



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

Weekly Report - Snowpack / Drought Monitor Update **Date: April 3, 2008**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: During the past week, active weather resulted in an increase of snow depths across the Central Rockies, Uinta, and Northern Wasatch but continued to fall over the Sierra. Since last week, the preliminary April-July streamflow runoff forecast has generally declined except for a few locations in Colorado (Fig. 1). Snow-water equivalent percent as of 3 April shows well above normal values over portions of the Cascades and Coastal Ranges (WA & OR). This time of year usually sees the greatest snow pack over the Northern Rockies and Cascades. In recent years, this peak has occurred around 1 March. Values have decreased substantially over portions of Arizona and New Mexico which is to be expected (Fig. 1a).

Temperature: For the past seven days, average temperature anomalies were well below normal over the northern half of the West and were above normal over portions of Arizona and New Mexico (Fig. 2). The Greatest negative temperature departures occurred over the Pacific NW and Northern Rockies (<-12F) and the greatest positive departures occurred over eastern Arizona and southwestern New Mexico (>+6F) (Fig. 2a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 2 April shows a continued typical La Nina wet pattern over the Pacific NW and the Central Rockies and a La Nina dry pattern across California, western Nevada, Arizona, and New Mexico (Fig. 3). Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows much above normal totals over much of southern Colorado and central Arizona. Values have decreased across parts of Nevada since last week (Fig. 3a).

WESTERN DROUGHT STATUS

The West: Substantial changes were introduced across many of the dry areas across the western states this week, almost none of which were based on conditions observed during the prior week. Early April represents the approximate climatological peak in snowpack for much of the West, and conditions at this time of year provide substantial insight into how streamflows and reservoir stores will unfold as the snow melts and the warmer time of the year progresses. March 2008 was drier than normal for most areas in the West affected by dryness and drought. In fact, Phoenix, AZ recorded its first precipitation-free March since 1984. However, snowpack on April 1, 2008 was near to substantially above normal across a vast majority of the region (basin-averaged amounts below 90 percent of normal were restricted to the central Sierra Nevada, west-central and eastern sections of Nevada, south-central Idaho, and most of the higher elevations across the southernmost Rockies, where peak snowpack tends to occur earlier in the year). This bodes well for the forthcoming warm season, but must be considered along with the dry 2006-2007 winter across most of the region, and even longer-term dryness across Arizona, southern sections of California and Nevada, much of central and western Wyoming, and a few other areas scattered across the West. As of April 1, only Arizona reported above-normal statewide reservoir storage, and 6 states (WA, OR, NV, UT, NM, and WY) reported only 65 to 75 percent of normal, though this of course should be bolstered as the current substantial snowpack melts.

Weekly Snowpack and Drought Monitor Update Report

Given all of these factors, a significant reduction was made in the extent of D2 conditions, which are now limited to central Nevada, areas near the Nevada/Oregon/California triple point, and part of southeastern Idaho, northern Utah, and southwestern Wyoming. In addition, smaller areas of improvement from former D0 and D1 conditions were introduced in southeastern Oregon, central and southern Idaho, western Wyoming, and southeastern Utah. On the other hand, this re-assessment led to a few areas of deterioration, with D1 conditions returning to the Sierra Nevada, and some expansion of D0 to D1 conditions in parts of southern Utah and northern Arizona.

It should be noted that substantial long-term deficits still exist across much of the Southwest despite near-normal precipitation for the last 12 months. Some of the southeastern California deserts have received less than half of normal rainfall since April 2005, and reports of 50 to 80 percent of normal are common across southern California, central and southern Nevada, and parts of Arizona. Author: Rich Tinker, Climate Prediction 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, 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.

Weekly Snowpack and Drought Monitor Update Report

STATE ACTIVITIES

State government drought activities can be tracked at the following URL: <http://drought.unl.edu/mitigate/mitigate.htm>. NRCS SS/WSF State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SS/WSF information - <http://www.wcc.nrcs.usda.gov/cgibin/bor.pl>. Additional information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/>

FOR MORE INFORMATION

The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>

This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/ NOLLER HERBERT
Director, Conservation Engineering Division

