



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

Weekly Report - Snowpack / Drought Monitor Update **Date:** **April 5, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snowpack: For the 2007 Water Year, the Northern Cascades, Big Horn Mountains in Wyoming, and Colorado Front Range are the only regions showing near or above normal snow water-equivalent (**SWE**) (Fig. 1). Conditions are dire over the Sierra Nevada (CA-NV), Wasatch (UT), and the mountains of Arizona. During this week, SWE improved over the Northern Rockies due to last week's snow storm. Conditions continue to deteriorate over northern California and now over southern Oregon (Fig. 1a). Snowfall accumulated over the Northern Rockies (WY and MT) but decreased elsewhere (Fig. 1b).

Temperature: During the past seven days, temperatures ranged from up to 10°F above normal over the Sierra Nevada to 5°F below normal over the Northern Rockies (Fig. 2). Significant warming (>15°F) over the Northern Rockies (Fig. 2a) since yesterday signals the development of a building ridge of high pressure over the West (Fig. 2a).

Precipitation: During this report period, most precipitation (rain and snow) fell over Wyoming and the eastern two-thirds of Montana due to last weeks snow storm (Fig. 3). For the Water Year, precipitation totals range from <25% of normal over southern California to ~20% above normal over the Cascades, Front Range (CO), and portions of the Northern Rockies (Fig. 3a).

WESTERN DROUGHT STATUS

The West: An expansive storm system exited the Rockies on March 28th to the Plains, bringing widespread heavy precipitation and severe weather from the Mexican to the Canadian border. The storm dumped heavy snow across the northern Rockies during March 28-30, with the heaviest amounts over Wyoming, where storm totals ranged from 12 inches in Casper to 70 inches at Hobbs Park in the Wind River Range. Snow also fell on Colorado, Utah, and Montana. Temperatures plummeted by as much as 30 degrees from Wednesday afternoon to Thursday afternoon in the wake of the associated cold front. Drought levels generally improved by one category in Wyoming. The D2 retreated in southern Montana. Rain and snow amounts were not high enough to change the drought depiction over California and the Great Basin, so severe to extreme drought persisted across southern California and western Arizona, with D0 expanding farther northward in northern California. Los Angeles measured just 0.05 inches of rain in March, and is still on track to record the driest season (July to June) in more than 120 years. California statewide snow water content was at 40 percent of normal. Utah snowpack for early April was at the lowest levels since 1977 (Figs. 4 and 4a).

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

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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 (Fig. 4, and 4a).

SOIL MOISTURE

Soil moisture (Fig. 5), 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 Fig. 6.

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/ DANIEL MEYER

Acting Director, Conservation Engineering Division

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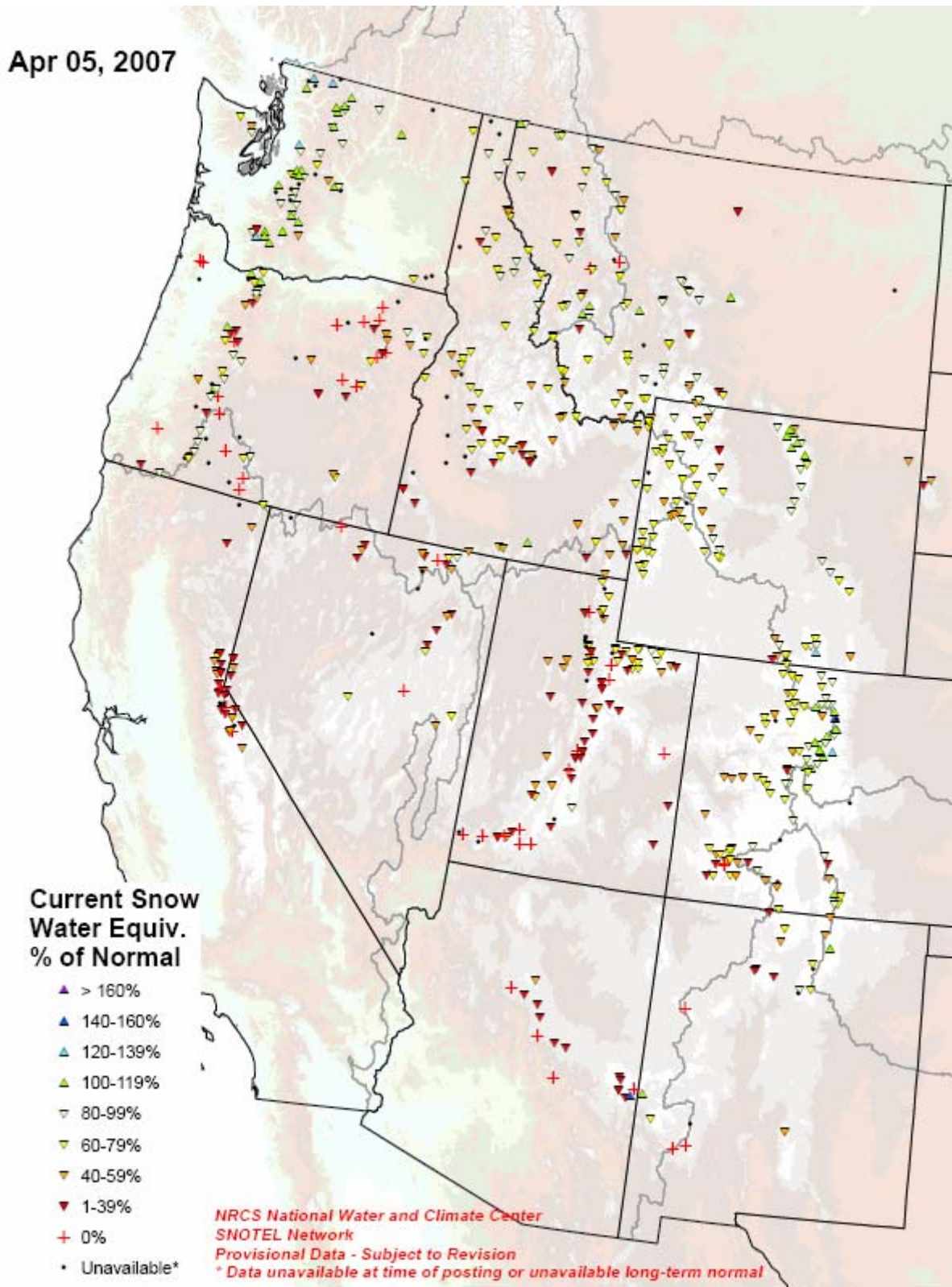


Fig. 1: Snow Water-Equivalent as a percent of normal for Water Year 2007.

