



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

Weekly Report - Snowpack / Drought Monitor Update **Date: November 21, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: Although very early into this year's snowfall season, the majority of higher SNOTEL sites over Wyoming (Fig. 1) show the greatest above normal snow water equivalent values in the West. The remainder of the West is essentially without snow cover except for the highest peaks in the Northwestern States. The Mt. Hood area of Oregon received between 12 and 18 inches of snow earlier in the week.

Temperature: A very warm week dominated most of the West. Temperatures ranged from up to 15 degrees F above normal over Eastern Colorado to almost 3 degrees F below normal over northern Washington (Fig.2).

Precipitation: For the past week, precipitation exceeded two to four times the typical weekly amounts for this time of year from Oregon and southern Washington, through central Idaho and most of western Montana (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 northwestern Wyoming and Bighorn Mountain Ranges. Dryness persists the further south one travels across the West from these locations (Fig. 3a).

WESTERN DROUGHT STATUS

The West: A typical La Niña precipitation pattern characterized the West this period. Beneficial rain and snow occurred in the northern sections while the southern areas received little, if any, moisture. D1 and D2 retreated in eastern Washington and the Idaho Panhandle where half an inch or more of precipitation fell. Otherwise, no changes were made. Drought in the West is slow to develop and slow to end, and heavy mountain snowpack laid down during the winter snow season is the crucial drought-busting factor. Water-year-to-date precipitation is above normal along a swath from Oregon, across southern Idaho, and into northwest Wyoming, but with above-normal temperatures the precipitation is falling more as rain rather than snow. Northern Arizona is beginning to experience seriously declining streamflows, and water restrictions may become a possibility for some smaller communities later. However, it is early in the snow season, so no change was made to the depiction this week.

Author: [Richard Heim, National Climatic Data Center, NOAA/NESDIS](#)

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

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Weekly Snowpack and Drought Monitor Update Report

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.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 and 6a 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.

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

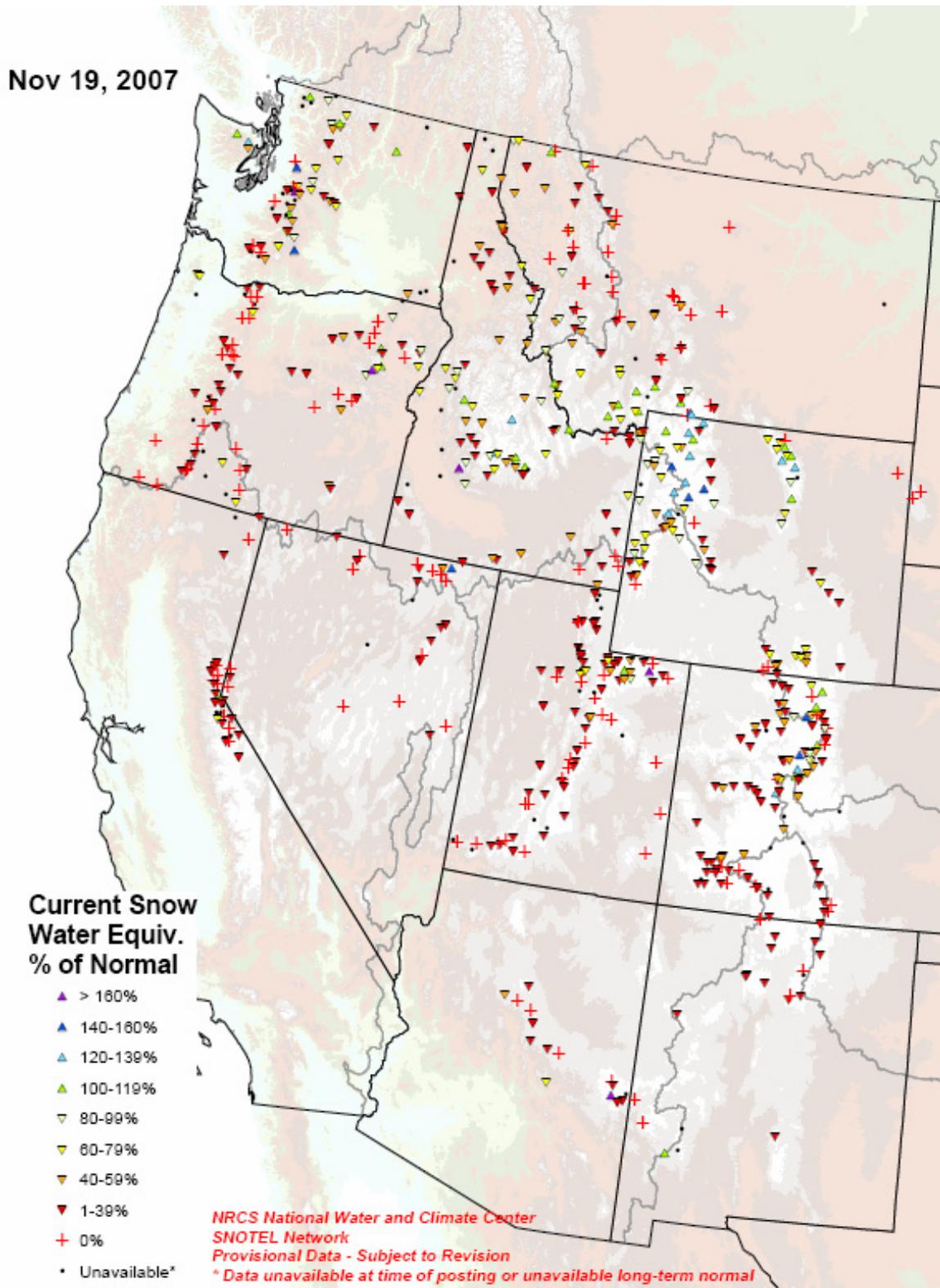
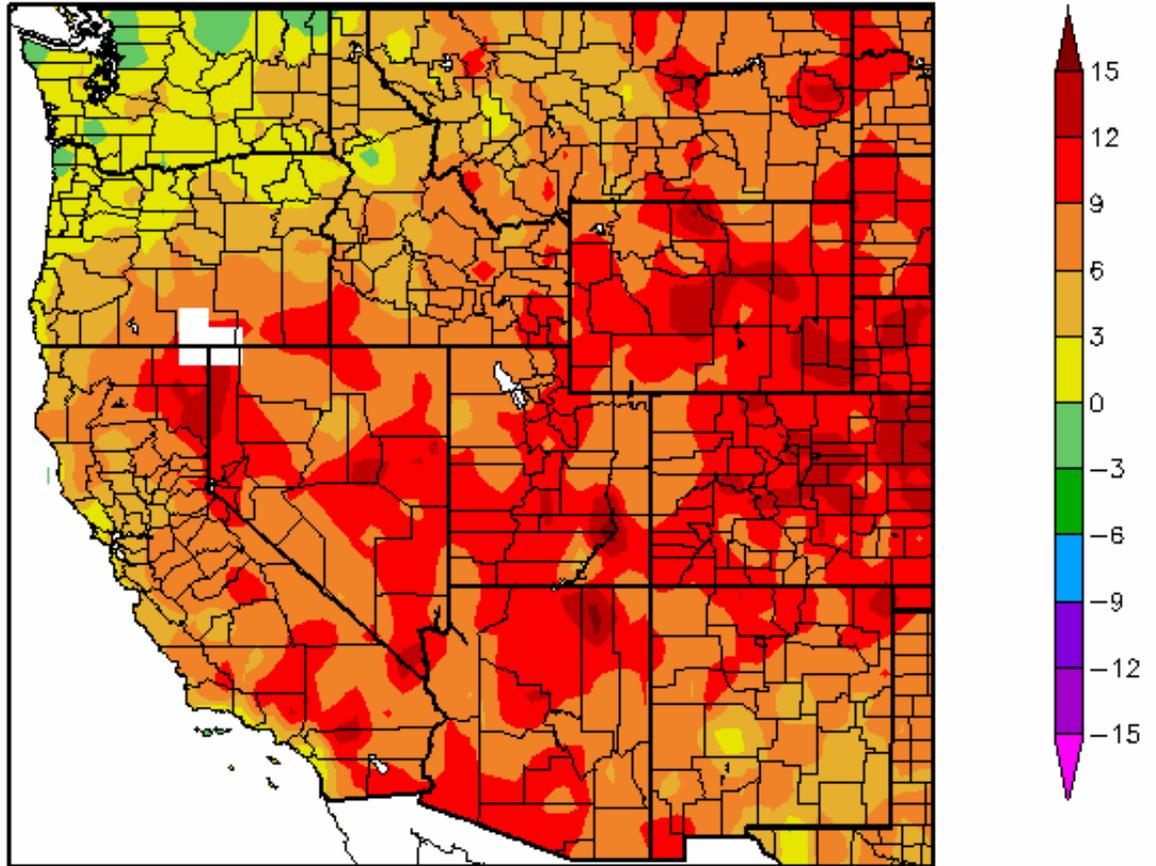


