



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

Weekly Report - Snowpack / Drought Monitor Update **Date: 7 May 2009**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: Snow-water equivalent percent to date shows values over much of the Cascades and Northern Rockies is holding on to surplus values while the Southern Tier States continue to dwindle (Fig 1). Unofficial forecast changes for the past 7 days in spring and summer streamflow runoff for selected SNOTEL sites show that forecast values have increased over much of the Northern Rockies and Inter Mountains of Idaho (residual impact from La Nina and the cool phase of the PDO) and have decreased over southern Utah and Colorado, and northern New Mexico (Fig. 1a). This past week's snow depth changes show late season increases over south-central Idaho and portion of northwest Wyoming and southwest Montana. Decreases are noted elsewhere; especially in Utah, Colorado and the Cascades (Fig. 1b).

Temperature: SNOTEL and ACIS-day station average temperature anomalies were below average across the Northern Tier States. During the week, average temperatures were warmer than average across the Southern Tier States (Fig. 2). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures occurred over areas over eastern Arizona (>+8F) and the greatest negative departures occurred over northern Montana (<-10F) (Fig. 2a).

Precipitation: ACIS 7-day average precipitation anomaly for the period ending 6 May shows an unusually wet pattern over much of the West Coast from Central California northward and eastward along the Western Slope of the Continental Divide (Fig. 3). Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2009 Water Year that began on October 1, 2008 shows values within a few percentage points of last week's values. However, a one category improvement has occurred over much of Oregon (Fig 3a). For precipitation totals, departures, and percent of normal for several time periods. See: <http://www.water.gov/> and <http://cig.mesonet.org/~derek/public/droughtmonitoring/>.

WESTERN DROUGHT STATUS

The West

The Sierra Nevada Mountains of northern California were the recipients of significant rainfall the first few days in May. Some weekly totals were over 7.5 inches in select areas for the week in the western foothills. Forage and rangeland reports are near normal for this time of year, and California Department of Water Resources' northern Sierra precipitation index is near normal for the water year (since October 1). A small area of short-term improvement in drought conditions west of Lake Tahoe led to one-category change in central El Dorado, Placer and Nevada counties. A very tight gradient of precipitation over the crest to the lee of the Sierra Nevada contributed to the retention of D2 in northeastern California and northwestern Nevada.

Elsewhere, a review of water conditions in Utah revealed near to above normal precipitation for the water year to date in many counties that had been in the abnormally dry category. In addition, streamflow is near normal this and reservoir storage is rising as a result. Improvements were made to reflect no drought conditions in several western, northern, and northeastern counties in Utah and into eastern Nevada. In Arizona, abnormally dry conditions persist and the east central part of the

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state was degraded to moderate drought, reflecting deficits in precipitation the last few months.

After a weather system pushed through Montana on April 27-29, improvements were warranted on this week's map. A large area of abnormally dry conditions was removed from central and eastern Montana. Moderate drought remains in northwestern Montana. Author: Laura Edwards, Western Regional Climate 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, and 4b).

SOIL MOISTURE

Soil moisture (Figs. 5a and 5b), 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

Fire Weather Users: The image presented on the National page now highlights offices with current Fire Weather Watches or Red Flag Warnings. Though the entire forecast office area is highlighted, the area of the Watch or Warning may be much smaller. Refer to the individual forecasts for details. Since forecast formats and policies are different among the different Weather Service offices, it is impossible to account for all variations in Watch/Warning issuances. Some Watches/Warnings may not be highlighted due to these differences and some may remain highlighted past the expiration time. We will continue to monitor the site and fix these problems as they occur (if possible).

Most offices issue a separate product for Fire Weather Watches/Red Flag Warnings, but some do not. For those that do issue a separate product, a hyperlink will appear in the Fire Weather Forecast for that office (the product that displays when you click on an area in the image of the United States). The offices that do not issue a separate product place the Red Flag Warning/Fire Weather Watch information directly in the Fire Weather Forecast, so no separate hyperlink will show up.

The National Interagency Coordination Center provides a variety of products that describe the current wildfire status for the U.S. - http://activefiremaps.fs.fed.us/lq_fire2.php. 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

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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/>