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

Weekly SWE Change

Snow Water Equivalent: Change in Percentiles (wrt/ 1915-2003)
for the week 20070327 to 20070403 threshold = 10 mm

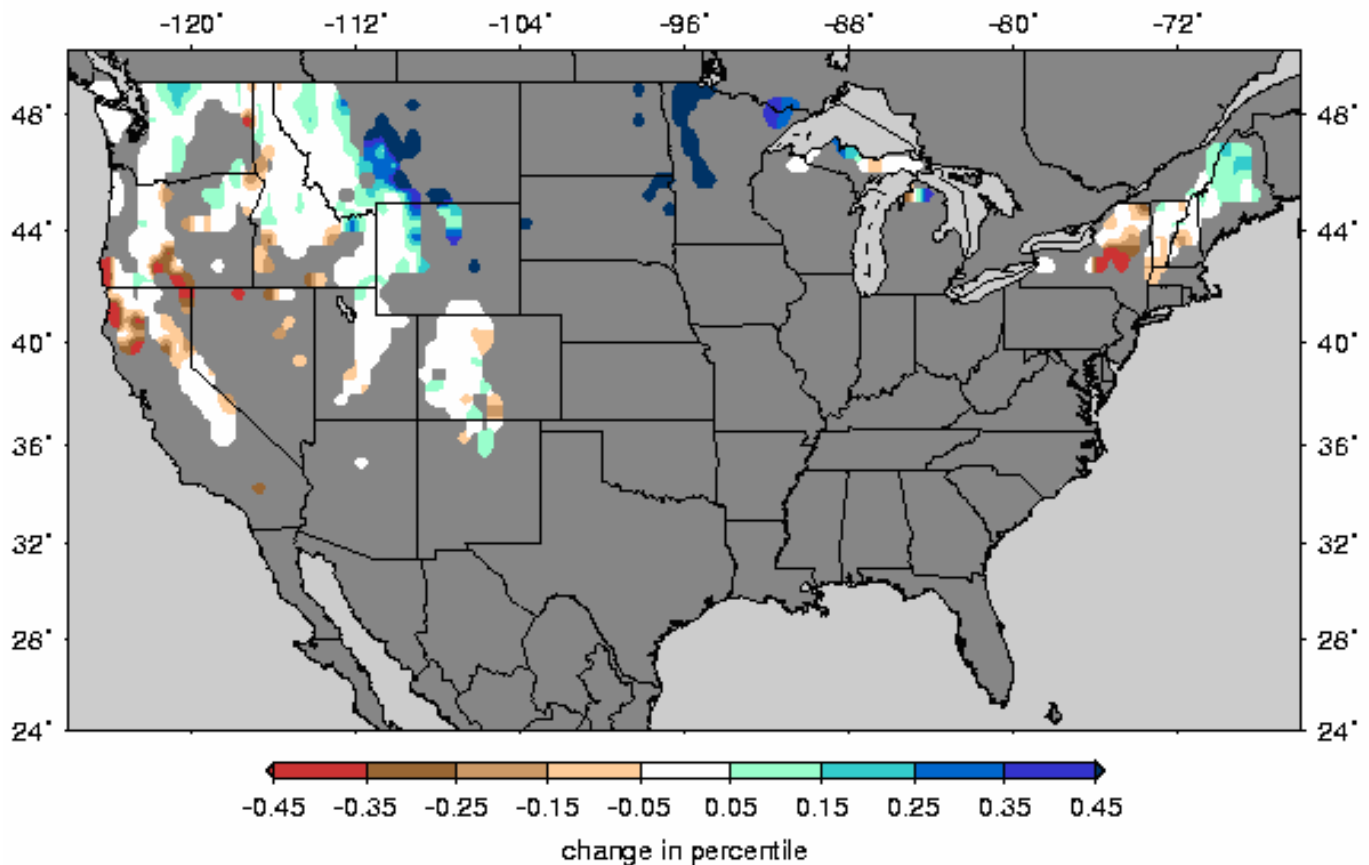


Fig. 1a. Snow Water-Equivalent changes as a percent during the period 27 March to 3 April 2007 based on 1915-2003 climatology. Note enhanced SWE over the Northern Rockies due to last week's snow storm. Ref: <http://www.hydro.washington.edu/forecast/monitor/index.shtml>

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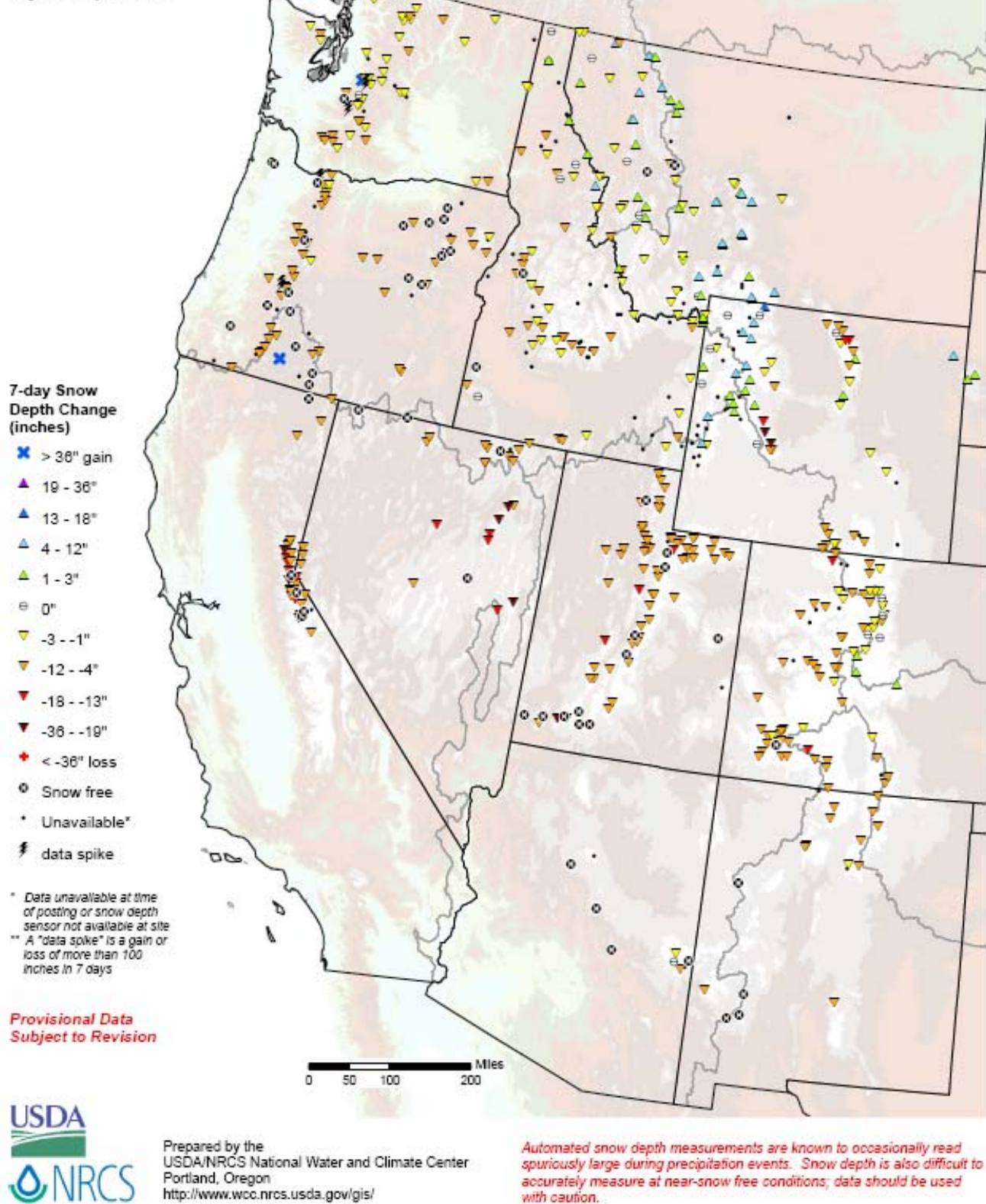