Weekly Snowpack and Drought Monitor Update Report

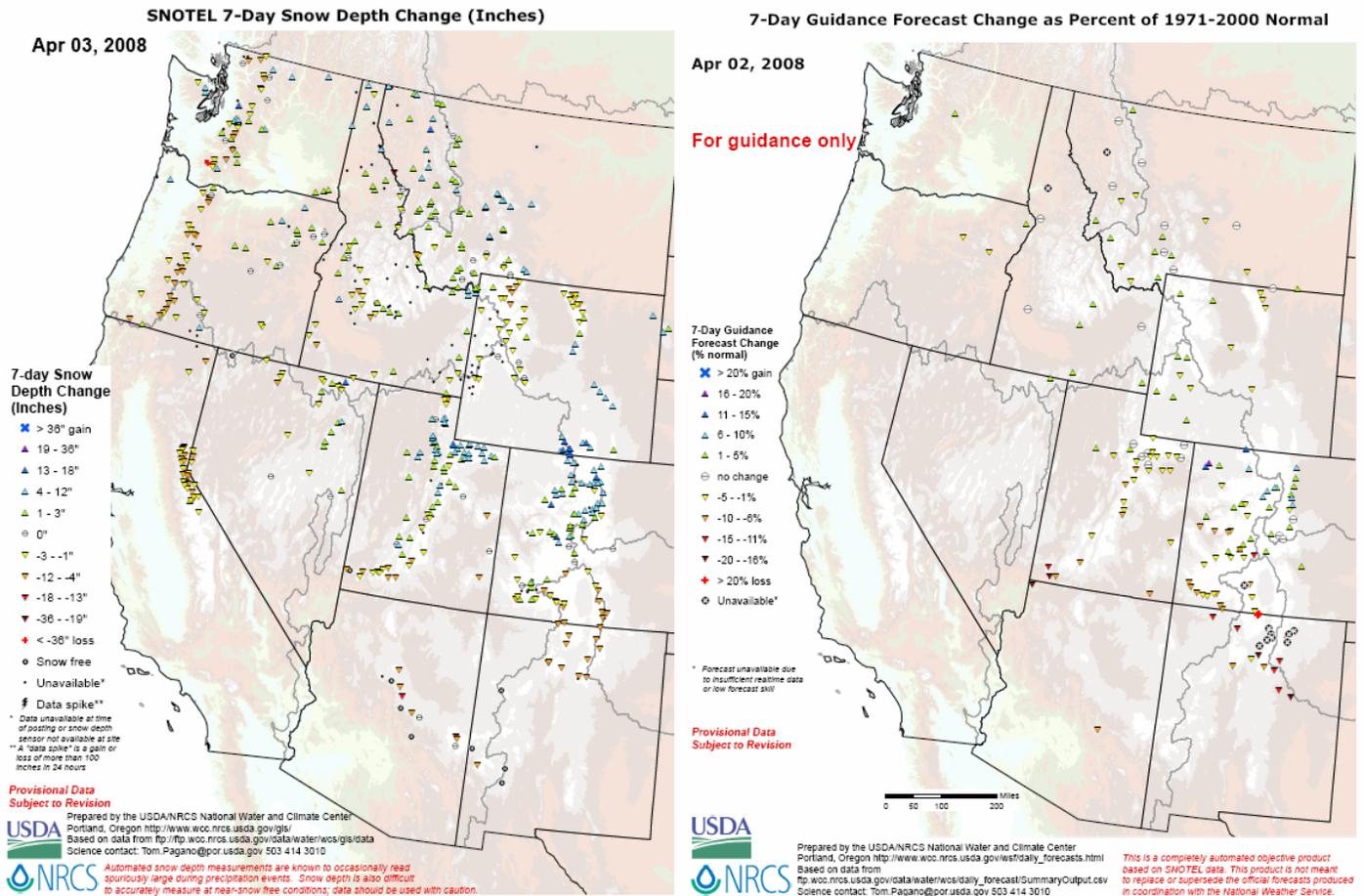


Fig. 1. During the past week, wet weather resulted in an increase of snow depths across the Central Rockies, Uinta, and Northern Wasatch and continued to fall over the Sierra (left figure). Since last week, the preliminary April-July streamflow runoff forecast has generally declined except for a few locations in Colorado (right figure). Note: Area basin preliminary forecasts for the Sierra and Cascades are not made.

Refs: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf
ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/daily_forecast/maps/west_dailyfcst_7daych.pdf

Weekly Snowpack and Drought Monitor Update Report

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

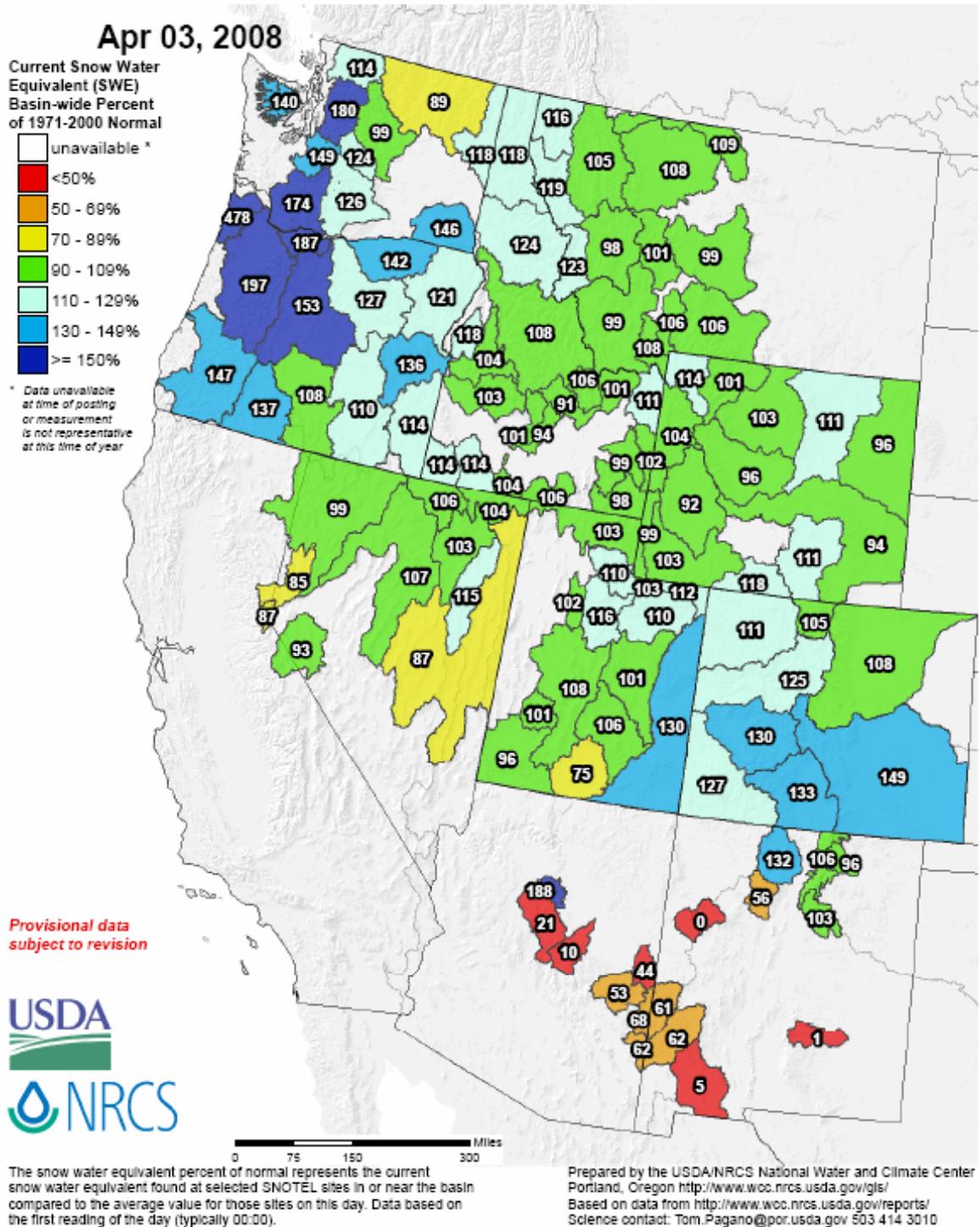


Fig. 1a. Snow-water equivalent percent as of 3 April shows well above normal values over portions of the Cascades and Coastal Ranges (WA & OR). This time of year usually sees the greatest snow pack over the Northern Rockies and Cascades. In recent years this peak has occurred around 1 March. Values have decreased substantially over portions of Arizona and New Mexico.

