



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

Weekly Report - Snowpack / Drought Monitor Update Date: March 27, 2008

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: During the past week, wet weather resulted in an increase of snow depth exceeding one foot scattered across the Cascades and lesser increases across the Northern Rockies. Since last week, the preliminary April-July streamflow runoff forecast has decreased greater than 10 percent over many areas across the 4-Corners States. Smaller forecast increases occurred over the Wyoming and Montana Rockies (Fig. 1). The snow-water equivalent (SWE) percent as of 27 March shows that well above normal values exist over portions of the Cascades and Coastal Ranges (WA & OR) and have further increased during the past week as a Gulf of Alaska complex series of low pressure systems moved into this region. SWE have decreased substantially over portions of Arizona and New Mexico due to a lack of precipitation and warmer than average temperatures which is more typical of La Nina (Fig. 1a).

Temperature: For the past seven days, average temperature anomalies were below normal over the northern half of the West and were above normal over the southern half (Fig. 2). The greatest negative temperature departures occurred over the Pacific NW and Northern Rockies (<-6F) and the greatest positive departures occurred over southern California, southern Nevada, and Arizona (>+4F) (Fig. 2a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 26 March shows continued La Nina type wet conditions over the Pacific NW, Intermountain West, and Wyoming Rockies while very little precipitation fell across California, Nevada, Arizona, and New Mexico (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 well above normal totals over much of southern CO, AZ, and northern NM. Values have remained essentially unchanged since last week (Fig. 3a).

WESTERN DROUGHT STATUS

The West: The month of March has only been holding serve as far as late season precipitation is concerned, and the generally cooler and beneficial weather of late gave way to warmer readings this past week. According to USDA-NRCS, the latest snow water equivalent readings within most of the basins east of the Sierras are only at, or just below, 100% of normal, so the situation is tenuous as the snow season winds down. Some late-season storm system boosts would be very much welcomed. One area that has made out pretty well this winter (water year) has been the Mohave and Yuma Desert regions in southeastern California and western Arizona, respectively. With much of this area seeing above-normal precipitation since October 2007, the D2 has been removed but D1 remains. There has also been a one-category improvement with the removal of D1 southward within the South Lahontan basin in eastern California along the Nevada border and across into west-central Nevada where D1 has been pushed slightly eastward.

Author: Mark Svoboda, National Drought Mitigation Center

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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, 4b, and 4c).

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/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>

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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

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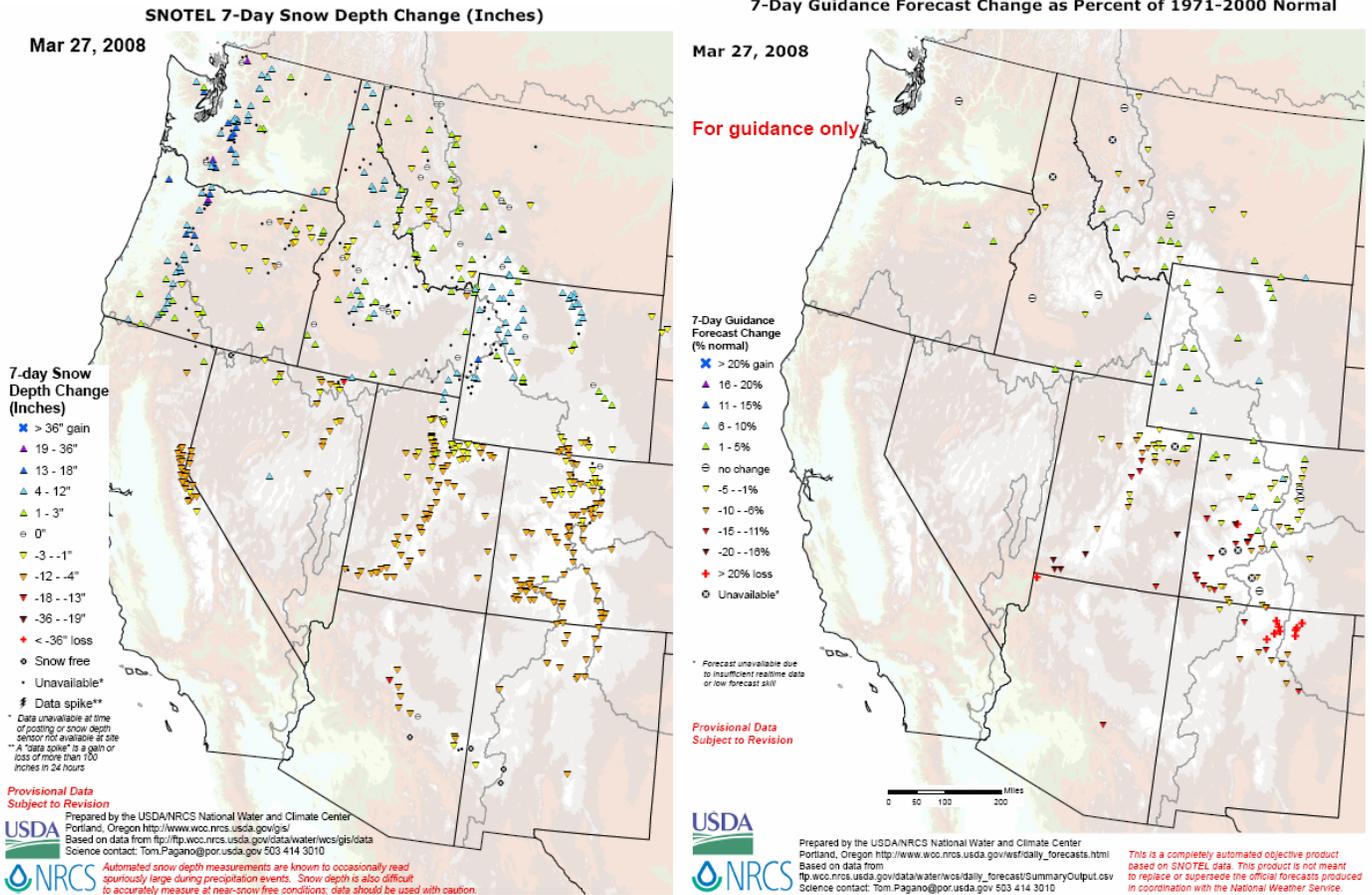


Fig. 1. During the past week, wet weather resulted in an increase of snow depth exceeding one foot scattered across the Cascades and lesser increases across the Northern Rockies (left figure). Since last week, the preliminary April-July streamflow runoff forecast has decreased over 10 percent over many areas across the 4-Corners States (right figure). Smaller increases occurred over the Wyoming and Montana Rockies. Note: Area basin preliminary forecasts for the Sierra and Cascades are not made.