Fig. 1b. SNOTEL 7-day snow depth change.

Ref: <http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf>

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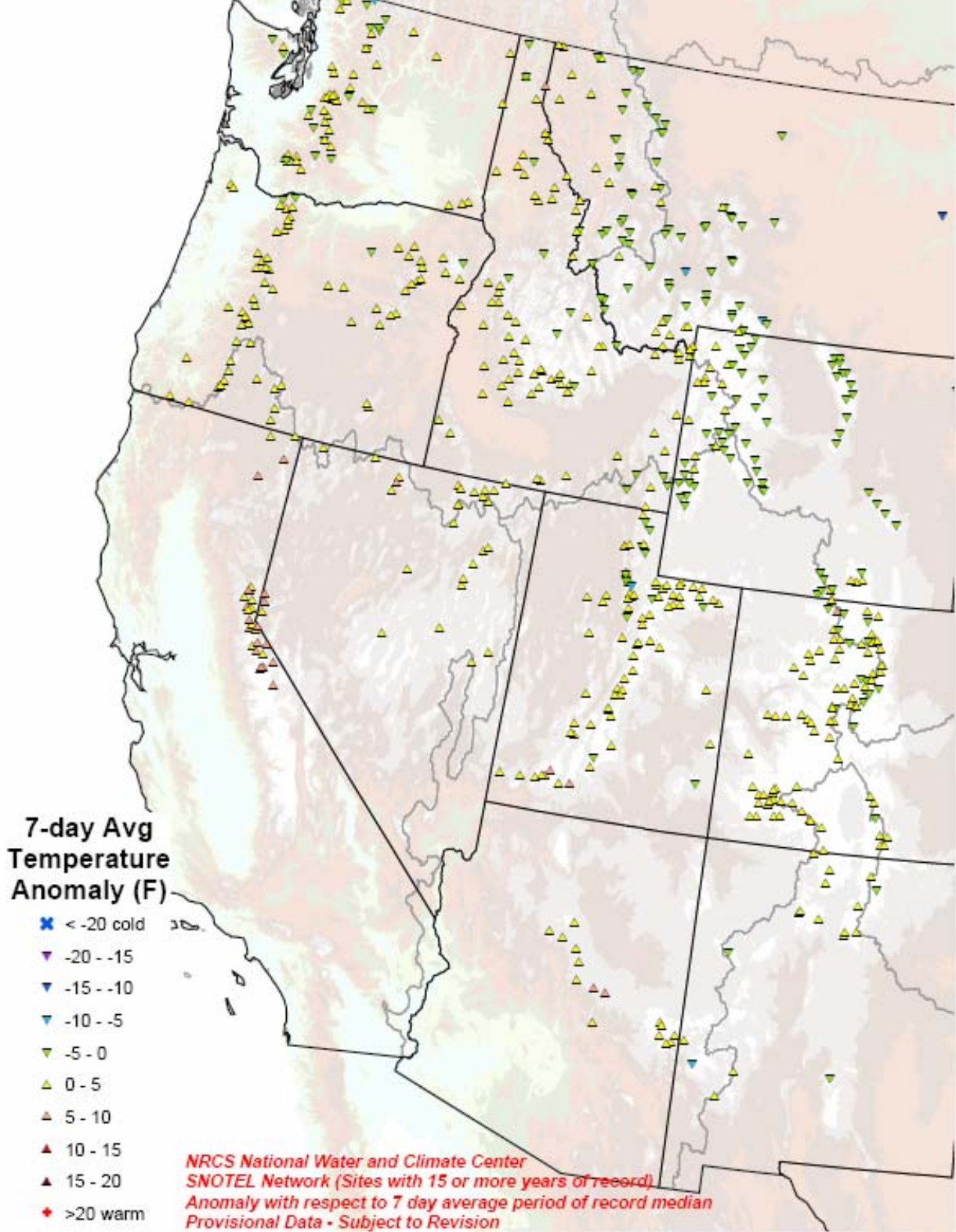


Fig. 2. SNOTEL 7-day average temperature anomaly.

Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf>

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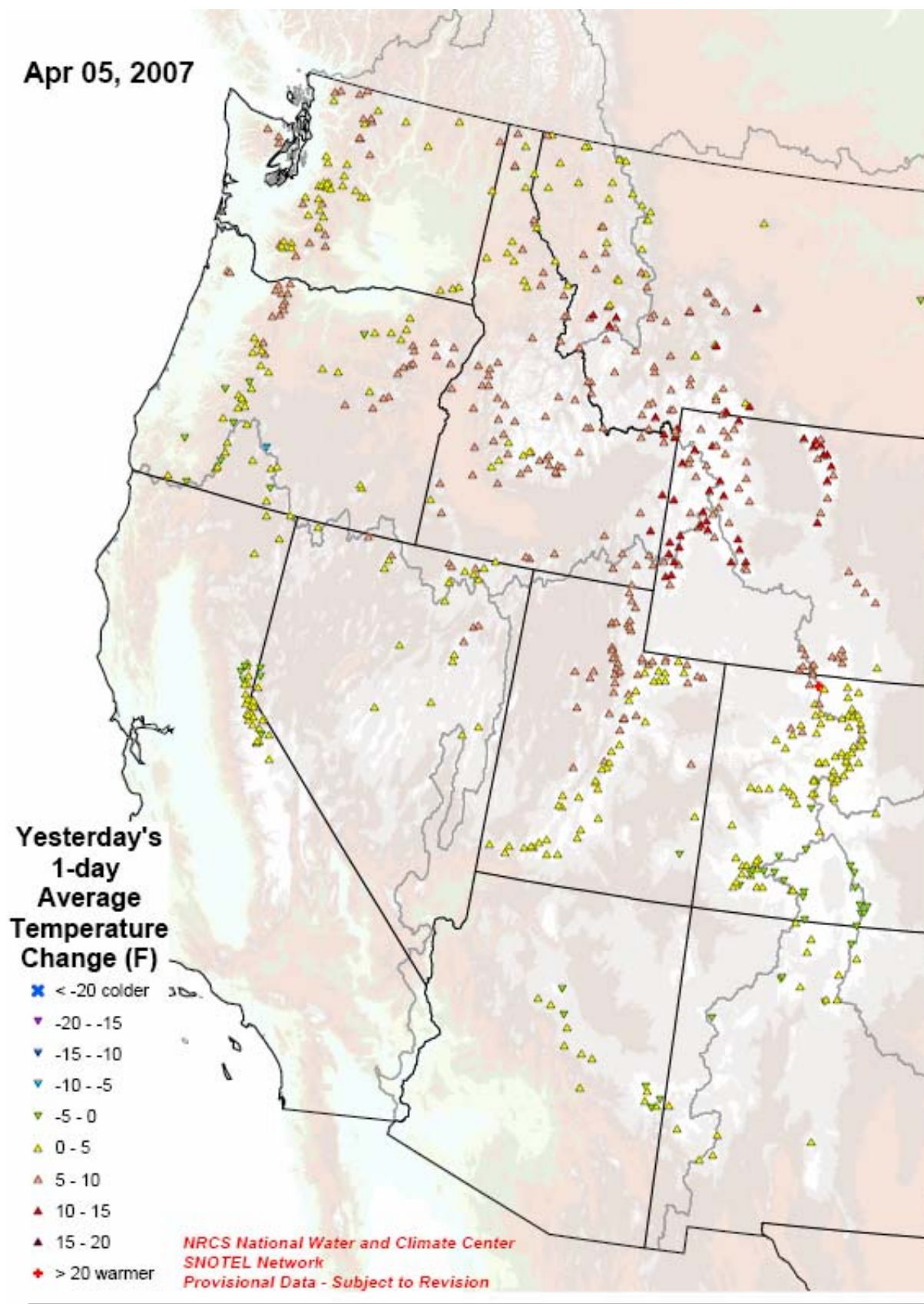
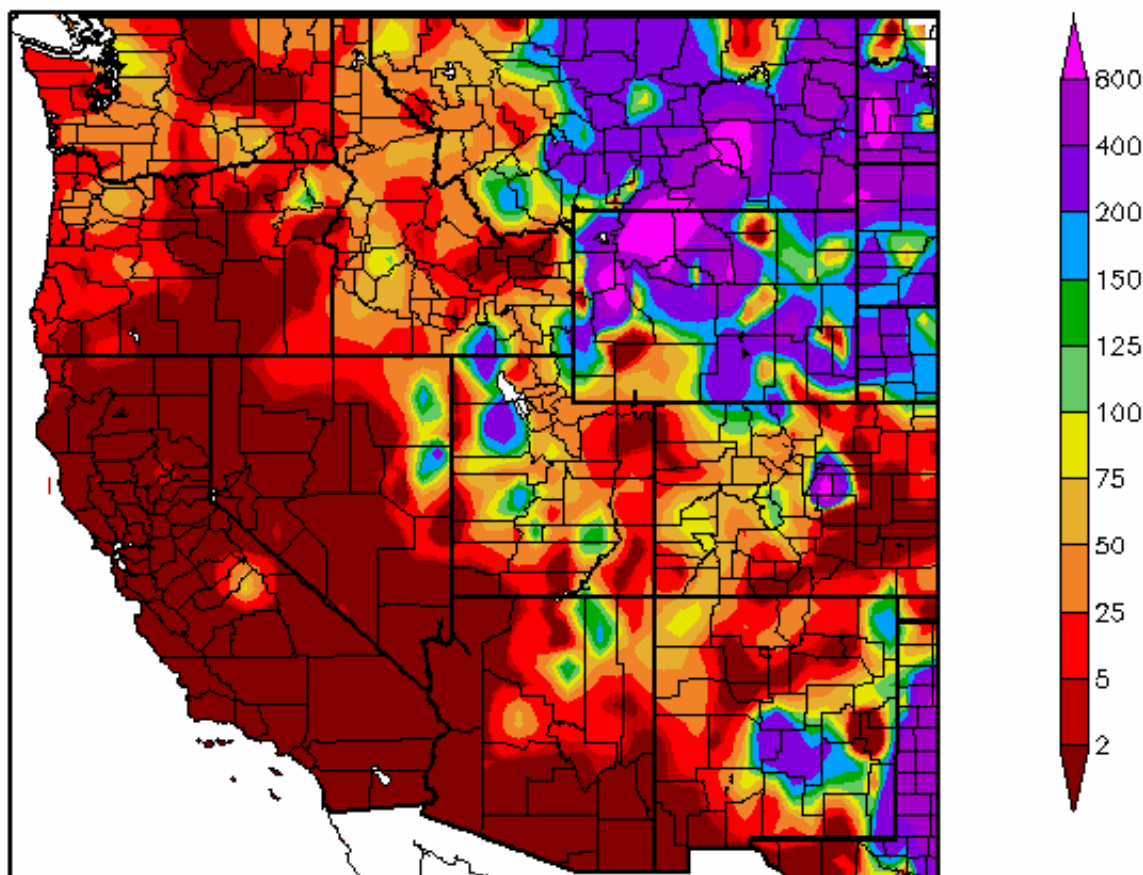


Fig. 2a. SNOTEL average temperature change from 4 to 5 April 2007.

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Percent of Normal Precipitation (%)
3/29/2007 – 4/4/2007



Generated 4/5/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. ACIS preliminary of precipitation as a percent of normal for the 7-day period ending 4 April 2007.