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

Weekly Snowpack and Drought Monitor Update Report

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

Apr 03, 2008

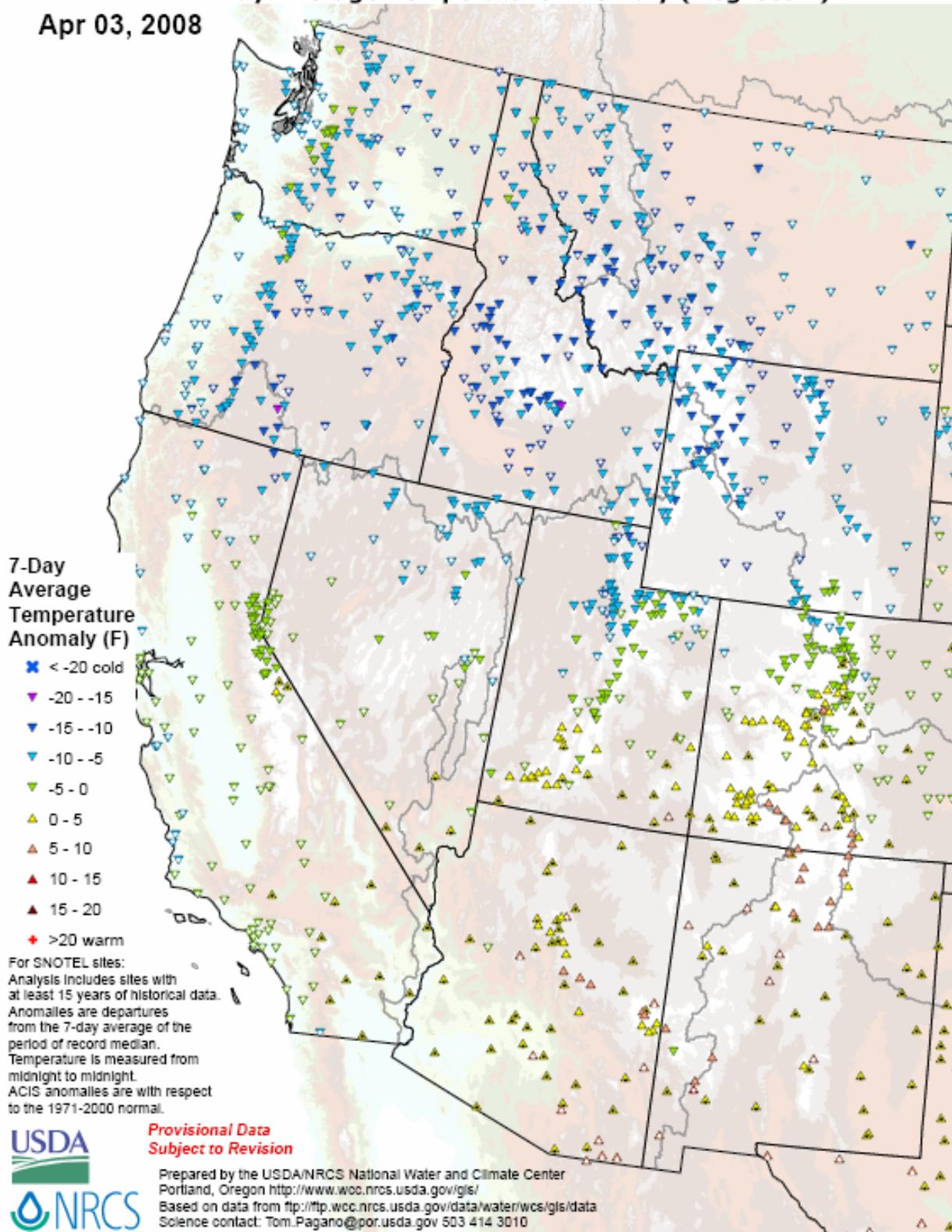
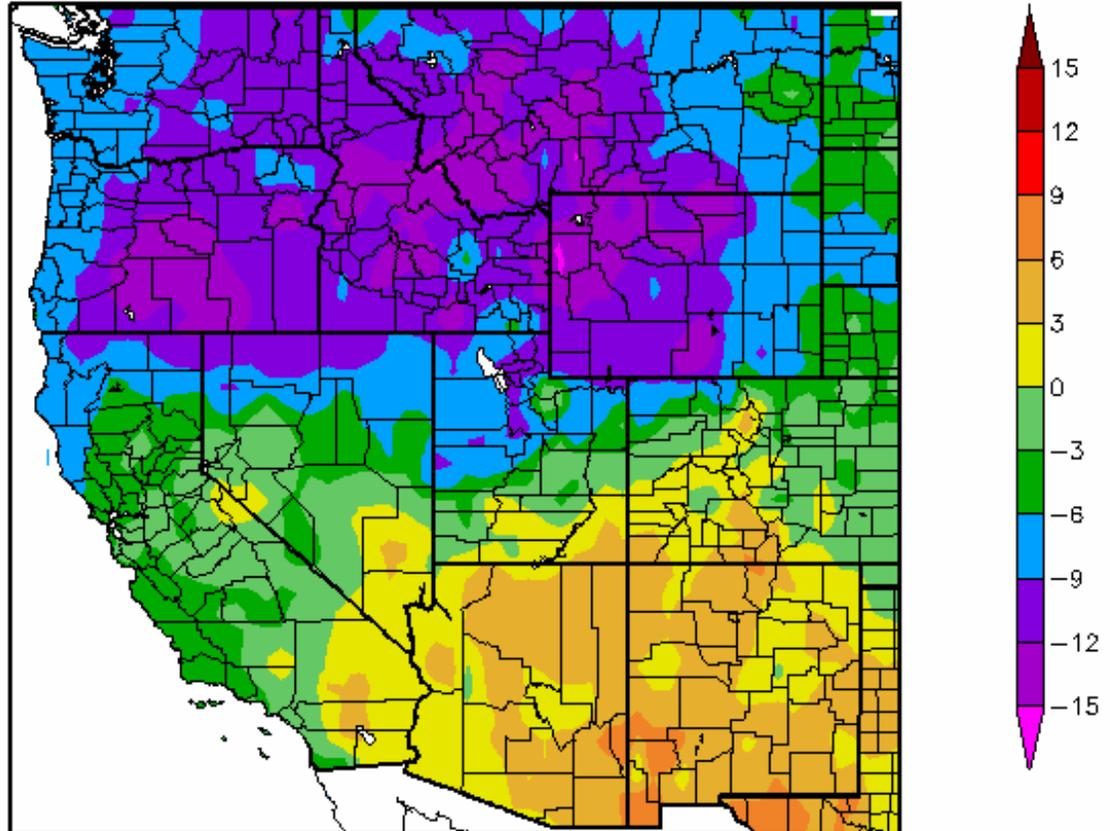


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomalies were below normal over the northern half of the West and were above normal over portions of Arizona and New Mexico.
Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>

Departure from Normal Temperature (F)
3/27/2008 – 4/2/2008



Generated 4/3/2008 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.

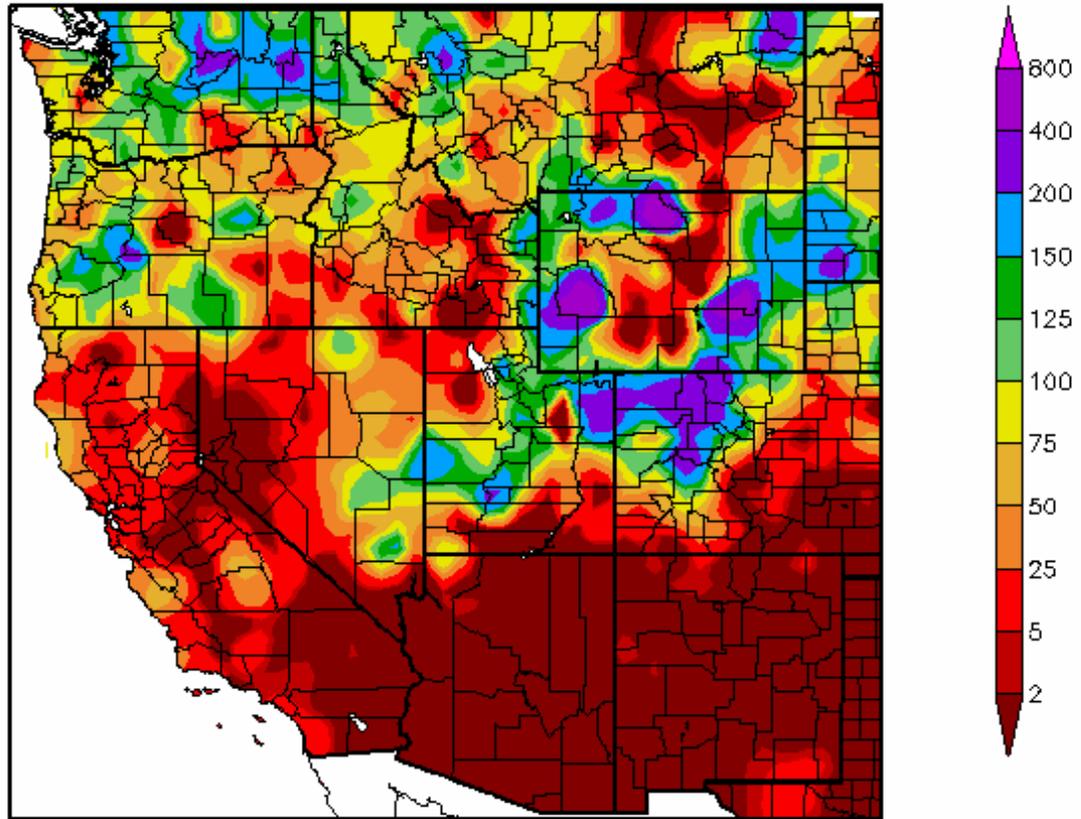


Normal refers to the 1971-2000 Climate Normal for the selected product.

