



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

**Weekly Report - Snowpack / Drought Monitor Update**      **Date: 1 May, 2008**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Snow:** During the past week, despite cooler than average temperatures, the sun has helped reduce snow cover over all but the Bighorn Mountains of Wyoming and Montana Ranges near Yellowstone National Park. The snow water-equivalent as of 30 April shows a number of SNOTEL sites at record levels across the West (Fig. 1). What's a little unusual about this year is that it has been relatively wet everywhere in the west. Usually one area is wet and another dry. The last time this has happened was in 1997. The current forecast for April-July inflow to Lake Powell (the Colorado River which drains parts of Wyoming, Utah and Colorado) is 122% normal, which is the best since 1997 (when the flow was 142% normal). The 2000-2007 average flow was 58% normal, so this year stands out for being relatively big compared to the severe drought we've had for the last 8 years now. Snow-water equivalent percent as of 1 May shows well above normal values continuing over the Cascades and Coastal Ranges (WA & OR) and to a lesser extent over Colorado (Fig. 1a).

**Temperature:** For the past seven days, average temperature anomalies were within +/- 5 degrees F across the West (Fig. 2). The greatest negative temperature departures occurred over the Wyoming Rockies (<-6F) and the greatest positive departures occurred over southern California (>+6F) (Fig. 2a).

**Precipitation:** Preliminary precipitation totals for the 7-day period ending 30 April shows an abundant amount of precipitation falling over western WA & OR and scattered across the Northern Rockies while very little precipitation fell across the remainder of the West (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 Colorado, northern New Mexico, central Arizona, and the Oregon Cascades. A drying trend is noted over parts of Nevada and southwest New Mexico (Fig. 3a).

## **WESTERN DROUGHT STATUS**

**The West:** Generally less than an inch of precipitation fell across the northern drought areas of the West this USDM week, but not enough to improve the drought depiction. An inch or more was observed over parts of northwest California and the coastal Pacific Northwest, while the southern areas of the West received little or no precipitation with wildfires developing in places.

Melting of an abundant winter snowpack has filled reservoirs and increased streamflows in Arizona, which has helped urban areas. But the last 8 weeks have been drier than normal and windy, with fire danger increasing. D0 (abnormally dry) was expanded across the state to reflect parched conditions in the rural areas, and D1 (moderate drought) was expanded in the southeast and southwest corners.

D0 was expanded to the coast across California, except for the northwest corner, due to continued dryness. According to news reports, the East Bay Municipal Utility District issued an urgent warning that water levels are critically low and that its Board of Directors may be forced to vote for mandatory water rationing at the May 13 meeting. D1 expanded along the San Joaquin Valley,

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## Weekly Snowpack and Drought Monitor Update Report

and the agricultural impact boundary was extended southward and to the coast, to reflect the persistent lack of rain and worsening soil moisture conditions. D2 expanded in southern California. Author: Richard Heim, National Climatic Data Center, NOAA

***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](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/>

## 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

### SNOTEL Current Snow Water Equivalent (SWE) Ranking Percentile Apr 30, 2008

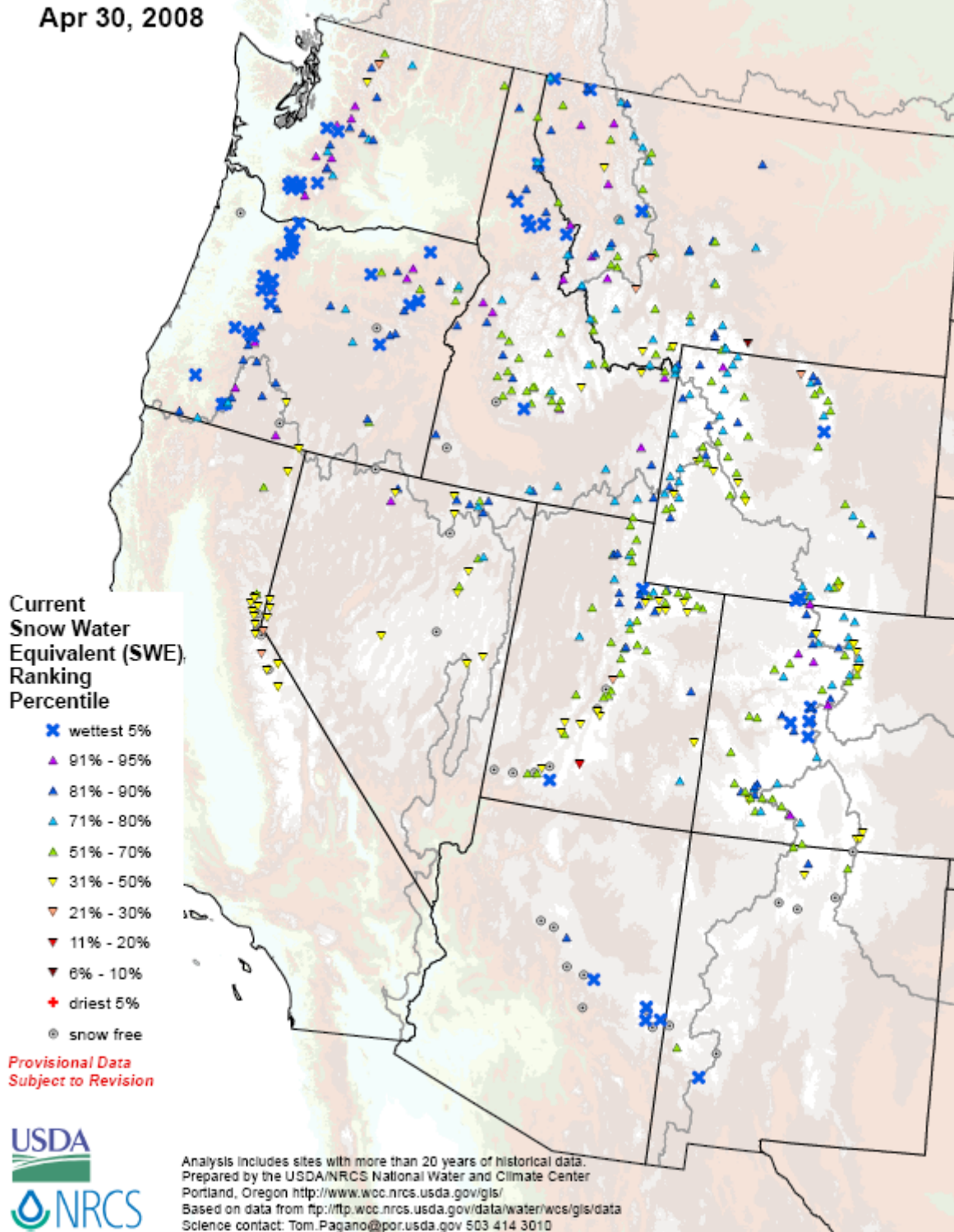


Fig. 1. During the past seven month, the 2008 Water-Year has been the wettest on average across the entire West since 1997. A large number of SNOTEL sites across the West are at or near record snow-water equivalent values. The **blue X** means that less than 5% of historical years since around 1980 have snowpack greater than what we have now (compared to other April 30's), meaning that this year is at least in the top 3 years. Some sites in Arizona and New Mexico still have some snow cover this late into the season.