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

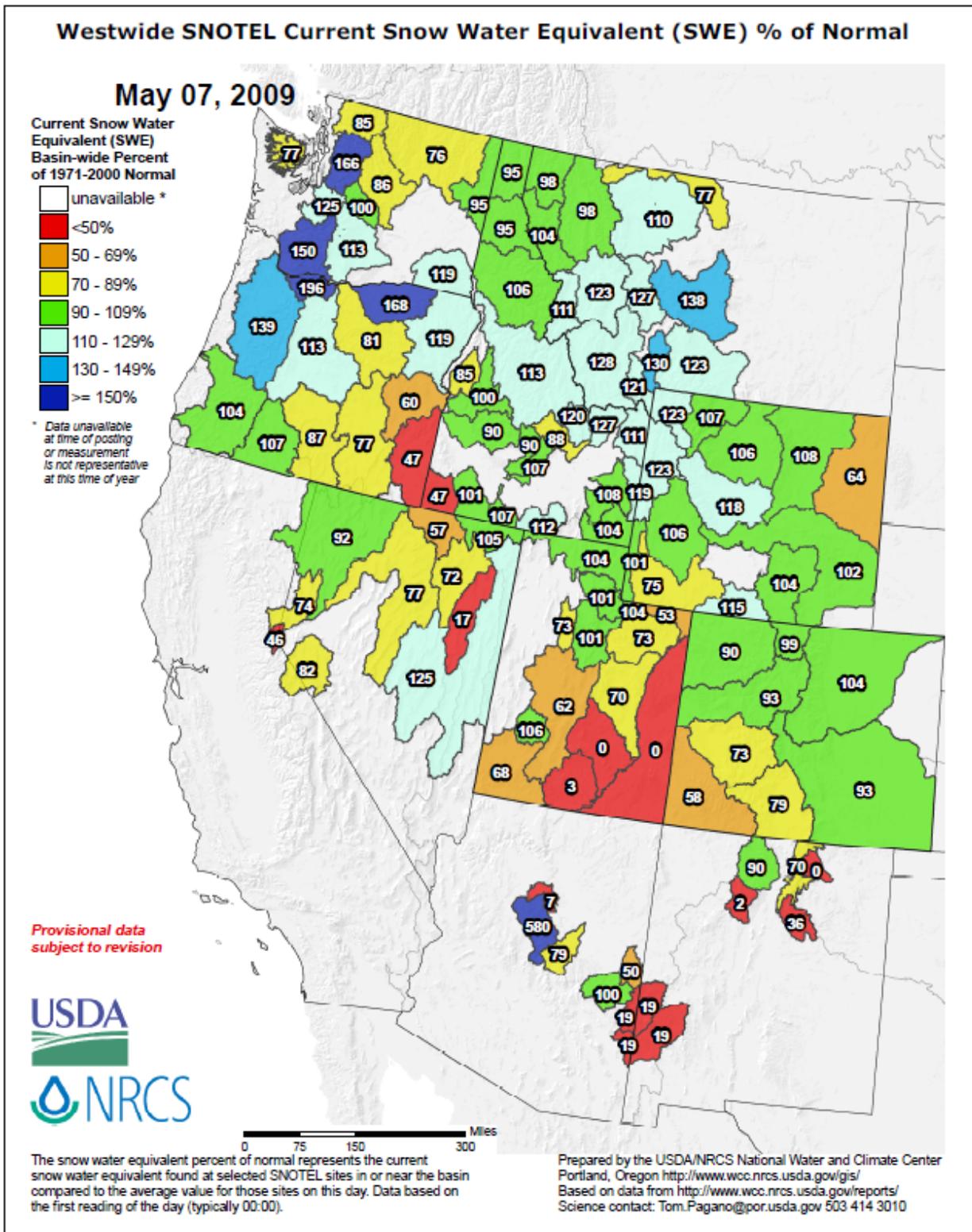


Fig. 1. Snow-water equivalent percent to date shows values over much of the Cascades and Northern Rockies holding on to surplus values while the Southern Tier States continue to dwindle. The very high value over central Arizona is due to one isolated SNOTEL site. Remember, at this time of year, it doesn't take much snow (occurrence is extremely rare) for the statistics to be skewed.

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

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7-Day Guidance Forecast Change as Percent of 1971-2000 Normal

May 07, 2009

For guidance only

7-Day Guidance
Forecast Change
(% normal)

- ✕ > 20% gain
- ▲ 16 - 20%
- ▲ 11 - 15%
- ▲ 6 - 10%
- ▲ 1 - 5%
- ⊖ no change
- ▼ -5 - -1%
- ▼ -10 - -6%
- ▼ -15 - -11%
- ▼ -20 - -16%
- ✘ > 20% loss
- ⊖ Unavailable*

* Forecast unavailable due to insufficient realtime data or low forecast skill

Provisional Data
Subject to Revision

0 50 100 200 Miles



Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/wsf/daily_forecasts.html
Based on data from
ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/daily_forecast/SummaryOutput.csv
Science contact: Tom.Pagano@por.usda.gov 503 414 3010

This is a completely automated objective product based on SNOTEL data. This product is not meant to replace or supersede the official forecasts produced in coordination with the National Weather Service.

Fig. 1a: Selected preliminary daily water supply forecast changes since last week show that forecast values have increased over much of the Northern Rockies and Inter Mountains of Idaho (residual impact from La Nina and the cool phase of the PDO) and have decreased over southern Utah and Colorado, and northern New Mexico.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/daily_forecast/maps/west_dailyfcst_7daych.pdf

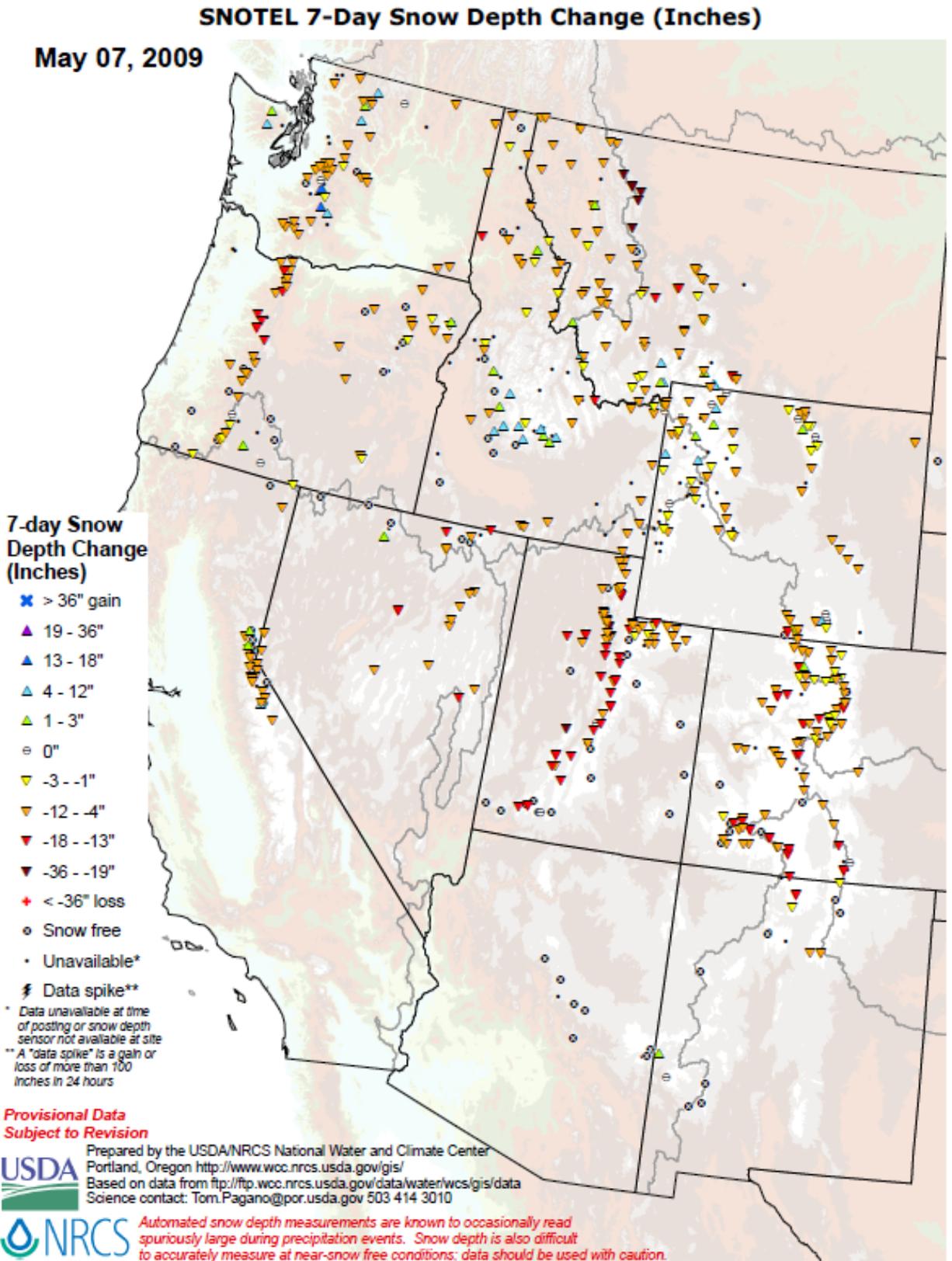


Fig. 1b: This past week's snow depth changes show late season increases over south-central Idaho and portion of northwest Wyoming and southwest Montana. Decreases are noted elsewhere; especially in Utah, Colorado and the Cascades.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf

