



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

Weekly Report - Snowpack / Drought Monitor Update **Date:** **March 20, 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 Pacific NW (Fig. 1). Since last week, the preliminary April-July streamflow runoff forecast has decreased over 10 percent over eastern New Mexico but increased over 10 percent over central Colorado (Fig. 1). Snow-water equivalent percent as of 20 March shows well above normal values over portions of the Cascades (WA & OR), Coastal Ranges (WA & OR), Southern Rockies (CO & NM), eastern Utah, and the mountains of Arizona. Well below normal values dominate in southern New Mexico (Fig. 1a).

Temperature: For the past seven days, average temperature anomalies for most stations in the West were about 5 degrees F below expected values for this time of year (Fig. 2). The greatest negative temperature departures occurred over the Central Rockies (<-10F) and the greatest positive departures occurred over eastern Montana and southeastern New Mexico (>+6F) (Fig. 2a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 19 March shows a return to La Nina type wet conditions over the Pacific Northwest and Northern 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 the southern CO, AZ, and northern NM. Only a few river basins are lower than 90% of normal. Values have changed ~ +/- 5 percent across the West since last week (Fig. 3a).

WESTERN DROUGHT STATUS

The West: The recent warmth and dryness has led to the introduction of D1 in southeastern New Mexico. Elsewhere in the West, status quo is the story as a drier March-to-date (for the Southwest, Great Basin, and Intermountain West) is being aided by a cooler March in the upper elevation thus far, preserving the good early pack. However, recent warmth has started to erode the lower level snows. The cooler temperatures have helped to temper flood fears thus far.

Author: Mark Svoboda, National Drought Mitigation Center

A comprehensive narrative describing drought conditions for the nation can be found at the end of this document.

DROUGHT IMPACTS DEFINITIONS (<http://drought.unl.edu/dm/classify.htm>)

The possible impacts associated with **D4 (H, A)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (H, A)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (H, A)** drought are focused 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.

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

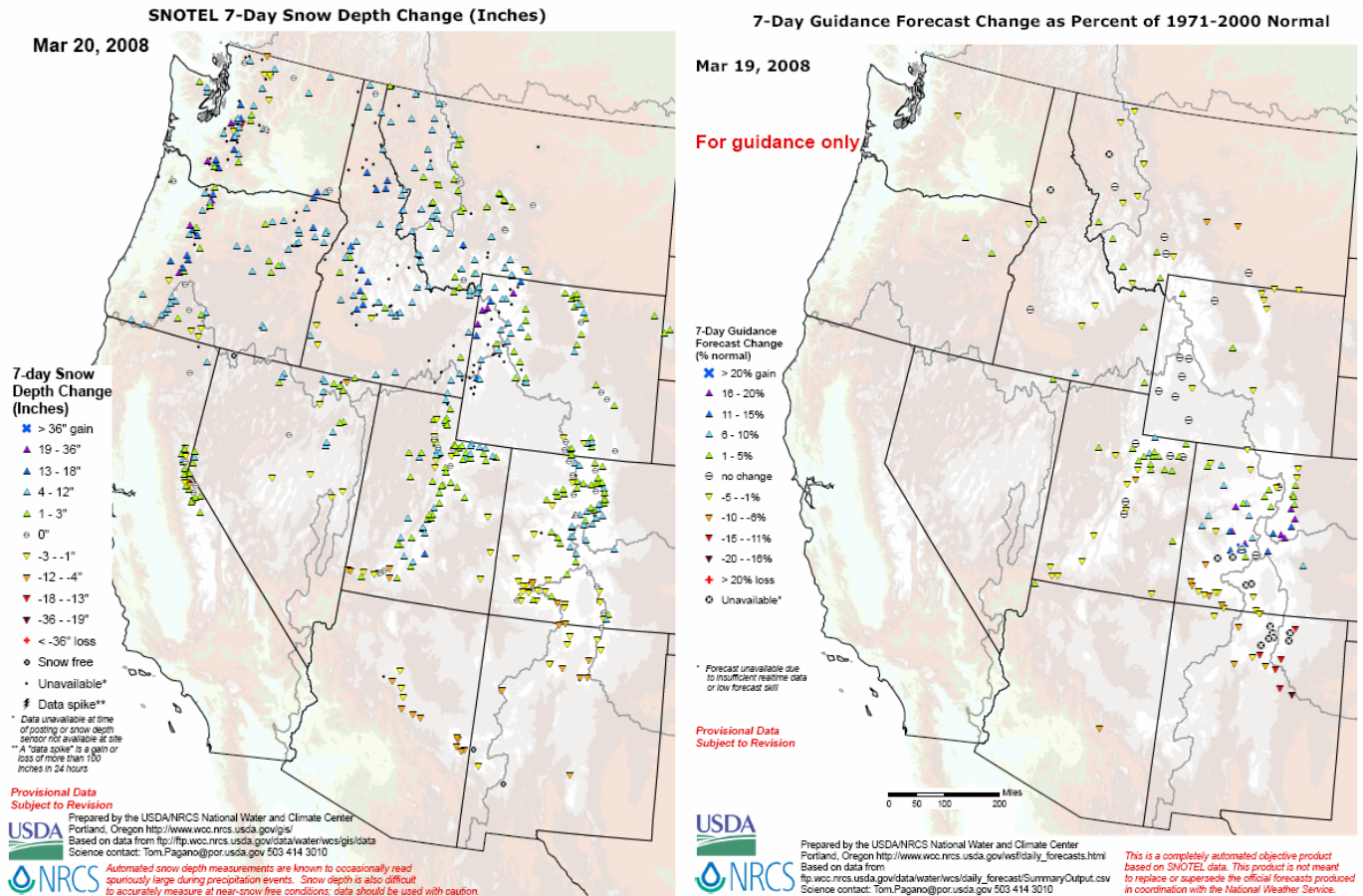


Fig. 1. During the past week, wet weather resulted in an increase of snow depth exceeding one foot scattered across the Pacific NW (left figure). Since last week, the preliminary April-July streamflow runoff forecast has decreased over 10 percent over eastern New Mexico but increased over 10 percent over central Colorado (right figure). 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