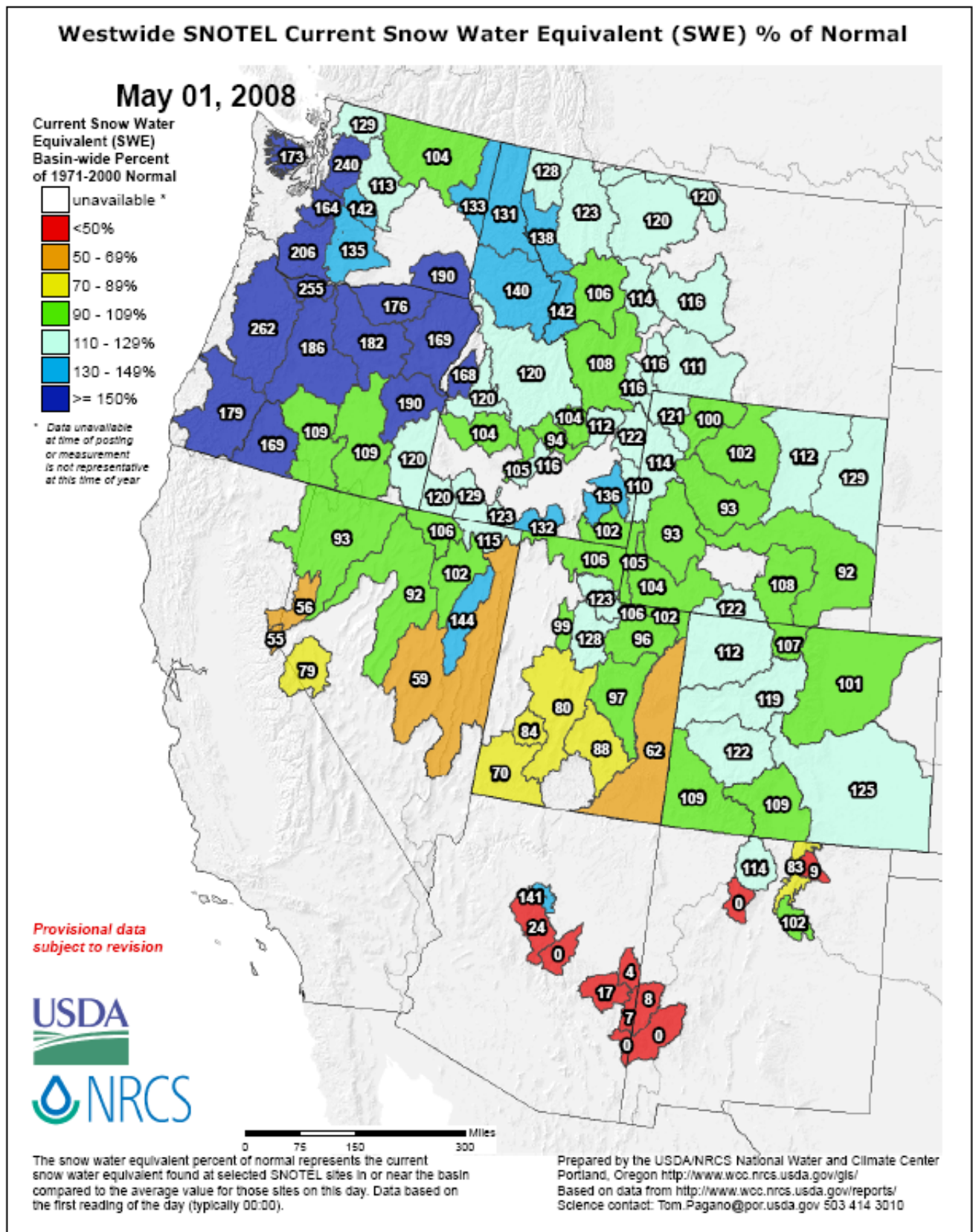


Fig. 1a. Snow-water equivalent percent as of 1 May shows well above normal values continuing over the Cascades and Coastal Ranges (WA & OR) and to a lesser extent over Colorado, Wyoming, and Montana. There was some increase over Montana since last week.

Ref: [http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west\\_swepctnormal\\_update.pdf](http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_swepctnormal_update.pdf)