Ref: http://www.hprcc.unl.edu/acis/program/acis_maps

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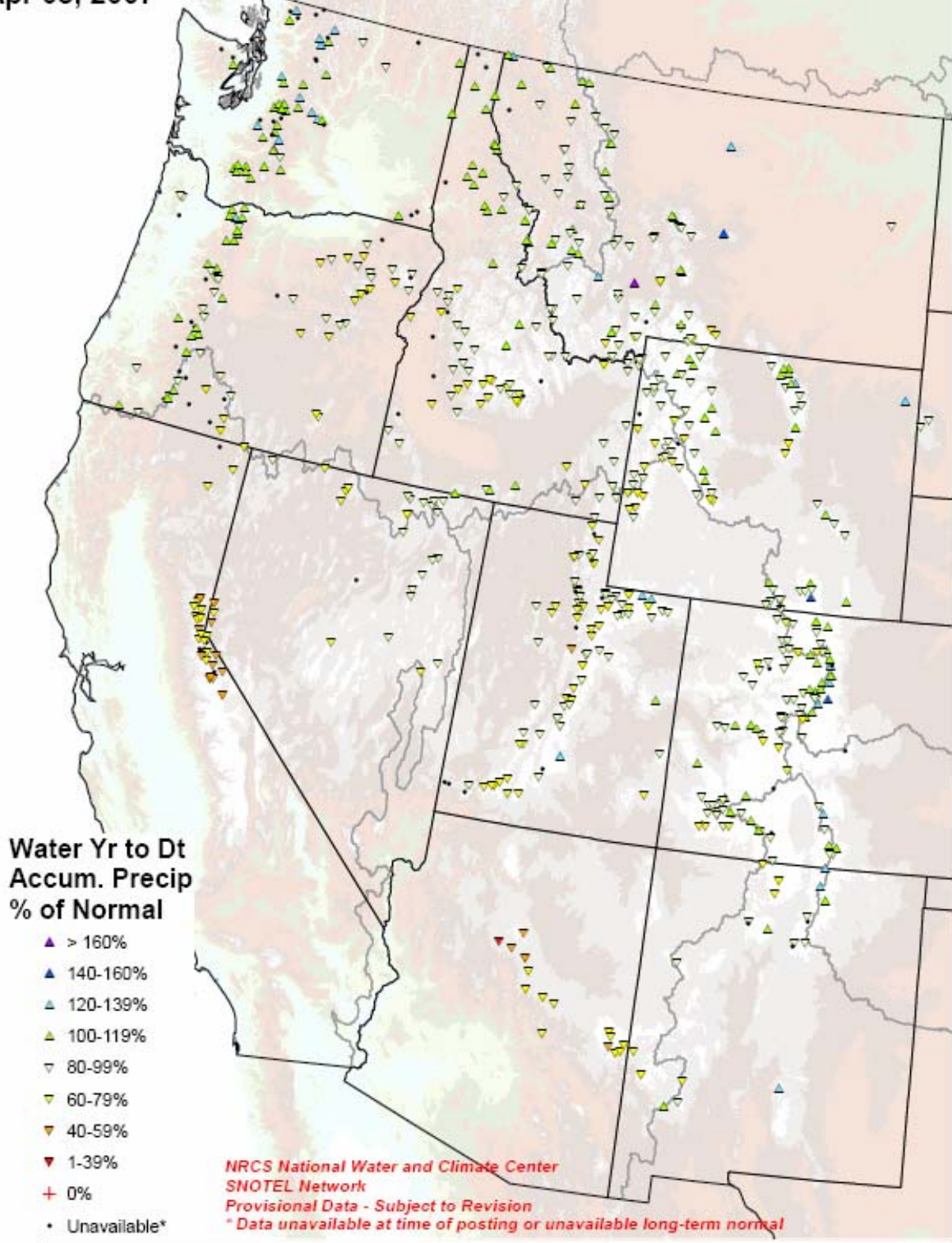


Fig. 3a. SNOTEL station water year (since October 1) precipitation as a percent of normal.
Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideWYTDPrecipPercent.pdf>