Weekly Snowpack and Drought Monitor Update Report

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

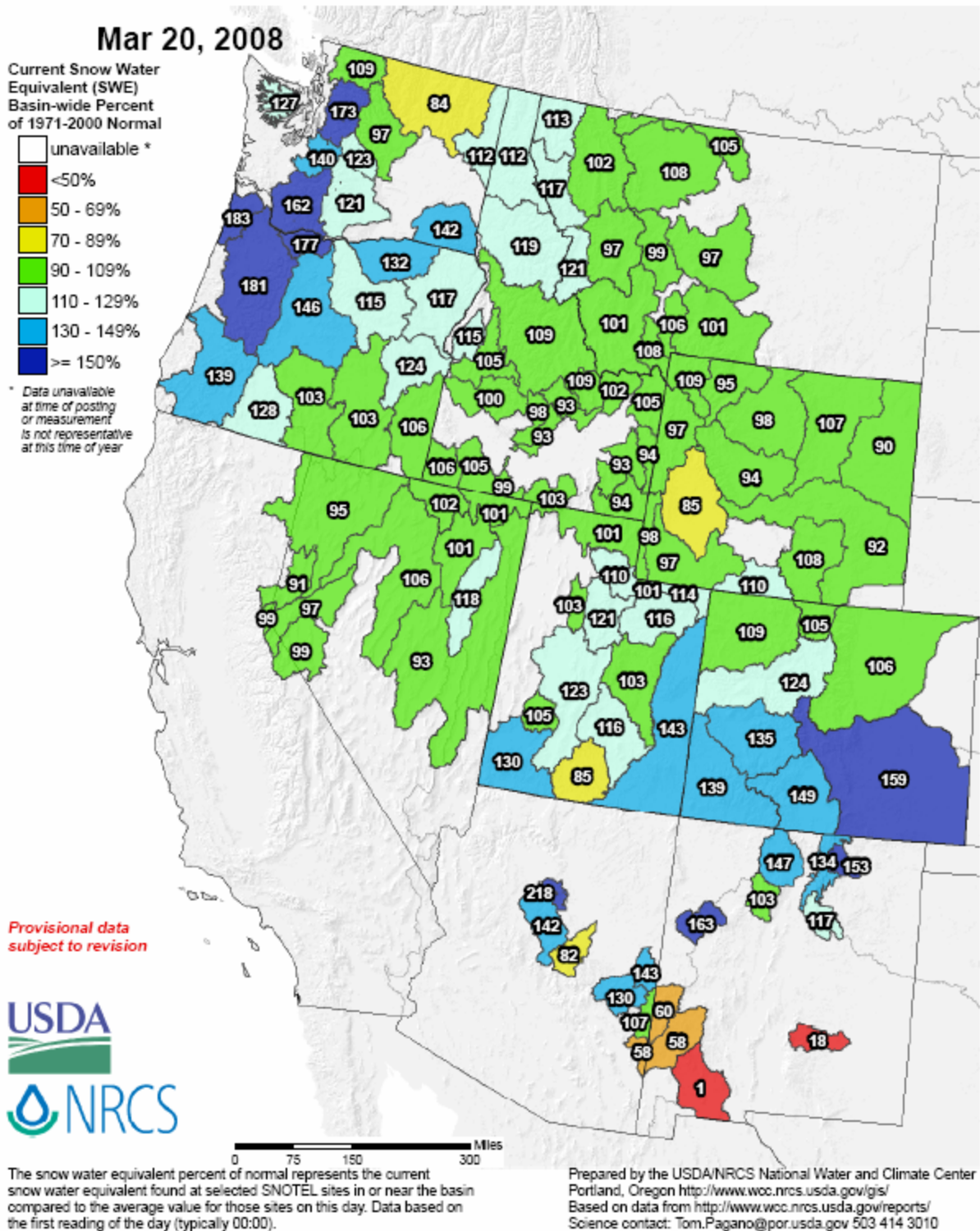


Fig. 1a. Snow-water equivalent percent as of 20 March shows well above normal values over portions of the Cascades (WA & OR), Coastal Ranges (WA & OR), Southern Rockies (CO & NM), eastern Utah, and the mountains of Arizona. Well below normal values dominate in southern New Mexico.

