



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

Weekly Report - Snowpack / Drought Monitor Update **Date: January 24, 2008**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: During the past week, snowfall accumulations were up across the Northern Rockies and Sierras and down across the Southern Rockies and Idaho Ranges (left Fig. 1). A preliminary forecast decrease of 5% in spring-summer runoff occurred this week over the southern half of the Western States (right Fig. 1). Snow-water equivalent percent to date shows well above normal values over portions of the Cascades (WA & OR), Southern Rockies (CO & NM), and the mountains of AZ & NM. Below normal values exist over the eastern slope of Montana, the Great Basin (NV, ID, OR), and over much of Wyoming (Fig. 1a).

Temperature: For the past seven days, SNOTEL & ACIS 7-day station average temperature anomaly shows -15F or greater departures across the Northern Rockies and lesser cold (5F of normal) over California and scattered areas across the West (Fig. 2). The greatest negative temperature departures occurred over Wyoming (>-15F) and the least negative departures occurred over the West Coast States (<-6F) (Fig. 2a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 23 January shows significant decrease in precipitation across the Northwest and Southwest. However, some precipitation fell over Central Coastal California. Much of Montana and Wyoming experienced above normal precipitation for this period (Fig. 3). Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows above normal totals over much of the West. A few river basins are lower than 90% of normal over Montana, Wyoming, and scattered across Utah, Nevada, and the Sierra. Values are within +/-10% of last week's map (Fig. 3a).

WESTERN DROUGHT STATUS

The Rockies, Intermountain West, and Far West: After a very wet December, especially in the Pacific Northwest, Southwest, and central Rockies, and a very stormy but beneficial early January that doubled snow water equivalent and season-to-date precipitation in the Sierra Nevada and brought values close to normal, the weather has gradually quieted down, particularly this week. A much colder weather pattern (departures -4 to -15°F in the Far West, -6 to -20°F in the Rockies) only brought light precipitation (0.1 to 0.5 inches) to the Pacific Northwest, Sierra Nevada, and northern and central Rockies (although 0.5 to 1.5 inches in the north-central Rockies), and little or no precipitation to the Southwest and Intermountain West. After further assessment, however, from the latest NRCS/USDA products and recent state drought updates and surveys, additional improvements were made in the northern Rockies. In western Montana, the recent state drought report depicted a 1-category improvement due to above-normal precipitation (105-115% of normal) and seasonable snow water equivalent (SWE), while Idaho has also benefited from frequent Pacific storminess this season. In central Idaho, water year (Oct. 1) precipitation has run from 110% to 130% and SWE from 100% to 115%. In response, the D1 was removed from central Idaho, and the D1-D2 was shifted farther south in Idaho. The rest of the West was left untouched as one to three categories of improvement have already been made in the West since the late Fall.

Author: [David Miskus, Joint Agricultural Weather Facility, CPC/NCEP/NWS/NOAA](#)

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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 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 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/cqibin/bor.pl>. Additional information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/>

Weekly Snowpack and Drought Monitor Update Report

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

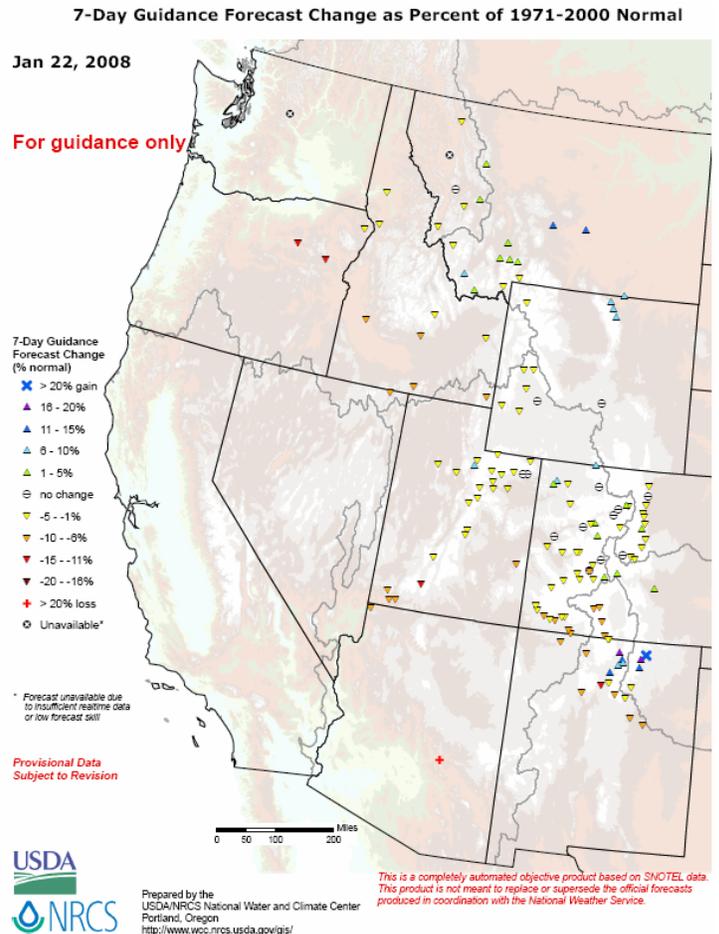
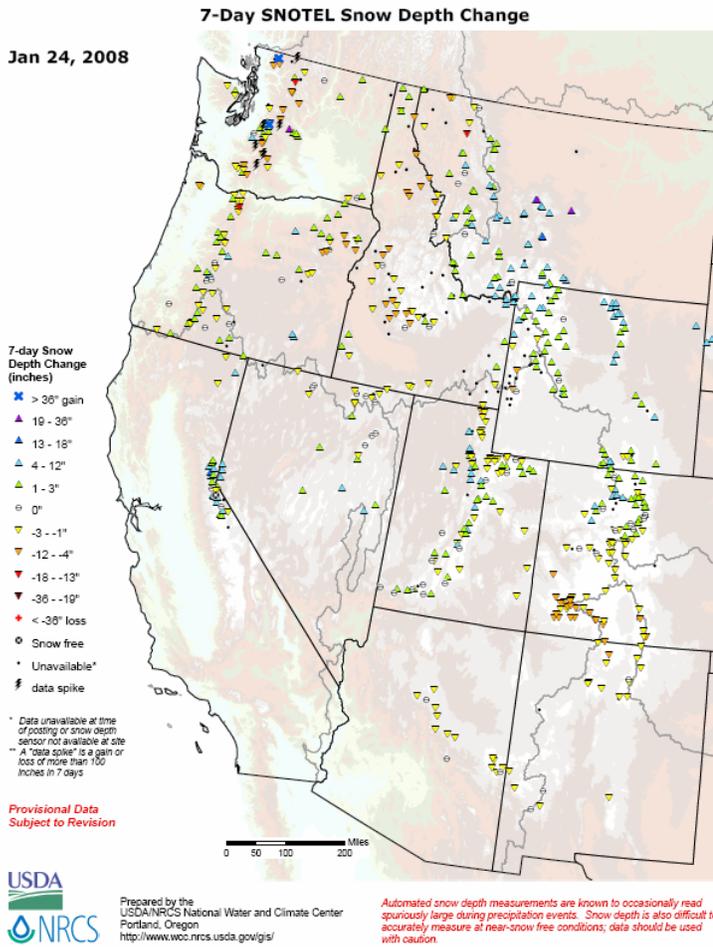


Fig. 1. During the past week, snowfall accumulations were up across the Northern Rockies and Sierras and down across the Southern Rockies and Idaho Ranges (left figure) . A preliminary forecast decrease of 5% in spring-summer runoff occurred this week over the southern half of the Western States (right figure). Note: Forecast values for the Sierra and Cascades but are not shown.

