



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

Weekly Report - Snowpack / Drought Monitor Update **Date: 15 May, 2008**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: Snow pack has decreased up to 18 inches over the Southern Cascades and Sierra and up to a foot over the remainder of the West (with some exceptions) since last week. Snow actually accumulated (~3 to 6 inches) over the Bighorn Mountain of Wyoming and northern Colorado Rockies as winter conditions persist (Fig. 1). Snow melts appears to have been delayed 3 to 5 weeks this year due to a very cold April and cool May. Snow-water equivalent percent as of 15 May shows well above normal values continuing over the Cascades and Coastal Ranges of Washington and Oregon, and over Colorado, Wyoming, and Montana. There were some significant increases this past week across the West as a result of delayed runoff. However, the snow pack is melting rapidly despite these apparent increases as noted in Fig. 1a.

Temperature: For the past seven days, average temperature anomalies were 5 degrees F below average across most of the West. The Sierra Mountains were 5 degrees F above average (Fig. 2). The greatest negative temperature departures occurred over the Northern Rockies (<-8F) and the greatest positive departures occurred over north central California (>+6F) (Fig. 2a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 14 May shows an abundant amount of precipitation falling over the Northern Cascades, Wyoming, Colorado, and Utah. Most of Oregon, California, Idaho, western Nevada, and southern New Mexico were dry (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, central Arizona, northeast Wyoming, border of Washington and Idaho, and the Central Oregon Cascades (Fig. 3a).

WESTERN DROUGHT STATUS

The West:

Dry weather continued for much of the West, with little to no precipitation reported across New Mexico, Arizona and California. Beginning on May 11, an upper-level low pressure system brought light, scattered rain to the Pacific Northwest before digging southward into the Four Corners and central Rockies, where 1 to 4 inches of precipitation was reported. Late-period rain in northwest Wyoming and southern Montana led to a reduction from D1 to D0, and 30-, 60-, and 90-day precipitation totals are at or above normal for the region. Some dry pockets still exist (25-50% of normal precipitation for the last 30 to 90 days), namely in Carbon County, Montana and northern parts of Park County, Wyoming.

Reservoir storage across Arizona continues to rise, with current levels approximately 30% above average. Drought blends indicate mostly short-term dryness for Arizona, therefore the region was adjusted to short-term (A) drought status. Similarly, an area of the Great Basin from central Oregon through much of Nevada was adjusted to "AH" status, indicating drought conditions exist in both the short- and long-term. Overall, precipitation for the past 30 to 90 days remains below 50% of normal for much of California and Nevada, with similar values across central and eastern Washington and Oregon. Reservoir levels throughout the west (with the exception of Arizona)

Weekly Snowpack and Drought Monitor Update Report

remain below normal due to delayed snowmelt. Snowpack in the Pacific Northwest and Northern Rockies exceeds 150% of normal due to recent wetness combined with cooler than average temperatures. Snowpack across Nevada and New Mexico, meanwhile, remains below normal levels, and mountain snowpack during April 2008 decreased 30% or more across northern California, eastern Nevada and throughout the Four Corners region.

Author: Michael James, JAWF/CPC/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, 4b, and 4c).

SOIL MOISTURE

Soil moisture (Figs. 5 and 5a), is simulated by the [VIC macroscale hydrologic model](#). The detailed, physically-based VIC model is driven by observed daily precipitation and temperature maxima and minima from approximately 2130 stations, selected for reporting reliably in real-time and for having records of longer than 45 years (and various other criteria).

OBSERVED FIRE DANGER CLASS

The National Interagency Coordination Center provides a variety of products that describe the current wildfire status for the U.S. - <http://www.nifc.gov/information.html>. The latest Observed Fire Danger Class is shown in Figs. 6 shows the current active wildfires across the West - <http://geomac.usgs.gov/>.

U.S. HISTORICAL STREAMFLOW

This map, (Fig. 7) shows the 7-day average streamflow conditions in hydrologic units of the United States and Puerto Rico for the day of year. The colors represent 7-day average streamflow percentiles based on historical streamflow for the day of the year. Thus, the map shows conditions adjusted for this time of the year. Only stations having at least 30 years of record are used. Sub-regions shaded gray indicate that insufficient data were available to compute a reliable 7-day average streamflow value. During winter months, this situation frequently arises due to ice effects. The data used to produce this map are provisional and have not been reviewed or edited. They may be subject to significant change.

http://water.usgs.gov/cgi-bin/waterwatch?state=us&map_type=dryw&web_type=map.

STATE ACTIVITIES

State government drought activities can be tracked at the following URL:

<http://drought.unl.edu/mitigate/mitigate.htm>. NRCS SS/WSF State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SS/WSF information - <http://www.wcc.nrcs.usda.gov/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/>