Fig. 1. Very early season snow water equivalent percent of normal for the 2008 Water Year that began on October 1, 2007. Note that 19 November is the latest available data.
Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideSWEPercent.pdf>

Departure from Normal Temperature (F)
11/14/2007 – 11/20/2007



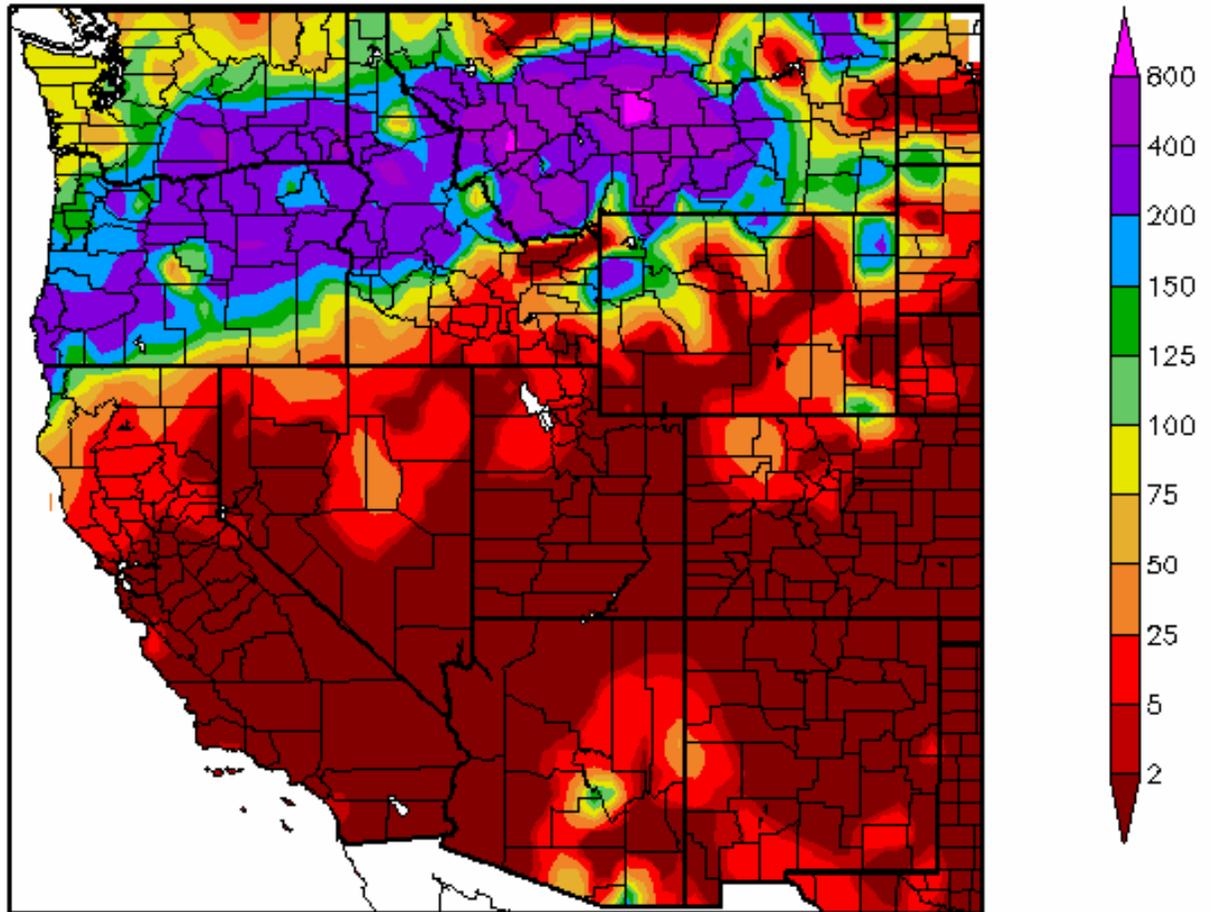
Generated 11/21/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2. ACIS 7-day average temperature anomaly: Warm week dominated most of the West.