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

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

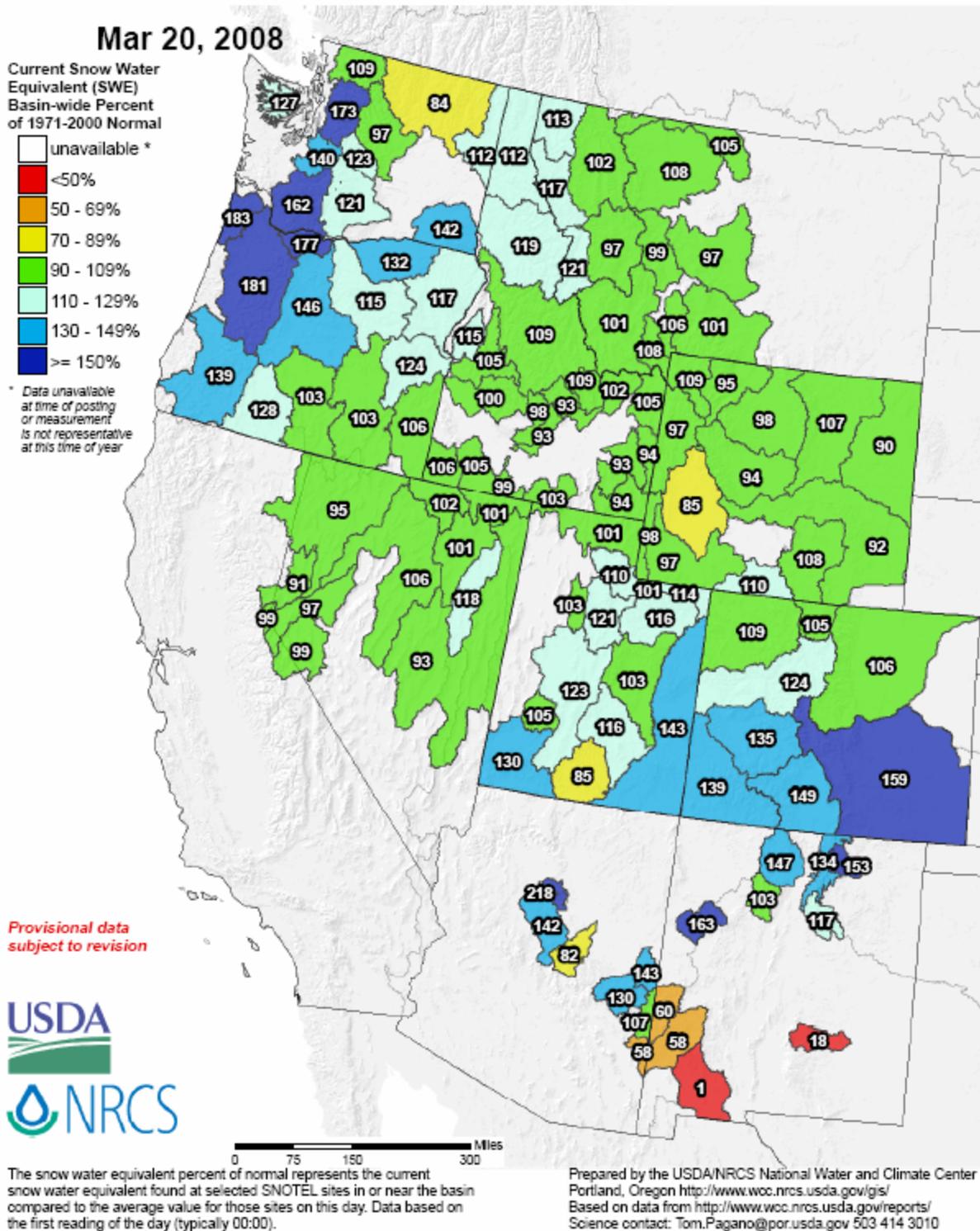


Fig. 1a. Snow-water equivalent percent as of 27 March shows well above normal values over portions of the Cascades and Coastal Ranges (WA & OR) that have increased during the past week. Values have decreased substantially over portions of Arizona and New Mexico. Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_swepctnormal_update.pdf