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

May 15, 2008

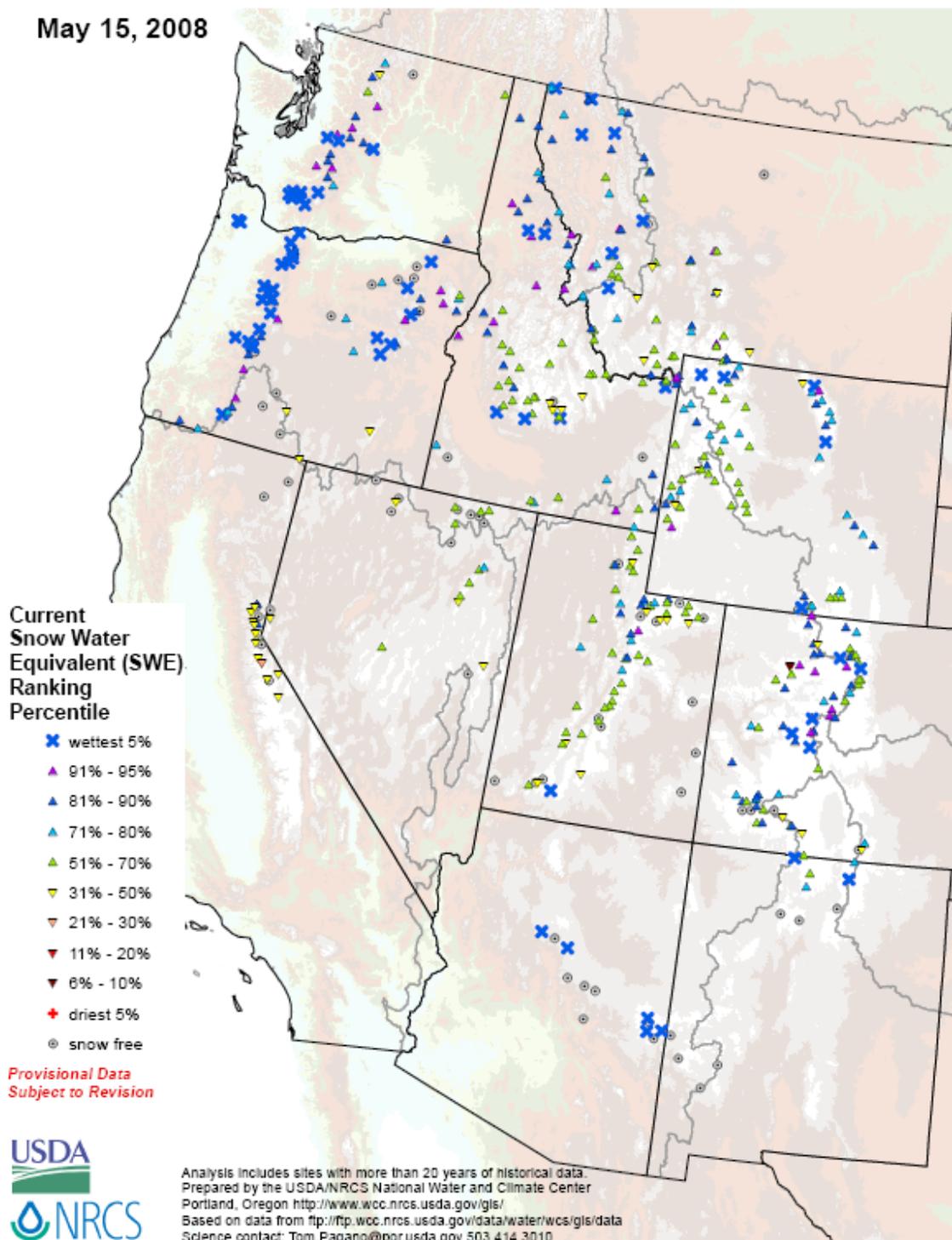


Fig. 1. During the past seven month, the 2008 Water-Year has been the wettest on average across the entire West since 1997. A large number of SNOTEL sites across the West are at or near record snow-water equivalent values. The **blue X** means that less than 5% of historical years since around 1980 have snowpack greater than what we have now (compared to other May 15th), meaning that this year is at least in the top 3 years. Delayed snow melt has upped the number of sites that are reporting near record values for this time of year.

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

Weekly Snowpack and Drought Monitor Update Report

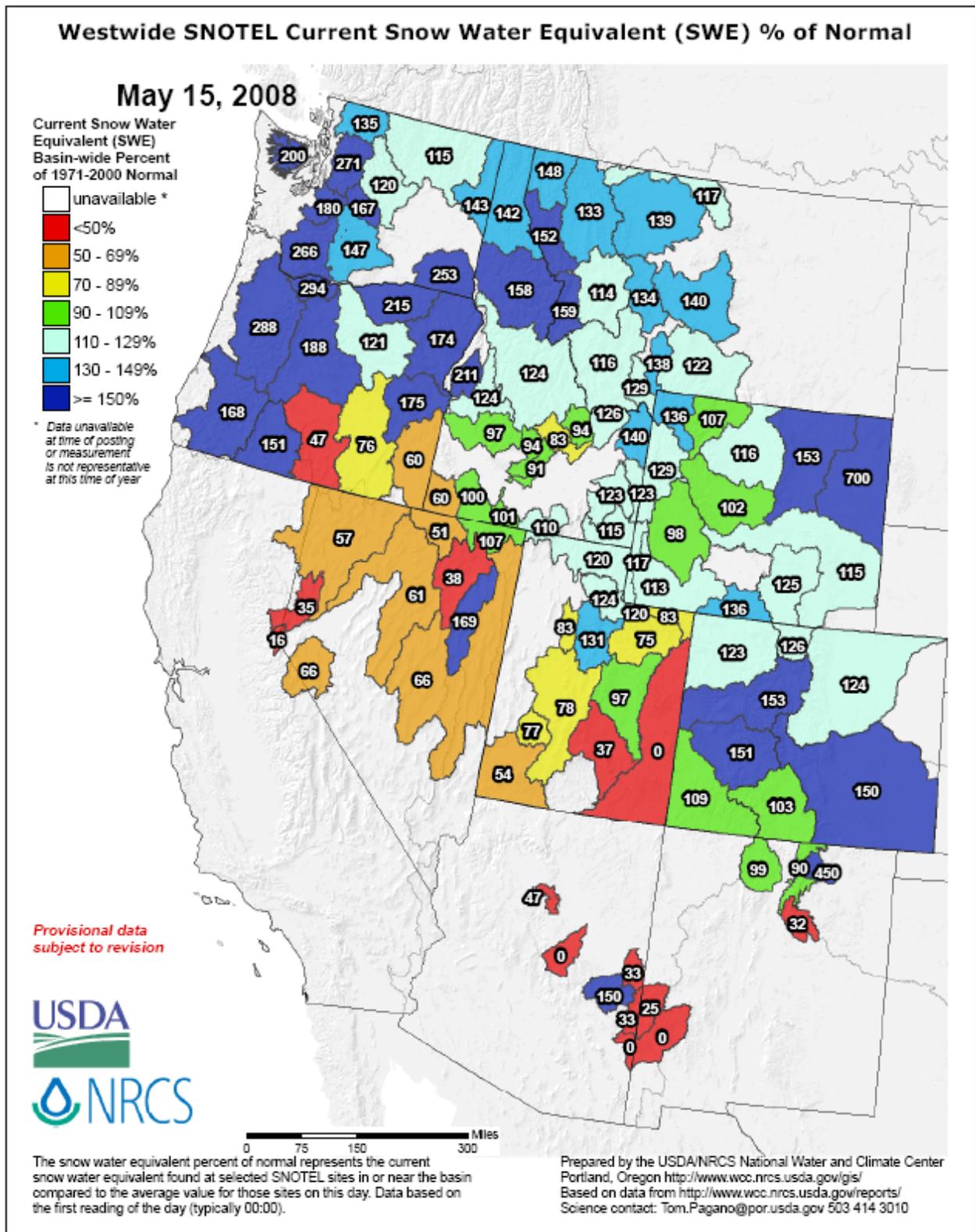


Fig. 1a. Snow-water equivalent percent as of 15 May shows well above normal values continuing over the Cascades and Coastal Ranges (WA & OR) and over Colorado, Wyoming, and Montana. There were some significant increases this past week across the West as a result of delayed runoff. However, the snow pack is melting rapidly despite these apparent increases. Remember, any number divided by a really small number result in a really large number.