Ref: http://www.hprcc.unl.edu/maps/index.php?action=update_region®ion=WRCC

Percent of Normal Precipitation (%)
11/14/2007 – 11/20/2007



Generated 11/21/2007 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 20 November 2007 shows significant precipitation across the central Pacific NW into Montana. Dry elsewhere.

Ref: http://www.hprcc.unl.edu/maps/index.php?action=update_product&product=PNorm

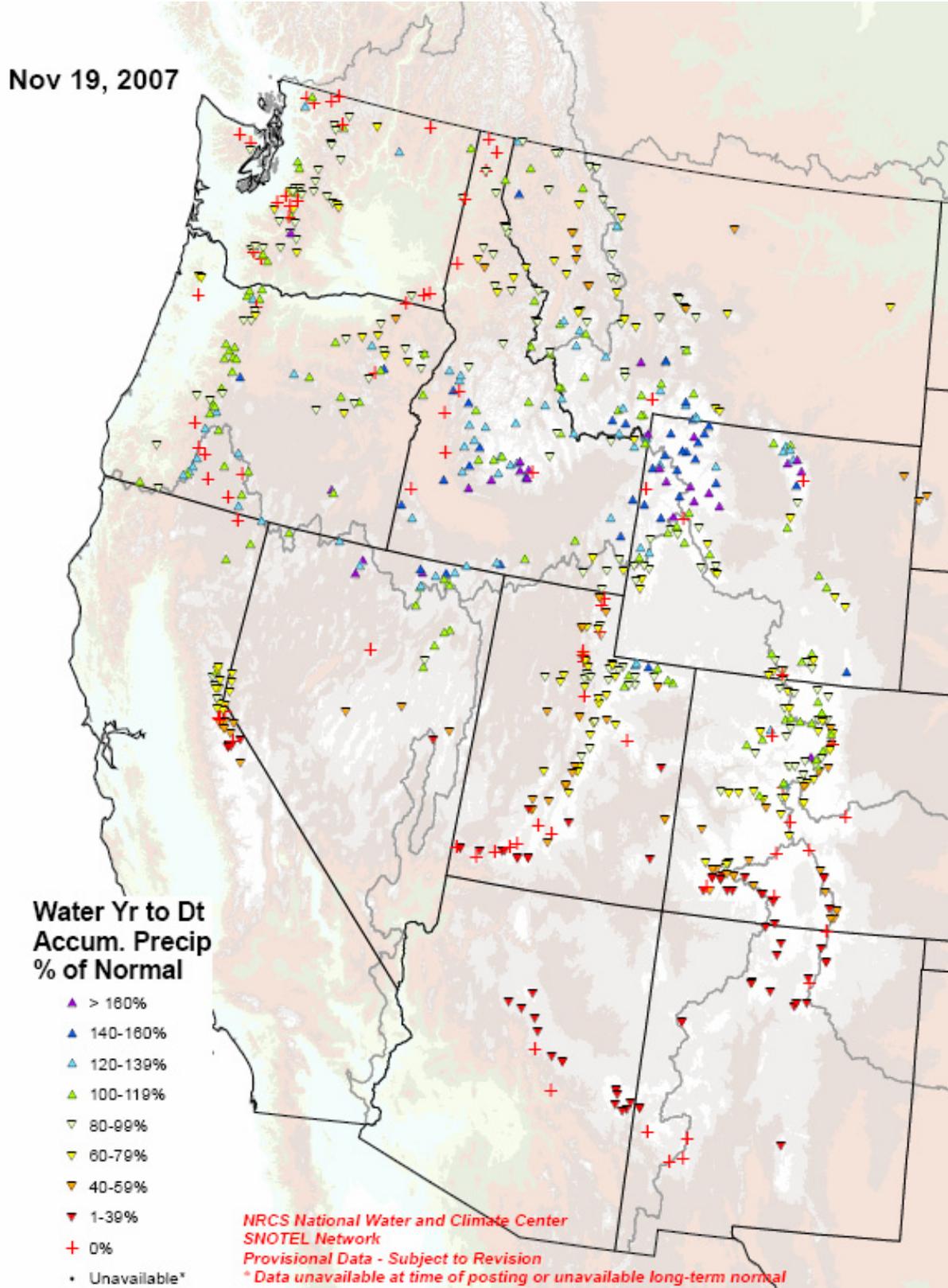


Fig 3a. Very early season precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007. Note that 19 November is the latest available data.