Refs: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf
ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/daily_forecast/maps/west_dailyfcst_7daych.pdf

Weekly Snowpack and Drought Monitor Update Report

Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

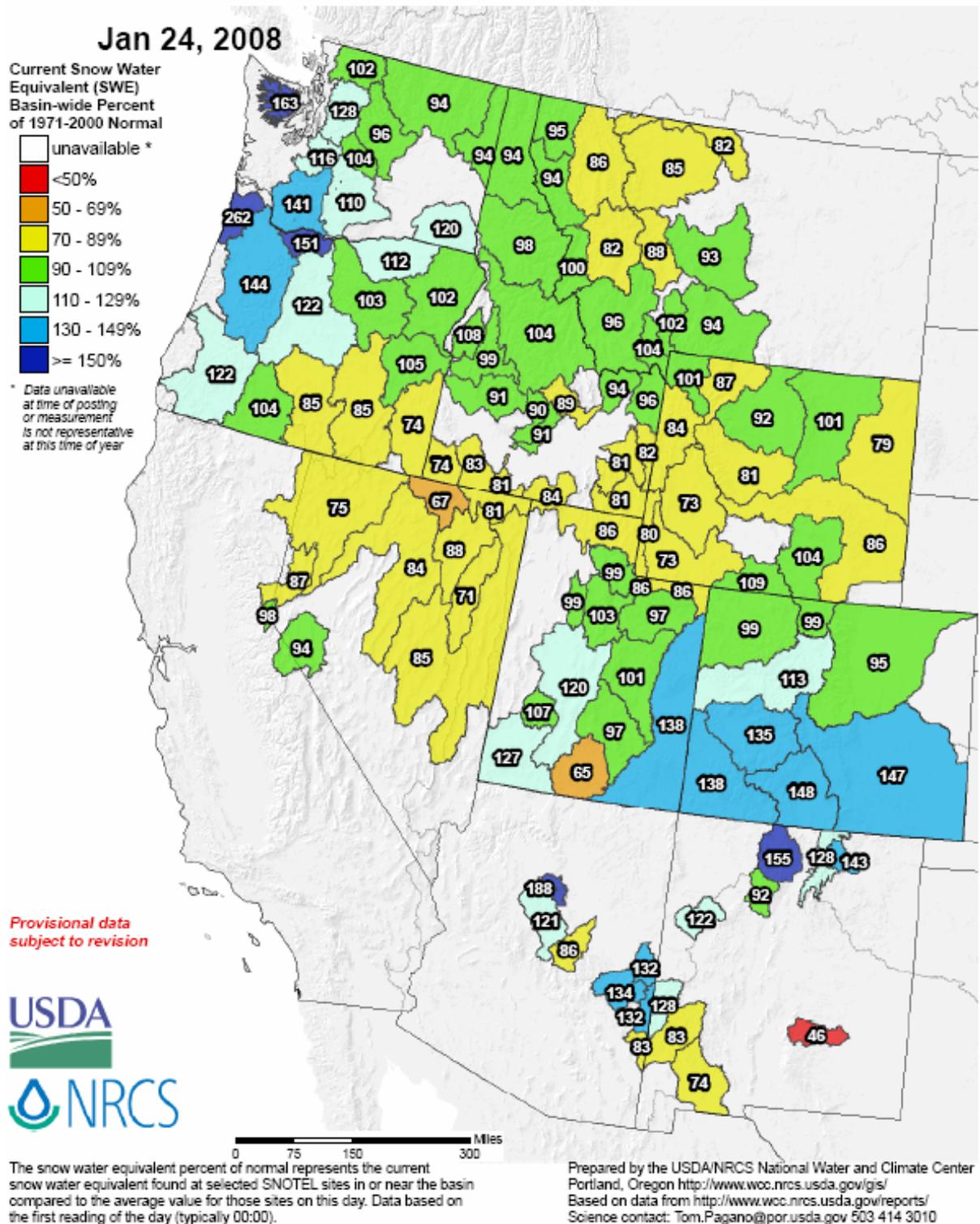


Fig. 1a. Snow-water equivalent percent to date shows well above normal values over portions of the Cascades (WA & OR), Southern Rockies (CO & NM), and the mountains of AZ & NM. Below normal values exist over the eastern slope of Montana, the Great Basin (NV, ID, OR), and over much of Wyoming. No significant change from last week.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_swepctnormal_update.pdf