## Weekly Snowpack and Drought Monitor Update Report

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

May 01, 2008

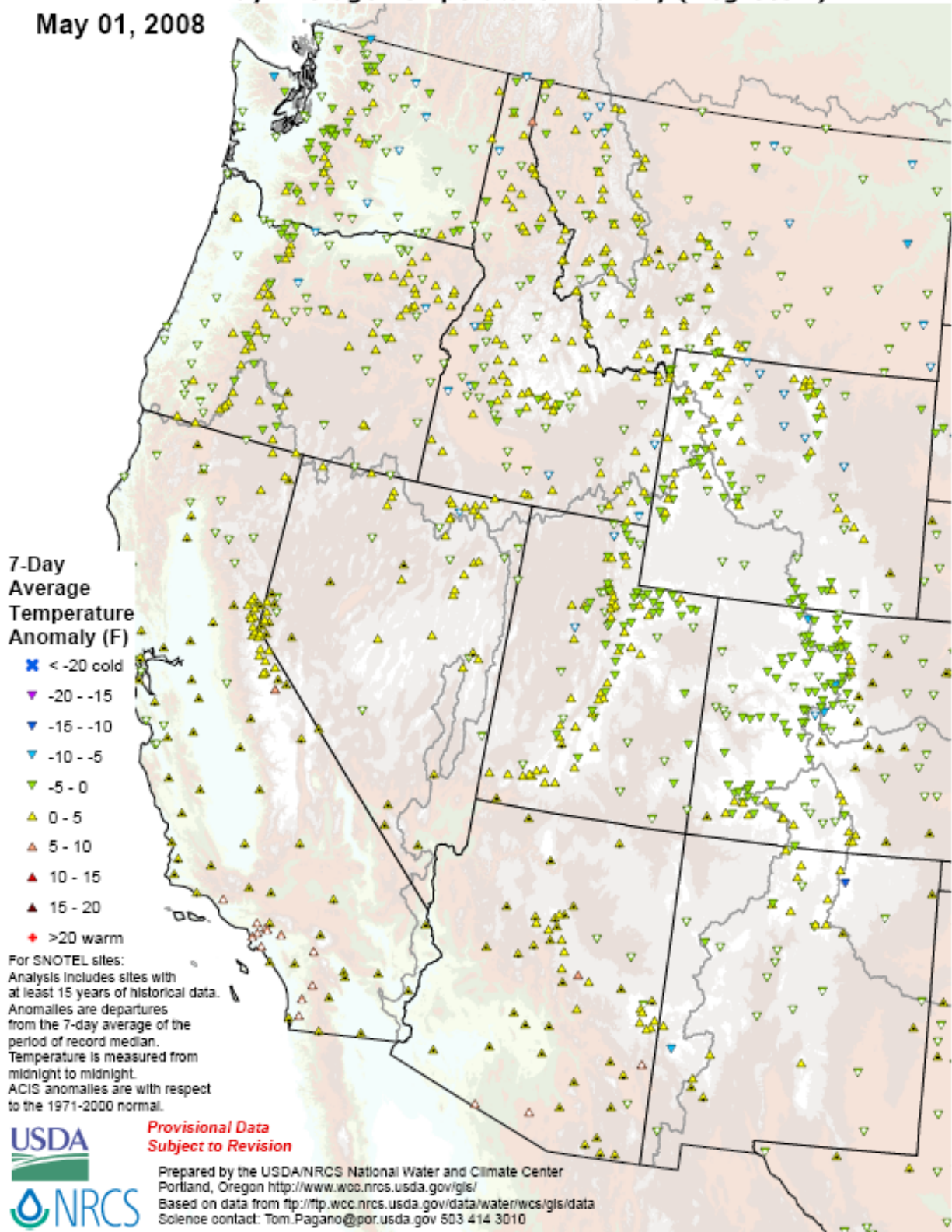
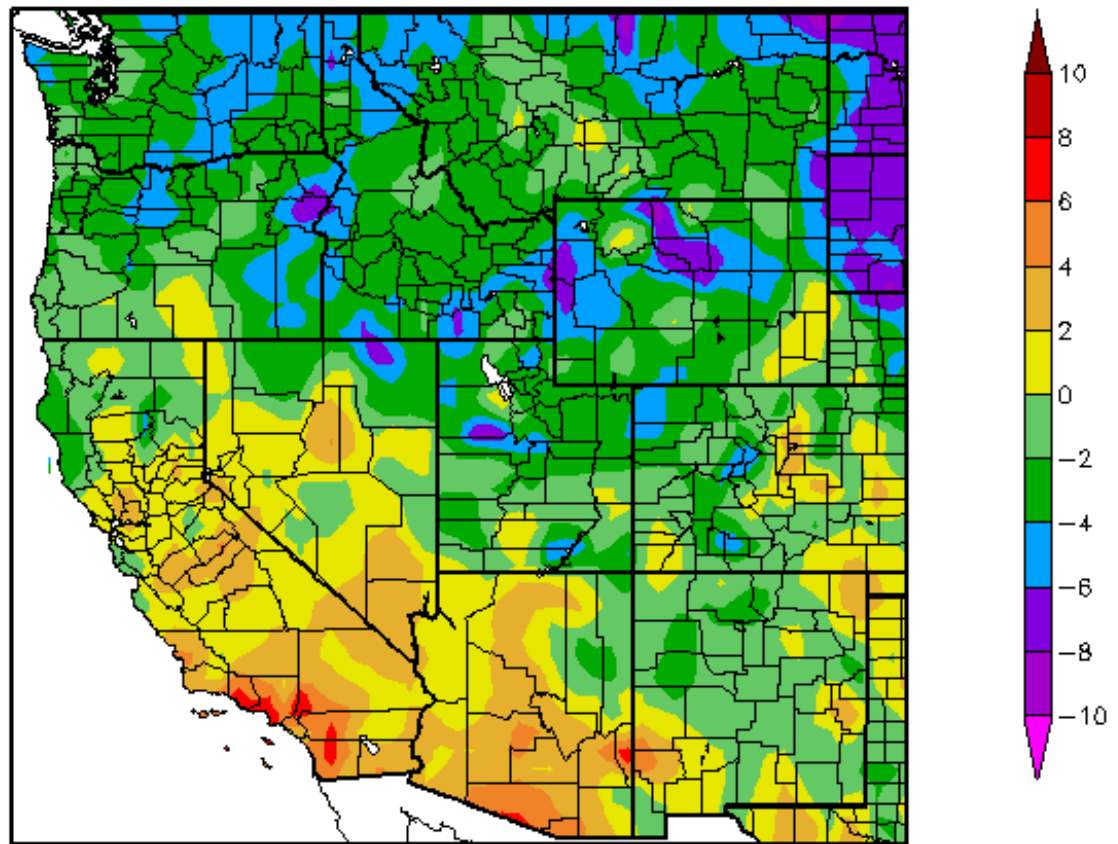


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomalies were within +/- 5 degrees F.

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

Departure from Normal Temperature (F)  
4/24/2008 – 4/30/2008



Generated 5/1/2008 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.