Fig. 2a. ACIS 7-day average temperature anomalies: Greatest negative temperature departures over the Pacific NW and Northern Rockies (<-12F) and greatest positive departures over eastern Arizona and southwestern New Mexico (>+6F).

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

Percent of Normal Precipitation (%)
3/27/2008 - 4/2/2008



Generated 4/3/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

The Current Climate Summary Maps are produced daily using data from the Applied Climate Information System (ACIS). Stations used are from the National Weather Service Cooperative Observer Network (COOP), and the Automated Weather Data Network (AWDN). All near-real-time data are considered preliminary and should be used responsibly.



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

Fig. 3. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 2 April shows continued La Nina type wet conditions over the Pacific NW and the Central Rockies while very little precipitation fell across California, western Nevada, Arizona, and New Mexico. Ref: http://www.hprcc.unl.edu/maps/index.php?action=update_product&product=Pnorm

Weekly Snowpack and Drought Monitor Update Report

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

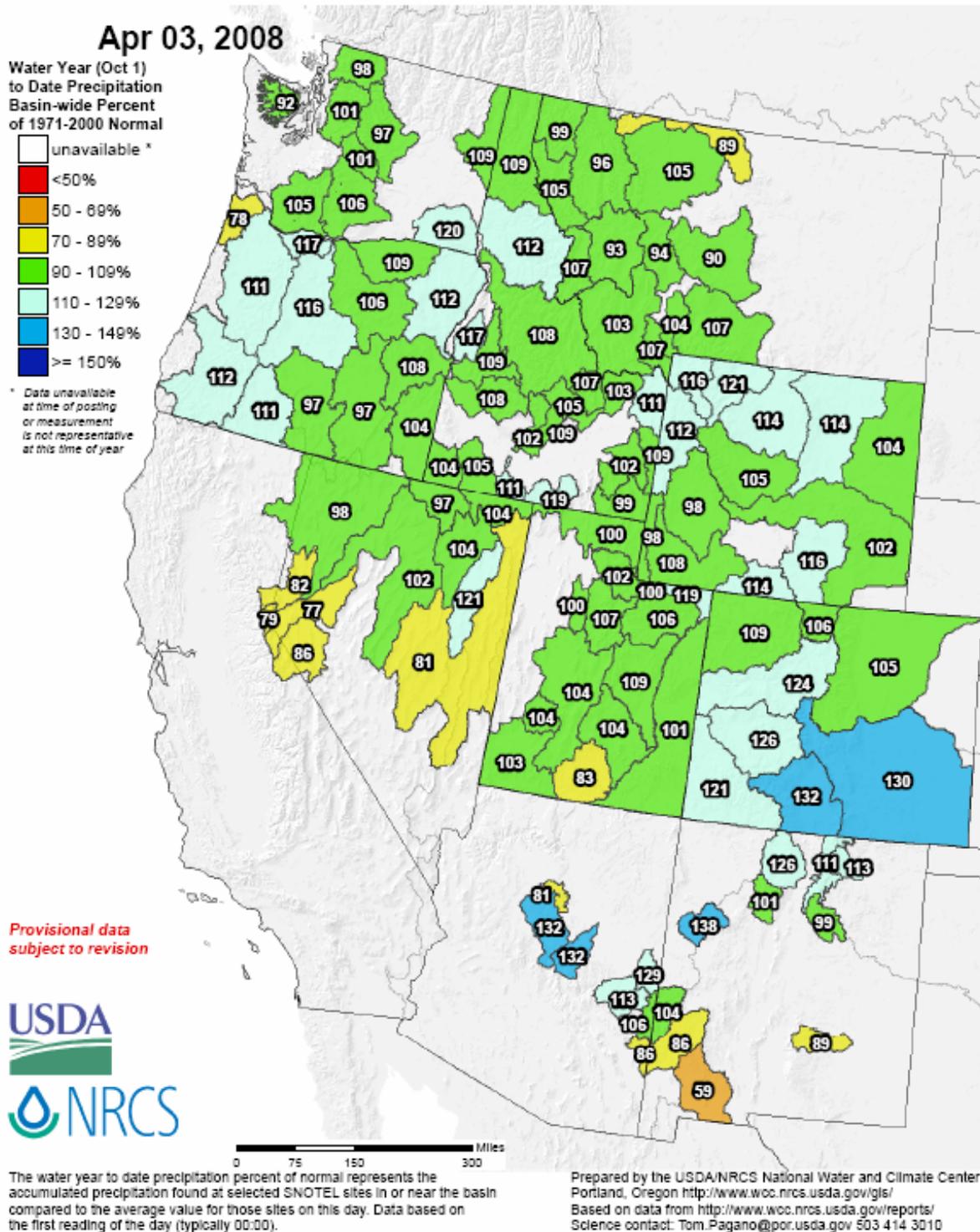
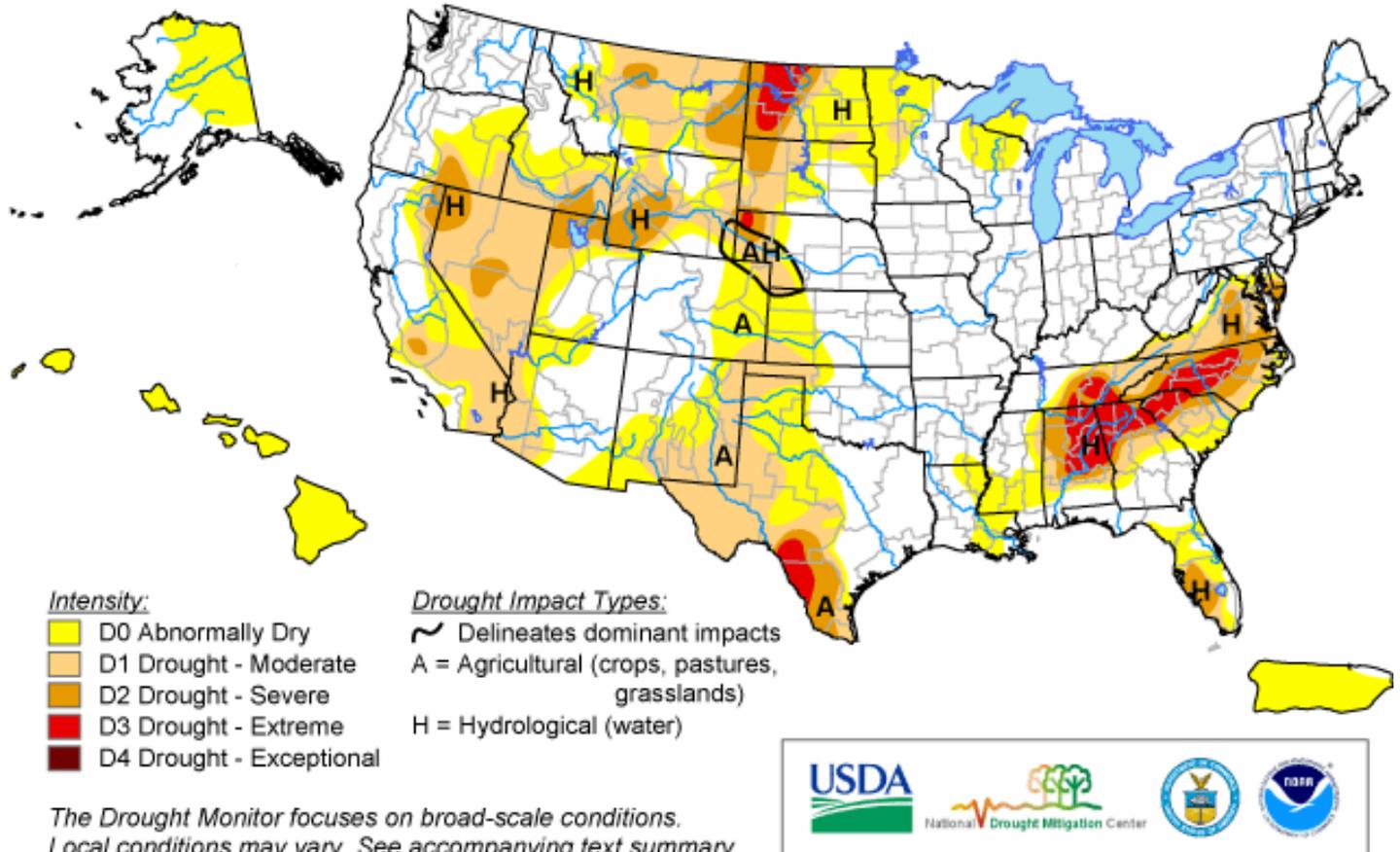