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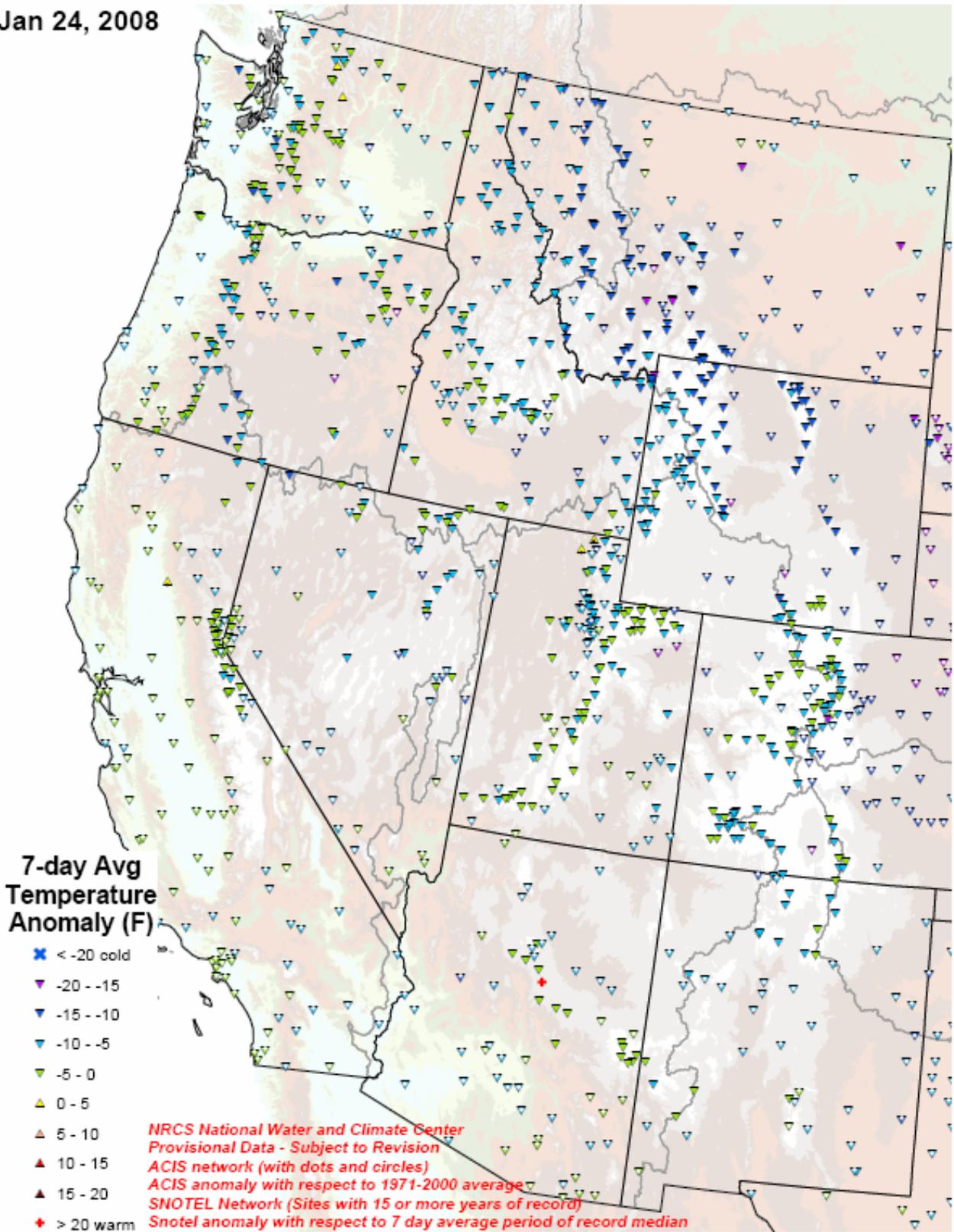
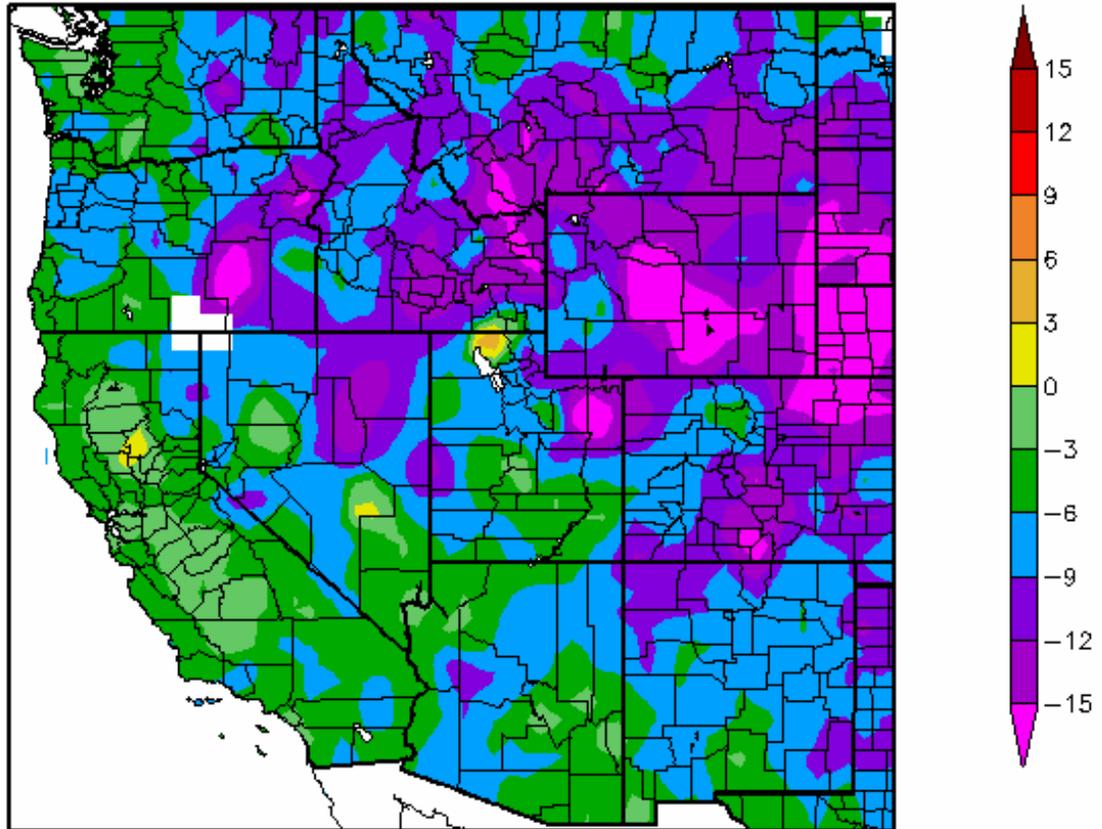


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomaly shows -15F or greater departures across the Northern Rockies and lesser cold (5F of normal) over California and scattered areas across the West.