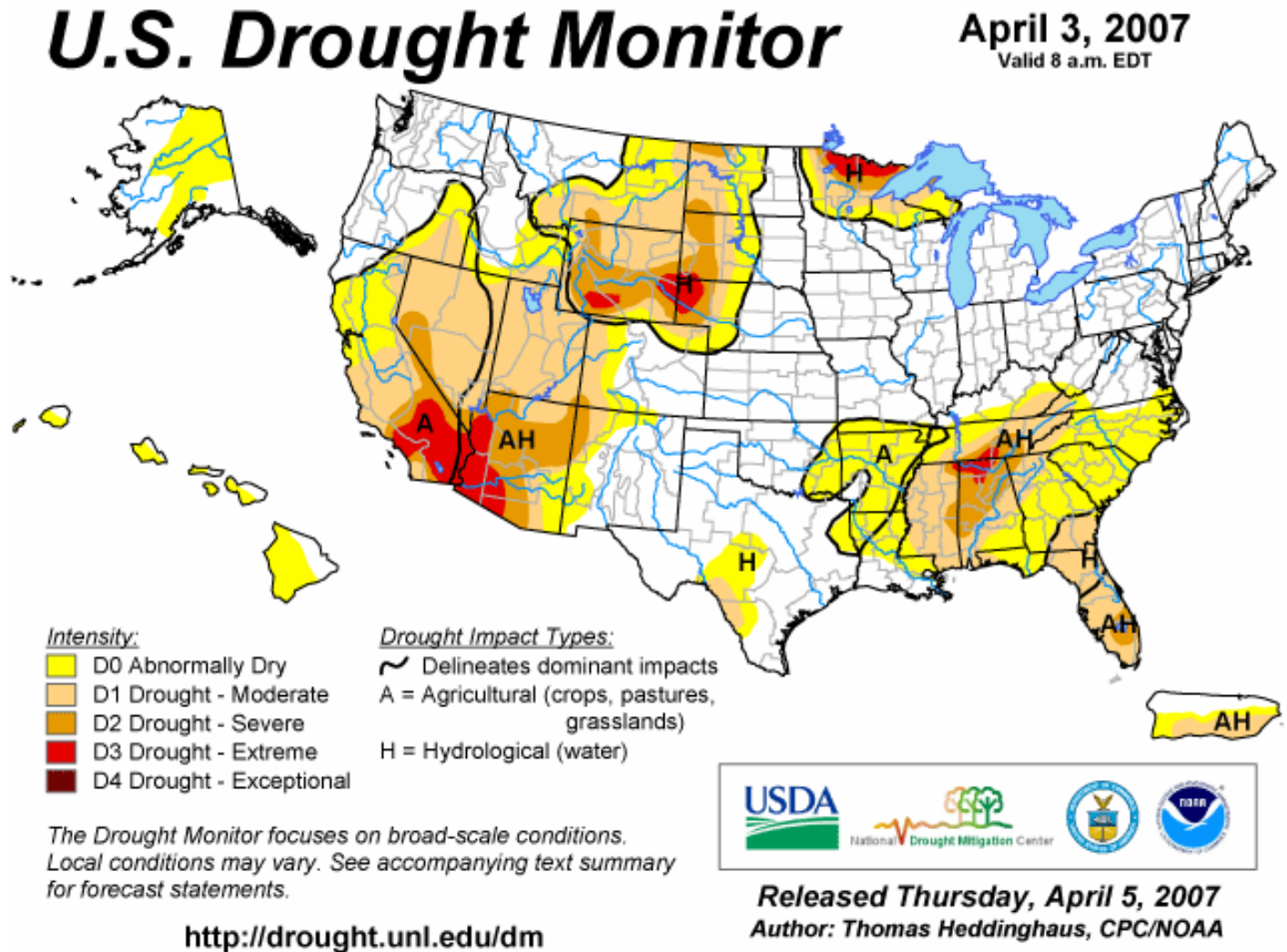


Fig. 4. Current Drought Monitor weekly summary.

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

U.S. Drought Monitor

West

April 3, 2007

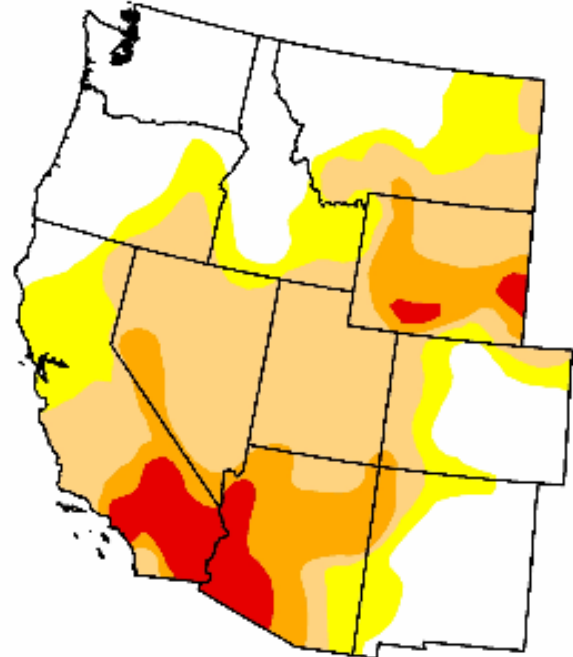
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.3	66.7	49.7	17.5	5.6	0.0
Last Week (03/27/2007 map)	34.6	65.4	49.7	20.8	8.1	0.0
3 Months Ago (01/09/2007 map)	49.1	50.9	26.8	12.5	5.0	0.0
Start of Calendar Year (01/02/2007 map)	51.2	48.8	25.8	9.4	4.0	0.0
Start of Water Year (10/03/2006 map)	43.5	56.5	33.5	16.9	5.2	0.0
One Year Ago (04/04/2006 map)	61.7	38.3	26.8	15.1	5.0	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, April 5, 2007
Author: Thomas Heddinghaus, CPC/NOAA

Fig 4a. Drought Monitor for the Western States with statistics over various time periods.

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

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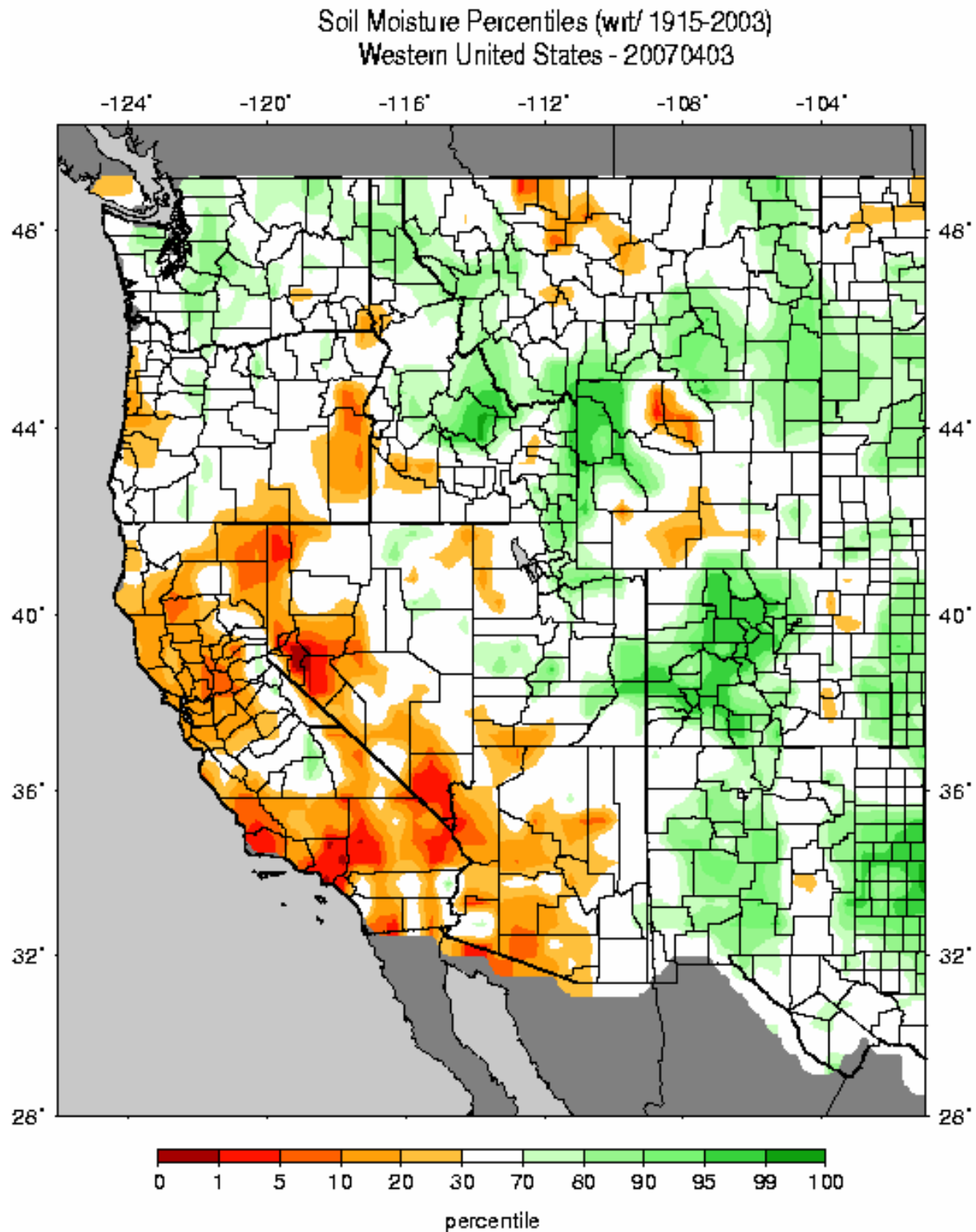