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

May 07, 2009

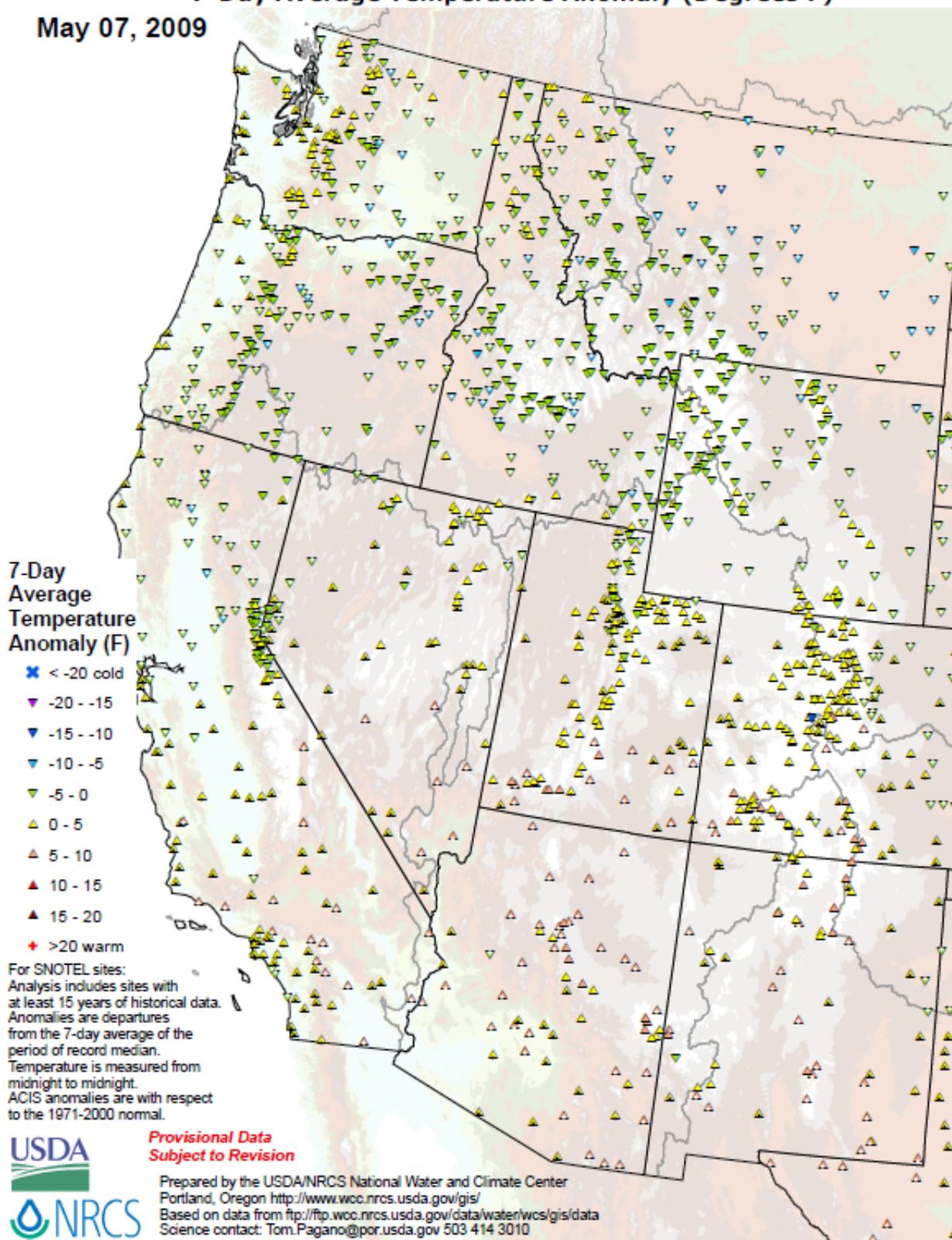
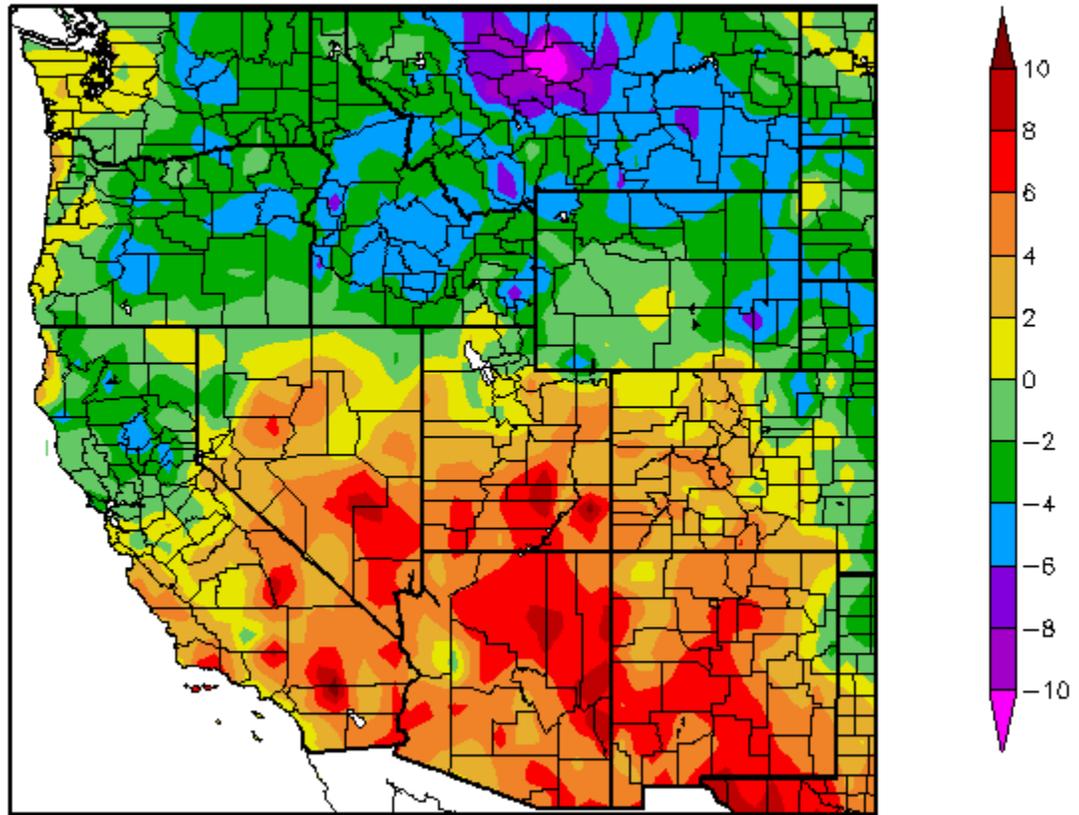