Ref: ftp://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 15, 2008

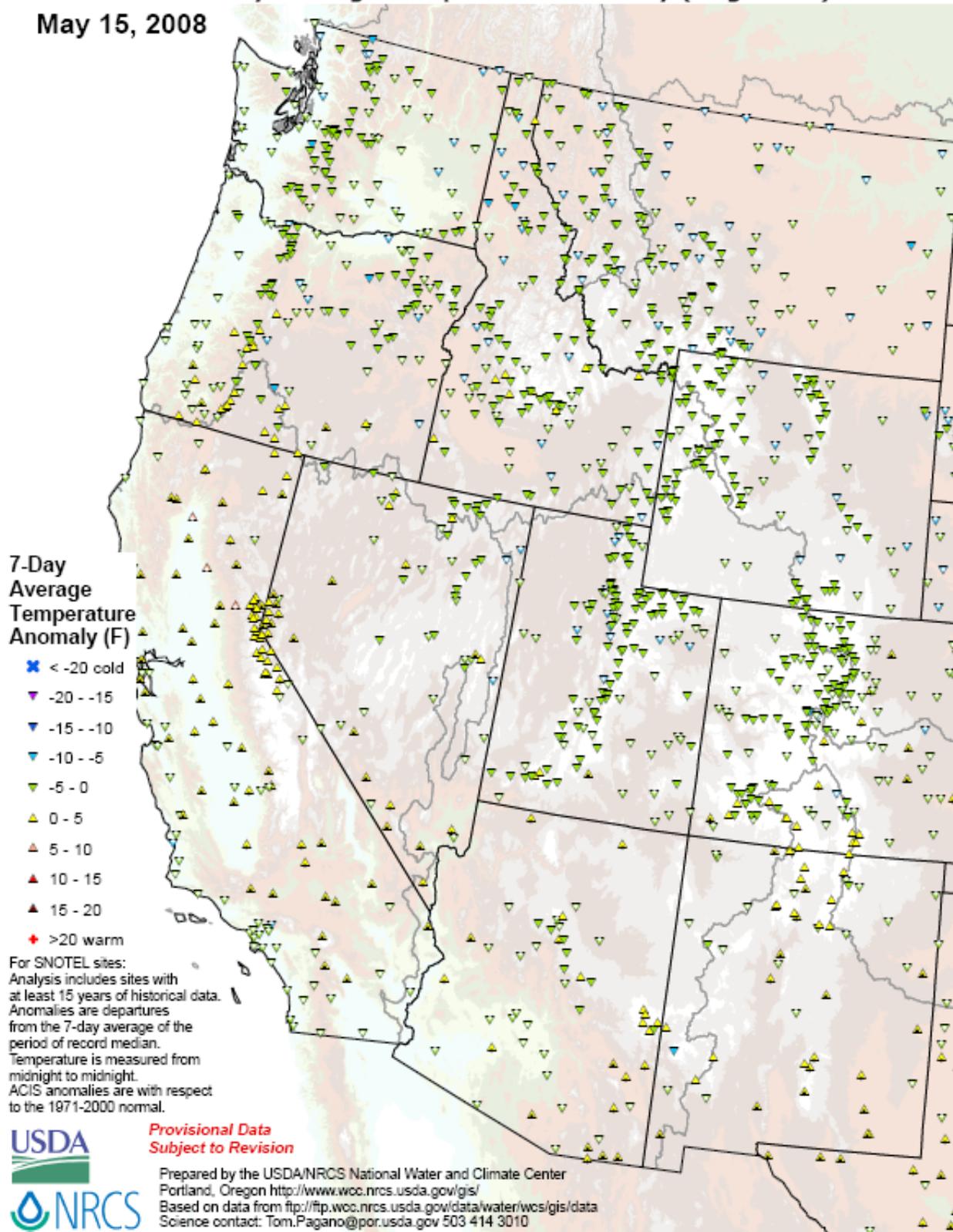
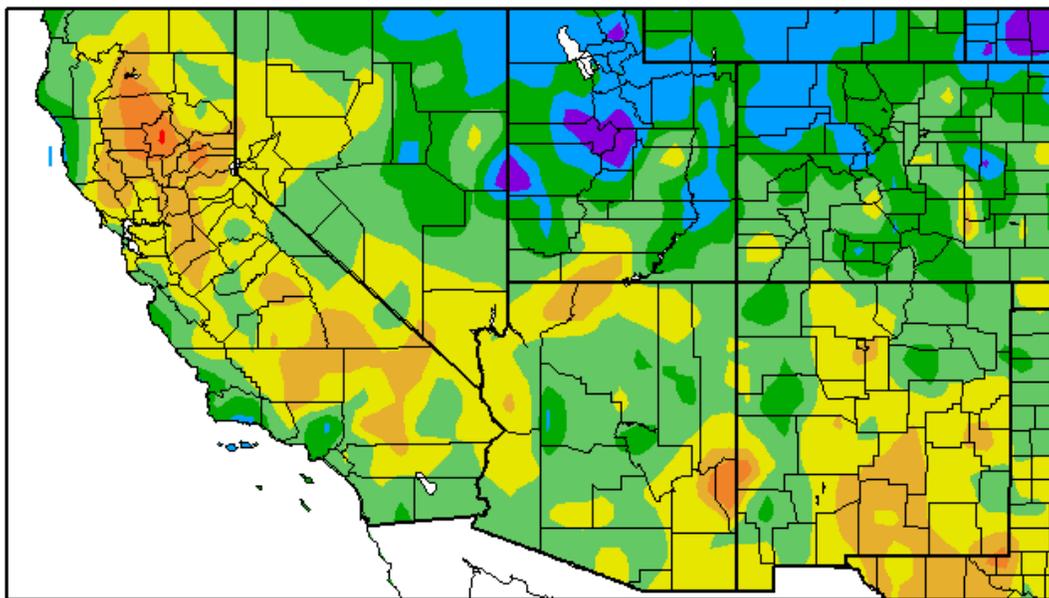
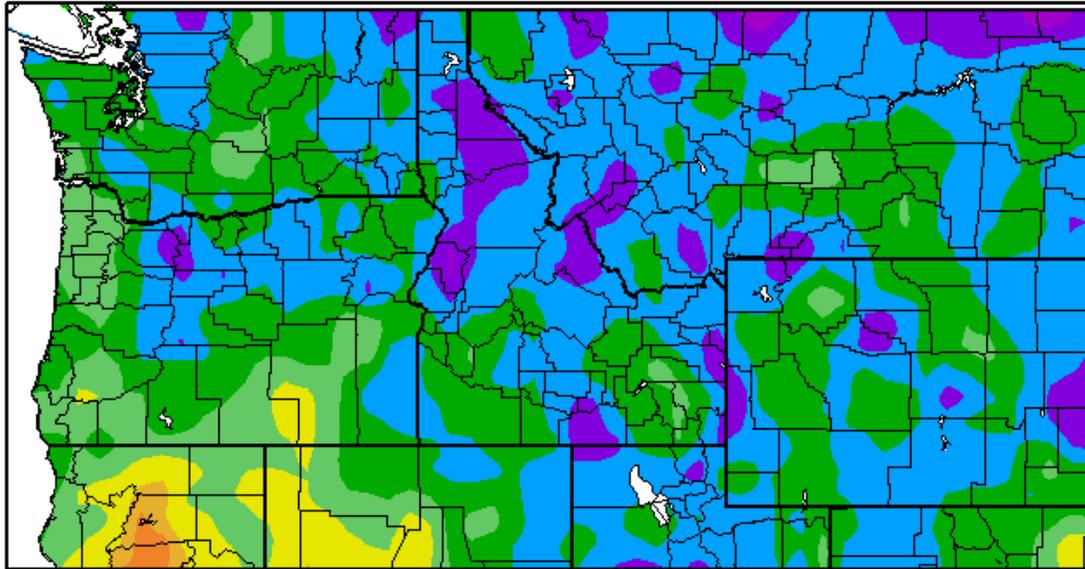


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomalies were 5 degrees F below average across most of the West. The Sierra Mountains were 5 degrees F above average.

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

Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)
5/8/2008 – 5/14/2008



Generated 5/15/2008 at HPRCC using provisional data.