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

Weekly Snowpack and Drought Monitor Update Report

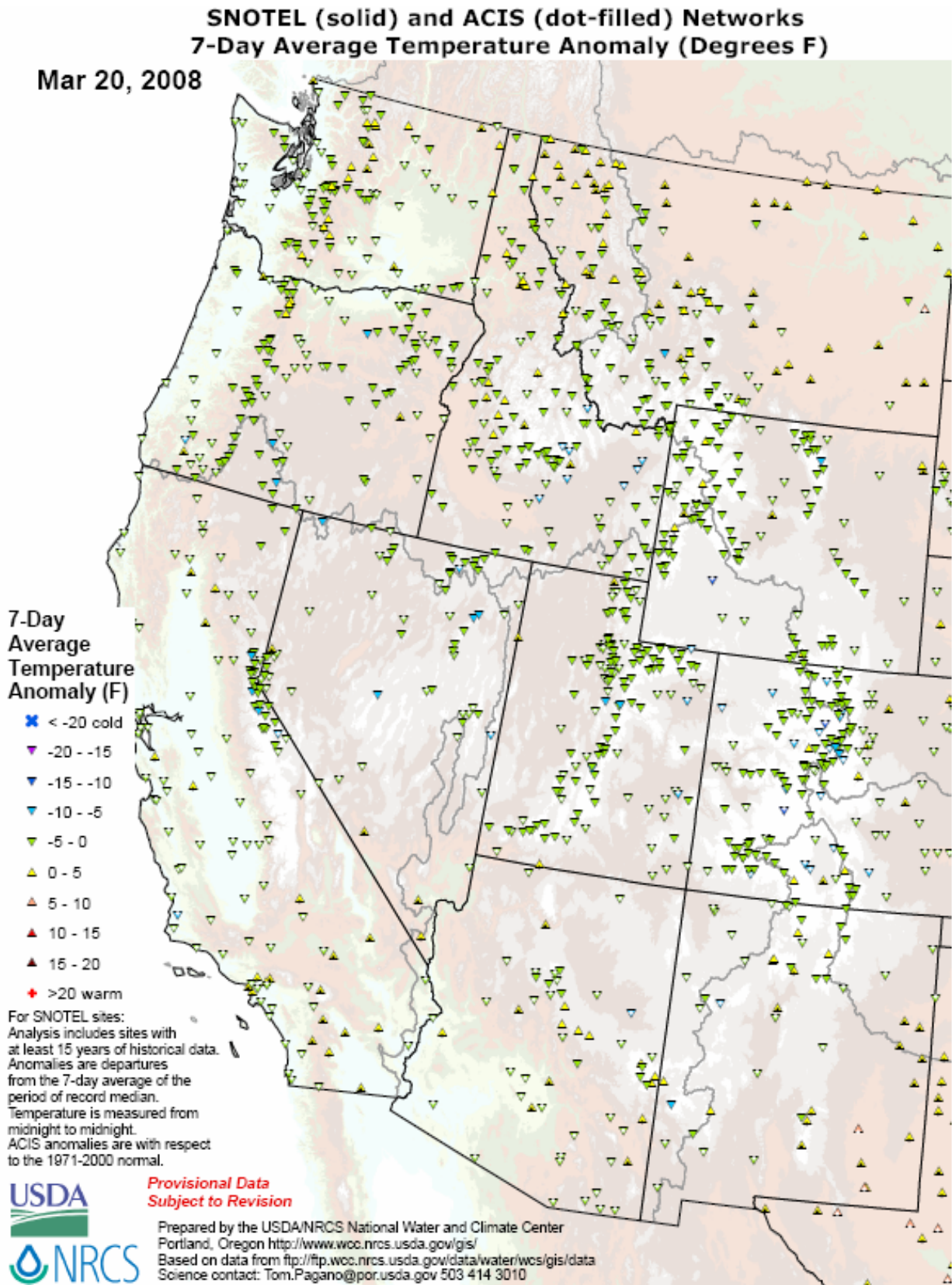
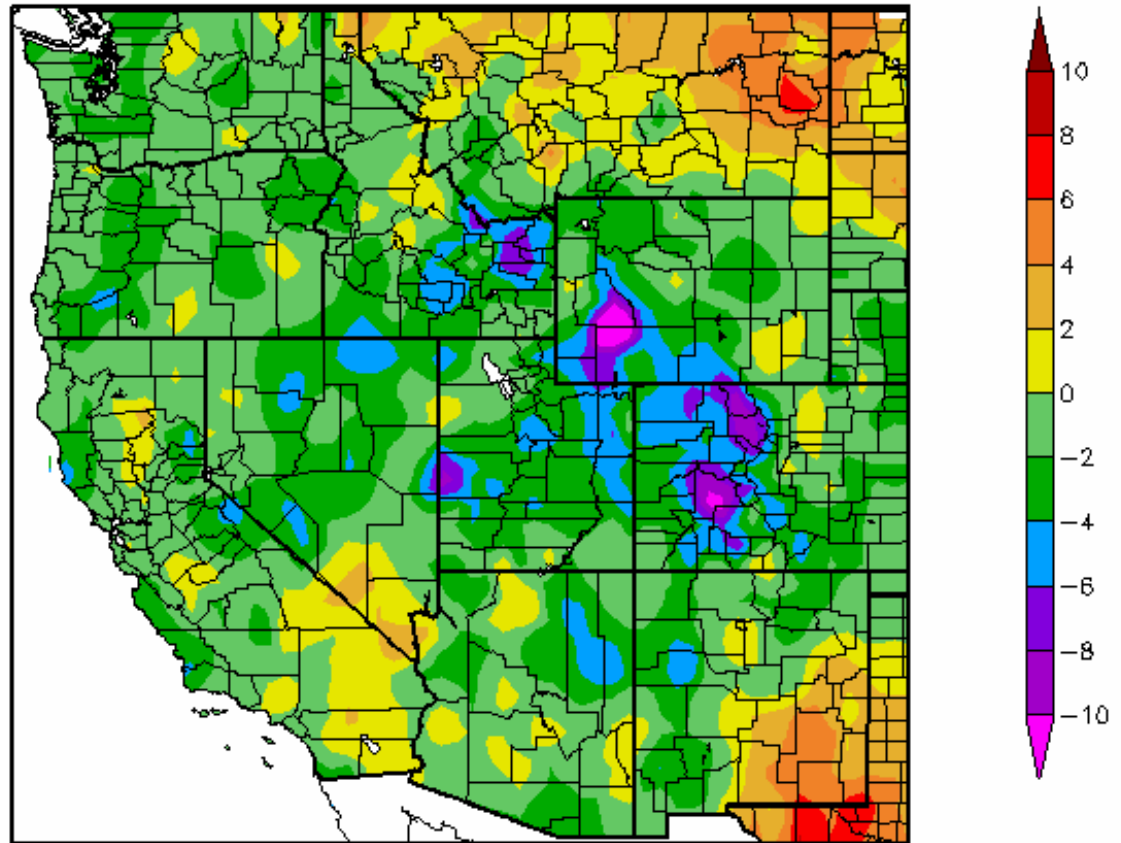


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomalies for most stations in the West were about 5 degrees F below expected values for this time of year.

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

Departure from Normal Temperature (F)
3/13/2008 – 3/19/2008



Generated 3/20/2008 at HPRCC using provisional data.

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.