Fig. 2. SNOTEL and ACIS-day station average temperature anomalies were below average across the Northern Tier States. During the week, average temperatures were warmer than average across the Southern Tier States.

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

Departure from Normal Temperature (F)
4/30/2009 – 5/6/2009



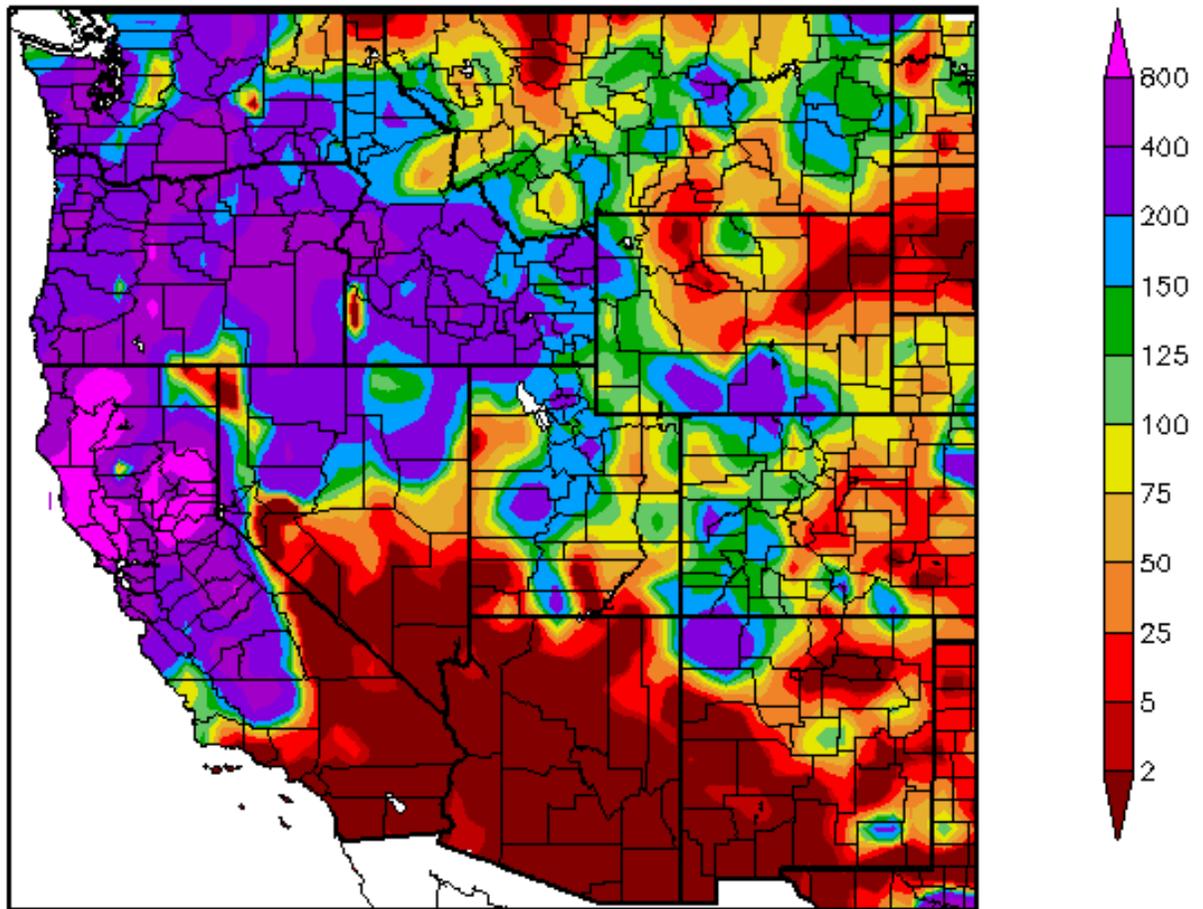
Generated 5/7/2009 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2a. ACIS 7-day average temperature anomalies show that the greatest positive temperature departures occurred over areas over eastern Arizona (>+8F) and the greatest negative departures occurred over northern Montana (<-10F).

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

Percent of Normal Precipitation (%)
4/30/2009 – 5/6/2009



Generated 5/7/2009 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. ACIS 7-day average precipitation anomaly for the period ending 6 May shows an unusually wet pattern over much of the West Coast from Central California northward and eastward along the Western Slope of the Continental Divide.