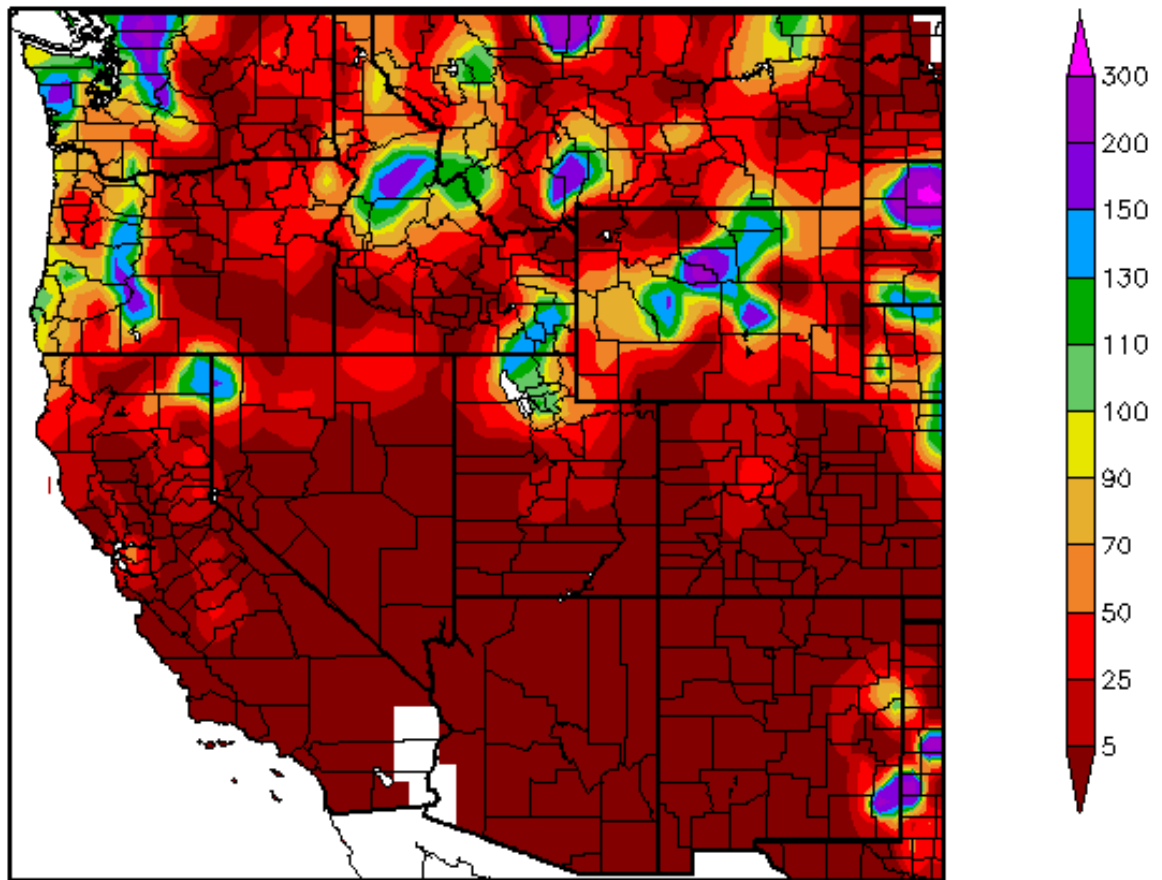
Normal refers to the 1971-2000 Climate Normal for the selected product.

**Fig. 2a. ACIS 7-day average temperature anomalies: Greatest negative temperature departures over the Wyoming Rockies (<-6F) and greatest positive departures over southern California (>+6F).**

Ref: [http://www.hprcc.unl.edu/maps/current/index.php?action=update\\_product&product=TDdept](http://www.hprcc.unl.edu/maps/current/index.php?action=update_product&product=TDdept)



Percent of Normal Precipitation (%)  
4/24/2008 – 4/30/2008



Generated 5/1/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

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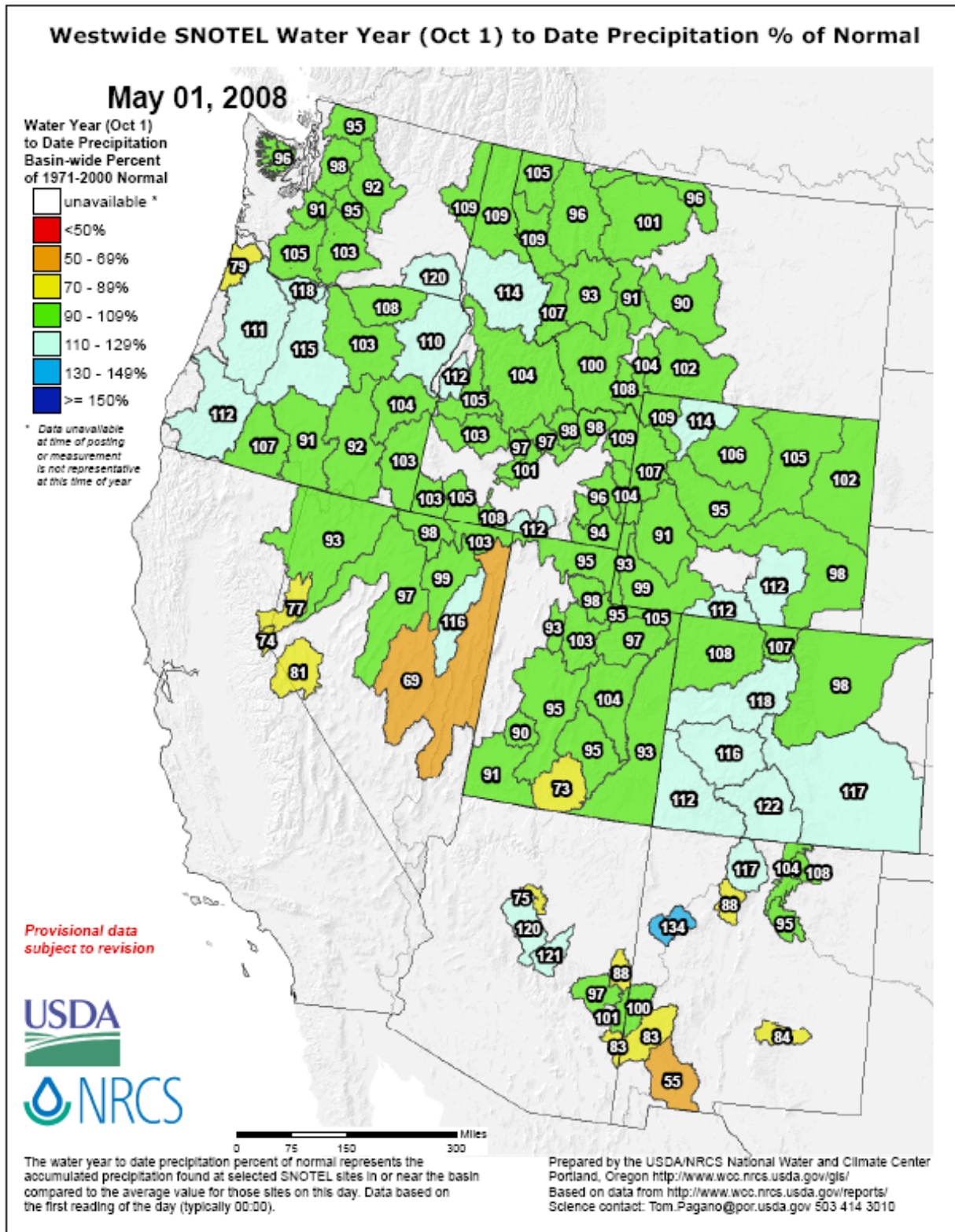
Normal refers to the 1971-2000 Climate Normal for the selected product.