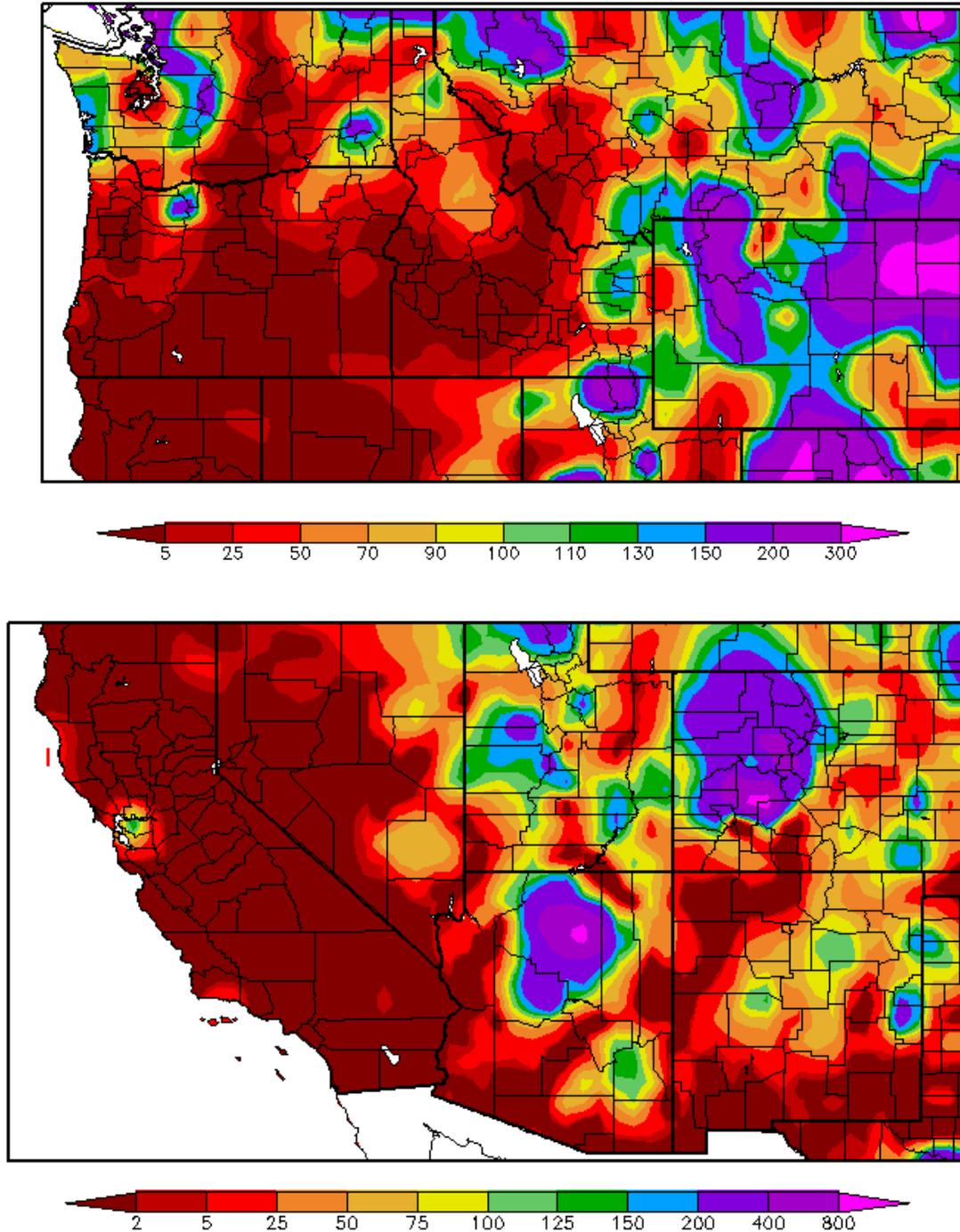
NOAA Regional Climate Centers

Fig. 2a. ACIS 7-day average temperature anomalies: Greatest negative temperature departures over the Northern Rockies (<-8F) and greatest positive departures over north central California (>+6F).

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

Weekly Snowpack and Drought Monitor Update Report

Percent of Normal Precipitation (%)
5/8/2008 – 5/14/2008



Generated 5/15/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 14 May shows an abundant amount of precipitation falling over the Northern Cascades, Wyoming, Colorado, and Utah. Most of Oregon, California, Idaho, western Nevada, and southern New Mexico were dry.

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

Weekly Snowpack and Drought Monitor Update Report

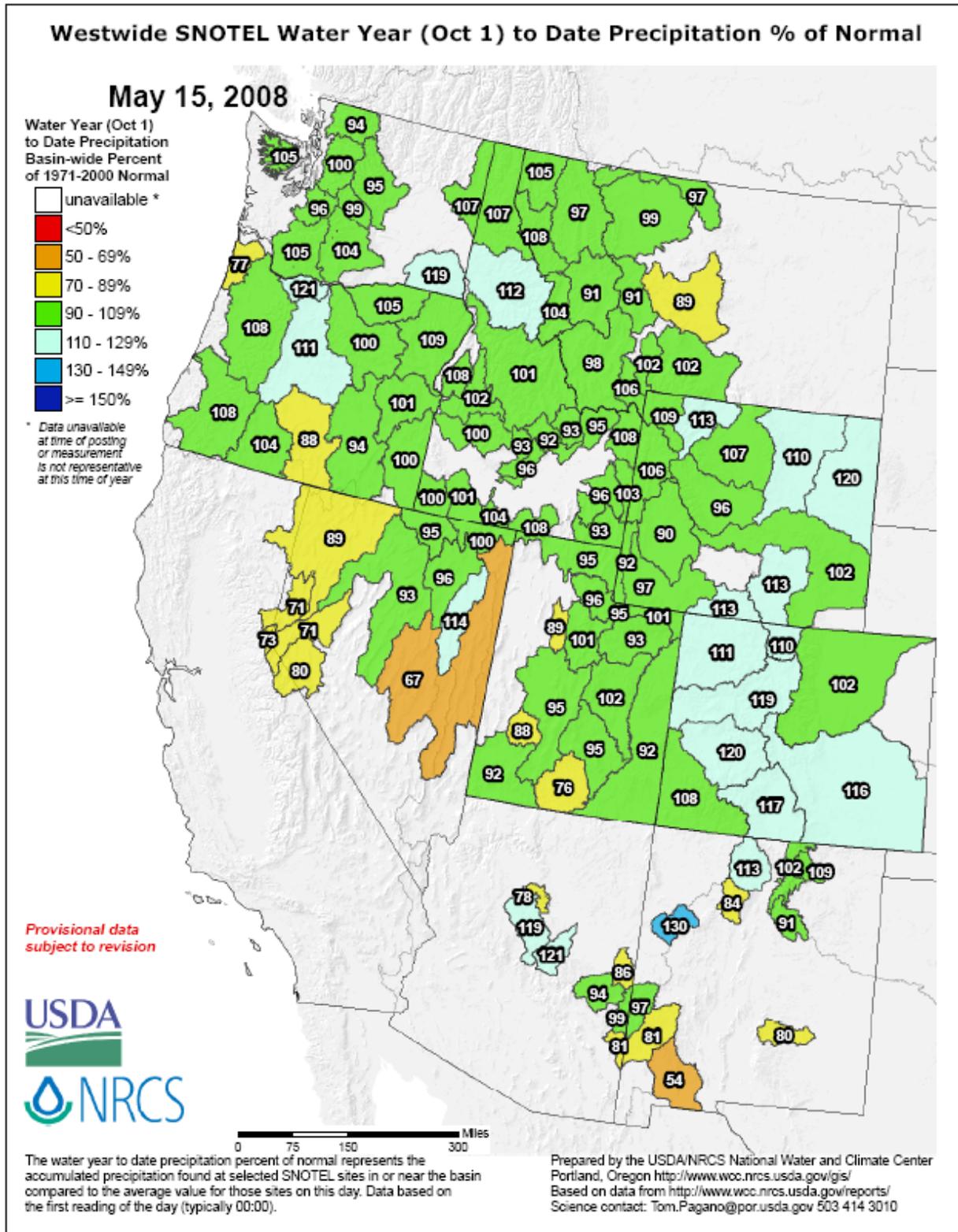


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows above normal totals over much of Colorado, central Arizona, northeast Wyoming, border of (WA and ID), and the Central Oregon Cascades. Note that little change has occurred since last week.