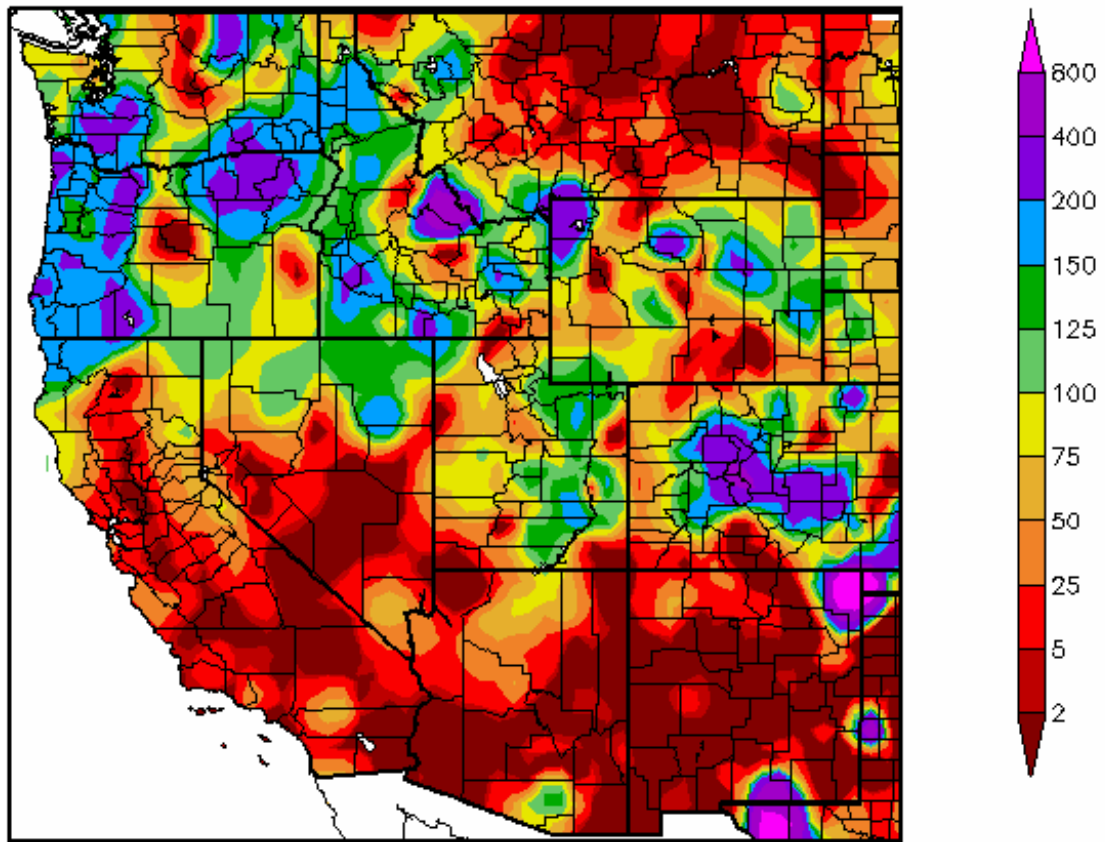
NOAA Regional Climate Centers



Fig. 2a. ACIS 7-day average temperature anomalies: Greatest negative temperature departures over the Central Rockies (<-10F) and greatest positive departures over eastern Montana and southeastern New Mexico (>+6F).

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

Percent of Normal Precipitation (%)
3/13/2008 – 3/19/2008



Generated 3/20/2008 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 19 March shows a return to La Nina type wet conditions over the Pacific NW and Northern 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