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows much above normal totals over much of southern Colorado and central Arizona. Values have decreased across parts of Nevada since last week.

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

U.S. Drought Monitor

April 1, 2008
Valid 8 a.m. EDT



Released Thursday, April 3, 2008
Author: Rich Tinker, Climate Prediction Center, NOAA

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

Fig. 4. Current Drought Monitor weekly summary.

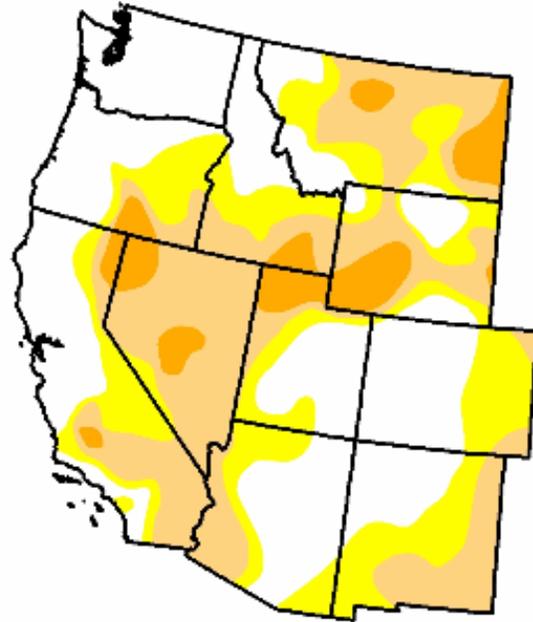
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>.

U.S. Drought Monitor West

April 1, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	40.6	59.4	36.3	7.5	0.0	0.0
Last Week (03/25/2008 map)	41.4	58.6	36.4	15.4	0.0	0.0
3 Months Ago (01/08/2008 map)	26.9	73.1	54.9	26.7	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 (04/03/2007 map)	33.3	66.7	49.7	17.5	5.6	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, April 3, 2008
Author: Rich Tinker, CPC/NOAA

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Note some improvement in the D2-D4 levels since last week.

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

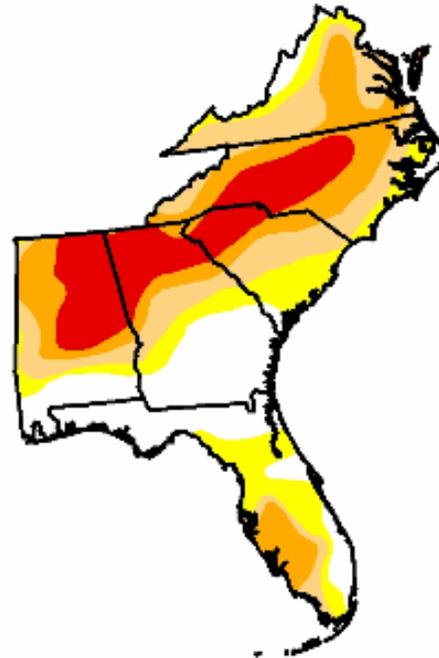
U.S. Drought Monitor

Southeast

April 1, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	23.8	76.2	59.4	39.2	17.9	0.0
Last Week (03/25/2008 map)	24.8	75.2	57.5	38.1	18.0	0.0
3 Months Ago (01/08/2008 map)	9.6	90.4	75.1	58.5	41.0	22.0
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 (04/03/2007 map)	12.2	87.8	42.8	12.1	1.7	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



Released Thursday, April 3, 2008
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<http://drought.unl.edu/dm>

Fig. 4b: Drought Monitor for the Southeastern States with statistics over various time periods. Note that there was little change since last week. Ref: http://www.drought.unl.edu/dm/DM_southeast.htm