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

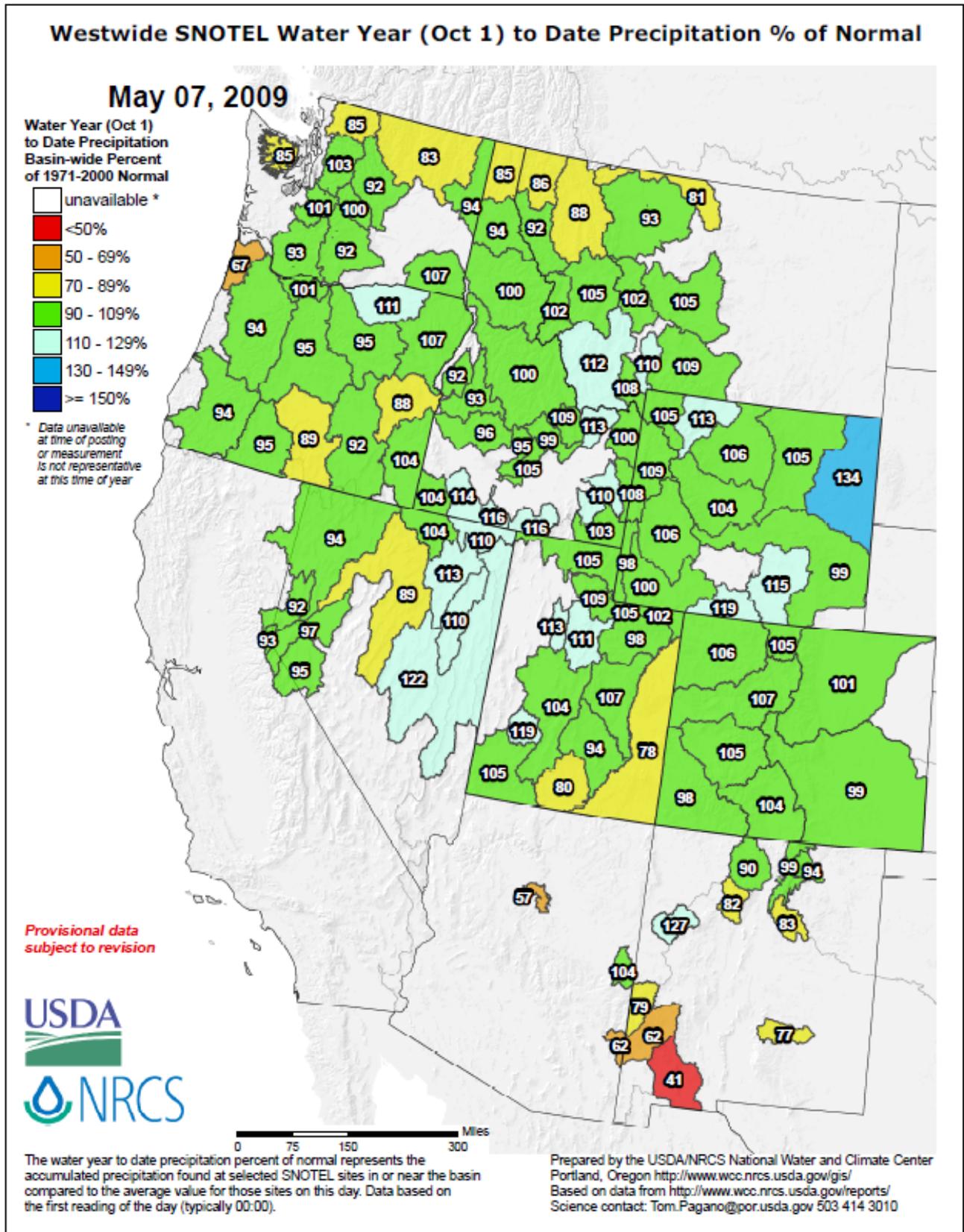
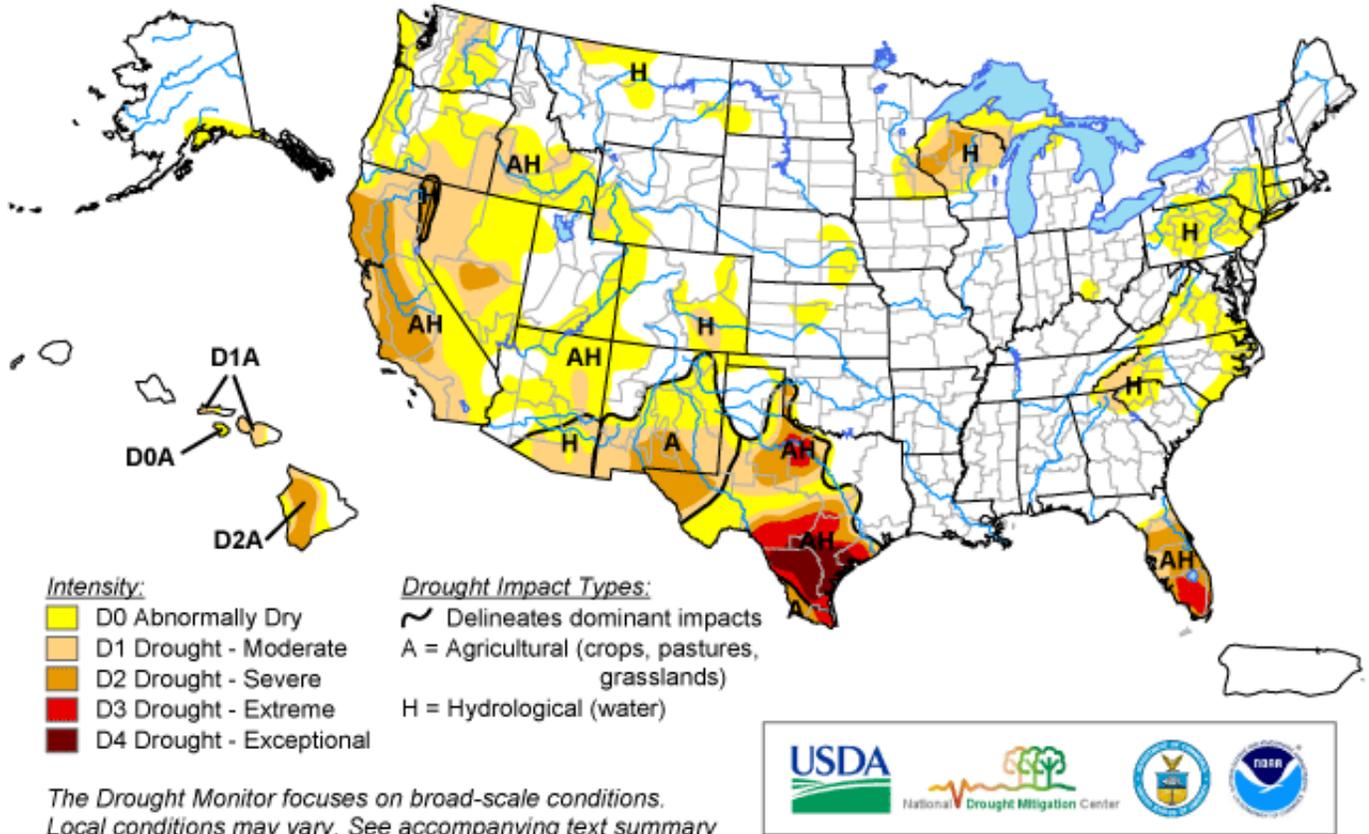


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2009 Water Year that began on October 1, 2008 shows values within a few percentage points of last week's values. However, a one category improvement has occurred over much of Oregon.