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

Mar 27, 2008

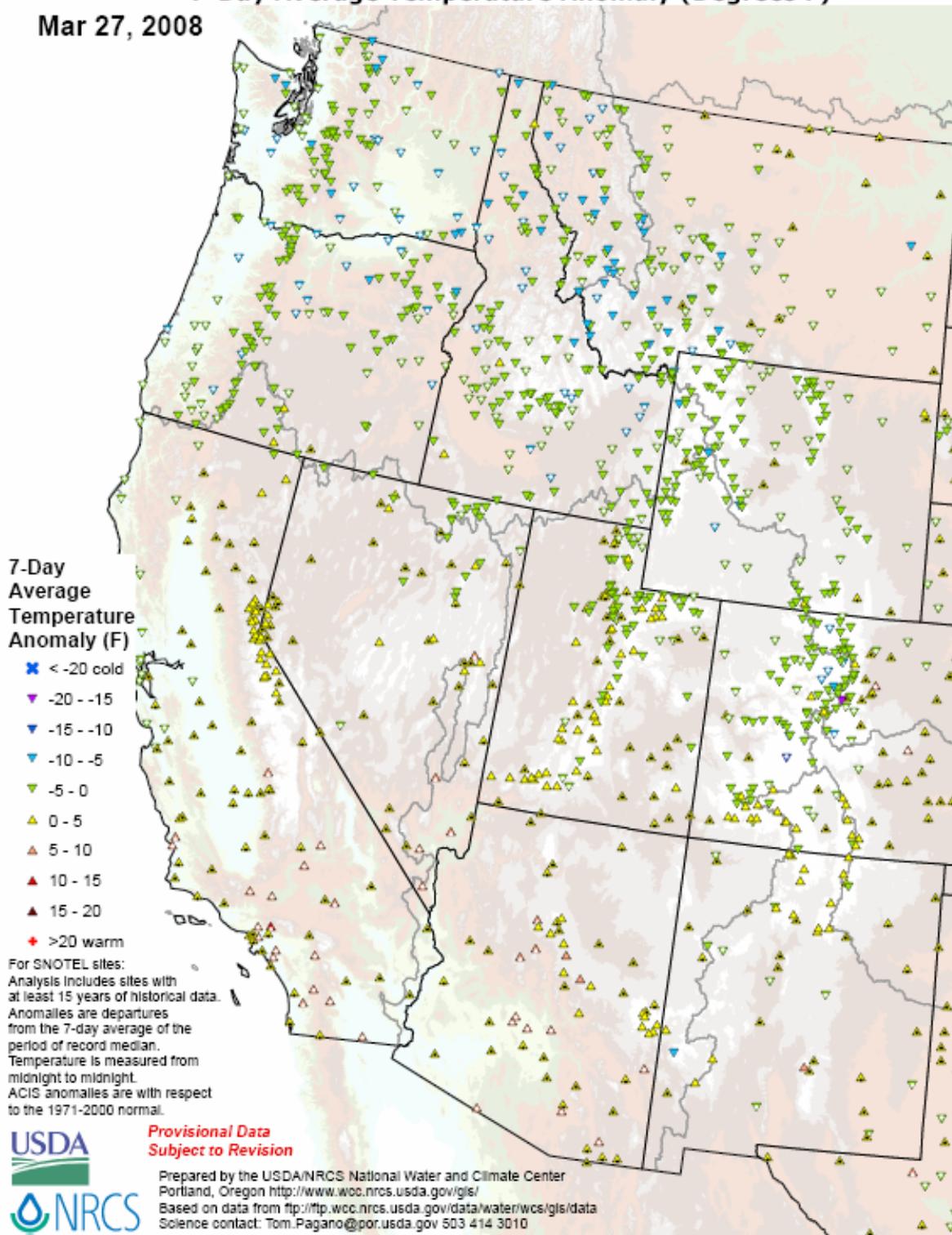
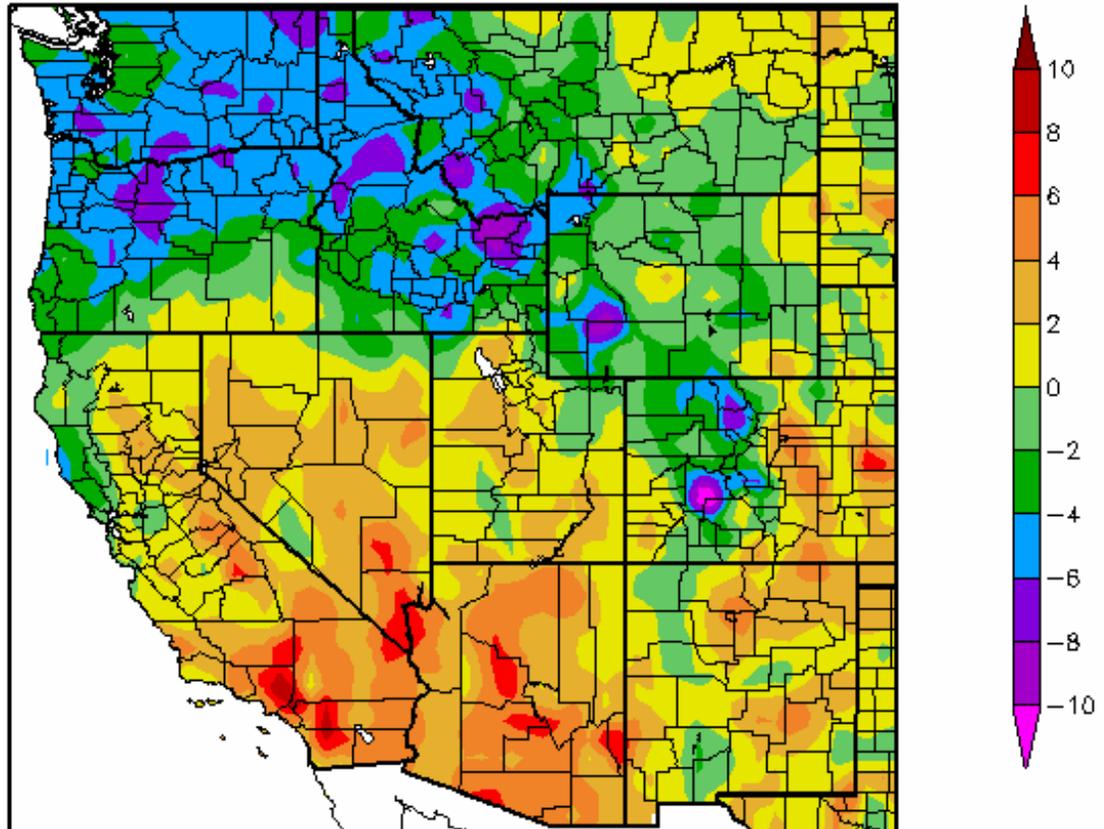


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomalies were below normal over the northern half of the West and were above normal over the southern half.

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

Departure from Normal Temperature (F)
3/20/2008 – 3/26/2008



Generated 3/27/2008 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.

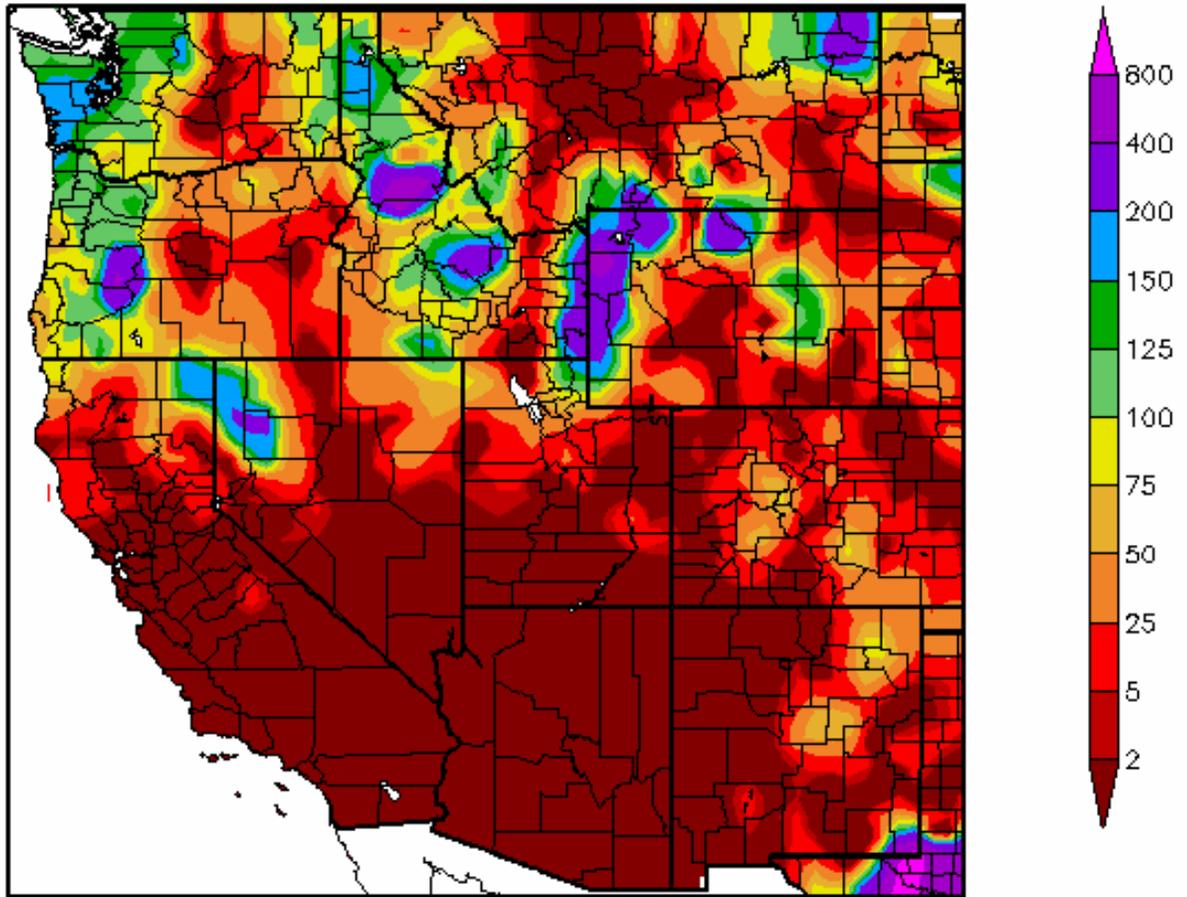
Normal refers to the 1971-2000 Climate Normal for the selected product.