Weekly Snowpack and Drought Monitor Update Report

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

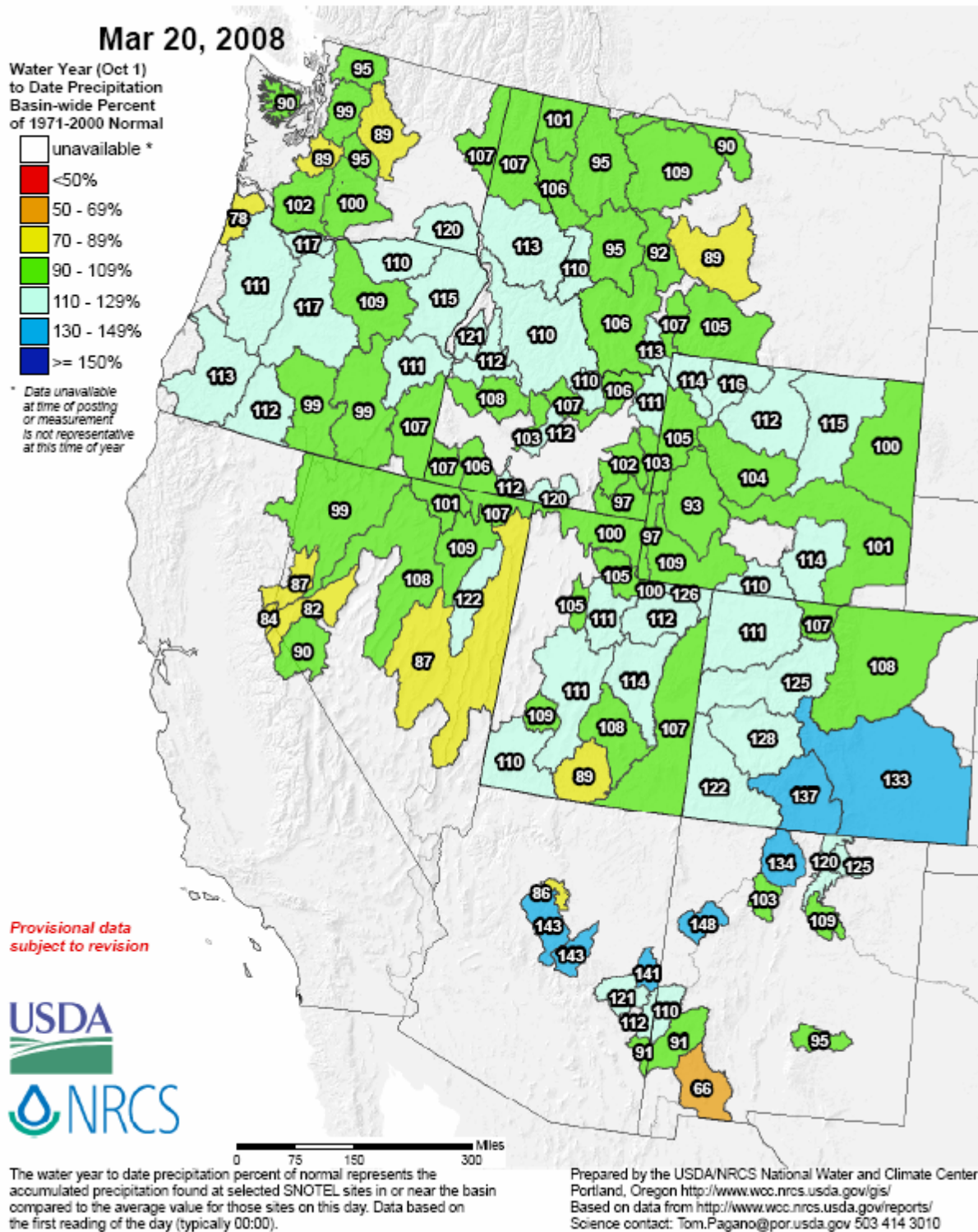
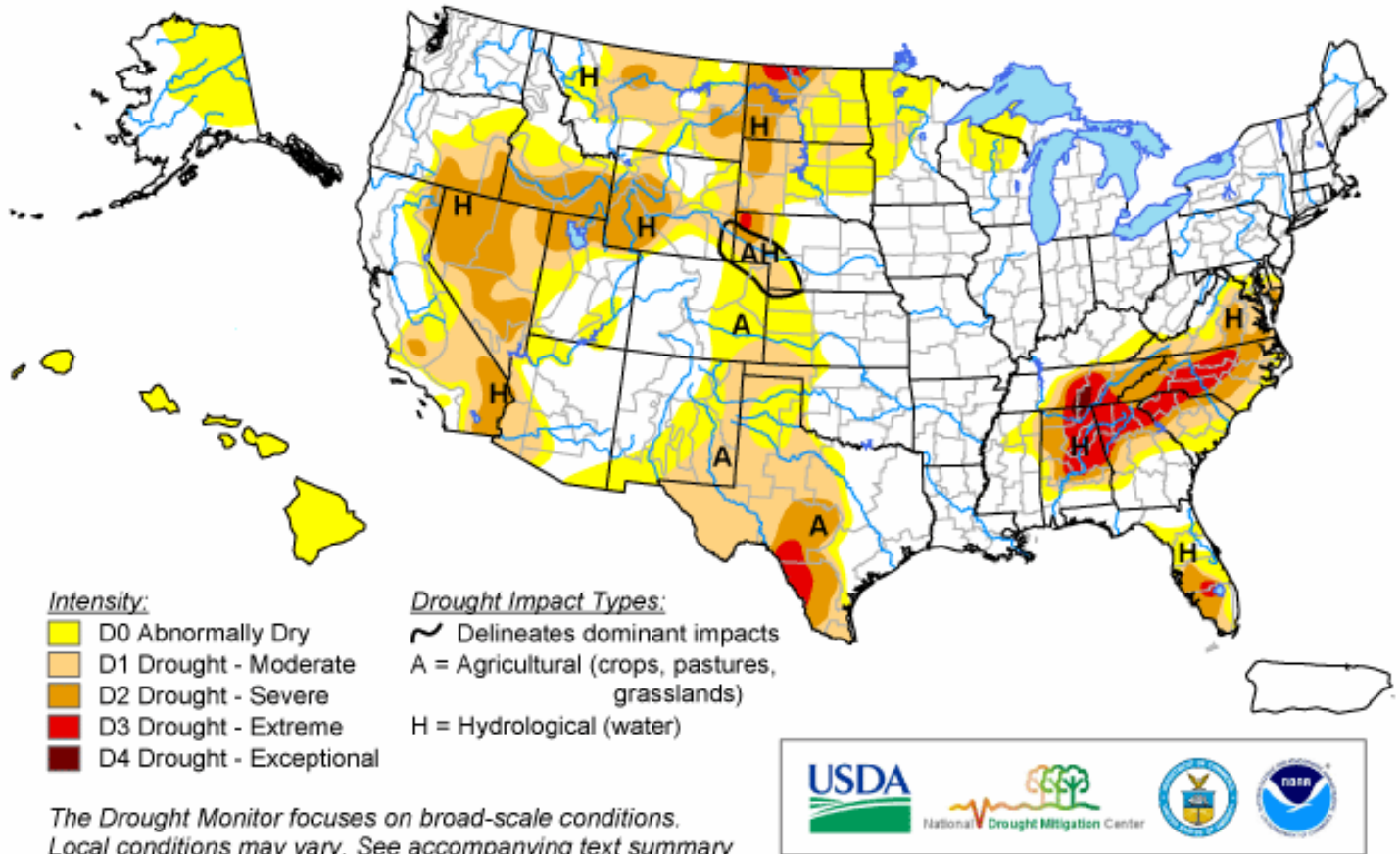


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows well above normal totals over much of the southern CO, AZ, and northern NM. Only a few river basins are lower than 90% of normal. Values have changed ~ +/- 5 percent across the West since last week.
Ref: http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf

U.S. Drought Monitor

March 18, 2008

Valid 8 a.m. EDT



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

Released Thursday, March 20, 2008

Author: Mark Svoboda, National Drought Mitigation Center

Fig. 4. Current Drought Monitor weekly summary.

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

U.S. Drought Monitor

West

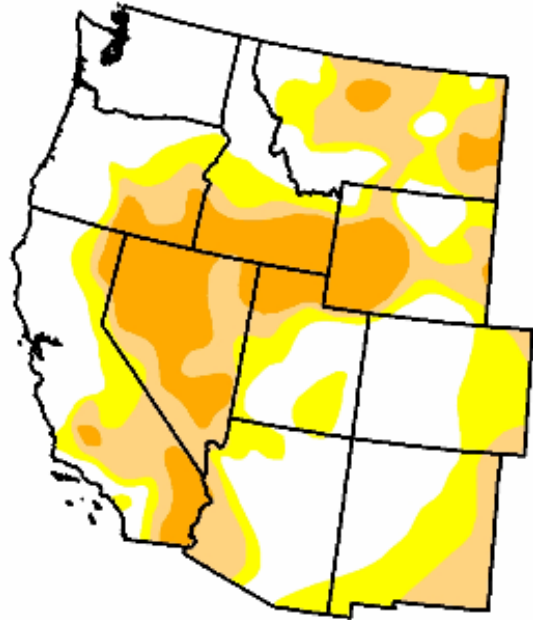
March 18, 2008

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.3	57.7	36.2	16.0	0.0	0.0
Last Week (03/11/2008 map)	42.3	57.7	34.2	16.0	0.0	0.0
3 Months Ago (12/25/2007 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 (03/20/2007 map)	36.7	63.3	34.7	19.7	8.1	0.0

Intensity:

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



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 20, 2008

Author: Mark Svoboda, National Drought Mitigation Center

Fig. 4a. 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.