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

U.S. Drought Monitor

May 5, 2009
Valid 8 a.m. EDT



Released Thursday, May 7, 2009

Author: Laura Edwards, Western Regional Climate Center

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

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

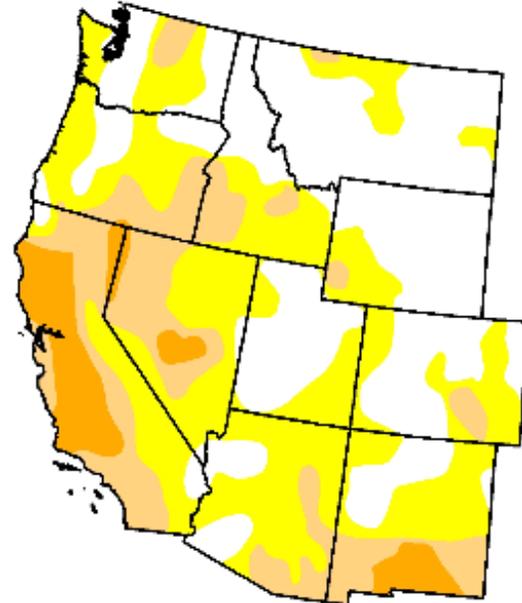
West

May 5, 2009

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.8	61.2	24.6	6.9	0.0	0.0
Last Week (04/28/2009 map)	33.6	66.4	25.2	7.7	0.0	0.0
3 Months Ago (02/10/2009 map)	37.1	62.9	26.2	10.7	2.5	0.0
Start of Calendar Year (01/06/2009 map)	37.4	62.6	28.9	8.8	0.4	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (05/06/2008 map)	33.3	66.7	36.3	6.2	0.0	0.0



Intensity:

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

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

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



Released Thursday, May 7, 2009

Author: Laura Edwards, Western Regional Climate Center

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Conditions have improved a bit during the past week. Ref: http://www.drought.unl.edu/dm/DM_west.htm

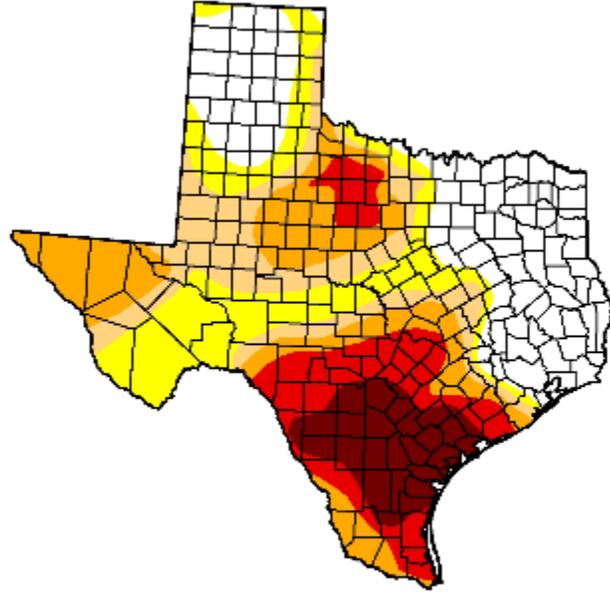
U.S. Drought Monitor

Texas

May 5, 2009
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.2	71.8	53.7	39.2	21.6	9.7
Last Week (04/28/2009 map)	24.6	75.4	56.3	41.6	21.4	9.7
3 Months Ago (02/10/2009 map)	2.6	97.4	69.5	43.8	19.6	7.6
Start of Calendar Year (01/06/2009 map)	41.7	58.3	24.5	15.0	9.1	4.2
Start of Water Year (10/07/2008 map)	67.2	32.8	20.5	11.0	3.6	0.0
One Year Ago (05/06/2008 map)	41.4	58.6	38.7	24.3	6.9	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



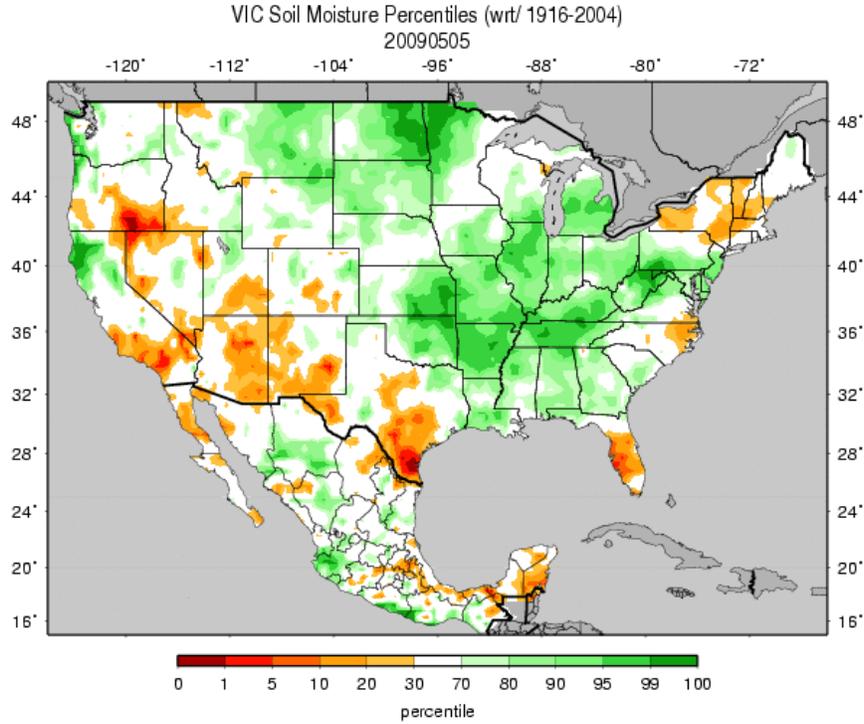
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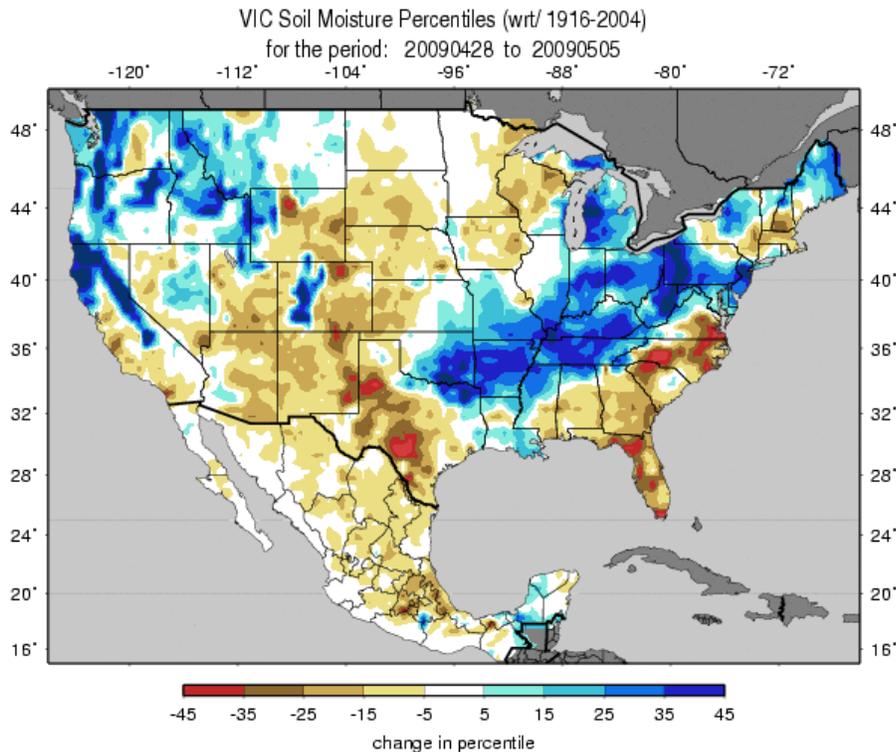
<http://drought.unl.edu/dm>