Fig. 2a. ACIS 7-day average temperature anomalies: Greatest negative temperature departures over the Pacific NW and Northern Rockies (<-6F) and greatest positive departures over southern California, southern Nevada, and Arizona (>+4F).

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

Percent of Normal Precipitation (%)
3/20/2008 – 3/26/2008



Generated 3/27/2008 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 26 March shows continued La Nina type wet conditions over the Pacific NW, Intermountain West, and Wyoming Rockies while very little precipitation fell across California, Nevada, Arizona, and New Mexico.

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

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

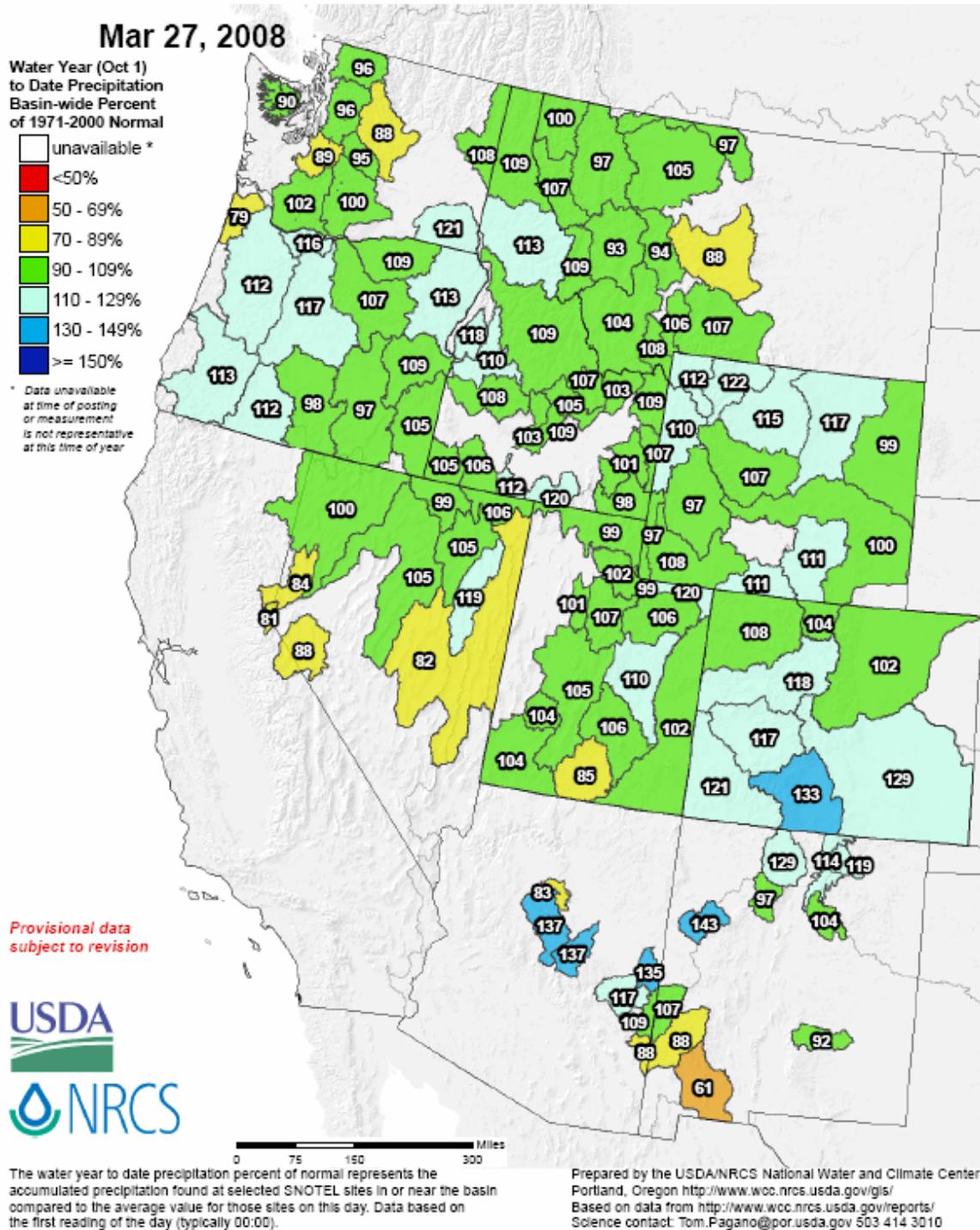


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows much above normal totals over much of southern CO, AZ, and northern NM. Values have remained essentially unchanged since last week.