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

Departure from Normal Temperature (F)
1/17/2008 – 1/23/2008



Generated 1/24/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

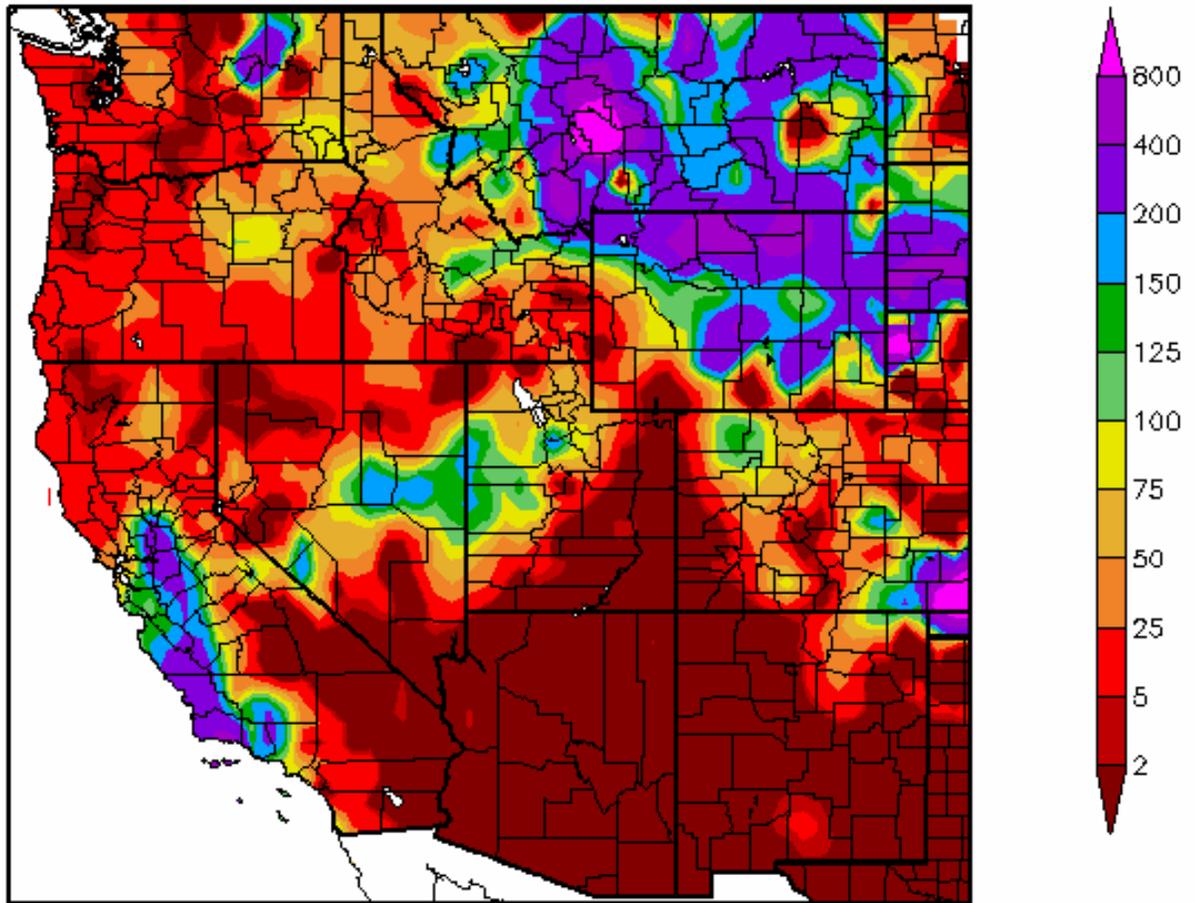
The Current Climate Summary Maps are produced daily using data from the Applied Climate Information System (ACIS). Stations used are from the National Weather Service Cooperative Observer Network (COOP), and the Automated Weather Data Network (AWDN). All near-real-time data are considered preliminary and should be used responsibly.

Normal refers to the 1971-2000 Climate Normal for the selected product.



Fig. 2a. ACIS 7-day average temperature anomaly: Greatest negative temperature departures over Wyoming (>-15F) and least negative departures over the West Coast States (<-6F).
Ref: http://www.hprcc.unl.edu/maps/current/index.php?action=update_product&product=TDept.

Percent of Normal Precipitation (%)
1/17/2008 – 1/23/2008



Generated 1/24/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

The Current Climate Summary Maps are produced daily using data from the Applied Climate Information System (ACIS). Stations used are from the National Weather Service Cooperative Observer Network (COOP), and the Automated Weather Data Network (AWDN). All near-real-time data are considered preliminary and should be used responsibly.



Normal refers to the 1971-2000 Climate Normal for the selected product.

Fig. 3. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 23 January shows significant decrease in precipitation across the Northwest and Southwest. However, some precipitation fell over Coastal Central California. Much of Montana and Wyoming experienced above normal precipitation for this period.