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

U.S. Drought Monitor

November 20, 2007
Valid 7 a.m. EST

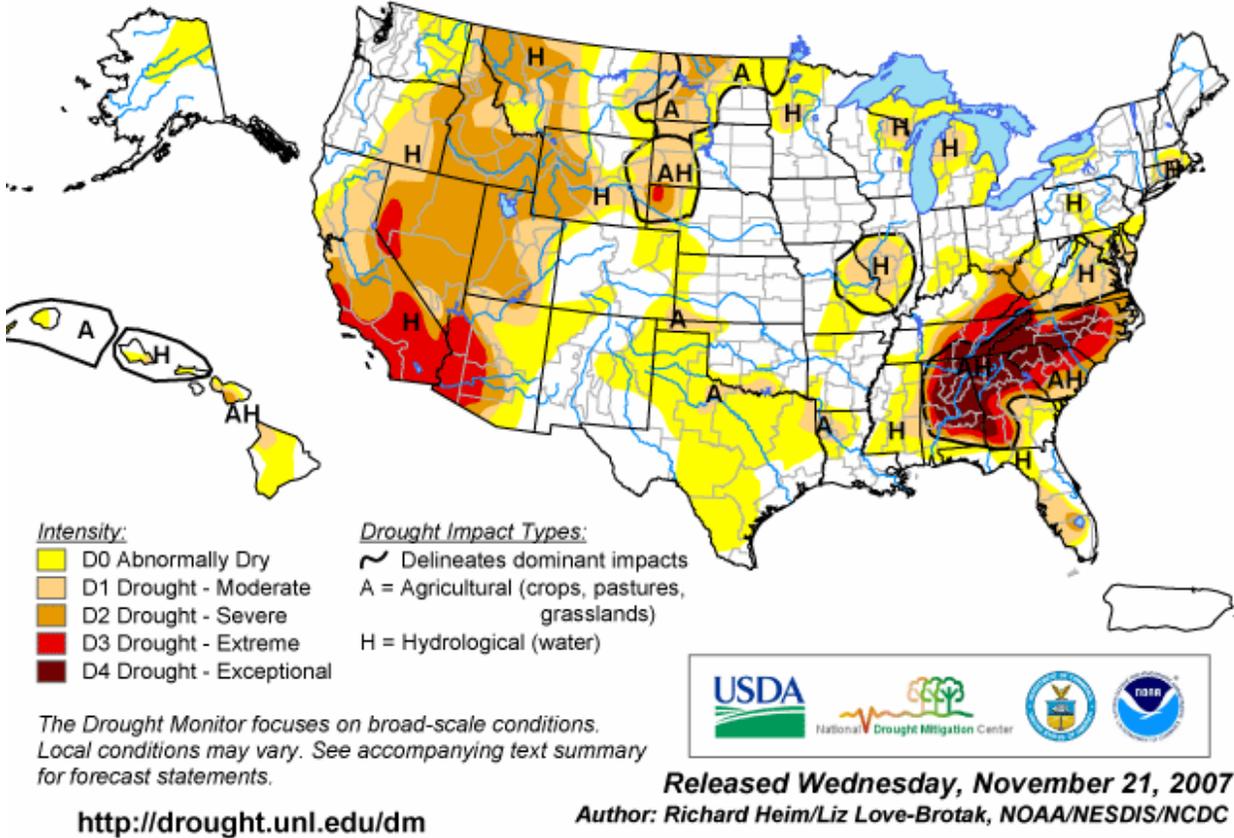


Fig. 4. Current Drought Monitor weekly summary.

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

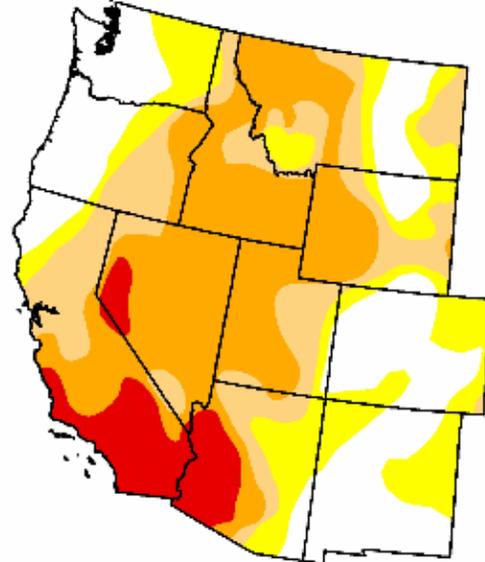
U.S. Drought Monitor

West

November 20, 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	56.6	38.1	7.9	0.0
Last Week (11/13/2007 map)	25.6	74.4	56.9	38.7	7.9	0.0
3 Months Ago (08/28/2007 map)	20.8	79.2	63.9	50.0	12.8	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 (11/21/2006 map)	59.1	40.9	23.8	10.6	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 Wednesday, November 21, 2007

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note slight improvement since last week's map. Ref: http://www.drought.unl.edu/dm/DM_west.htm

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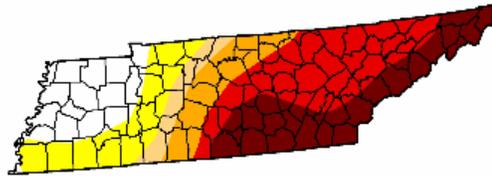
U.S. Drought Monitor

Tennessee

November 20, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.7	82.3	66.3	61.2	50.3	23.9
Last Week (11/13/2007 map)	17.7	82.3	66.3	61.2	50.3	35.1
3 Months Ago (08/28/2007 map)	0.0	100.0	100.0	100.0	99.7	44.0
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 (11/21/2006 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>