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

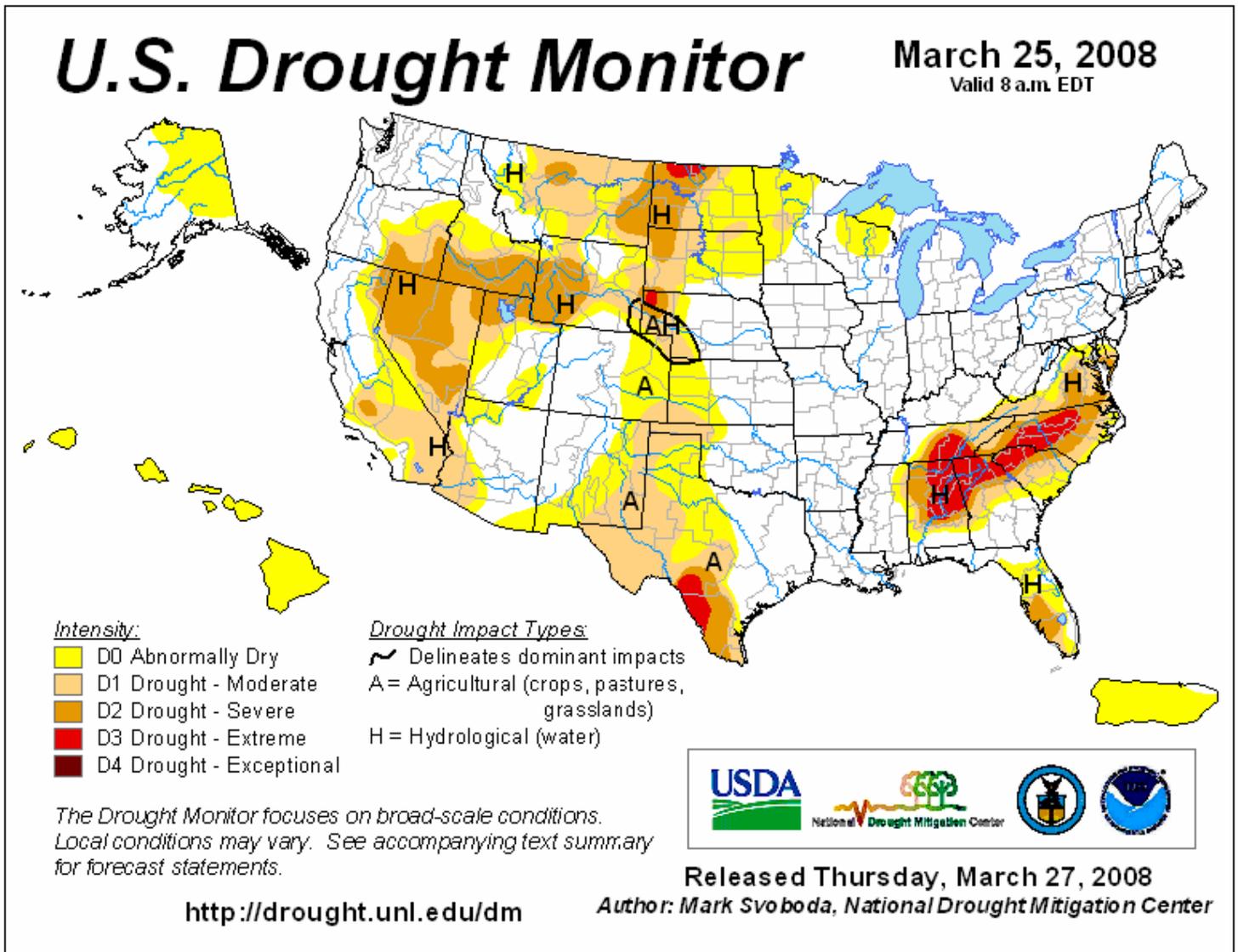


Fig. 4. Current Drought Monitor weekly summary.

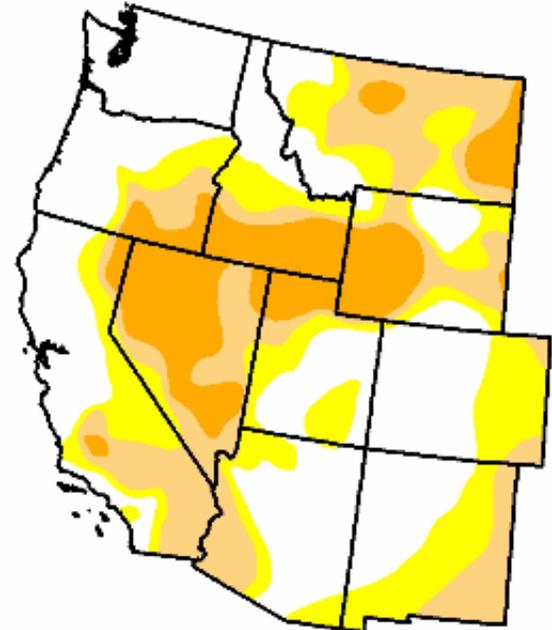
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>.

U.S. Drought Monitor West

March 25, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.4	58.6	36.4	15.4	0.0	0.0
Last Week (03/18/2008 map)	42.3	57.7	36.2	16.0	0.0	0.0
3 Months Ago (01/01/2008 map)	26.3	73.7	54.7	33.1	2.7	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 (03/27/2007 map)	34.6	65.4	49.7	20.8	8.1	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, March 27, 2008

Author: Mark Svoboda, National Drought Mitigation Center

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.

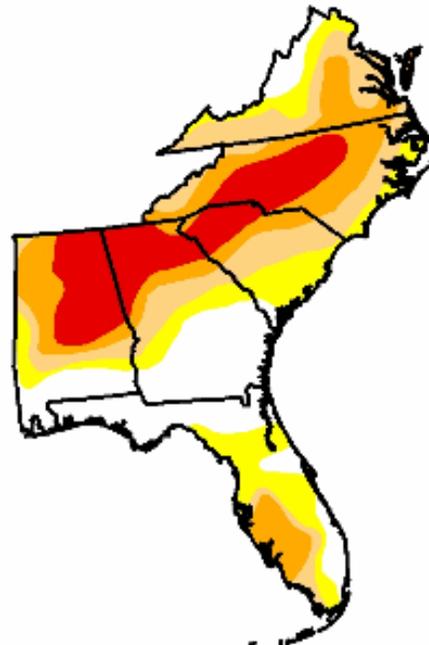
U.S. Drought Monitor

Southeast

March 25, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.8	75.2	57.5	38.1	18.0	0.0
Last Week (03/18/2008 map)	23.8	76.2	58.5	40.5	18.8	0.3
3 Months Ago (01/01/2008 map)	9.6	90.4	74.3	58.5	41.0	22.0
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 (03/27/2007 map)	10.7	89.3	30.1	9.7	0.7	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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<http://drought.unl.edu/dm>

Fig. 4b: Drought Monitor for the Southeastern States with statistics over various time periods. Note that there was little change since last week. However the D4 area no longer exists.