Fig. 4b: Texas is the only state with D4 drought condition in the US. Note some improvement in all categories except in D4 since last week. Ref: http://www.drought.unl.edu/dm/DM_state.htm?TX,S

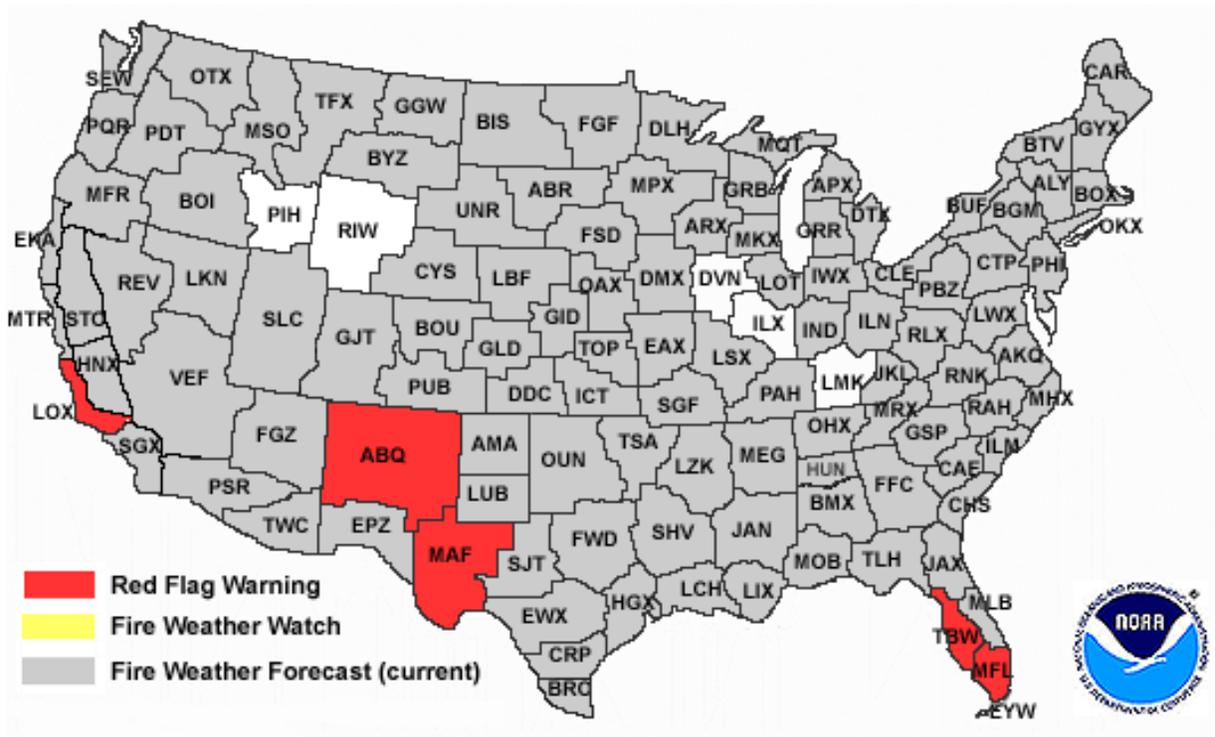
Weekly Snowpack and Drought Monitor Update Report



Figs. 5a: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 5 May. Near saturation exists over the Northern Plain and mid-Mississippi River Valley into West Virginia while excessive dryness is scattered across the West from Texas to Oregon and over New England and Florida. Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.gif



Figs. 5b: Soil Moisture change in percentile based on 1916-2004 climatology for this past week. There was significant moistening Oklahoma to New Jersey and along the Sierra and Cascades to the Northern Rockies. Excessive dryness is noted over Texas and much of the Southeast. Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.1wk.gif