Weekly Snowpack and Drought Monitor Update Report

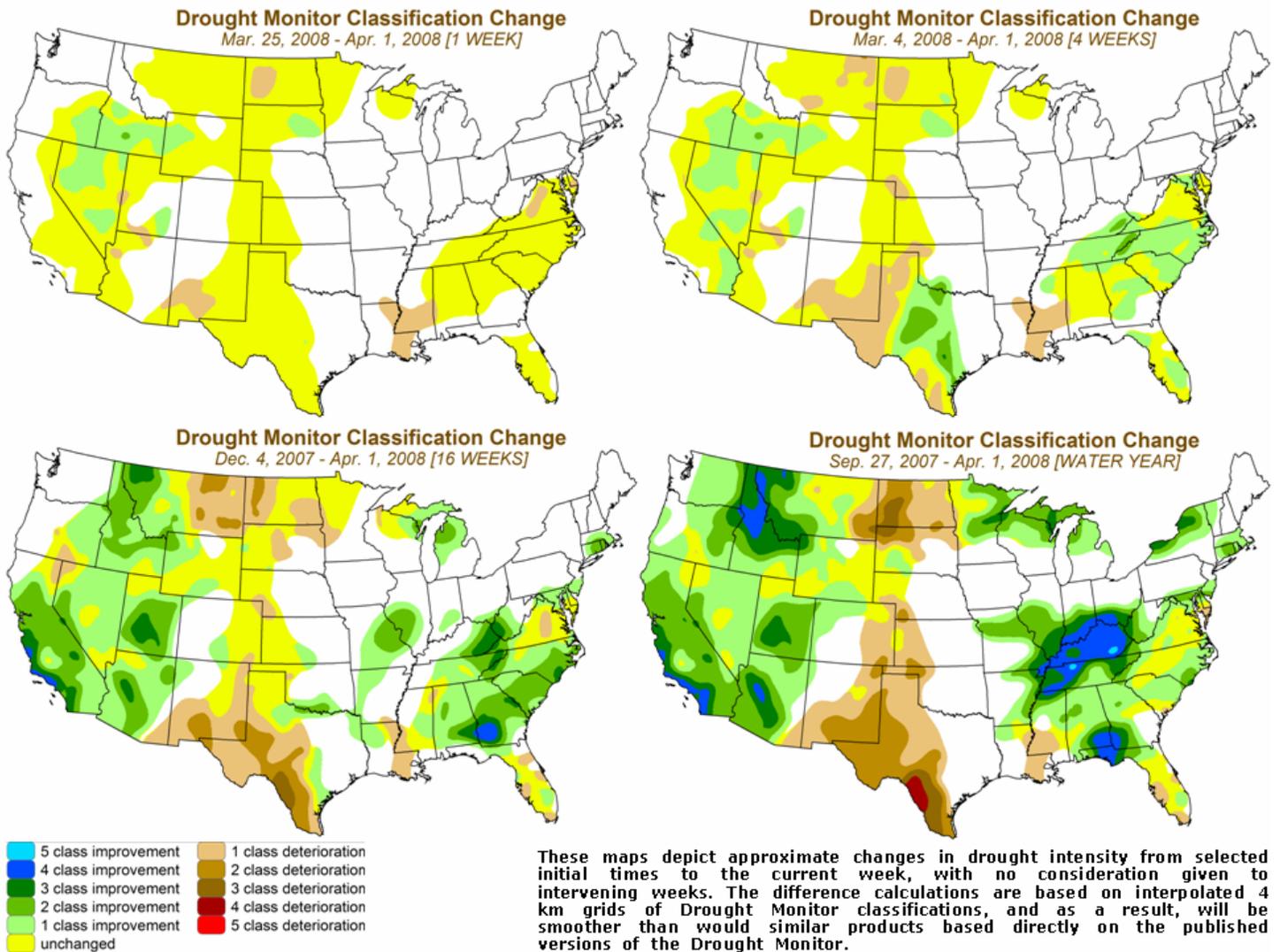
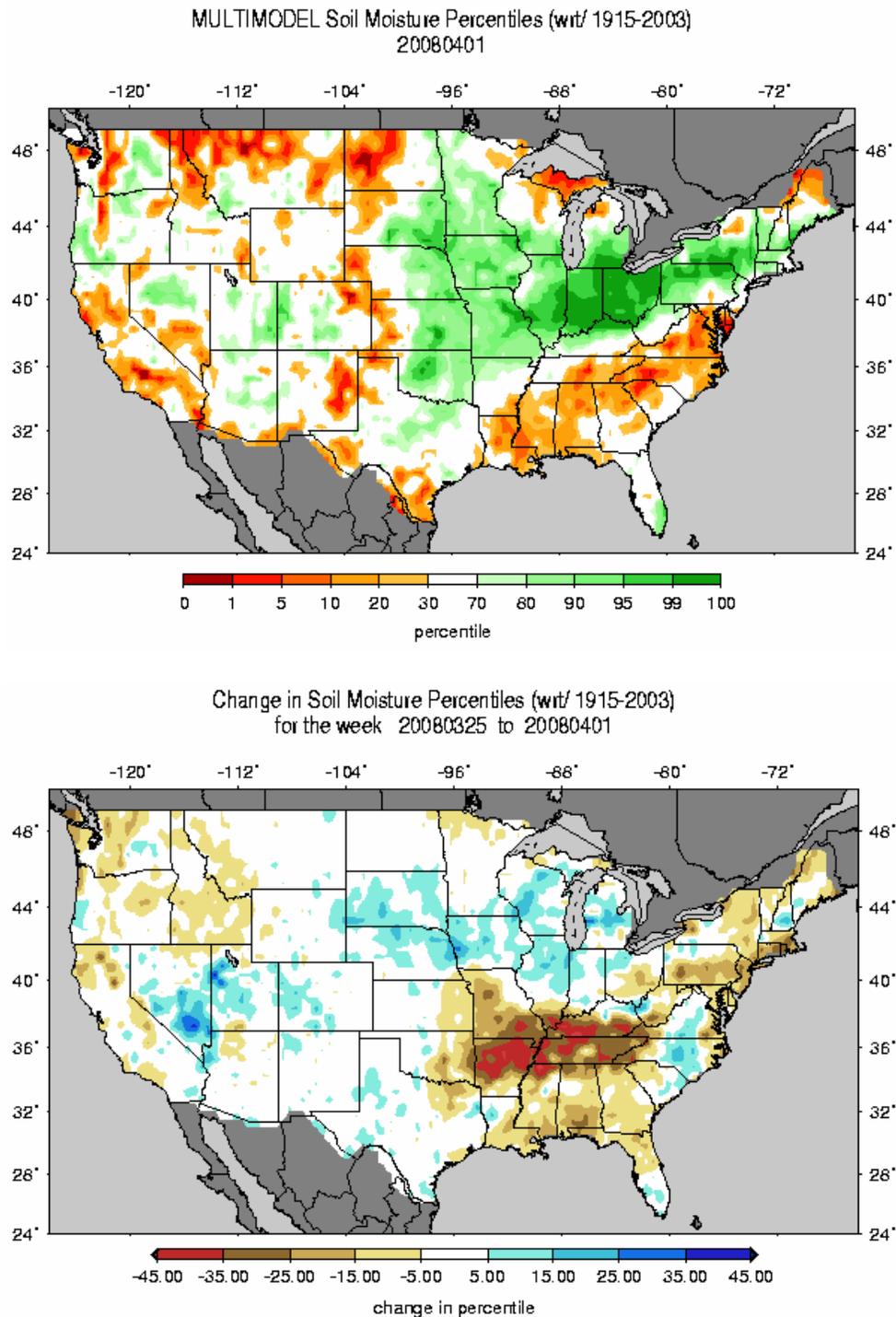


Fig. 4c. Drought Monitor classification changes for various time periods shows some recent improvements over the Intermountain West and Great Basin (upper left). Note long term improvements over the West and Southeast but worsening over the mid section of the nation (lower right).

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. Note some worsening (drying) over the Northern Rockies, California, the Northern Plains, and the Southeast to Mid-Atlantic States. Significant soil saturation persists over the Mississippi and Ohio River Valleys (flooding is a problem in some of this area) (Fig. 5). Considerable drying has occurred over Arkansas to eastern Tennessee (Fig. 5a). Remark: In colder regions of the West, frozen ground suggests incorrect values or missing data (e.g. the Cascades are considerably wetter than depicted).