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

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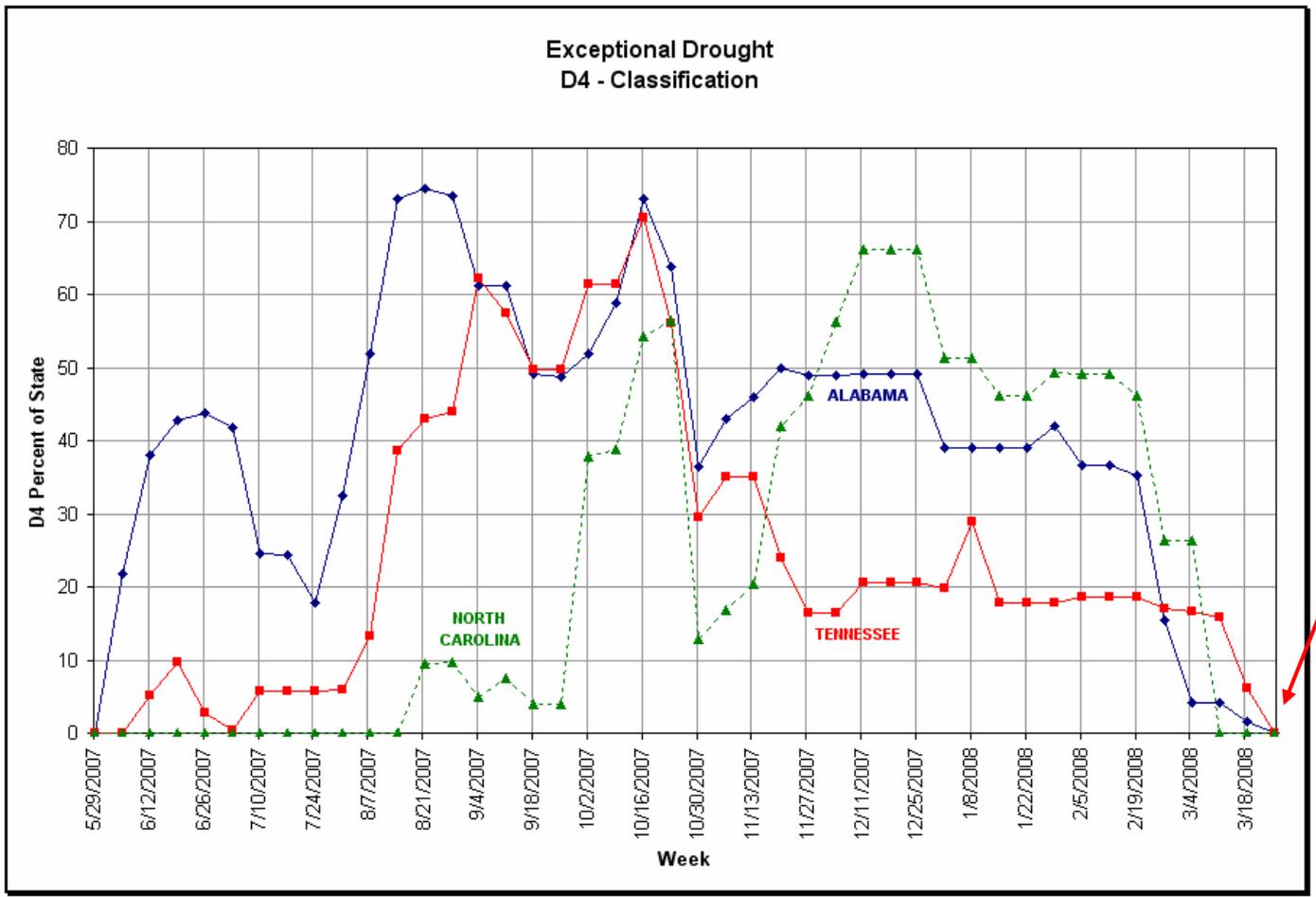
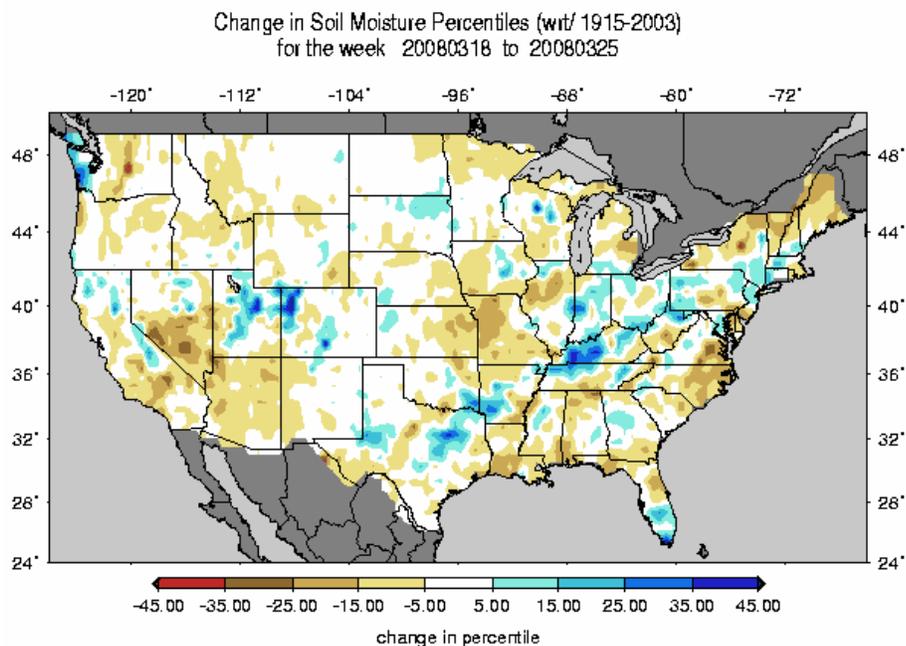
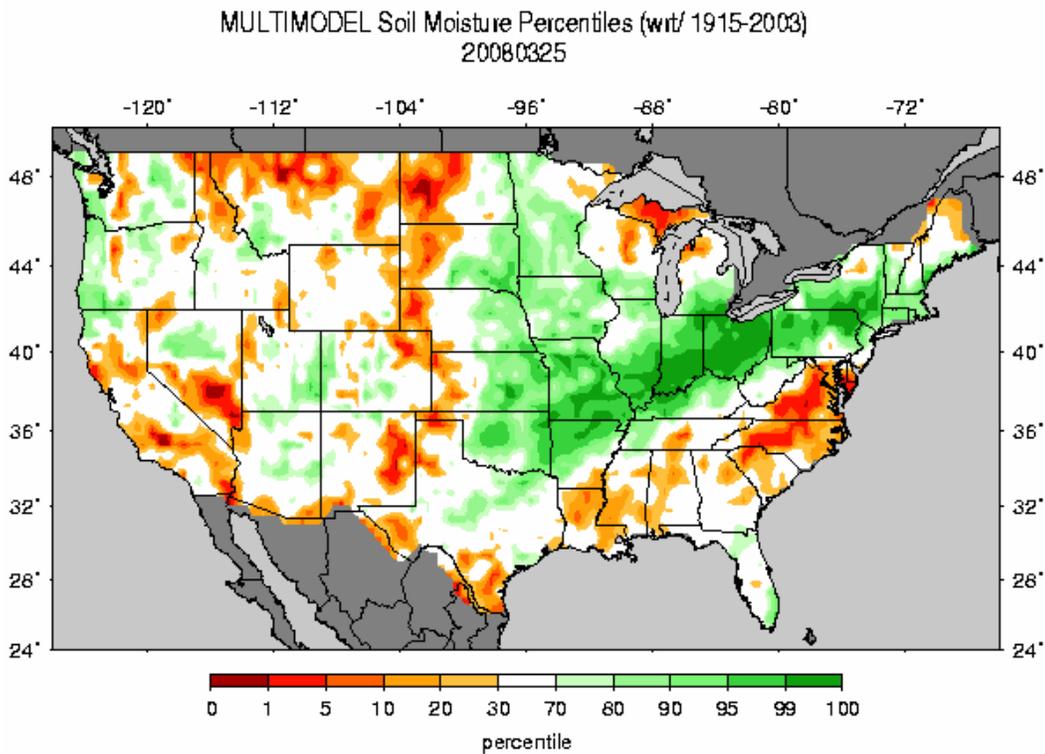