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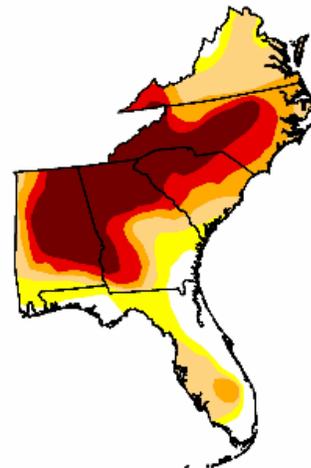
U.S. Drought Monitor

Southeast

November 20, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	11.3	88.7	75.6	55.4	41.7	27.2
Last Week (11/13/2007 map)	11.3	88.7	73.6	53.8	36.3	23.1
3 Months Ago (08/28/2007 map)	2.7	97.3	82.6	60.0	40.7	22.6
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 (11/21/2006 map)	70.5	29.5	11.3	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

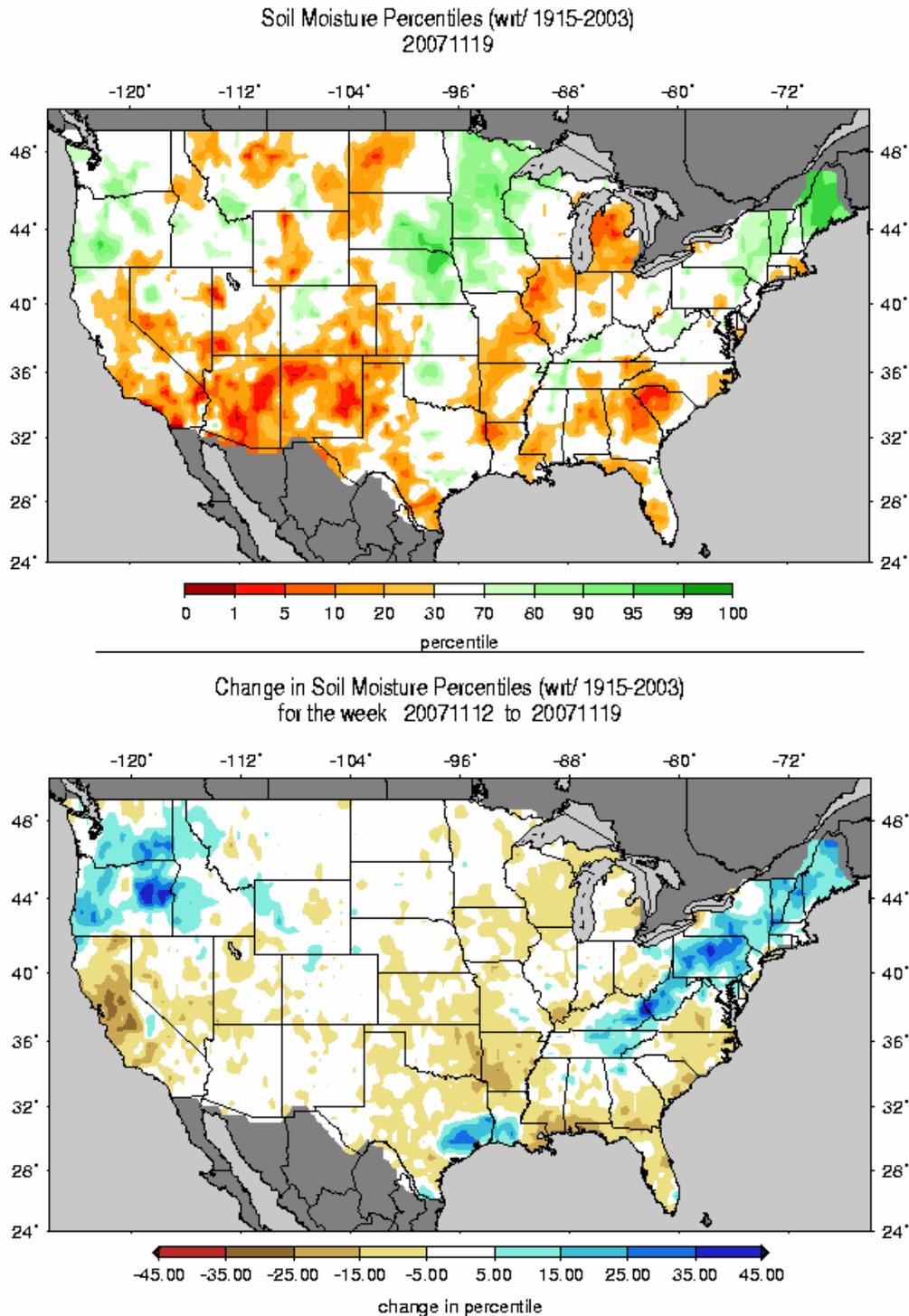
<http://drought.unl.edu/dm>



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Fig. 4b. 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 in D4 conditions in Tennessee but some worsening over the Southeast during the past week. Ref: http://www.drought.unl.edu/dm/DM_southeast.htm

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Figs. 5 & 5a: Soil Moisture Ranking Percentile based on 1915-2003 climatology. Note significant deterioration over much of the central California, TEX-AR-OK, and the central Coastal Gulf of Mexico since last week. Marked improvement is noted over the Pacific NW and Appalachians into New England States.

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_gnt.gif &
http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_gnt.1wk.gif.