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

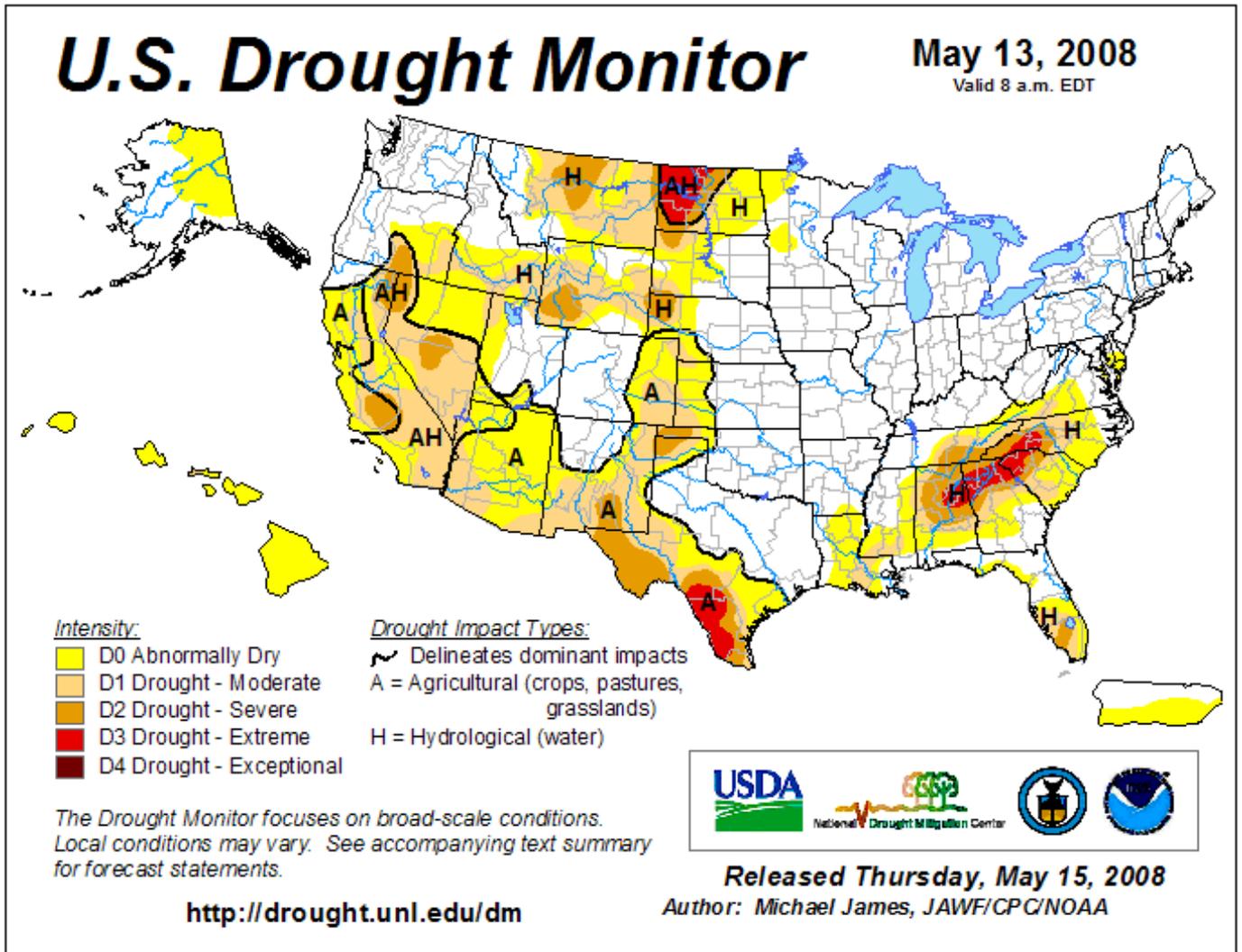


Fig. 4. Current Drought Monitor weekly summary.

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

U.S. Drought Monitor

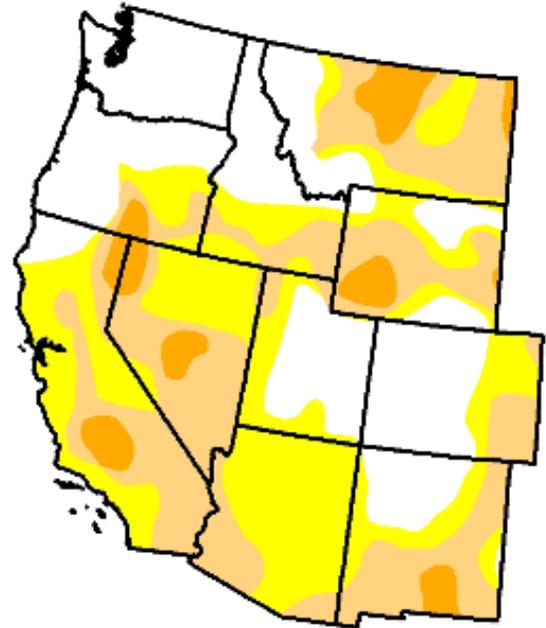
West

May 13, 2008

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.4	66.6	35.8	6.2	0.0	0.0
Last Week (05/06/2008 map)	33.3	66.7	36.3	6.2	0.0	0.0
3 Months Ago (02/19/2008 map)	33.9	66.1	37.5	16.9	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 (05/15/2007 map)	30.5	69.5	50.5	23.7	6.7	0.0



Intensity:

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

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

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



Released Thursday, May 15, 2008

Author: Michael James, JAWF/CPC/NOAA

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note no significant change since last week. Ref: http://www.drought.unl.edu/dm/DM_west.htm

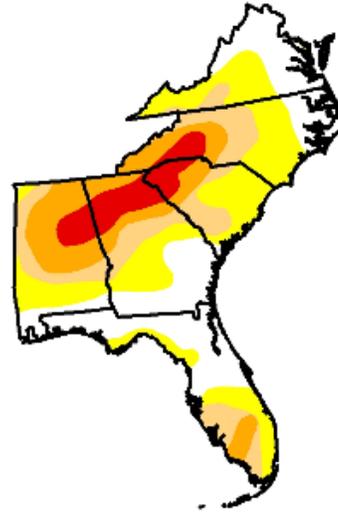
U.S. Drought Monitor

Southeast

May 13, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	30.3	69.7	40.2	23.5	8.3	0.0
Last Week (05/06/2008 map)	26.4	73.6	43.6	23.2	8.9	0.0
3 Months Ago (02/19/2008 map)	8.6	91.4	72.4	54.4	34.5	18.9
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 (05/15/2007 map)	14.8	85.2	65.6	36.4	19.3	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 15, 2008
Author: Michael James, JAWF/CPC/NOAA

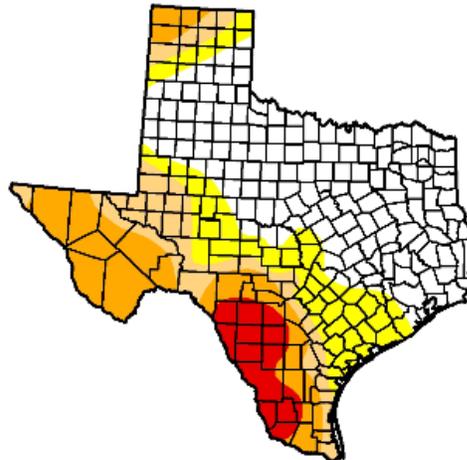
U.S. Drought Monitor

Texas

May 13, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	46.7	53.3	36.6	24.3	6.9	0.0
Last Week (05/06/2008 map)	41.4	58.6	38.7	24.3	6.9	0.0
3 Months Ago (02/19/2008 map)	28.3	71.7	41.0	14.8	1.5	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 (05/15/2007 map)	96.0	4.0	0.0	0.0	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 15, 2008
Author: Michael James, JAWF/CPC/NOAA