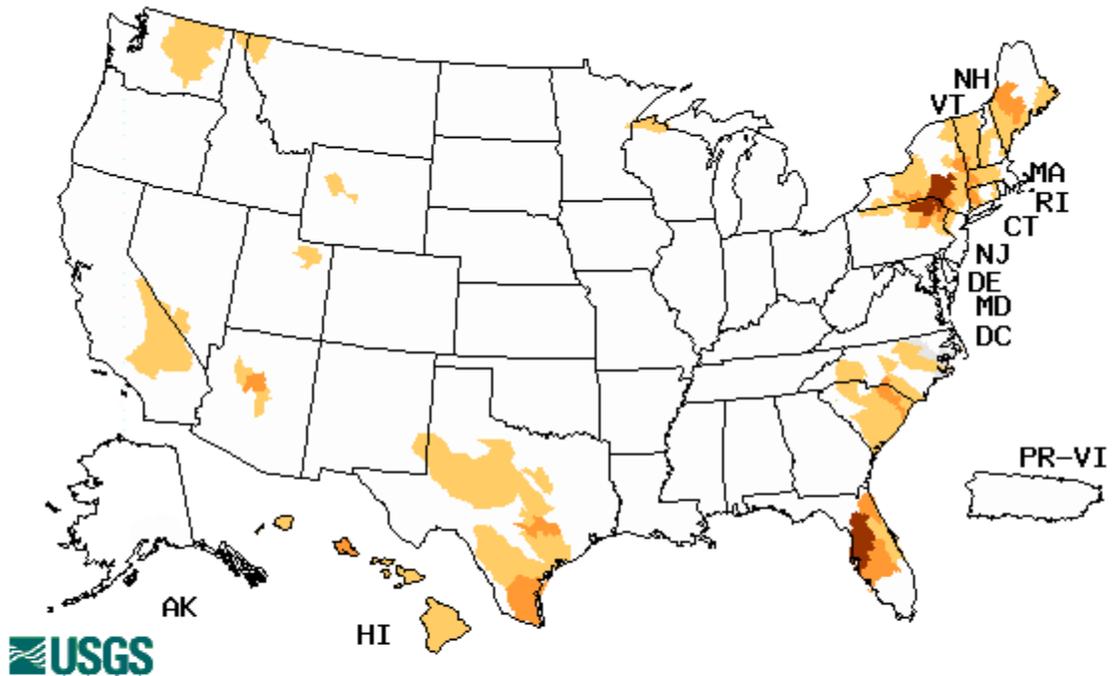


Thursday, 7 May 2009

Fig. 6. Red Flag Warning areas
 Ref: <http://fire.boi.noaa.gov/>

Weekly Snowpack and Drought Monitor Update Report

Wednesday, May 06, 2009



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. Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Conditions are very poor over western Florida, and worsening over New England. Conditions have improved greatly over Wisconsin-Upper Michigan and California during the past week.

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

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National Drought Summary –May 5, 2009

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/>.

Widespread precipitation over many regions of the nation this week has led to large-scale improvements in drought conditions. These short-term improvements are reflected in the West, Plains and mid-Atlantic regions. Substantial, near-record rainfall in Oklahoma and northern Texas contributed to 3-category improvements in this region.

The Plains

The area of most significant precipitation of the week was along the Red River of Oklahoma and Texas. The Burneyville, OK mesonet site reported an incredible 24-hour total of 12.89 inches, the fourth highest in the state's history, bringing the week's total to over 15 inches. This, in combination with equally impressive storm totals in the area, generated a two- to three-category improvement throughout much of the region, similar to what might result from a tropical storm. Widespread and significant changes spilled over the border into Texas, along a line roughly from Wichita Falls to College Station and eastward. An expansion of extreme drought (D3) was made in the northern counties of Shackelford and Stevens counties, creating a steep gradient from wet to dry in this region.

In North Dakota, soil moisture has improved in the northwestern part of the state, but has worsened in the southwest. D0 was introduced these drier counties, and removed from the wetter, northwestern areas. Nebraska and Kansas have had a good dose of rainfall across their border that returned this area to near-normal conditions. Areas of abnormal dryness remain in central Kansas and east central Nebraska.

The South

Florida continues to experience extreme drought throughout the southern reaches of the state. D3 was expanded this week to include western Glades county, and eastward into the metropolitan areas in Broward and Miami-Dade counties. This expansion reflects the large precipitation deficits in these areas, including shortages of over 11 inches in Miami and over 15 inches in Fort Lauderdale and Palm Beach. High fire danger is pervasive, and soil moisture ranges from one to five percent of normal in these interior areas. In Mississippi, substantial rainfall this week of two to eight inches brought relief to the western part of the state, ameliorating the previously abnormally dry conditions.

The East

Beneficial rains swept through the Ohio River Valley and Mid-Atlantic States this week. This recovery in drought conditions meant improvements in a significant portion of the previously abnormally dry areas in Ohio, West Virginia, Virginia, Maryland, Pennsylvania, Delaware and southern New Jersey. Local rainfall totals of over 4 inches were observed in the heart of this area in eastern Maryland and northern West Virginia. In the Appalachian Mountains, the area of D0 and D1 were reduced along the Tennessee/North Carolina border as well.

The West

The Sierra Nevada Mountains of northern California were the recipients of significant rainfall the first few days in May. Some weekly totals were over 7.5 inches in select areas for the week in the western foothills. Forage and rangeland reports are near normal for this time of year, and California Department of Water Resources' northern Sierra precipitation index is near normal for the water

Weekly Snowpack and Drought Monitor Update Report

year (since October 1). A small area of short-term improvement in drought conditions west of Lake Tahoe led to one-category change in central El Dorado, Placer and Nevada counties. A very tight gradient of precipitation over the crest to the lee of the Sierra Nevada contributed to the retention of D2 in northeastern California and northwestern Nevada.

Elsewhere, a review of water conditions in Utah revealed near to above normal precipitation for the water year to date in many counties that had been in the abnormally dry category. In addition, streamflow is near normal this and reservoir storage is rising as a result. Improvements were made to reflect no drought conditions in several western, northern, and northeastern counties in Utah and into eastern Nevada. In Arizona, abnormally dry conditions persist and the east central part of the state was degraded to moderate drought, reflecting deficits in precipitation the last few months.

After a weather system pushed through Montana on April 27-29, improvements were warranted on this week's map. A large area of abnormally dry conditions was removed from central and eastern Montana. Moderate drought remains in northwestern Montana.

Hawaii, Alaska and Puerto Rico

No changes were introduced this week in these regions.

Looking Ahead:

The next week's Drought Monitor period is starting off wet in the Tennessee River Valley, with a stationary front stretching from east Texas to Virginia. This system will bring precipitation to areas that have been recovering from drought in the Carolinas and Virginia, in addition to those areas already drought-free in Arkansas and Tennessee. Rain and high elevation snow will come to the Pacific Northwest during this same period. The system in the East will eventually work its way off the coast as high pressure from the central United States moves in. Oklahoma could be on track again to receive more rainfall during the next week.

For the next six to ten day period, models suggest a ridge setting in over the Aleutians, bringing above average temperatures in southwest Alaska. Above normal temperatures are predicted from New Mexico to New York and most of the southeast. Below normal temperatures will help slow the mountain snowpack east of the Cascades and in the northern Rockies. The precipitation outlook during this same period includes below average areas along all coastal areas, including the Pacific, Gulf, and Atlantic coasts. Above average precipitation in the next six to ten days may include the region from the northern Rockies to the Great Lakes states.

Author: Laura Edwards, Western Regional Climate 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: 7 May 2009