U.S. Drought Monitor

Southeast

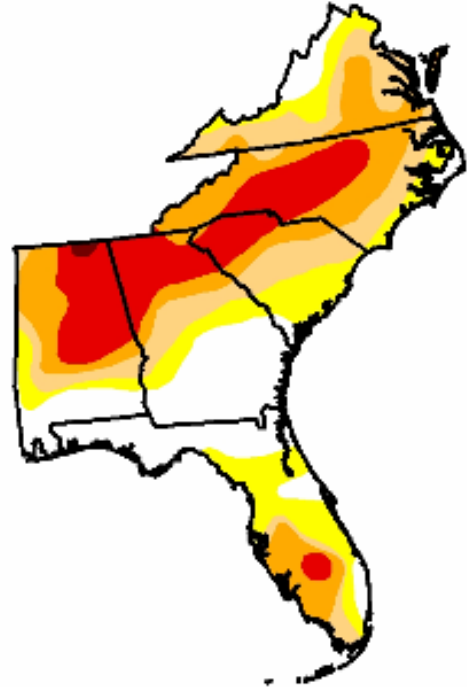
March 18, 2008

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	23.8	76.2	58.5	40.5	18.8	0.3
Last Week (03/11/2008 map)	23.8	76.2	58.0	40.3	18.8	1.6
3 Months Ago (12/25/2007 map)	9.0	91.0	76.9	62.3	47.8	36.2
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 (03/20/2007 map)	20.2	79.8	26.0	2.2	0.0	0.0

Intensity:

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



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



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Fig. 4b: Drought Monitor for the Southeastern States with statistics over various time periods. Note that there was little change since last week.

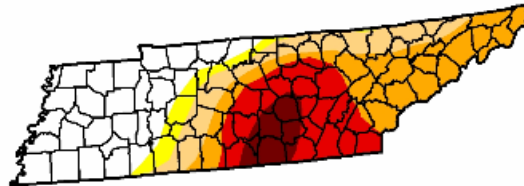
Ref: http://www.drought.unl.edu/dm/DM_southeast.htm.

Weekly Snowpack and Drought Monitor Update Report

U.S. Drought Monitor Tennessee

March 18, 2008
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.7	66.3	61.1	47.3	23.9	6.1
Last Week (03/11/2008 map)	33.2	66.8	61.1	47.3	23.9	15.9
3 Months Ago (12/25/2007 map)	27.4	72.6	60.8	53.8	46.8	20.7
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 (03/20/2007 map)	12.0	88.0	51.4	4.5	0.0	0.0



Intensity:

Yellow	D0 Abnormally Dry	Dark Red	D3 Drought - Extreme
Orange	D1 Drought - Moderate	Dark Red	D4 Drought - Exceptional
Light Orange	D2 Drought - Severe		

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements

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

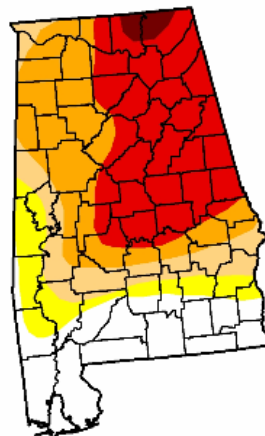


Released Thursday, March 20, 2008
Author: Mark Svoboda, National Drought Mitigation Center

U.S. Drought Monitor Alabama

March 18, 2008
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	21.3	78.7	69.0	57.2	34.1	1.5
Last Week (03/11/2008 map)	21.3	78.7	69.0	57.2	34.1	4.2
3 Months Ago (12/25/2007 map)	7.3	92.7	84.3	70.5	60.2	49.2
Start of Calendar Year (01/01/2008 map)	9.5	90.5	80.8	66.9	56.5	38.9
Start of Water Year (10/02/2007 map)	0.0	100.0	95.4	83.7	76.1	52.0
One Year Ago (03/20/2007 map)	0.0	100.0	62.7	7.0	0.0	0.0



Intensity:

Yellow	D0 Abnormally Dry	Dark Red	D3 Drought - Extreme
Orange	D1 Drought - Moderate	Dark Red	D4 Drought - Exceptional
Light Orange	D2 Drought - Severe		