Fig. 4b: Drought Monitor for the Southeastern States and Texas with statistics over various time periods. Note some improvement over Texas since last week while the Southeast had little significant change. Ref: http://www.drought.unl.edu/dm/DM_southeast.htm

Weekly Snowpack and Drought Monitor Update Report

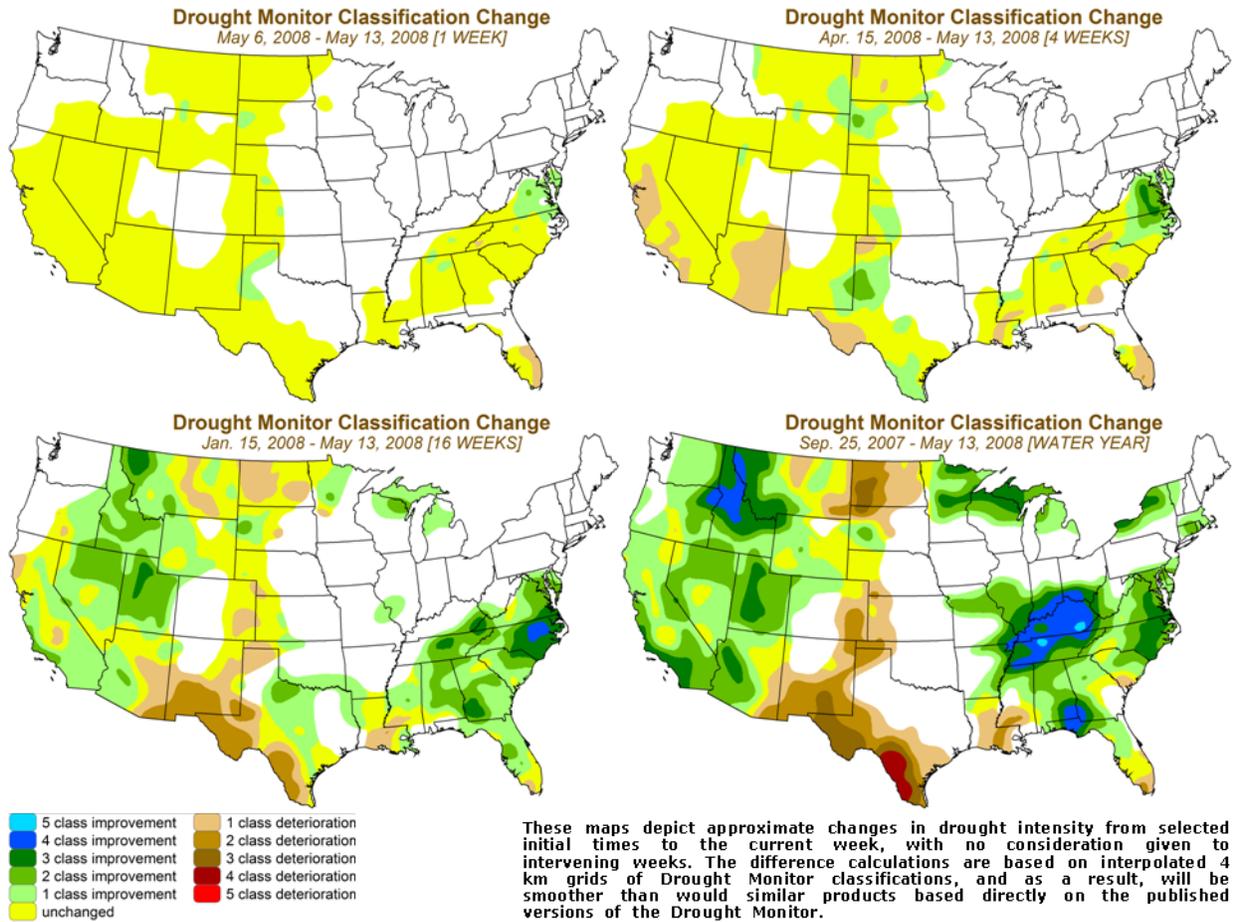
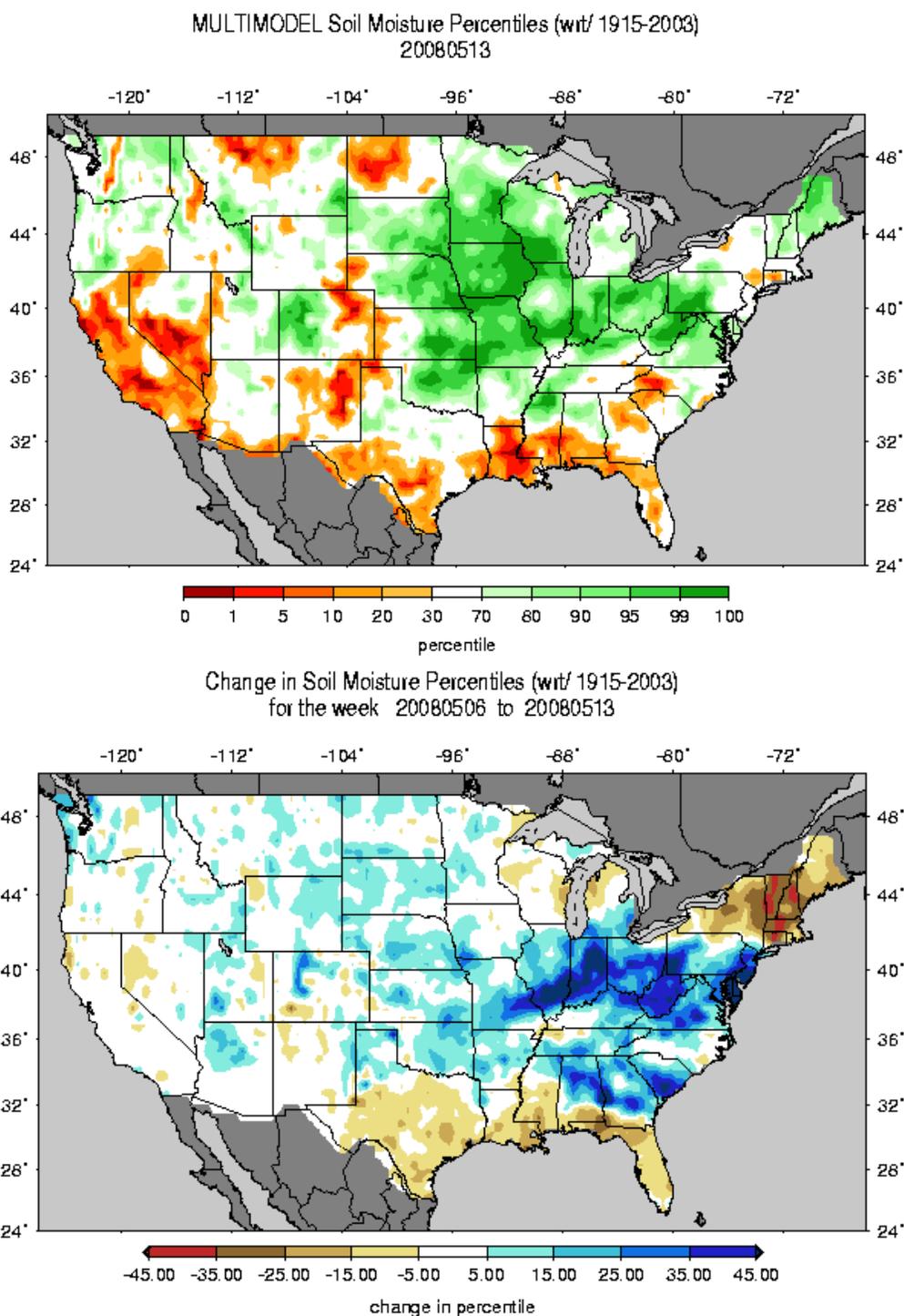


Fig 4c: Drought Monitor Classification Change for various time periods. Note little change (improvement) last week but major improvement over Idaho and the Tennessee Valley since the start of the Water Year (lower right panel). Also note significant worsening in drought over the Northern Plains (ND) and southern Texas and New Mexico.