Fig. 5: Soil Moisture Ranking Percentile based on 1915-2003 climatology. (source: Univ. of Washington). Ref: http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_qnt.gif

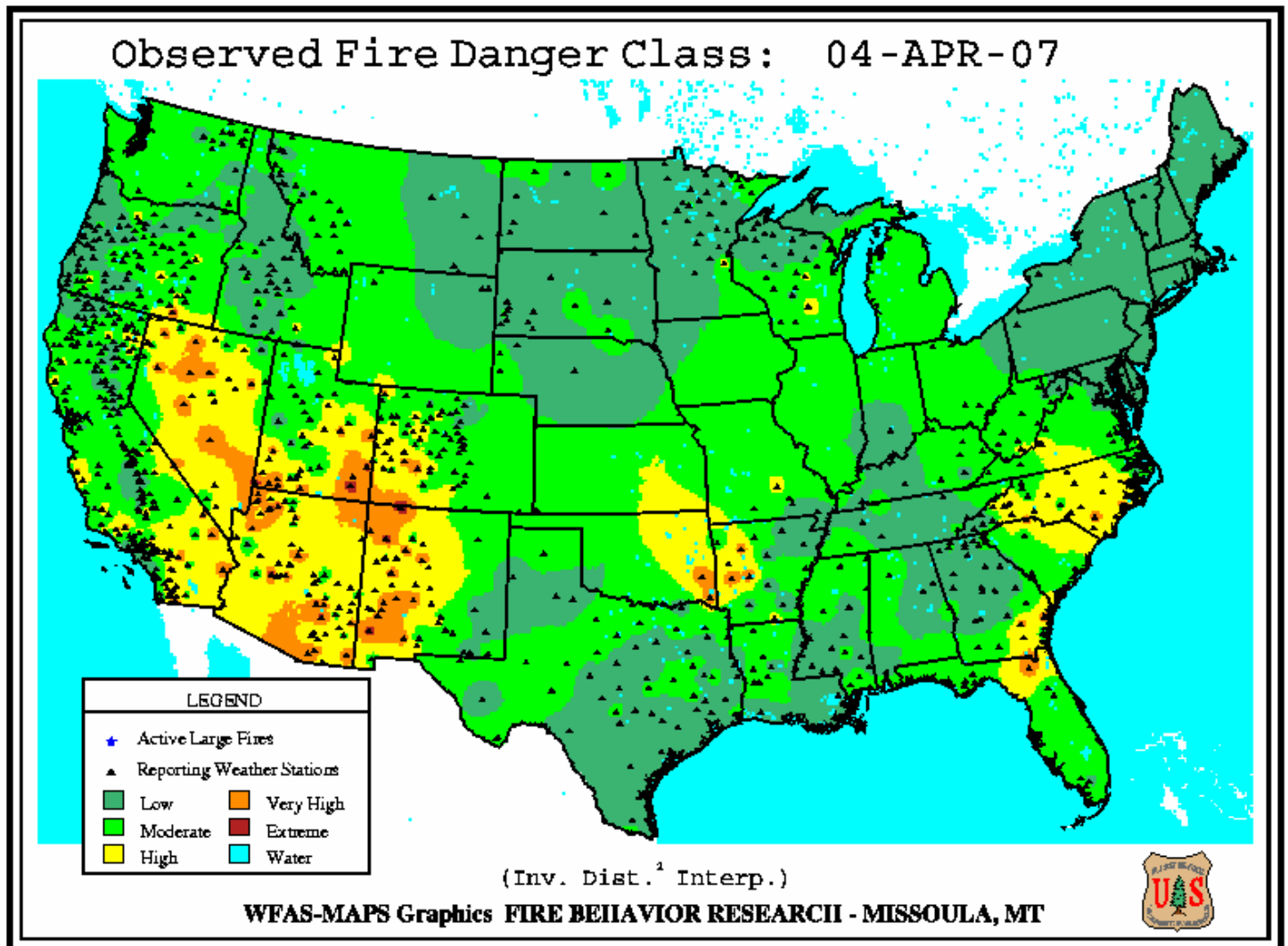


Fig. 6. Observed Fire Danger Class. Source: Forest Service Fire Behavior Research – Missoula, MT
Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