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

Weekly Snowpack and Drought Monitor Update Report

Westwide SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

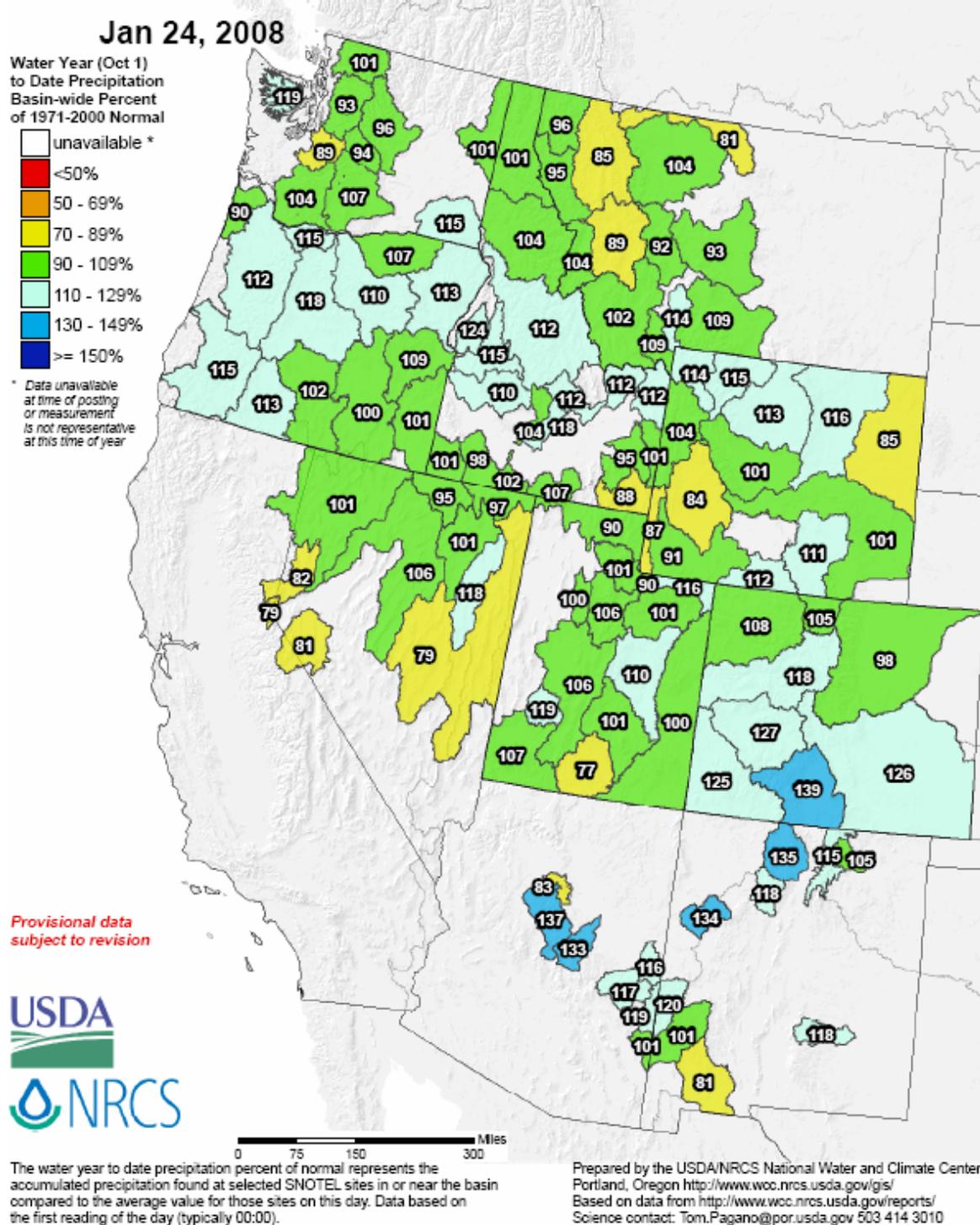
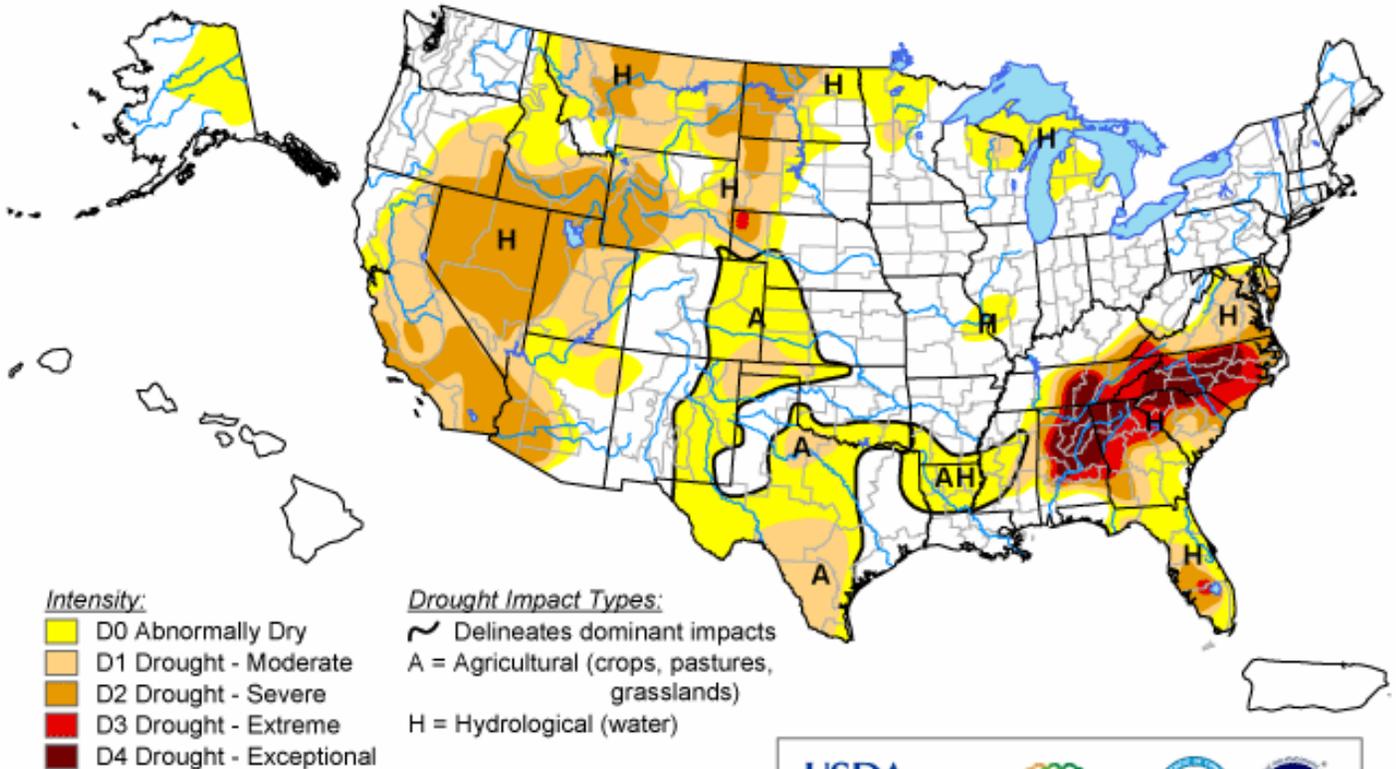


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows above normal totals over much of the West. A few river basins are lower than 90% of normal over Montana, Wyoming, and scattered across Utah, Nevada, and the Sierra. Values are within +/-10% of last week's map. Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecptnormal_update.pdf.

U.S. Drought Monitor

January 22, 2008
Valid 7 a.m. EST



- Intensity:**
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional

- Drought Impact Types:**
- Delineates dominant impacts
 - A = Agricultural (crops, pastures, grasslands)
 - H = Hydrological (water)

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, January 24, 2008
Author: David Miskus, JAWF/CPC/NOAA

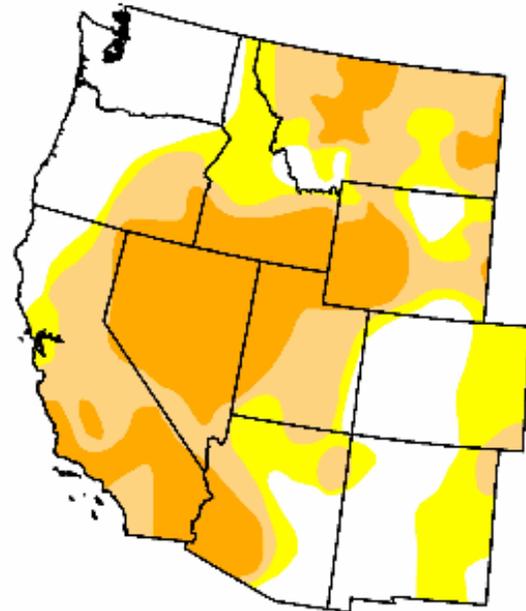
Fig. 4. Current Drought Monitor weekly summary.
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor West

January 22, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.7	71.3	51.8	26.2	0.0	0.0
Last Week (01/15/2008 map)	27.3	72.7	53.6	28.5	0.0	0.0
3 Months Ago (10/30/2007 map)	28.4	71.6	57.4	41.5	10.0	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 (10/02/2007 map)	22.0	78.0	62.3	44.7	12.4	0.0
One Year Ago (01/23/2007 map)	48.7	51.3	30.5	14.9	4.9	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

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Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note no significant change since last week.