Fig. 4c. Drought Monitor D4 “exceptional” drought percent of statewide coverage for Tennessee, Alabama, and North Carolina (the hardest hit areas on the US during the past 9 months. Worth highlighting this week is that with the removal of the D4 in Tennessee and Alabama, the United States is D4-free for the first time since May 2007.

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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 southern Nevada and southern California. Significant soil saturation persists from Arkansas to New York (flooding is a problem in some of this area) (Fig. 5). Downstream of these areas (e.g. Baton Rouge, LA, the Mississippi River is threatening to flood). Considerable drying has occurred over Nevada, the Mid-Atlantic States, and Northern New England (Fig. 5a). 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

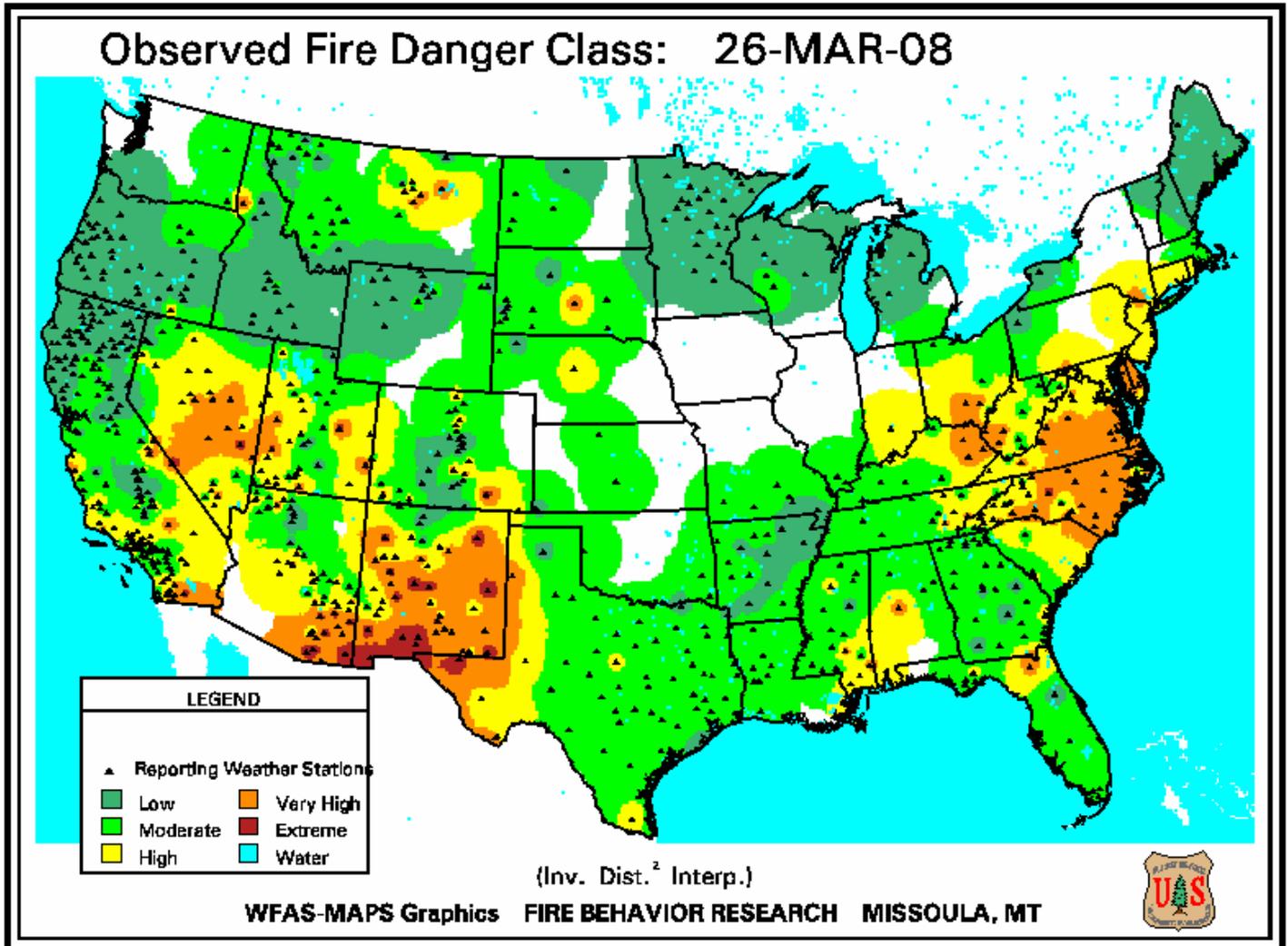
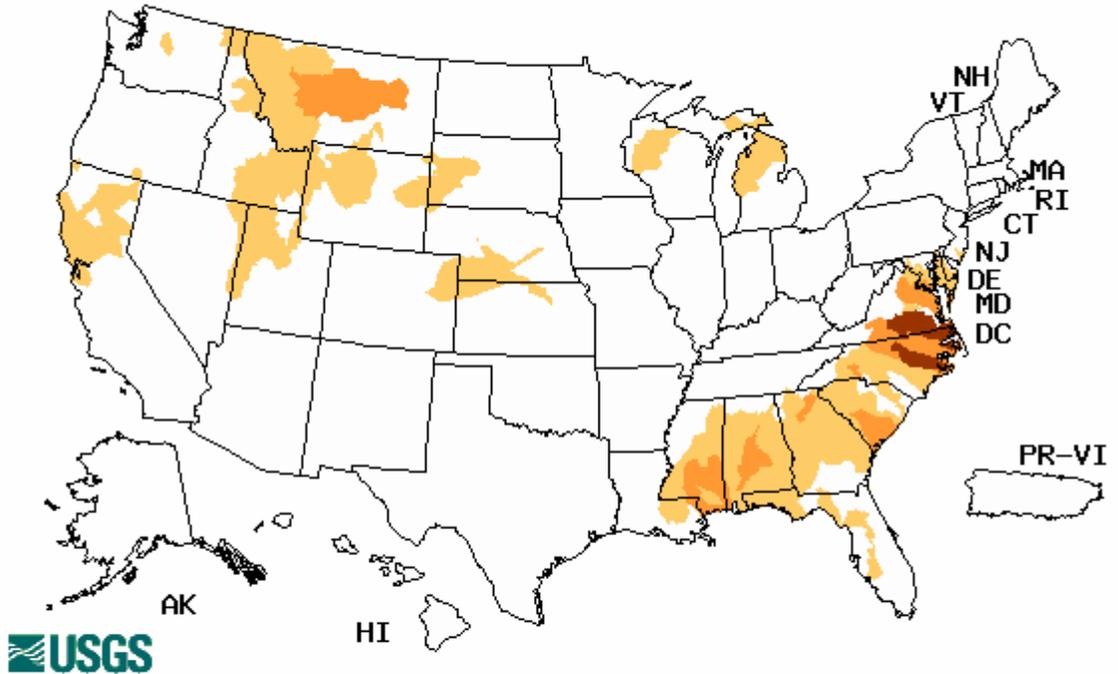