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

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 with little change elsewhere since last week (Fig. 5). Last week saw a significant increase in soil moisture over the Ohio Valley and Eastern States with the exception of New England and Florida where significant drying has occurred 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.sm_qnt.1wk.gif

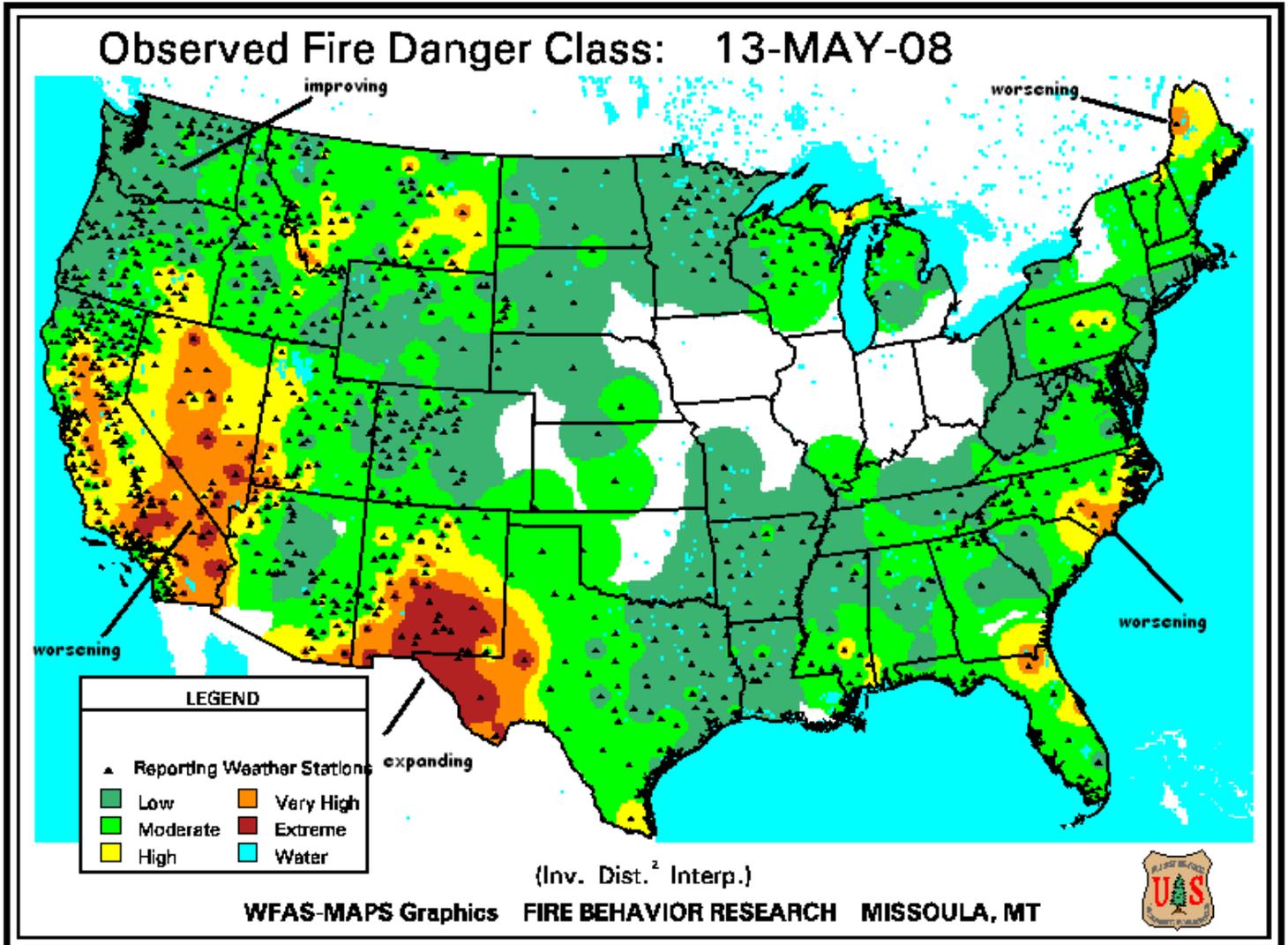
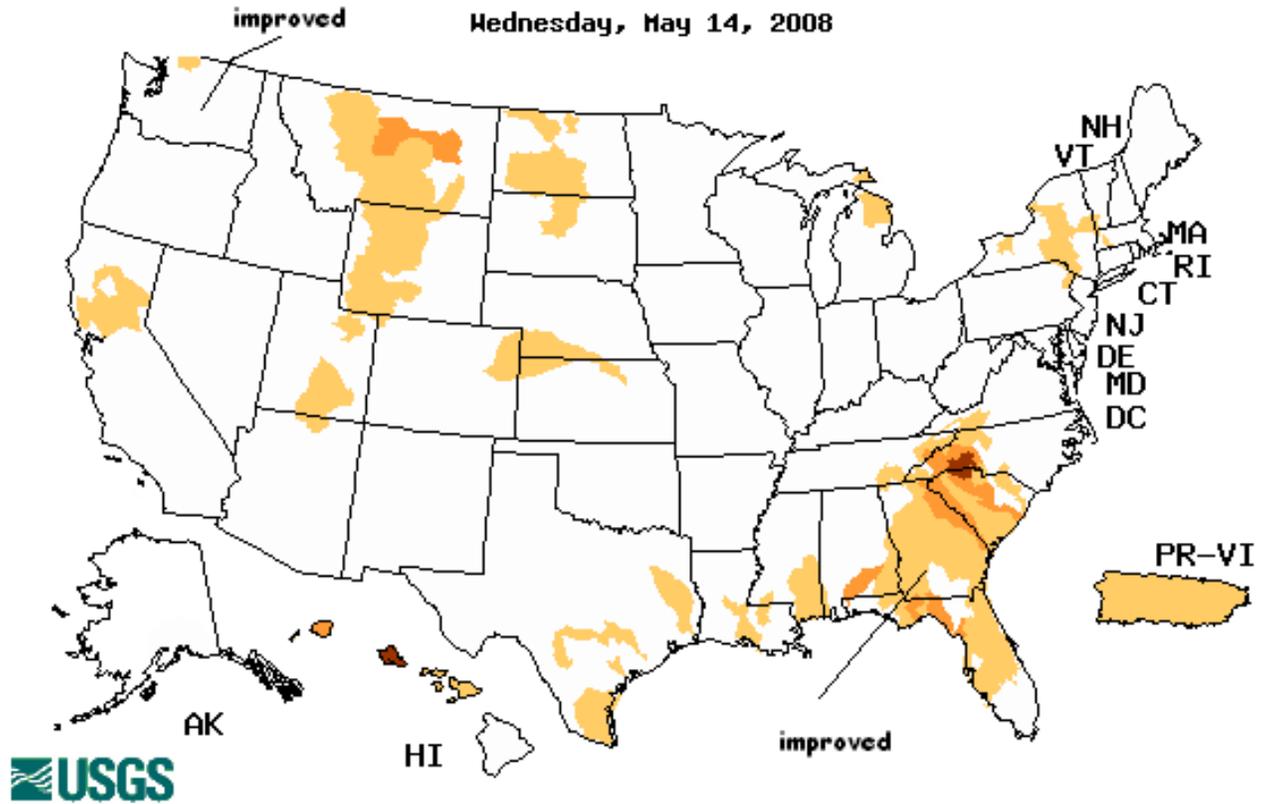


Fig. 6. Observed Fire Danger Class. Note extreme fire danger over the Southwest Texas, southern California, and southern Nevada but conditions have improved greatly over the Washington Cascades since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

Weekly Snowpack and Drought Monitor Update Report



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 significant improvement over the Southeast and Washington since last week. Ref: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary – May 13, 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/>.