**Fig. 3. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 30 April shows an abundant amount of precipitation falling over western WA & OR and scattered across the Northern Rockies while very little precipitation fell across the remainder of the West.** Ref: [http://www.hprcc.unl.edu/maps/index.php?action=update\\_product&product=PNorm](http://www.hprcc.unl.edu/maps/index.php?action=update_product&product=PNorm)



## Weekly Snowpack and Drought Monitor Update Report



**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 Colorado, northern New Mexico, central Arizona, and the Oregon Cascades. A drying trend is noted over parts of Nevada and southwest New Mexico.**

Ref: [http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west\\_wytdprecptnormal\\_update.pdf](http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecptnormal_update.pdf)

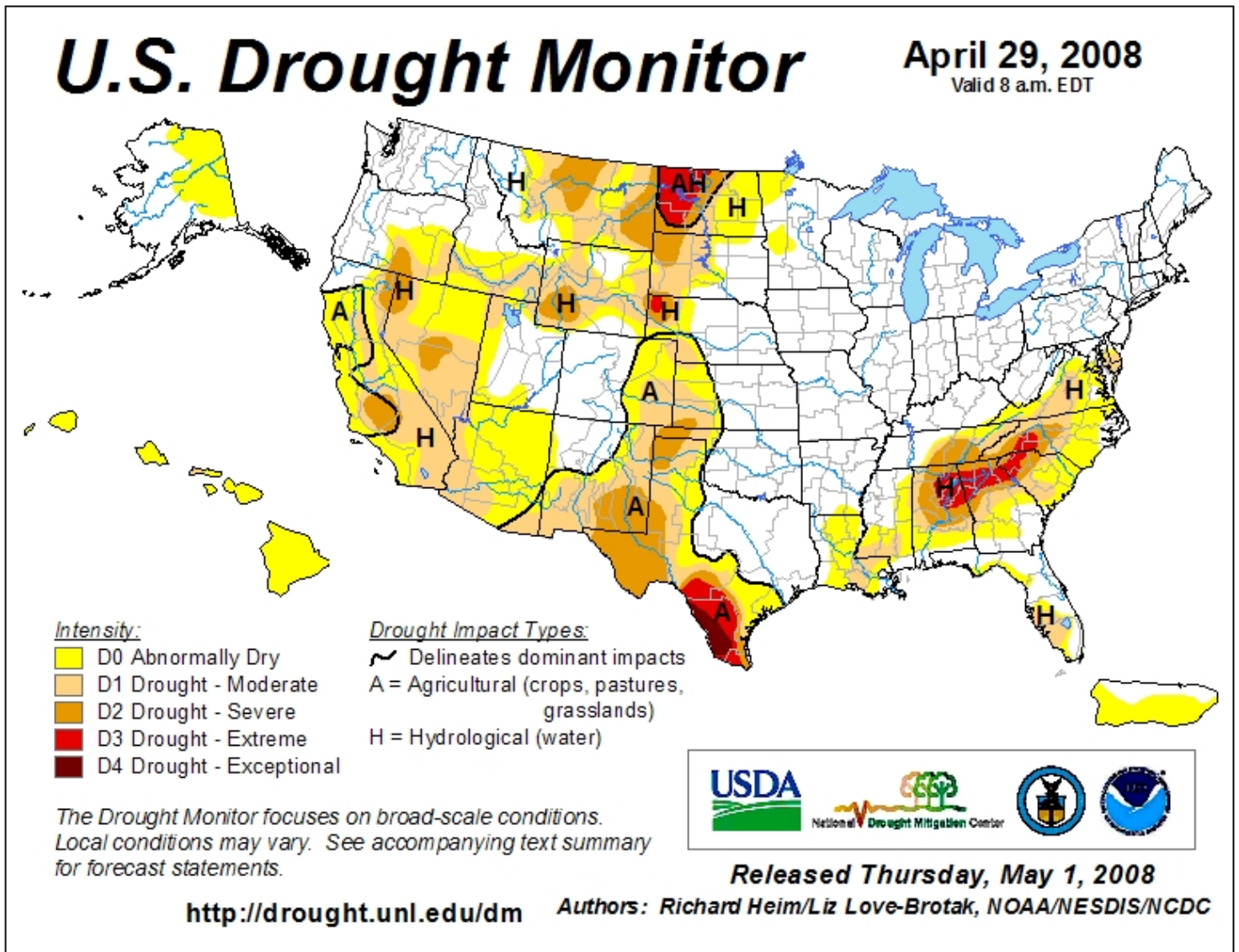


Fig. 4. Current Drought Monitor weekly summary.

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

# U.S. Drought Monitor

## West

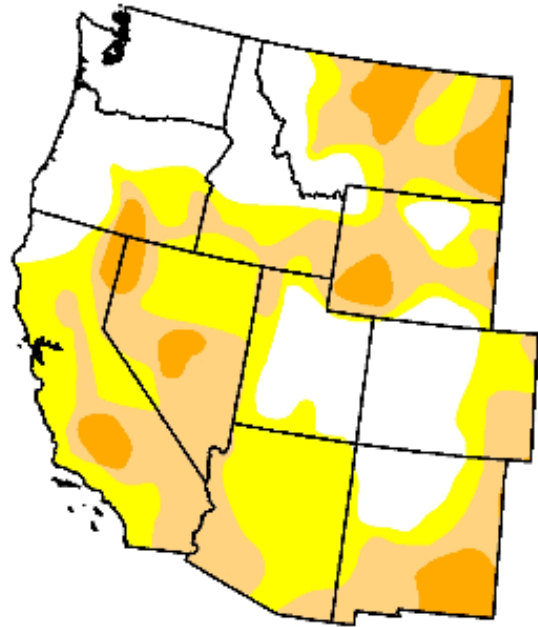
April 29, 2008

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	32.9	67.1	36.6	8.7	0.0	0.0
Last Week (04/22/2008 map)	40.8	59.2	35.1	8.1	0.0	0.0
3 Months Ago (02/05/2008 map)	34.1	65.9	43.6	18.9	0.0	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 (05/01/2007 map)	27.9	72.1	51.7	21.7	6.6	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, May 1, 2008

Author: R. Heim/L. Love-Brotak, NOAA/NESDIS/NCDC

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note a slight worsening in drought conditions since last week.

Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)

# U.S. Drought Monitor

## Southeast

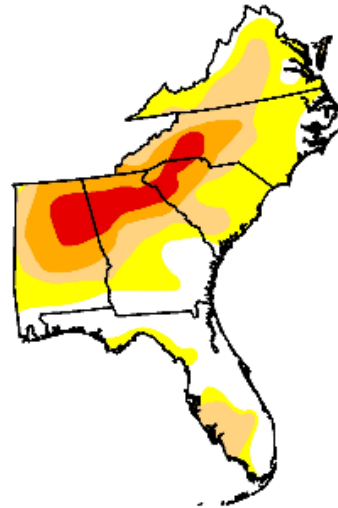
April 29, 2008

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	27.3	72.7	42.9	22.1	8.6	0.0
Last Week (04/22/2008 map)	26.6	73.4	47.8	24.7	8.9	0.0
3 Months Ago (02/05/2008 map)	8.0	92.0	71.8	54.8	36.3	19.8
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 (05/01/2007 map)	25.5	74.5	60.0	34.7	16.6	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>



Released Thursday, May 1, 2008

Author: R. Heim/L. Love-Brotak, NOAA/NESDIS/NCDC

# U.S. Drought Monitor

## Texas

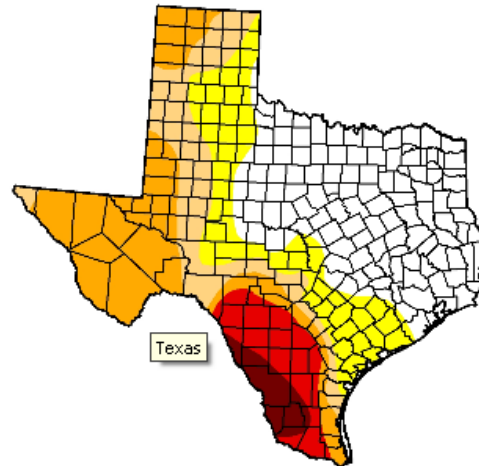
April 29, 2008

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	37.6	62.4	45.2	31.8	10.5	3.3
Last Week (04/22/2008 map)	37.2	62.8	43.6	18.4	10.5	3.3
3 Months Ago (02/05/2008 map)	17.1	82.9	29.4	5.9	0.0	0.0
Start of Calendar Year (01/01/2008 map)	52.0	48.0	11.6	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	97.9	2.1	0.0	0.0	0.0	0.0
One Year Ago (05/01/2007 map)	93.9	6.1	1.1	0.0	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>



Released Thursday, May 1, 2008

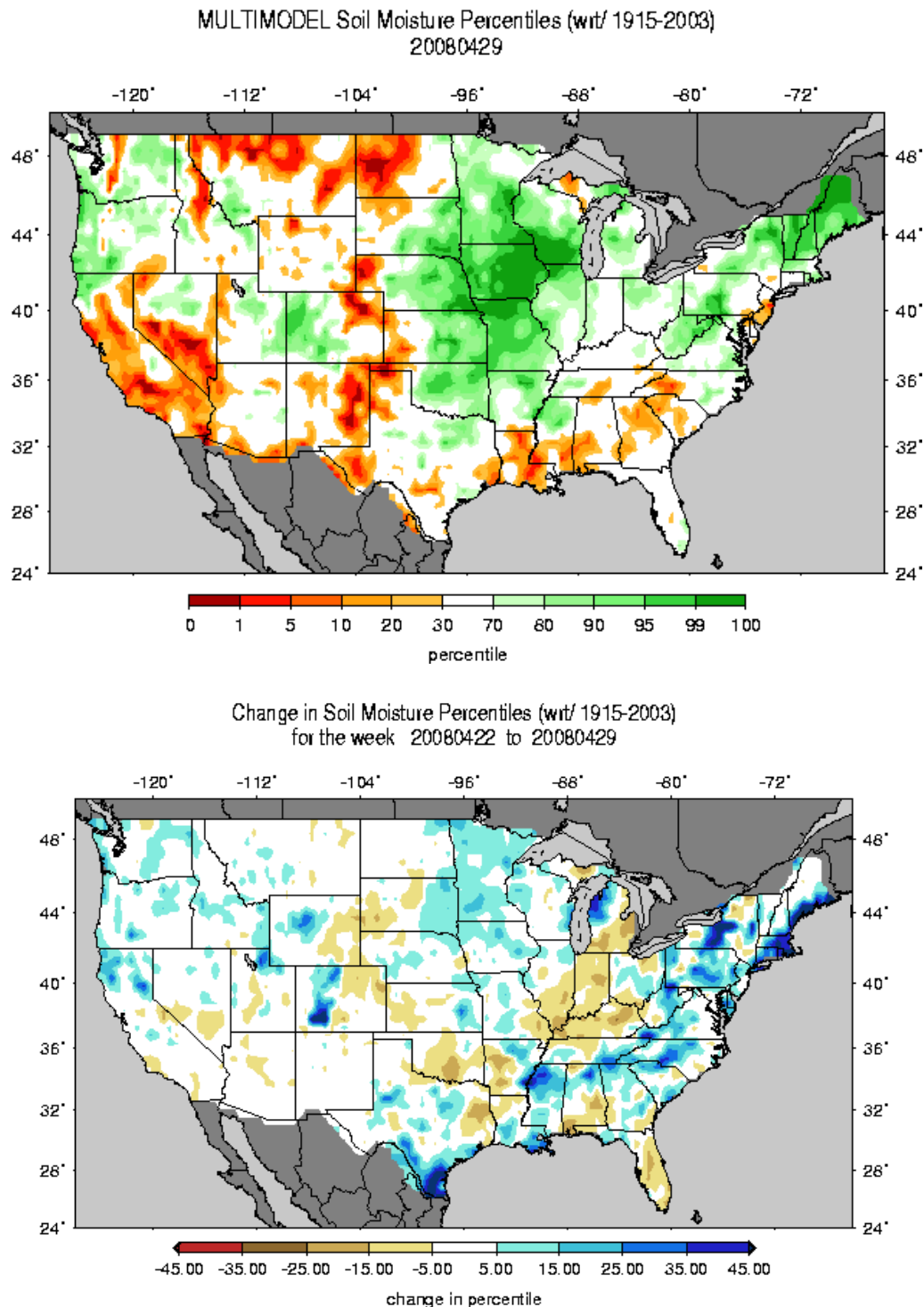
Author: R. Heim/L. Love-Brotak, NOAA/NESDIS/NCDC

Fig. 4b: Drought Monitor for the Southeastern States and Texas with statistics over various time periods. Note significant worsening over Texas since last week while the Southeast is slowing improving.