Fig. 6. Observed Fire Danger Class. Note general worsening over southern California to New Mexico and over the Mid-Atlantic States since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

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Wednesday, March 26, 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 some worsening over the Southeast and Mid-Atlantic States since last week. Values over the colder regions of the West and northern states are probably missing or are in error 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 March 25, 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: On the heels of recent rains, slow and steady improvement continues for many parts of these regions. Heavy rains like those seen in the Mississippi and Ohio River valleys have missed the core drought region thus far. Worth highlighting this week is that with the removal of the D4 in Tennessee and Alabama, the United States is D4-free for the first time since May 2007. Impressive long-term deficits still remain and hydrologic recovery typically lags the immediate short-term benefits seen with the greening up of spring. Other changes in the region include the trimming (improvement) of D0-D3 on the western and northern edges in Mississippi and Tennessee and extreme western North Carolina. To the south in Florida, some heavier rains in the southern peninsula (Everglades region) totaled anywhere from 2 to 4 inches, leading to the removal of the D3 core that was centered off the western shore counties of Lake Okeechobee. Other improvements here include a trimming of D0-D2 on the eastern and northern shores of the lake as well. Long-term dryness is still reflected by low groundwater levels as far south and east as Dade County.

The Plains: Good moisture from heavy snows (a nice 1-inch water equivalent) last week in northeastern South Dakota and southeastern North Dakota has brought about some improvement to the D1 there. The precipitation missed the western Dakotas and eastern Montana, leading to some expansion of drought conditions there. In Montana, D0 now covers all of the eastern counties and D1 and D2 have pushed slightly to the south and east. The lack of snow cover and/or rains coupled with high winds this spring, have already resulted in several pre-season fires.

In the southern Plains, fire risk is still critically high in western and southern Texas along with parts of western Oklahoma. After another dry and warm week, both D0 and D1 have advanced slightly to the east in northwestern Oklahoma. In west-central Texas, the wet pattern continued for some this past week. Good rains (1.5 to 3 inches or more in places) have eaten away at some of the western and northern edges of the D1/D2 in the area, pushing the severe and extreme drought core (D2/D3) to the south, where D2 has actually pushed farther south this week along the Rio Grande toward Brownsville. This core region of D2 and D3 has only seen 50% or less of normal precipitation since October of last year.

The West: The month of March has only been holding serve as far as late season precipitation is concerned, and the generally cooler and beneficial weather of late gave way to warmer readings this past week. According to USDA-NRCS, the latest snow water equivalent readings within most of the basins east of the Sierras are only at, or just below, 100% of normal, so the situation is tenuous as the snow season winds down. Some late-season storm system boosts would be very much welcomed. One area that has made out pretty well this winter (water year) has been the Mohave and Yuma Desert regions in southeastern California and western Arizona, respectively. With much of this area seeing above-normal precipitation since October 2007, the D2 has been removed but D1 remains. There has also been a one-category improvement with the removal of

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D1 southward within the South Lahontan basin in eastern California along the Nevada border and across into west-central Nevada where D1 has been pushed slightly eastward.

Hawaii and Puerto Rico: The lack of rains over the past 90 days or so has left most of Puerto Rico at or below 50% of normal (6- to 12-inch deficits), leading to below-normal streamflows. This has led to the introduction of abnormally dry (D0) conditions across all but the extreme northeast corner of the island.

In Hawaii, little rain means no changes to the D0 areas on all of the islands this week, and high pressure north of the islands should generally result in limited shower activity on the windward sides through the middle of next week.

Looking Ahead: During the next 5 days (through March 31), the forecast again calls for the heaviest rains to fall just where they aren't needed in the middle Mississippi and Ohio River valleys. Parts of the southeast (along the northern fringe from Mississippi, Tennessee, Alabama, and Georgia) could also see some more welcome rains. A system coming out of the northern Rockies could also lead to some additional good moisture across most of South Dakota. Temperatures should remain cooler than normal across the northern Plains and southern California. Warmer temperatures are expected across the Desert Southwest, southern Plains, and western Gulf Coast states.

The NWS 6 to 10 day outlook for April 1-5 shows that a strong zonal (west to east) flow pattern should build in, bringing with it warmer temperatures for most of the country everywhere east of the Rockies except for Florida, which is expecting more seasonal readings. The abnormally dry region in Alaska can also expect to see above-normal temperatures. Precipitation for this period is more of a mixed bag, with below-normal amounts expected in southwestern Alaska, the southern Rockies, and western Texas. Those areas that should see above-normal precipitation are again centered on the Midwest and Great Lake states. The northern states in the Southeast may benefit from being on the southern edge of this wet pattern as well.

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 March 26, 2008