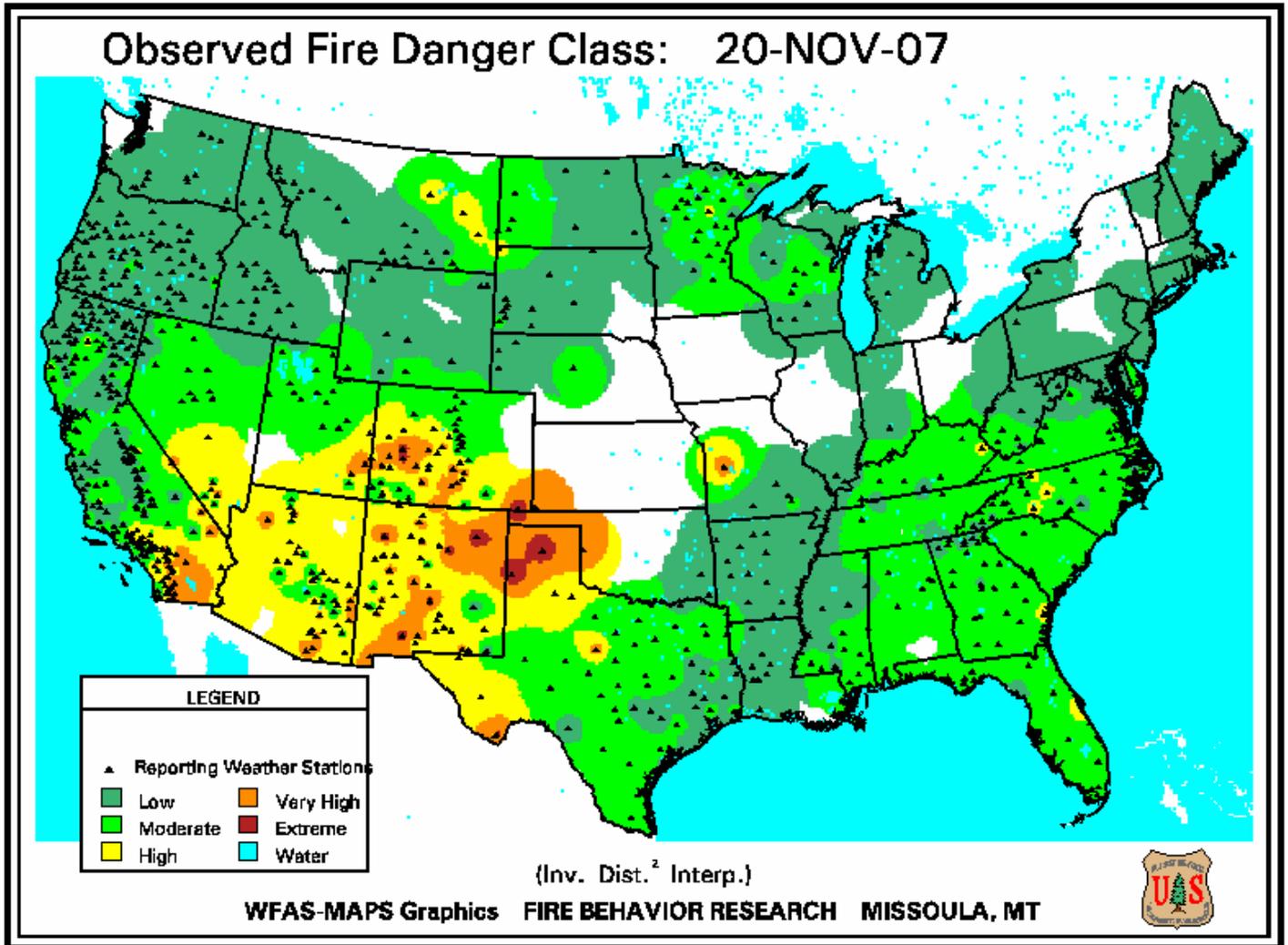


Fig. 6. Observed Fire Danger Class. Conditions have worsened over northern Texas, New Mexico, and parts of Colorado since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