Heavy rain and thunderstorms were seen across the Plains to begin this US Drought Monitor period, replenishing topsoil moisture and easing drought concerns in western Oklahoma and the Texas panhandle. Over the weekend, the nation's southern tier saw an outbreak of severe weather, with tornadoes, hail and heavy rain reported from Oklahoma through Arkansas and Missouri, as well as further south in the drought-stricken areas of Alabama and Georgia. Heavy rainfall across major D3 areas of the South did little to ease long-term hydrological drought, but the subsequent deluge across the Mid-Atlantic improved conditions throughout North Carolina and Virginia. Out west, dry weather persisted, with temperatures averaging slightly above normal for this USDM period.

The Southeast and Mid-Atlantic:

Clear and dry weather across the Southeast and Mid-Atlantic early in the period gave way to excessively wet weather to end the period. A severe weather outbreak across the Southeast on May 10-11 brought thunderstorms and heavy rain to drought-stricken areas of Alabama and Georgia. While the heavy rain (2 to 4 inches) replenished topsoil moisture and somewhat eased drought concerns for parts of northern Alabama, more rain is needed to improve the long-term drought impacts of northern Georgia and western South Carolina.

An area of low pressure slowly moved through the Mid-Atlantic on Sunday, bringing excessive rainfall (4 to 7 inches) and flooding to Maryland and Virginia. This heavy rain prompted a reduction from D1 to D0 for the Delmarva Peninsula, as well as eliminated D0 across central and eastern Virginia and northeast North Carolina. The extent of D2 coverage in central Virginia and northern North Carolina was reduced, but the western D2 areas missed this timely rain. Western North Carolina, in particular, received 1 to 2 inches of rain, but river streamflows levels remained at or below the 10th percentile, prompting a slight expansion of D2 coverage westward to the Tennessee state line, while D3 was expanded northward in northern Georgia and western South Carolina.

The Plains and Midwest:

Heavy rainfall was seen early in the USDM period across the Texas panhandle and parts of western Oklahoma, where 2 to 3 inches of rain essentially erased short term moisture deficits in the southern half of the panhandle. The D0 boundary was pushed westward to the New Mexico state line, and D0/D1 coverage was reduced northward into Deaf Smith County, TX and southward into Gaines County, TX.

Steady rain in western Kansas and southwest Nebraska (2 to 4 inches) early in the period warranted a small westward pullback of D0/D1 in the central High Plains. Northwest Nebraska benefited from 1 to 2 inches of rain, and near-normal 30-day rainfall totals prompted the removal of the small D3 area in Box Butte and Dawes counties. Continued excessive rainfall over the Black Hills of South Dakota prompted an expansion of drought-free conditions eastward from

Weekly Snowpack and Drought Monitor Update Report

northeastern Wyoming into Butte and Meade counties in South Dakota, where river levels are seen a marked improvement in recent days.

Drought-afflicted areas of central North Dakota received 1 to 2 inches of moisture over the weekend, improving topsoil conditions over the previous week. Climate divisions 1, 4 and 7 are experiencing the 4th, 8th and 10th driest 90-day periods respectively (an improvement over last week's ranking of driest 90-day period for all divisions). Because this long-term dryness is still a significant concern, no improvements are warranted at this time for North Dakota.

The West:

Dry weather continued for much of the West, with little to no precipitation reported across New Mexico, Arizona and California. Beginning on May 11, an upper-level low pressure system brought light, scattered rain to the Pacific Northwest before digging southward into the Four Corners and central Rockies, where 1 to 4 inches of precipitation was reported. Late-period rain in northwest Wyoming and southern Montana led to a reduction from D1 to D0, and 30-, 60-, and 90-day precipitation totals are at or above normal for the region. Some dry pockets still exist (25-50% of normal precipitation for the last 30 to 90 days), namely in Carbon County, Montana and northern parts of Park County, Wyoming.

Reservoir storage across Arizona continues to rise, with current levels approximately 30% above average. Drought blends indicate mostly short-term dryness for Arizona, therefore the region was adjusted to short-term (A) drought status. Similarly, an area of the Great Basin from central Oregon through much of Nevada was adjusted to "AH" status, indicating drought conditions exist in both the short- and long-term. Overall, precipitation for the past 30 to 90 days remains below 50% of normal for much of California and Nevada, with similar values across central and eastern Washington and Oregon. Reservoir levels throughout the west (with the exception of Arizona) remain below normal due to delayed snowmelt. Snowpack in the Pacific Northwest and Northern Rockies exceeds 150% of normal due to recent wetness combined with cooler than average temperatures. Snowpack across Nevada and New Mexico, meanwhile, remains below normal levels, and mountain snowpack during April 2008 decreased 30% or more across northern California, eastern Nevada and throughout the Four Corners region.

Hawaii, Alaska and Puerto Rico:

Abnormally dry drought areas in central and eastern Alaska remain unchanged after the region saw minimal precipitation (less than 0.5 inches) during the current USDM period.

Stations on the eastern half of Big Island in Hawaii reported 1.9, 3.0 and 5.5 inches of rain for the current USDM period, while stations on the western edge reported little to no precipitation. Similarly, a single station on Maui reported 2.0 inches, while the rest of the Hawaiian Islands remained relatively dry, resulting in no changes to the current extent of D0/D1 coverage.

Scattered, light precipitation across Puerto Rico (generally less than 1 inch) kept D0 status unmodified for the southern half of the island.

Looking Ahead:

An upper-level trough will move through the Four Corners region and into the Southern Plains, triggering rain and thunderstorms across the Delta and Southeast. Drought-stricken areas in Alabama and Georgia will likely see weekly rainfall totals of 1 to 3 inches, with heavier amounts possible locally. Rainfall over 3 inches is expected for far eastern parts of Texas and throughout Louisiana, with similar amounts forecast for the Ohio River Valley and Mid-Atlantic. Dry weather

Weekly Snowpack and Drought Monitor Update Report

is expected to persist throughout the West and across the Northern Plains, and the West will see a rapid increase in temperature as a strong high pressure ridge builds in the upper levels.

Cool weather is expected throughout the Corn Belt and Midwest from May 19-27, with drier than normal conditions forecast for the Pacific Northwest and Upper Mississippi Valley, as well as across the southern Plains and Gulf coast. Temperatures warmer than normal are forecast for the West and Southwest, while central and eastern Alaska is likely to experience unseasonably warm and dry conditions for the next 7 to 14 days.

Author: Michael James, JAWF/CPC/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 May 14, 2008