Ref: http://www.drought.unl.edu/dm/DM_west.htm

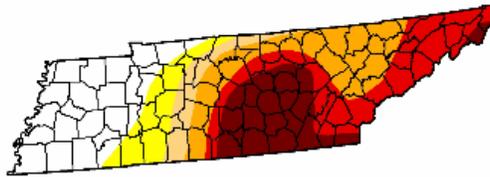
U.S. Drought Monitor

Tennessee

January 22, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.4	72.6	63.3	57.2	38.6	17.8
Last Week (01/15/2008 map)	27.4	72.6	63.3	57.2	38.6	17.8
3 Months Ago (10/30/2007 map)	17.7	82.3	66.3	61.2	50.4	29.6
Start of Calendar Year (01/01/2008 map)	27.4	72.6	60.8	53.8	46.8	19.9
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	100.0	85.7	61.3
One Year Ago (01/23/2007 map)	76.1	23.9	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

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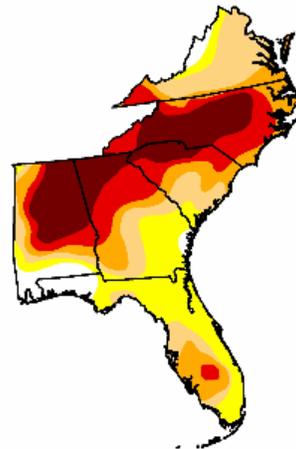
U.S. Drought Monitor

Southeast

January 22, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.3	93.7	73.8	54.5	37.4	20.2
Last Week (01/15/2008 map)	3.9	96.1	75.9	58.5	40.4	20.2
3 Months Ago (10/30/2007 map)	14.8	85.2	66.7	46.3	31.3	18.5
Start of Calendar Year (01/01/2008 map)	9.6	90.4	74.3	58.5	41.0	22.0
Start of Water Year (10/02/2007 map)	10.1	89.9	77.9	63.8	45.2	24.0
One Year Ago (01/23/2007 map)	74.2	25.8	11.2	3.2	0.0	0.0



Intensity:

- D0 Abnormally Dry
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- D2 Drought - Severe
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- 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>

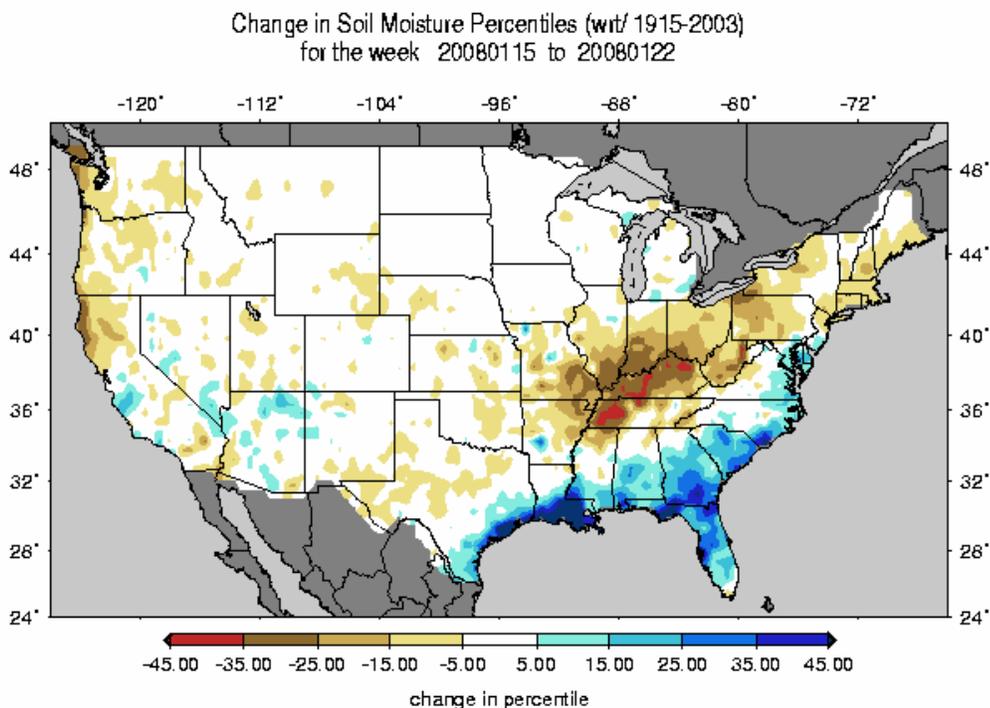
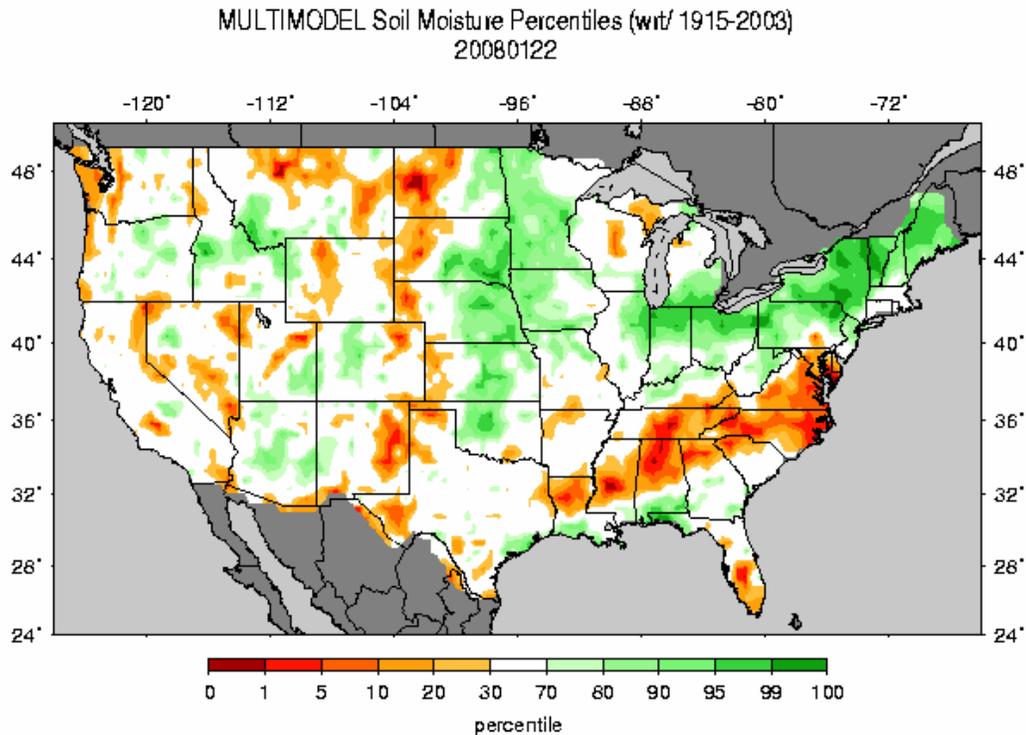


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Fig. 4b. Drought Monitor for Tennessee and the Southeastern States with statistics over various time periods shows some of the severest drought conditions in the US. Note change in drought intensities for Tennessee but slight improvement over the Southeast during the past week.

Ref: http://www.drought.unl.edu/dm/DM_state.htm?TN,S
http://www.drought.unl.edu/dm/DM_southeast.htm

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Figs. 5 & 5a: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. Note some worsening (drying) over of the Ohio Valley to the middle Mississippi River Valley and some improvement over the Gulf of Mexico coastal regions and Southeast during the past week. Remark: In colder regions of the West, frozen ground suggests incorrect values or missing data.