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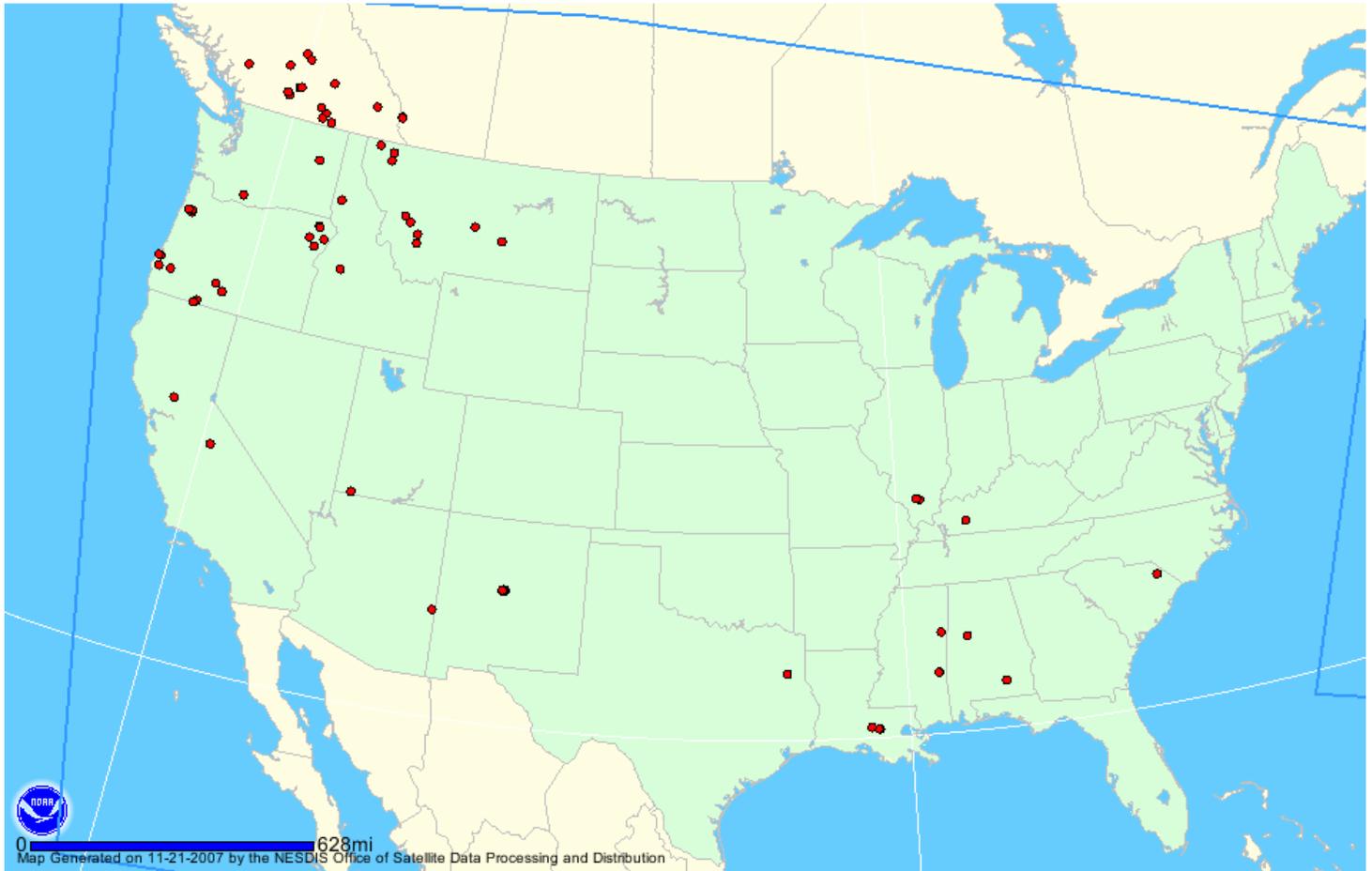
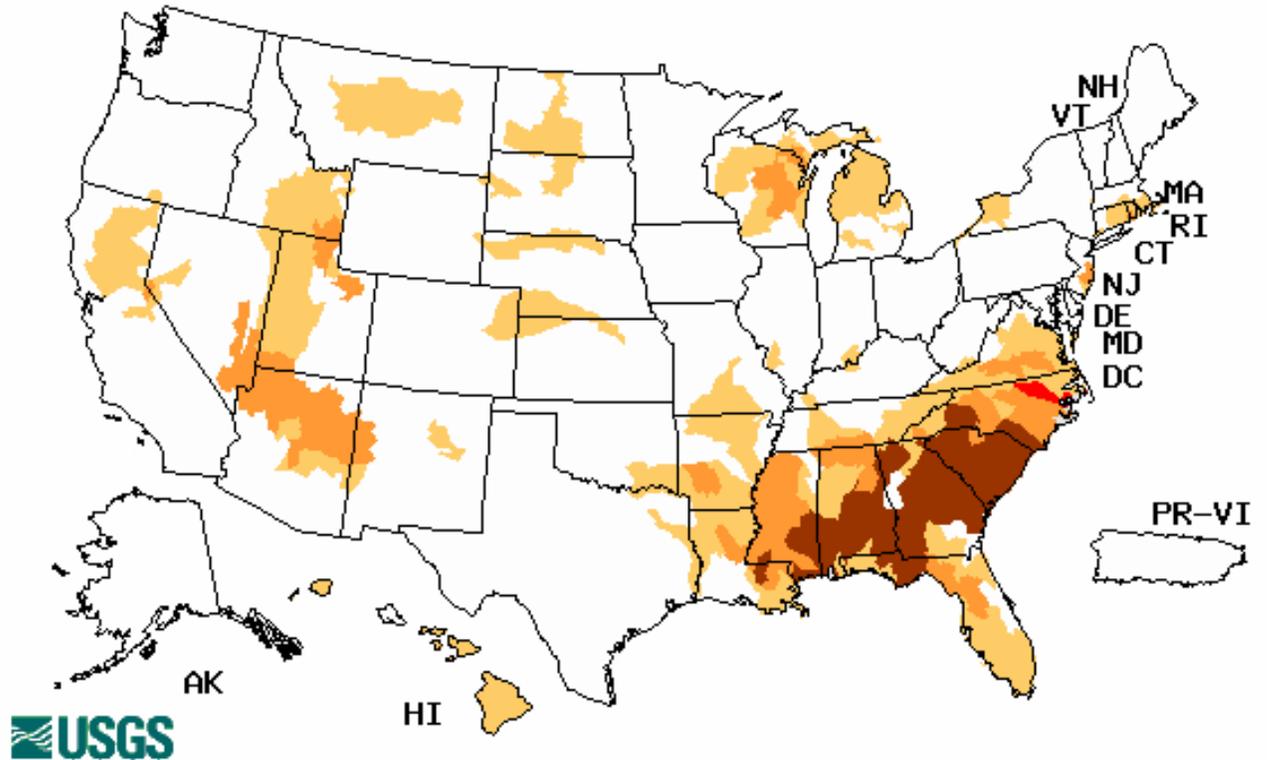


Fig. 6a. Location of active wildfires as detected from satellite across the U.S. as of 21 November 2007. Gray areas depict smoke and any blue areas depict fire potential. Conditions have improved considerably across the U.S. since last week.

Ref: <http://www.firedetect.noaa.gov/viewer.htm>

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Tuesday, November 20, 2007



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. 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>

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National Drought Summary -- November 20, 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/>.

A couple cold fronts and associated upper-level troughs brought precipitation to portions of the drought areas in the Pacific Northwest, northern Rockies, and eastern U.S. The rest of the nation remained generally dry. Cold temperatures followed the first front as it moved east of the Rockies. But month-to-date temperature anomalies remained well above normal across the western two-thirds of the country, with below-normal temperatures confined to the East.