Ref: [http://www.drought.unl.edu/dm/DM\\_southeast.htm](http://www.drought.unl.edu/dm/DM_southeast.htm)



## 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. The moist mid-West continues to dominate although drier soils over the Northwest may be incorrect due to continued freezing temperatures high elevations (Fig. 5). Remark: In colder regions in parts of the West, frozen ground suggests incorrect values or missing data (e.g. the Cascades are considerably wetter than depicted). Last week saw a decrease in soil moisture over the Ohio Valley but excessive moisture over the Appalachian Mountains as noted in Fig. 5a.**

Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.multimodel.sm\\_qnt.gif](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](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_qnt.1wk.gif)

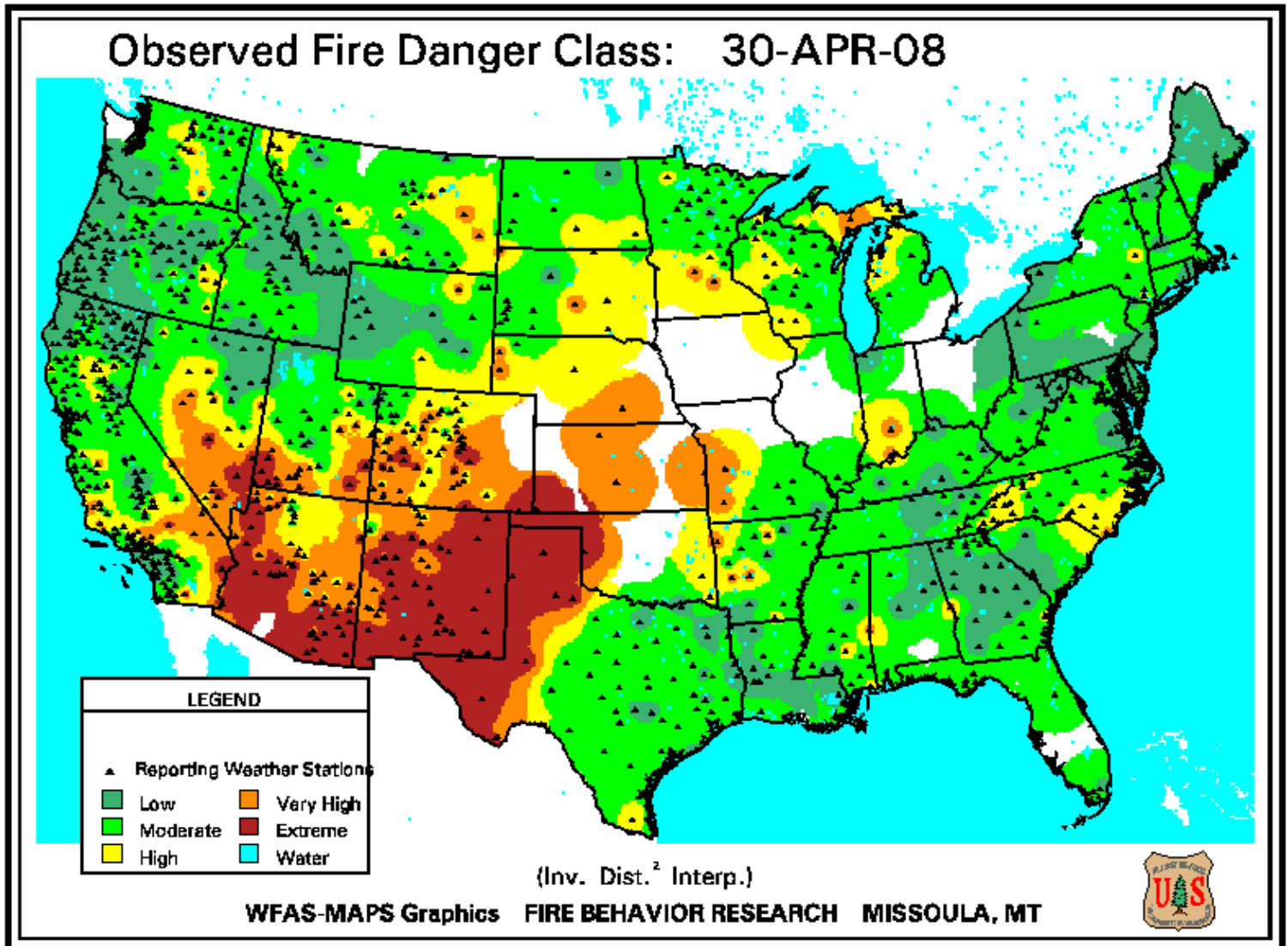
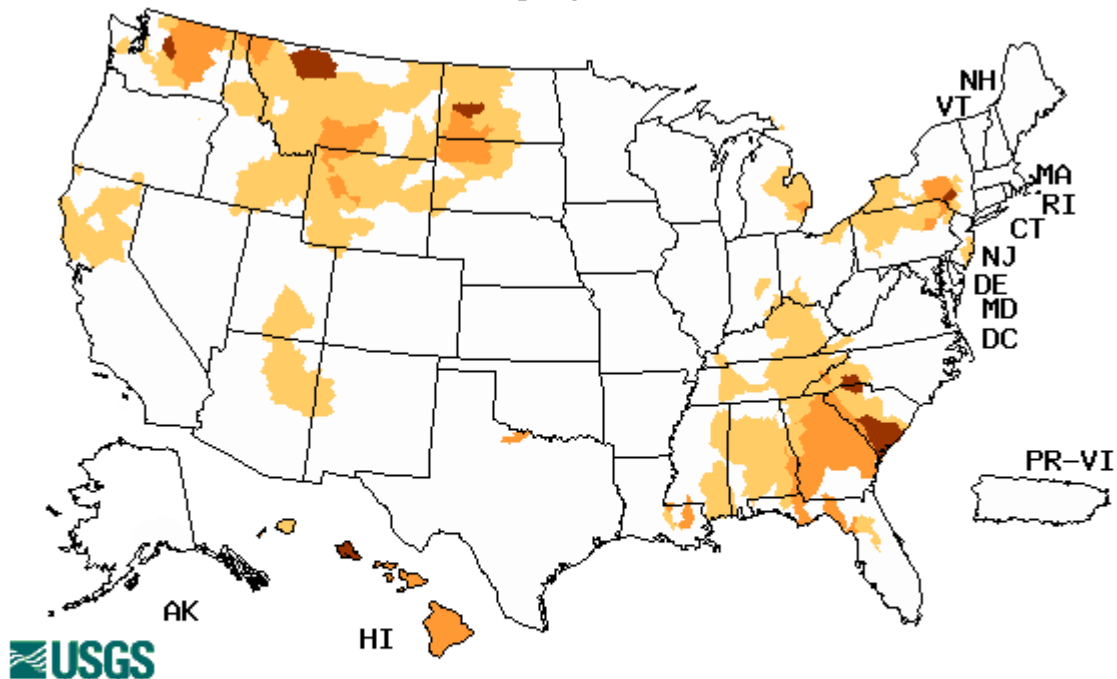


Fig. 6. Observed Fire Danger Class. Note an increase in extreme fire danger over the Southwest and into western Texas since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: [http://www.fs.fed.us/land/wfas/fd\\_class.gif](http://www.fs.fed.us/land/wfas/fd_class.gif)

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Wednesday, April 30, 2008



Explanation - Percentile classes				
Low	$\leq 5$	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 no significant change over the West 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 although this is rapidly becoming a non-issue as we enter mid-spring. Ref: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary - April 29, 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/>.*

A cold low pressure trough in the upper atmosphere moved across the country during this U.S. Drought Monitor (USDM) period. The weather system deepened as it reached the central U.S. and strengthened a surface Low and cold front. Rain and thunderstorms with the front brought short-term relief to the Southeast drought areas, while rain associated with the surface Low dampened an area of dryness that had been developing in the Northeast. A spring snowstorm on the back side of the Low dumped beneficial precipitation on the north central states. Meanwhile, dry weather continued from California to the southern High Plains.