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Wednesday, April 04, 2007

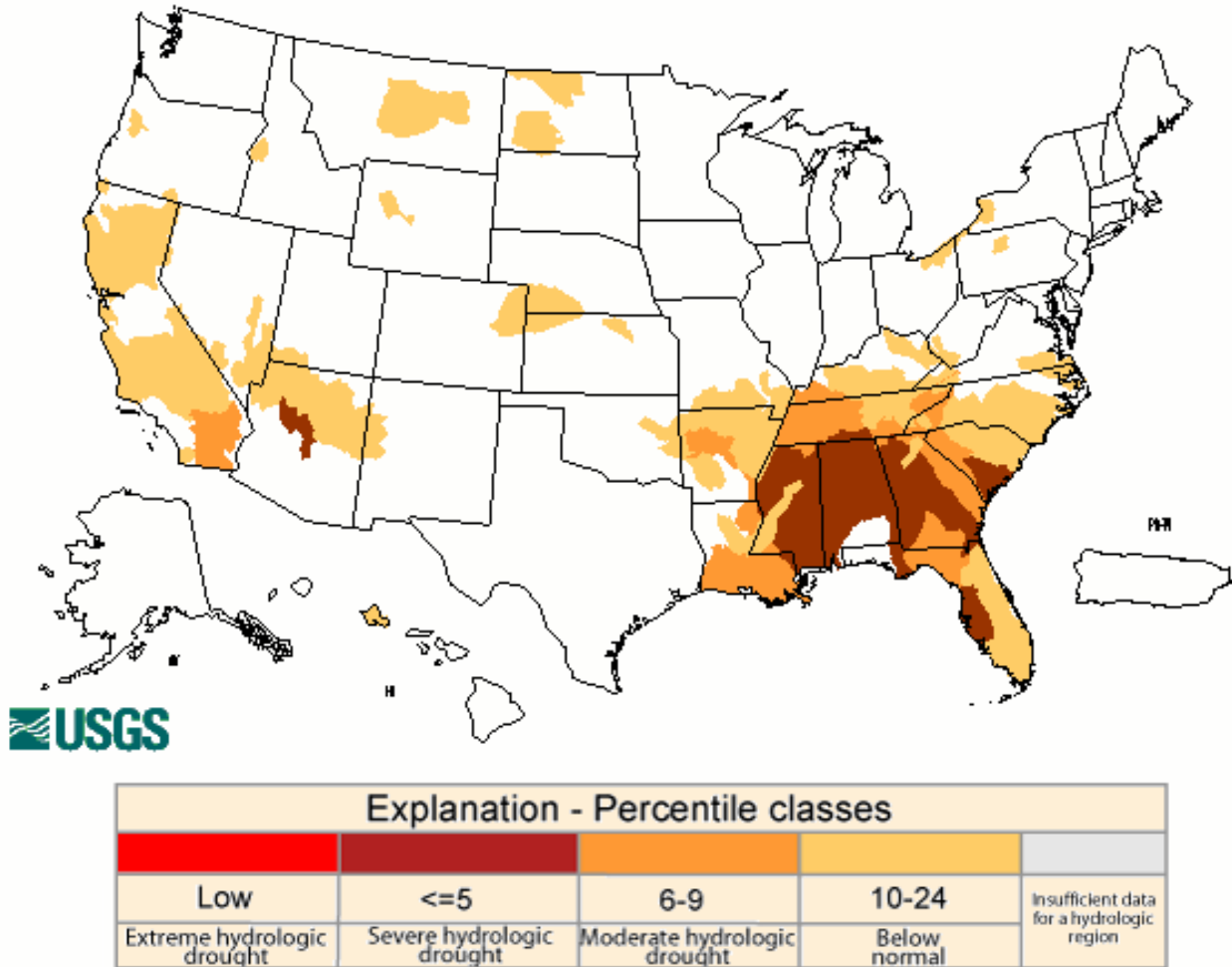


Fig. 7. Map of below normal 7-day average streamflow compared to historical stream flow for the day of the year. Note decreased stream flows over California and Arizona.

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

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National Drought Summary -- April 3, 2007

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 West: An expansive storm system exited the Rockies on March 28th to the Plains, bringing widespread heavy precipitation and severe weather from the Mexican to the Canadian border. The storm dumped heavy snow across the northern Rockies during March 28-30, with the heaviest amounts over Wyoming, where storm totals ranged from 12 inches in Casper to 70 inches at Hobbs Park in the Wind River Range. Snow also fell on Colorado, Utah, and Montana. Temperatures plummeted by as much as 30 degrees from Wednesday afternoon to Thursday afternoon in the wake of the associated cold front. Drought levels generally improved by one category in Wyoming. The D2 retreated in southern Montana. Rain and snow amounts were not high enough to change the drought depiction over California and the Great Basin, so severe to extreme drought persisted across southern California and western Arizona, with D0 expanding farther northward in northern California. Los Angeles measured just 0.05 inches of rain in March, and is still on track to record the driest season (July to June) in more than 120 years. California statewide snow water content was at 40 percent of normal. Utah snowpack for early April was at the lowest levels since 1977.

The Plains and Upper Midwest: The storm that tracked onto the Plains during March 28-30 brought severe weather and heavy rains to the Plains states, as well as heavy snow to North Dakota. By Friday, the 30th, flood watches and warnings stretched from Texas to North Dakota and Minnesota. The heavy rains eliminated the lingering dryness in Kansas and north-central Oklahoma, which saw up to 5 inches of rain from Wednesday to Saturday. This was the first time since April 2005 that Oklahoma was drought-free, according to the Drought Monitor. Oklahoma City experienced their wettest March day on record, when 3.50 inches of rain fell on March 30. Heavy rains and flooding removed most of the drought in Texas, which saw widespread 2-5 inches of rain on top of the heavy rains measured during the previous week. San Antonio shattered its March rainfall record with 7.24 inches (383 percent of normal) for the month. D0H and a small area of D1H remained over south-central Texas to account for continued low reservoirs and still substantial 2-year rainfall deficits. Much of the northern Plains saw a 1-category improvement thanks to 1-3 inches liquid-equivalent across the Dakotas, Nebraska, and Minnesota.

Southeast: The storm system dropped smaller amounts of rainfall as it tracked across the Southeast, leaving the drought depiction nearly unchanged or even somewhat worse. D1 expanded into west-central Mississippi from the core drought area extending across Tennessee and Alabama. D2 edged westward into eastern Mississippi. D1 drought extended northward from Florida into southeastern Georgia. D2 expanded westward and southward in southern Florida. Jackson, Mississippi, set a March record with only 0.90 inches of rain. Huntsville, Alabama, notched a January-March record with 6.46 inches, over 10 inches below normal.

Alaska, Hawaii, and Puerto Rico: Precipitation was light in Alaska, allowing D0 dryness to persist. Hawaii rainfall totals were variable, but mostly less than 1 inch, resulting in continued

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D0 dryness in many areas. Heavy rains hit Puerto Rico, although the greatest totals, which exceeded 5 inches, fell mostly in the north, outside of the dry areas. The south saw 0.5 to 2 inches. As a result, the D0/D1 area diminished.

Looking Ahead: Forecast weather that could have an impact on dry conditions during the next 2 weeks include: 1) abnormally cold weather in the central and eastern states, contrasting with warmth over the interior West during April 4-9; 2) 1.5 to 2 inches of rain forecast over southern Texas for the 5-day period; 3) storm systems crossing the Plains and the East during April 10-14 bringing moisture to dry areas in the Tennessee Valley and Southeast, as well as the northern Plains and northern Rockies; 4) the April 10-14 and April 12-18 forecasts showing above-normal precipitation for the northern Plains and the Southeast, with the exception of southern Florida, and above-normal warmth and below-normal rainfall for the Southwest into Texas.

Author: [Thomas Heddinghaus, NOAA/CPC](#)

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 4, 2007