The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
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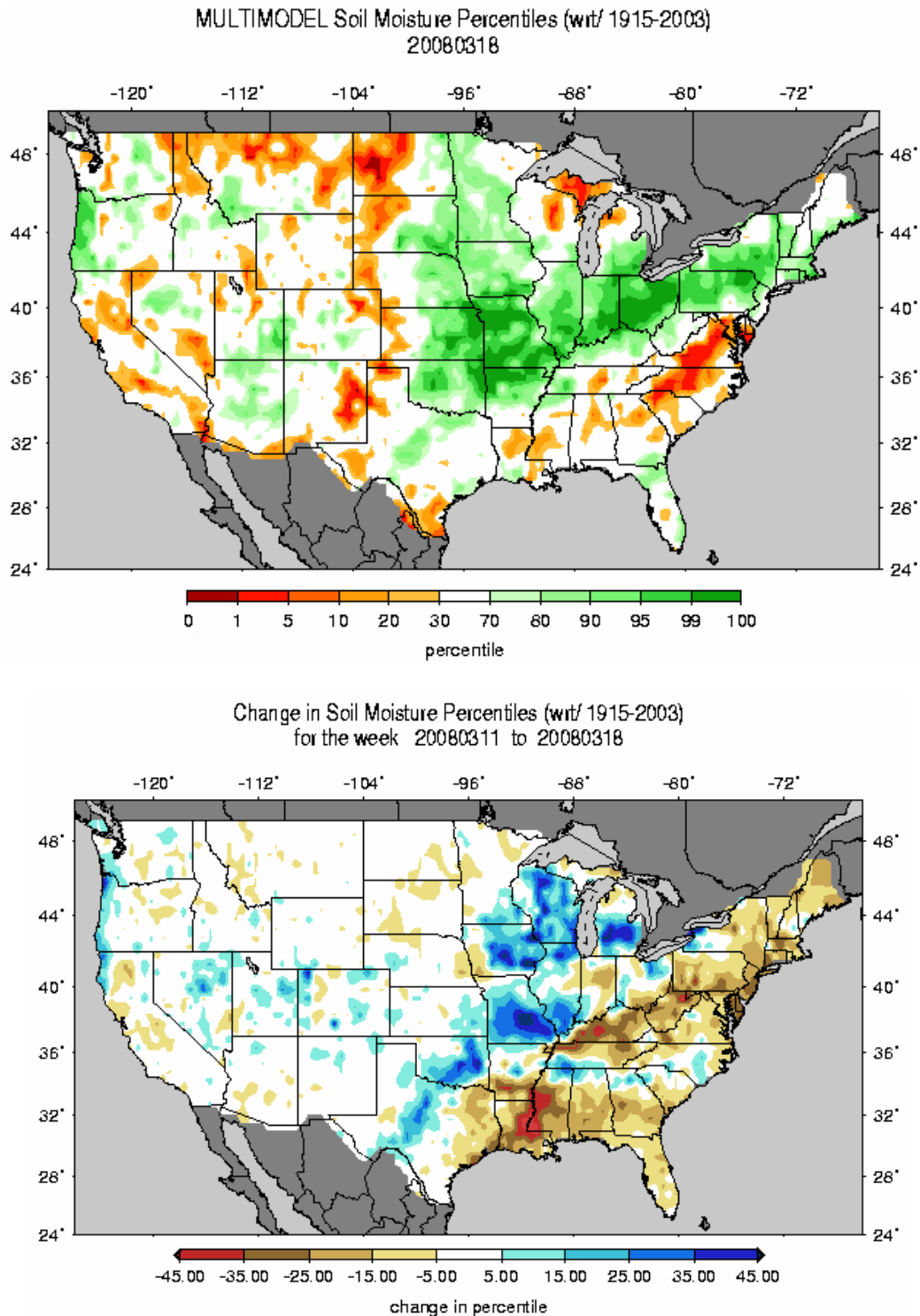
<http://drought.unl.edu/dm>



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Fig. 4c. Drought Monitor for Tennessee and Alabama with statistics over various time periods shows some of the severest drought conditions in the US. Note improvements for Tennessee and Alabama (D4) since last week.
Ref: http://www.drought.unl.edu/dm/DM_state.htm?TN,S
http://www.drought.unl.edu/dm/DM_state.htm?AL,SE

Weekly Snowpack and Drought Monitor Update Report



Figs. 5 & 5a: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. Note significant moistening from central Texas to Michigan (flooding starting to be a problem in some of this area). Considerable drying has occurred from Louisiana to New England. 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

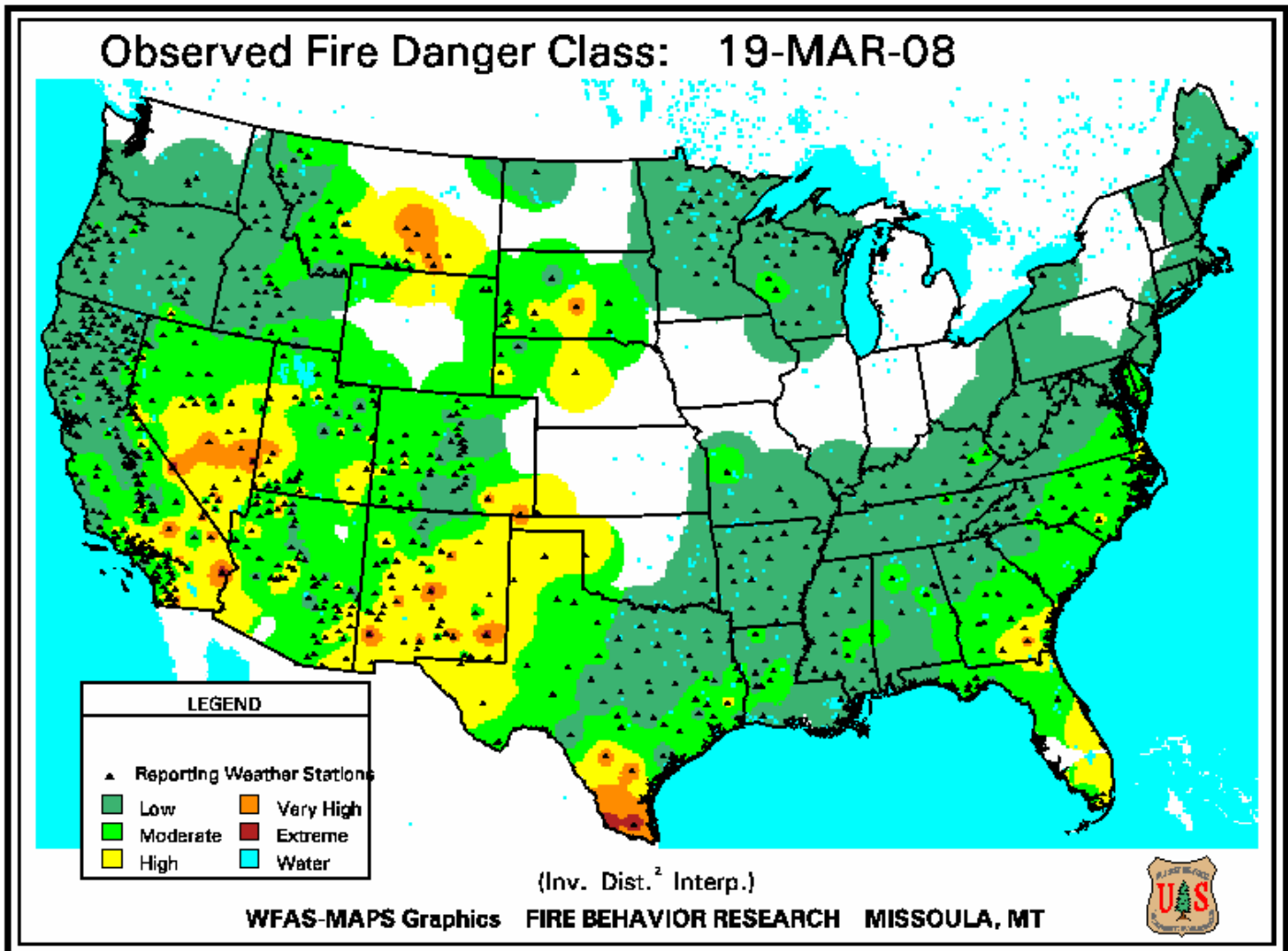
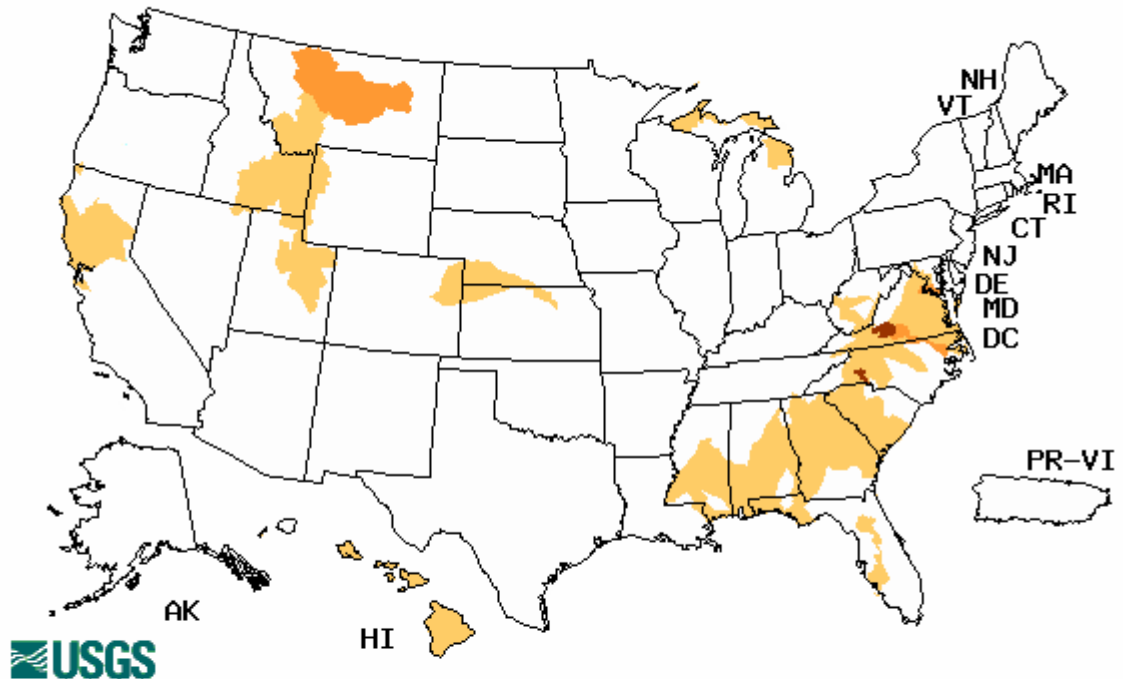