#### **The Southeast, Mid-Atlantic, and Northeast:**

Widespread rains of 1 to 2 inches brought short-term relief to much of the Southeast drought area during this USDM period. Contractions to the drought areas were made in several states, but significant long-term deficits remained, ranging from 5-15 inches over the last 6 months to 12-20 inches over the last 12 months, with locally bigger deficits. Surface conditions improved temporarily, but deeper soil moisture remained dry and groundwater levels and multiple-day averaged streamflows continued low in many places. The Tennessee Valley Authority lakes continued low in spite of the recent rains.

D0 (abnormally dry) was removed in a hole over southeast Virginia where 4 to 8 inches of rain fell last USDM week and an additional 1 to 2 inches fell this week. Two to 3 inch rains removed the spot of severe drought (D2) over central Virginia. The D1 (moderate drought) was trimmed in Virginia and North Carolina. The eastern edge of D2 in the Carolinas was pulled back. Conservation measures and the rains of recent weeks have helped replenish many of the reservoirs in North Carolina, but low well levels and streamflows still reflected subnormal groundwater conditions. The Catawba Basin in North Carolina has received less rain than areas to the east. Consequently, the D3 (extreme drought) area was shifted westward in North and South Carolina.

Flooding on the Lower Mississippi River, plus locally heavy rains in Madison county, Louisiana, prompted pullback of the D0 along the Louisiana-Mississippi state line. D0 was pulled back in central Mississippi, D1 dented in southern Mississippi, and D1 trimmed in northeast Mississippi where 1-3 inch rains fell.

After a generally wet fall, winter, and early spring, the Northeast experienced unusually dry weather during the last month and, in some areas, last 2 months. Near record heat was reported during the last 2 weeks in western New York. Stream levels dropped and several wildfires broke out in the region early this USDM week. But widespread 1-inch, and locally 2-inch, rains late in the week brought temporary relief and held off the introduction of D0 to the Northeast.



## **Weekly Snowpack and Drought Monitor Update Report**

### **The Plains and Midwest:**

Six to 12 inches of snow, with locally heavier amounts, fell in a swath from South Dakota to Minnesota this week. Consequently, D0 was contracted in northwest Minnesota and near the state line intersection of Minnesota and the Dakotas. But D1 expanded in central South Dakota where precipitation totals averaged less than 50% of normal over the last 6 months. The short-term dryness is beginning to affect winter wheat, while impacts from the multi-year dryness are beginning to show up in rangeland conditions.

In the southern High Plains, D1 expanded across the Texas Trans Pecos and northern Texas panhandle where dry weather persisted and soils were rapidly drying. Less than 50% of normal precipitation has fallen across much of this area during the past 6 months. D2 was added in the Texas and Oklahoma panhandles into southwestern Kansas, where less than an inch of precipitation has fallen over the past 6 months. Dalhart, Texas has had 0.54 inch of precipitation since January 1, which is 2.68 inches below normal, and Lake Meredith had reached a record low and was still falling rapidly. Boise City, Oklahoma has had 0.50 inch for the year-to-date compared to a normal January-April total of 3.47 inches. D0 and D1 were trimmed slightly in the northern Edwards Plateau of central Texas where 2 to 3 inches of rain fell this week.

### **The West:**

Generally less than an inch of precipitation fell across the northern drought areas of the West this USDM week, but not enough to improve the drought depiction. An inch or more was observed over parts of northwest California and the coastal Pacific Northwest, while the southern areas of the West received little or no precipitation with wildfires developing in places.

Melting of an abundant winter snowpack has filled reservoirs and increased streamflows in Arizona, which has helped urban areas. But the last 8 weeks have been drier than normal and windy, with fire danger increasing. D0 (abnormally dry) was expanded across the state to reflect parched conditions in the rural areas, and D1 (moderate drought) was expanded in the southeast and southwest corners.

D0 was expanded to the coast across California, except for the northwest corner, due to continued dryness. According to news reports, the East Bay Municipal Utility District issued an urgent warning that water levels are critically low and that its Board of Directors may be forced to vote for mandatory water rationing at the May 13 meeting. D1 expanded along the San Joaquin Valley, and the agricultural impact boundary was extended southward and to the coast, to reflect the persistent lack of rain and worsening soil moisture conditions. D2 expanded in southern California.

### **Hawaii:**

Heavy afternoon rains on a couple days provided short-term relief to parts of the Islands but otherwise this week has been drier than normal. The continued dryness during at least the last 90 days has lowered streams, but groundwater resources in most areas provided adequate public water supplies and there were no reports of agricultural impacts. No change to the depiction was made.

## Weekly Snowpack and Drought Monitor Update Report

### Alaska:

Several inches of precipitation fell along the southern coastal regions of the state, with a few tenths of an inch reported over the southern D0 area. But in areas of eastern Alaska where snowpack remained well below average, there was no change to the D0 designation. The rest of the state remained free of drought or abnormally dry classification.

### Puerto Rico:

More than 5 inches of rain fell over the northern and eastern parts of the island this week, while below-normal conditions prevailed in the south. The D0 was pulled back in northwest Puerto Rico where the rain fell over the abnormally dry area.

### Looking Ahead:

*Another in a series of low pressure systems and associated fronts will move across the nation Wednesday through Monday, May 5, bringing rain to the southern and eastern states and rain or snow to the north central states. Precipitation amounts of a half inch to one inch are expected across the Southeast, with up to 2 inches over parts of the Northeast. One to 3 inches of moisture are expected over parts of the western Dakotas. A few tenths of an inch is forecasted for the northern parts of the West, while the weather should remain dry from California to the southern High Plains. Colder-than-normal air will follow behind the front.*

*The pattern will continue for May 6-14: Pacific weather systems should bring above-normal precipitation to southern Alaska then weaken as they move across the western U.S., and strengthen as they emerge over the central U.S. Above-normal precipitation is expected for the central third of the country, including the central and northern Plains, Great Lakes, and Mississippi and Ohio valleys. Dry weather is forecasted for northern Alaska, parts of the Far West, the Southwest and along the Rio Grande Valley, and most of Maine. Colder-than-normal temperatures are predicted for the north central states, while warmer-than-average conditions are expected along the Southwest, Gulf Coast, and Northeast peripheries.*

**Author:** Richard Heim, National Climatic Data Center, NOAA

### 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 April 30, 2008