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.multimodel.sm_qnt.gif
http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_qnt.1wk.gif

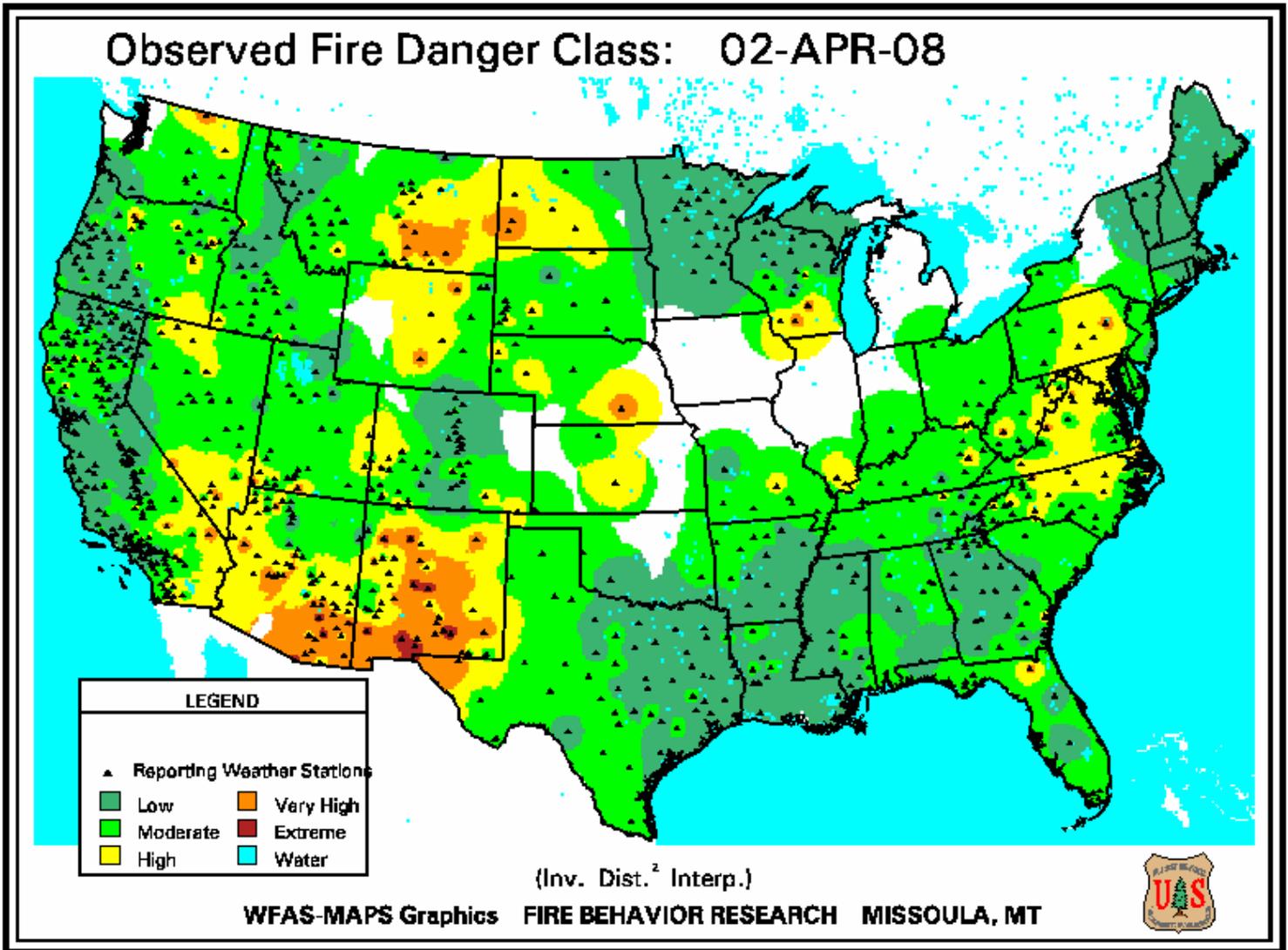
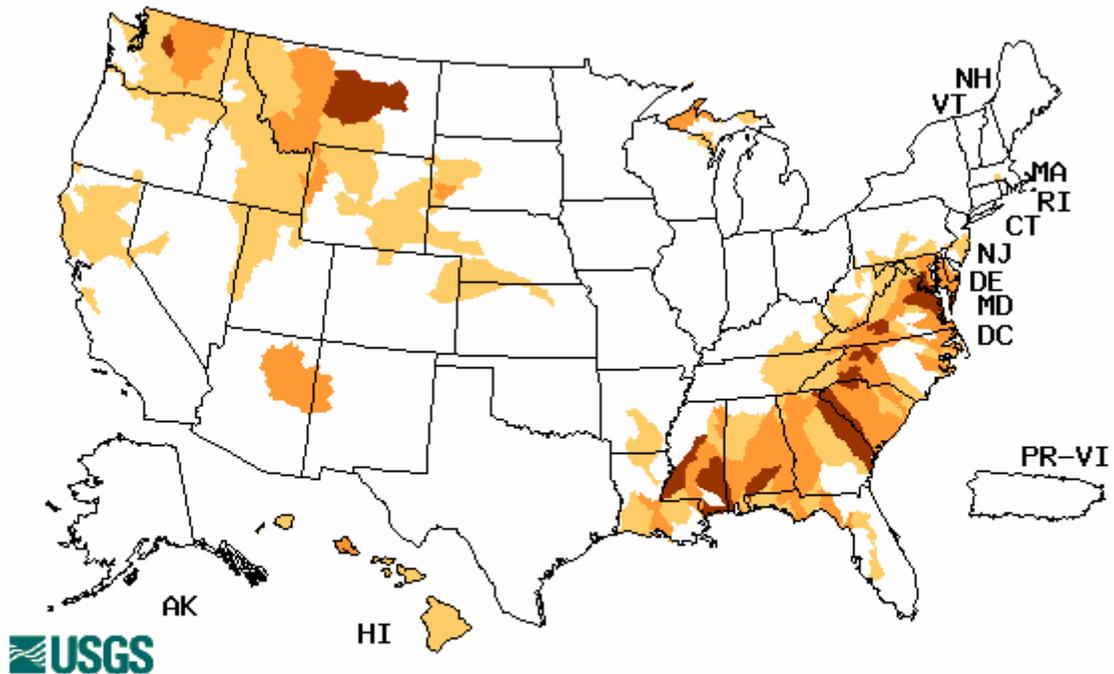


Fig. 6. Observed Fire Danger Class. Note general improvement over Nevada and the Mid-Atlantic States since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

Weekly Snowpack and Drought Monitor Update Report

Wednesday, April 02, 2008



Explanation - Percentile classes				
Low	≤5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Fig. 7. This week's map shows some worsening over Montana, Washington, Arizona, and portions of the Southeast since last week. Values over the colder regions of the West and northern states are probably missing or are in error due to river icing and freeze-up.

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

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- April 1, 2008

The discussion in the Looking Ahead section is simply a description of what the official national guidance from the National Weather Service (NWS) National Centers for Environmental Prediction is depicting for current areas of dryness and drought. The NWS forecast products utilized include the HPC 5-day QPF and 5-day Mean Temperature progs, the 6-10 Day Outlooks of Temperature and Precipitation Probability, and the 8-14 Day Outlooks of Temperature and Precipitation Probability, valid as of late Wednesday afternoon of the USDM release week. The NWS forecast web page used for this section is: <http://www.cpc.ncep.noaa.gov/products/forecasts/>.

