavy rain and snow will overspread the Southwest on November 30 – December 1. Precipitation will develop across portions of the Plains on December 1, and the storm's cold front will sweep into the East on December 2-3. Heavy snow and high winds may accompany the system from portions of the central U.S. into the Great Lakes region, and bitterly cold air will trail the storm into the Midwest and Northeast. Dry weather will prevail nearly nationwide in the storm's wake, except for persistent rain and snow showers in the Northwest.

The outlook for December 6-12 calls for colder-than-normal weather across the eastern one-third of the U.S., while warmer-than-normal conditions will prevail in most areas from the High Plains westward. Meanwhile, most of the nation will receive below-normal precipitation. Near-normal totals will be confined to the Far West and the nation's northern tier.

**Author:** [Brad Rippey, U.S. 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 November 28, 2007