Fig. 6. Observed Fire Danger Class. Note general improvement across the US except for some worsening over southern Nevada since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

Weekly Snowpack and Drought Monitor Update Report

Wednesday, March 19, 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 Montana, 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>

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary March 18, 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 Southeastern and Mid-Atlantic States: Slow but steady erosion of the D4 core continued last week following back-to-back weeks of good rains (1 to 3 inches) in and around the Cumberland Plateau of Tennessee and across northern Georgia and the western Carolinas. In fact, the D4 has been removed from Georgia as a result. This is the first time Georgia has been D4-free since July of last year. The return of moisture and warmth led to some severe weather across the region, signaling that the high demand season is just around the corner. The rest of the region remains in a holding pattern this week, with no changes to the drought depiction as widespread long-term (since October 1) deficits (10-20 inches/50-75% of normal) are still entrenched across the region.

The Plains: A break in the dry pattern occurred early this week as heavy late-period rains (2-4 inches) fell across west-central Texas and up into Oklahoma, bringing widespread relief and a general one-category improvement along the western and northern edges of last week's D2 core in west-central Texas. To the west of San Angelo and Del Rio, however, the rains failed to materialize, and D1 has advanced across all of western Texas and D0 now covers the entire Texas Panhandle. Drought has also pushed east across all counties within the OK Panhandle. In addition, above-normal temperatures returned in earnest to the region after a brief hiatus. This, coupled with the dryness in west Texas, has again raised grass fire fears.

The West: The recent warmth and dryness has led to the introduction of D1 in southeastern New Mexico. Elsewhere in the West, status quo is the story as a drier March-to-date (for the Southwest, Great Basin, and Intermountain West) is being aided by a cooler March in the upper elevation thus far, preserving the good early pack. However, recent warmth has started to erode the lower level snows. The cooler temperatures have helped to temper flood fears thus far.

Hawaii: A relatively quiet week weatherwise across Hawaii results in no changes to the Abnormally Dry conditions (D0) found there.

Looking Ahead: During the next 5 days (through March 24), the forecast calls for good rains in the southern Plains and across the Southeast and Mid-Atlantic regions. Some of the better totals are expected to fall within some of the core D3-D4 drought areas in the Southeast as well as the D1-D3 core in southern Florida. As for temperatures, they are expected to be 3 to 6 degrees Fahrenheit below normal for the entire eastern two-thirds of the United States. The exception can be found in the extreme southern tip of Florida, where they are looking at normal, seasonal-type temperatures. It's looking to warm up in the west. Specifically, the Southwest is looking at 3 to 6 degree Fahrenheit departures on the warm side during this time frame.

Weekly Snowpack and Drought Monitor Update Report

The NWS 6 to 10 day outlook for March 25-29 shows that cooler temperatures are likely in Alaska and for the entire eastern half of the United States (east of the Mississippi River). Above-normal temperatures are expected in the Desert Southwest, the Intermountain West, and southern California. As for precipitation, below-normal totals are likely across Alaska, the Desert Southwest, southern Rockies, southern Plains, and southern Florida.

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 19, 2008