The Southeast and Mid-Atlantic: Once again, a storm system brought heavy rain to parts of the Mississippi and Ohio Valleys, but dropped much lower totals on the areas of dryness and drought in the Southeast and middle Atlantic regions. Between 2 and 4 inches fell on portions of central and southeastern Tennessee and isolated sites across Georgia, but totals of 0.5 to locally 2.0 inches were more common in the D0 to D3 areas, with even lower amounts reported in the northern and western mid-Atlantic region, southwestern Virginia, the central and western Carolinas, northern and west-central Georgia, eastern Alabama, and most of Florida.

As a result, the areas of dryness and drought depicted last week changed little. D3 conditions improved to D2 in a small section of southeastern Tennessee which received the heaviest rainfall last week. Meanwhile, D1 to D2 conditions expanded a bit in central and northern Virginia and parts of southern Maryland and Delaware.

In addition, little or no precipitation fell on the southern half of Mississippi, much of eastern Louisiana, and adjacent Arkansas. Since early October 2007, these areas have received 4 to locally 12 inches less precipitation than normal, and as a result, D0 conditions were introduced this week.

Over the last few months, precipitation in the areas of dryness and drought has been closer to normal than was the case for much of 2007, but has still been below normal. For the last 90 days, precipitation totals in a large part of the dry region have been within 4 inches of normal, with larger deficits restricted to southern sections of Maryland and Delaware, the Piedmont sections of Virginia and the Carolinas, northern Georgia, the central Gulf Coast, northeastern Louisiana, and southeastern Arkansas. As a result, large long-term precipitation deficits continue to affect the region, with most areas from the western Carolinas southward through Florida and westward across Tennessee, Georgia, Alabama, Mississippi, and adjacent sections of Arkansas and Louisiana reporting amounts 1 to 2 feet below normal since early April 2006.

The Plains: Locally heavy snows lifted parts of eastern South Dakota out of D0 and reduced the southward extent of D1 in northeastern South Dakota. Meanwhile, 1 to 3 inches of rain improved conditions to D0 for a small section of central Texas, and 0.5 to locally 2.0 inches of precipitation dampened the western Upper Peninsula of Michigan and northeastern Wisconsin, but was not enough to improve the abnormally dry conditions in those areas. Elsewhere, light to locally moderate precipitation fell on the rest of South Dakota, western Nebraska, eastern Wyoming, and several other locations scattered across the northern Plains while little or nothing fell from western Kansas and eastern Colorado southward to the Mexican border. As a result, D0 and D1 conditions expanded in southern and western New Mexico, and D3 was introduced in a large part of western North Dakota where recent conditions have been particularly dry. In most these areas where dryness and drought intensified, precipitation totals for the last 6 months have been less than half of normal, and under 25 percent of normal since the beginning of the calendar year.

Weekly Snowpack and Drought Monitor Update Report

The West: Substantial changes were introduced across many of the dry areas across the western states this week, almost none of which were based on conditions observed during the prior week. Early April represents the approximate climatological peak in snowpack for much of the West, and conditions at this time of year provide substantial insight into how streamflows and reservoir stores will unfold as the snow melts and the warmer time of the year progresses. March 2008 was drier than normal for most areas in the West affected by dryness and drought. In fact, Phoenix, AZ recorded its first precipitation-free March since 1984. However, snowpack on April 1, 2008 was near to substantially above normal across a vast majority of the region (basin-averaged amounts below 90 percent of normal were restricted to the central Sierra Nevada, west-central and eastern sections of Nevada, south-central Idaho, and most of the higher elevations across the southernmost Rockies, where peak snowpack tends to occur earlier in the year). This bodes well for the forthcoming warm season, but must be considered along with the dry 2006-2007 winter across most of the region, and even longer-term dryness across Arizona, southern sections of California and Nevada, much of central and western Wyoming, and a few other areas scattered across the West. As of April 1, only Arizona reported above-normal statewide reservoir storage, and 6 states (WA, OR, NV, UT, NM, and WY) reported only 65 to 75 percent of normal, though this of course should be bolstered as the current substantial snowpack melts.

Given all of these factors, a significant reduction was made in the extent of D2 conditions, which are now limited to central Nevada, areas near the Nevada/Oregon/California triple point, and part of southeastern Idaho, northern Utah, and southwestern Wyoming. In addition, smaller areas of improvement from former D0 and D1 conditions were introduced in southeastern Oregon, central and southern Idaho, western Wyoming, and southeastern Utah. On the other hand, this re-assessment led to a few areas of deterioration, with D1 conditions returning to the Sierra Nevada, and some expansion of D0 to D1 conditions in parts of southern Utah and northern Arizona.

It should be noted that substantial long-term deficits still exist across much of the Southwest despite near-normal precipitation for the last 12 months. Some of the southeastern California deserts have received less than half of normal rainfall since April 2005, and reports of 50 to 80 percent of normal are common across southern California, central and southern Nevada, and parts of Arizona.

Hawaii: Below normal precipitation fell on the island chain last week, keeping D0 conditions intact.

Alaska: Significant precipitation continues to evade the D0 region, with only 0.1 to 0.5 inch reported at a few scattered locations. As a result, D0 conditions persisted.

Puerto Rico: Moderate to locally heavy rains fell on the northeastern, central, and western parts of the island, with 2 to locally 4 inches falling on part of the interior southwest. However, rainfall appeared insufficient to improve the D0 conditions covering most of the island.

Looking Ahead: In general, April 2 – 7, 2008 is expected to feature beneficial precipitation in the dry areas across the eastern half of the country, but only spotty, marginal relief at best through the rest of the contiguous 48 states. Between 3 and 4 inches of rain is forecast across Tennessee and adjacent sections of Alabama and Mississippi, and at least 1.5 inches is expected through the mid-Atlantic region, the Carolinas, Florida, much of northern Alabama and Mississippi, southeastern Arkansas, and northeastern Louisiana. Generally 0.5 to 1.5 inches should fall on the remaining areas of dryness and drought in the Southeast, in addition to central and northern sections of Minnesota, parts of southwestern Nebraska and western Montana, and a small section of coastal southern California. In the remaining dry areas, less than 0.5 inch is forecast, with little or none projected for the southern half of the High Plains, New Mexico, Arizona, Utah, and Wyoming.

Weekly Snowpack and Drought Monitor Update Report

Meanwhile, daily high temperatures should average near to somewhat below normal across the central and northern states, with slightly above average values expected along the southern tier of states.

For the ensuing 5 days, the odds favor wetter than normal conditions in the mid-Atlantic and Southeastern dry areas, the Plains from northern Texas to the Canadian border, and the easternmost sections of the central and northern Rockies. In contrast, below normal precipitation is favored for roughly the southwestern half of Texas, most of New Mexico, Arizona, all but the northernmost reaches of California, Nevada, and Utah, and the D0 area in Alaska. The odds favor neither above nor below normal precipitation in other areas of dryness and drought. Meanwhile, warmer than normal conditions are favored in the dry areas of the eastern states and in southern Texas while unusually cool weather is more likely in most of the West and across Alaska.

Author: [Rich Tinker, Climate Prediction 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 2, 2008