Ref: 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

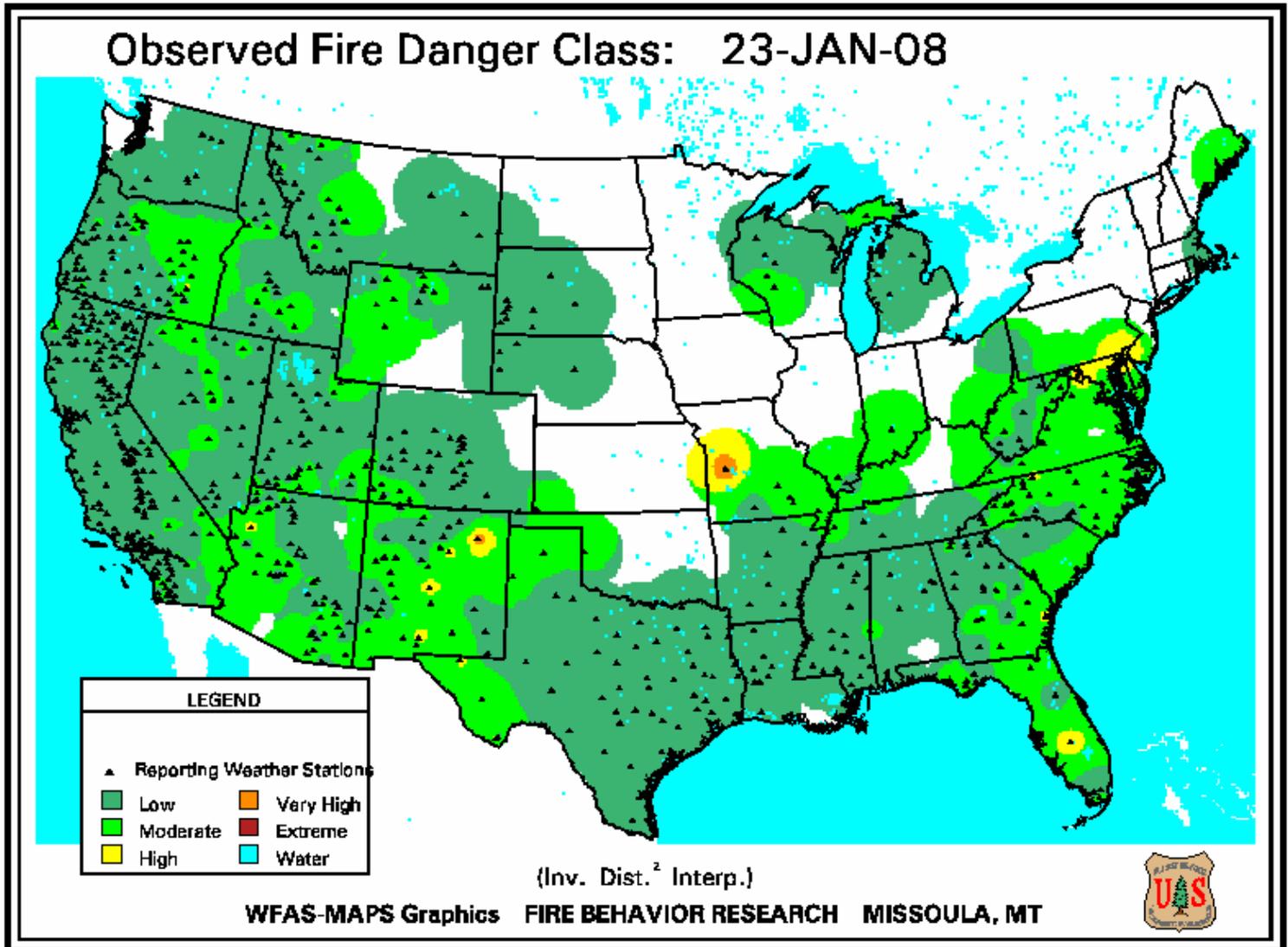
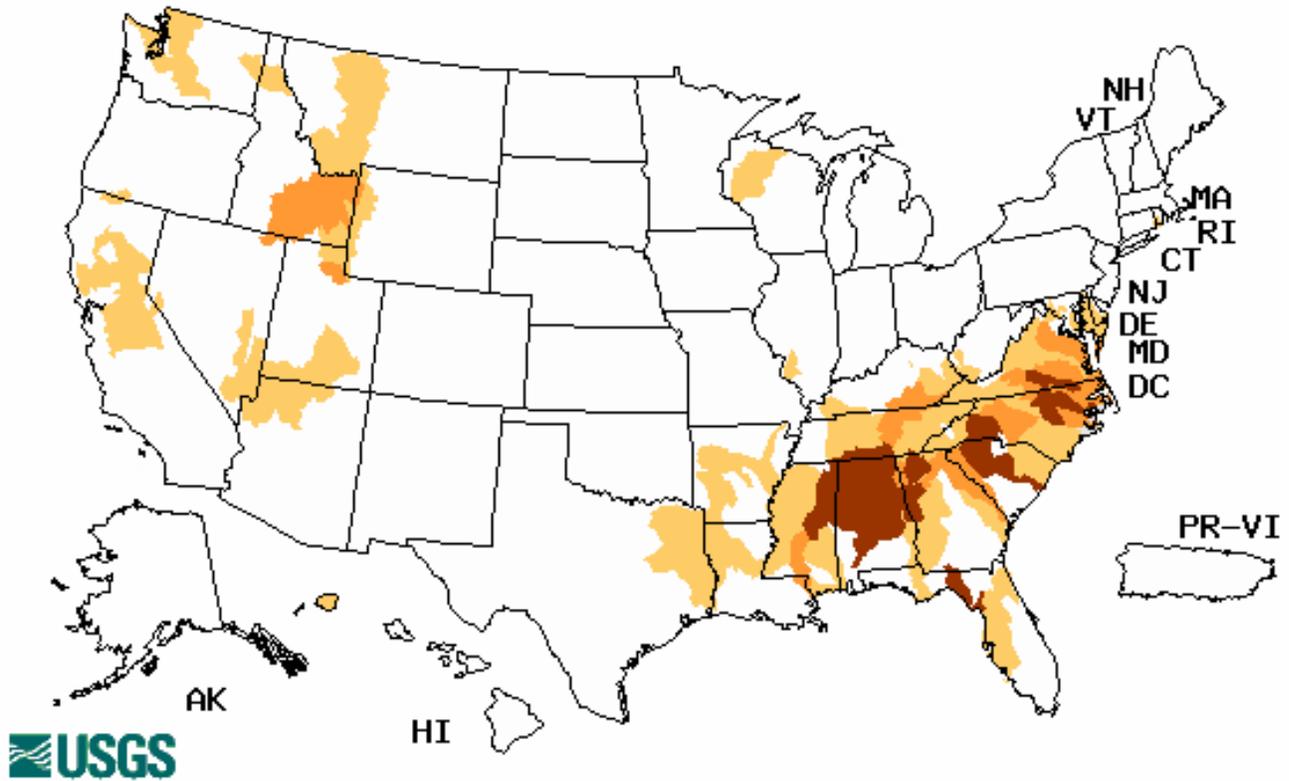


Fig. 6. Observed Fire Danger Class as of 23 January. Note some improvement over Southern California and Southwest Arizona since last week.