The Southeast and Mid-Atlantic: The heaviest rains from the cold front early in the U.S. Drought Monitor (USDM) period fell across the western portions of the southern and central Appalachians, where reports of 1 to 2 inches were common. D4 was pulled back in eastern Tennessee and the southwest tip of Virginia where the heaviest rains fell. The rest of the Southeast and mid-Atlantic drought areas received generally 0.25 inch or less, with some areas recording up to an inch. But this was mostly insufficient to improve the long-term hydrological deficits which ranged from 10 to 20 inches since the first of the year across much of the area. Year-to-date deficits exceeded 20 inches from central Alabama to southwest North Carolina. Wells, springs, and streams were failing, and producers continued to reduce or liquidate cattle herds. All along the Tennessee River system, the Tennessee Valley Authority has announced it will not perform its usual winter draw down of reservoirs since they are already down to that level. D3 and D4 were expanded in southern Alabama and D1 expanded slightly in Virginia around Roanoke. D1 grew along the Gulf Coast of Florida, from Fort Myers to Beverly Hills, to reflect low streamflows. Low levels in the Peace River threatened drinking water supplies for communities in southwest Florida.

In spite of rains of recent weeks, major drought impacts were being felt across central and western North Carolina, where 14 local water systems have less than 100 days of water supply. Many streams were at or near record low levels and groundwater levels continued to reach record lows. The reservoirs that feed the population centers of the Piedmont Triangle region were nearing record lows. Consequently, D4-D3-D2 expanded eastward across North Carolina and the adjoining parts of South Carolina and Virginia.

The primary drought impact across much of the nation this time of year is hydrological. While the growing season for many crops has ended and the dry conditions were favorable for harvesting some crops, other agricultural interests were suffering from the drought, so an area of AH impacts was added to the Southeast this week. USDA reports indicate that planting of oat and winter wheat crops was behind schedule in South Carolina, and the lack of moisture continued to delay pasture growth, tobacco market preparations, and winter wheat germination in Tennessee. In Georgia, dry soil conditions continued to plague livestock and small grains producers, and farmers that had already planted new crops were in desperate need of rain.

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Winter forages and ryegrass in Mississippi were suffering due to the dry weather conditions. In Alabama, newly planted winter grazing was in desperate need of rain. In North Carolina, winter wheat was 69% planted on November 18, which is about average, but emergence was only 33%, well behind average. Topsoil moisture was rated short or very short across much of this region, from 68% of North Carolina to 86% of Georgia. Generally two-thirds of the pasture and rangeland was rated poor to very poor region wide.

The Great Lakes and Ohio Valley: Frontal rains dropped an inch or more along and south of the Ohio Valley, and half an inch of precipitation fell across parts of the Great Lakes, otherwise precipitation amounts were light. D0 expanded southward along Lake Michigan in Wisconsin and Michigan, and southward in southeast Michigan to reflect low precipitation and modeled soil moisture conditions. D0 grew into southwestern Indiana to more accurately reflect modeled dry soil moisture conditions and long-term rainfall deficits.

The Northeast: An inch or more of precipitation fell across a large part of the Northeast this period, but the heavier amounts generally missed the drought areas. Modeled soil moisture indicated dryness remained in central Pennsylvania, so the D0 there was left in place. However, D0 in western New York was pulled back from Jefferson and northern Oswego counties.

The Plains: Heavy rains fell over southeast Texas late in the period, resulting in elimination of D0 from areas receiving about 2.50 inches or more. Half an inch of precipitation was observed in the northern Plains. But most of the Plains, otherwise, were dry. Texas now has 79 counties with burn bans in effect, roughly twice the number from about 2 weeks ago. D0 expanded across the Panhandle and north central Texas and further in south central Oklahoma. Two spots of D1 were added, one in southwest Oklahoma and adjoining Texas along the Red River, the other in northeast Texas-northwest Louisiana. In South Dakota, D1 expanded westward to the state line. D0 and D1 nosed a little westward in east central Montana to better reflect an area of below-normal precipitation at several timescales.

The West: A typical La Niña precipitation pattern characterized the West this period. Beneficial rain and snow occurred in the northern sections while the southern areas received little, if any, moisture. D1 and D2 retreated in eastern Washington and the Idaho Panhandle where half an inch or more of precipitation fell. Otherwise, no changes were made. Drought in the West is slow to develop and slow to end, and heavy mountain snowpack laid down during the winter snow season is the crucial drought-busting factor. Water-year-to-date precipitation is above normal along a swath from Oregon, across southern Idaho, and into northwest Wyoming, but with above-normal temperatures the precipitation is falling more as rain rather than snow. Northern Arizona is beginning to experience seriously declining streamflows, and water restrictions may become a possibility for some smaller communities later. However, it is early in the snow season, so no change was made to the depiction this week.

Alaska, Hawaii, and Puerto Rico: Conditions did not warrant any changes to the USDM depiction this week for these areas.

Looking Ahead: During the next several days, a strong Low pressure system and cold front will develop in the Ohio Valley and move to the Atlantic Coast, bringing beneficial rain and snow to the drought areas from the Southeast to Northeast. By the weekend, another Low will develop over the southern Plains and move across the Southeast, reaching New England by Tuesday and bringing another chance for beneficial rain to the southern and eastern drought areas. In the meantime, High pressure over the Great Basin will trigger dry Santa Ana winds across

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southern California. A Pacific storm system will move into the Northwest by the end of the period. A series of Pacific systems is expected to brush southern Alaska.

The outlook for November 26-December 4 calls for below-normal temperatures across most of the country, with above-normal temperatures for the Southeast and Alaska. Precipitation is expected to be drier than normal from the West to the Northeast, and across eastern Alaska, and wetter than normal from the southern Plains to the mid-Atlantic, and western Alaska.

Author: [Richard Heim, National Climatic Data Center, NOAA/NESDIS](#)

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 20, 2007