Source: Forest Service Fire Behavior Research – Missoula, MT.

Weekly Snowpack and Drought Monitor Update Report

Wednesday, January 23, 2008



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 low stream flows over the Southeast and Mid-Atlantic States. Values over the colder regions of the West and northern states are probably missing due to river icing and freeze-up.

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

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National Drought Summary -- January 22, 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 and Mid-Atlantic: Once again, significant precipitation fell on the Southeast and mid-Atlantic, although the greatest totals (2 to 5 inches) were shifted farther south compared to the previous week. A wave of low pressure formed along a stalled cold front in the Gulf of Mexico and tracked northeastward, dropping over 2 inches of rain along the Gulf and southern Atlantic Coasts, with mixed precipitation and lower totals (0.5 to 1.5 inches) farther north in the southern Appalachians, mid-Atlantic, and New England. The precipitation continued a pattern of near- to above-normal precipitation for the drought-stricken Southeast since early December, although the core of the extreme to exceptional drought (D3-D4) received between 0.5 to 1 inches. This was far less than last week, which kept conditions status-quo there, but did include rare accumulating Southern snows.

In contrast, the heavy rains along the Gulf Coast were enough to alleviate abnormal dryness in extreme southern sections of Louisiana, Mississippi, and Alabama, and improve portions of southern and eastern Georgia, eastern South Carolina, and extreme southeastern North Carolina by 1-category. Nearly all monitored USGS stream flows at 1-, 7-, 14-, and 28-days (ending Jan. 22) have risen back into the normal range (30th to 70th percentiles), and short-term surpluses (30- and 60-days) have accumulated in these aforementioned areas, especially aiding the topsoil moisture. However, it should be noted that some states have maintained their severe drought status even after the recent precipitation as reservoirs, ground water, and many rivers remained at very low levels. This included South Carolina, where Lakes Marion and Moultrie were at very low elevations, and approximately 26% and 56% of the population is under mandatory and voluntary water conservation, respectively. In northern Georgia, Lake Lanier, the major water supply for Atlanta, was at 1051.38 feet at Buford Dam, only a tad above its record low of 1050.79 feet on Dec. 26, although other reservoirs were doing better (e.g., West Point and George were above the top of conservation level). Farther north, another round of light to moderate precipitation (0.2 to 0.8 inches) trimmed the northern edge of the D0 from eastern Kentucky into the Delmarva Peninsula where surpluses now exist out to 90-days.

The Great Lakes Region and Midwest: For the third consecutive week, a storm system dropped moderate precipitation (0.4 to 0.7 inches liquid equivalent, or 5 to 10 inches of snow) on the upper Great Lakes region, upping the snow depths to between one and two feet and creating a 30-day surplus of 1 to 3 inches. Accordingly, the recent precipitation was enough to decrease the D1 in northeastern Wisconsin, although D0(H) persisted as precipitation remained below normal from 90-days out to 12-months plus. In east-central Missouri and southwestern Illinois, little or no precipitation fell on the small area of D0(H) as 1-, 7-, 14-, and 28-day USGS stream flows stayed in the lower 25th percentile, although no other impacts were noted.

The Plains: Much of the Plains experienced little or no precipitation and very cold weather, with temperatures averaging 4 to 10°F below normal and lows plunging to -25°F in eastern Montana and North Dakota, 0°F as far south as the Oklahoma Panhandle, and into the teens into south-

Weekly Snowpack and Drought Monitor Update Report

central Texas. After last week's expansion, conditions were left status-quo, except in the upper Missouri Valley. With less than 25% of the normal precipitation during the past 90-days, some degradation was made in eastern Montana, based upon suggestions from the latest Montana drought subcommittee. In contrast, heavy rains soaked extreme southeastern Texas (along the western Gulf Coast as mentioned in the Southeast and mid-Atlantic section) where 1.5 to 5 inches improved conditions by 1-category along the Texas coast.

The Rockies, Intermountain West, and Far West: After a very wet December, especially in the Pacific Northwest, Southwest, and central Rockies, and a very stormy but beneficial early January that doubled snow water equivalent and season-to-date precipitation in the Sierra Nevada and brought values close to normal, the weather has gradually quieted down, particularly this week. A much colder weather pattern (departures -4 to -15°F in the Far West, -6 to -20°F in the Rockies) only brought light precipitation (0.1 to 0.5 inches) to the Pacific Northwest, Sierra Nevada, and northern and central Rockies (although 0.5 to 1.5 inches in the north-central Rockies), and little or no precipitation to the Southwest and Intermountain West. After further assessment, however, from the latest NRCS/USDA products and recent state drought updates and surveys, additional improvements were made in the northern Rockies. In western Montana, the recent state drought report depicted a 1-category improvement due to above-normal precipitation (105-115% of normal) and seasonable snow water equivalent (SWE), while Idaho has also benefited from frequent Pacific storminess this season. In central Idaho, water year (Oct. 1) precipitation has run from 110% to 130% and SWE from 100% to 115%. In response, the D1 was removed from central Idaho, and the D1-D2 was shifted farther south in Idaho. The rest of the West was left untouched as one to three categories of improvement have already been made in the West since the late Fall.

Alaska: Above-normal temperatures accompanied light snow (0.1 to 0.3 inches liquid equivalent) across most of interior and northeastern Alaska, slightly building up the area's snow depth, but not enough to remove the region's abnormal dryness.

Looking Ahead: For January 24-28, cold weather will envelop the lower 48 states early in the period, but by the weekend, milder air will return to the eastern half of the nation. A few weak systems will generate light showers in the southern Great Plains and the western Gulf Coast, and lake-effect snows will blanket orographically favored parts of the Great Lakes. In the West, an upper-air low off the California Coast will bring more January precipitation to California, Sierra Nevada, and Great Basin, with heavier totals expected by the weekend as the system gradually tracks inland. The Rockies should receive light precipitation on Sunday, and as the system moves into the nation's mid-section on Monday, showers will occur from the upper Delta to the upper Great Lakes region, with snow in the upper Midwest.

For the ensuing 5 days (January 29-February 2), the odds favor wet weather in the West and the eastern third of the nation, including most of the drought-stricken Southeast, except for drier-than-usual conditions in the southern half of Florida. Subnormal precipitation is expected in the Plains and in eastern Alaska. Unseasonably cold air should continue in the western half of the U.S. while above-normal temperatures persist in the eastern third of the nation.

Author: [David Miskus, Joint Agricultural Weather Facility, CPC/NCEP/NWS/NOAA](#)

Dryness Categories

D0 ... Abnormally Dry ... used for areas showing dryness but not yet in drought, or for areas recovering from drought.

Weekly Snowpack and Drought Monitor Update Report

Drought Intensity Categories

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

Drought or Dryness Types

A ... Agricultural

H ... Hydrological

Updated January 23, 2008