



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

Weekly Report - Snowpack / Drought Monitor Update Date: 12 June, 2008

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: Preliminary snowpack conditions as of 11 June 2008, shows that several northern Western States experienced a remarkable increase in snow depth during the past week (mostly since late Sunday (Fig. 1). Snow-water equivalent percent for this Water Year as of 12 June shows exceptionally late snow melt over the Cascades, Intermountain West, and Northern and Central Rockies. A transiting late winter type storm combined with record cold temperatures during the first week in June were contributing factors for perhaps the highest SWE for so late in the season on record (Fig. 1a).

Some Montana SNOTEL sites have record SWE. The significant records are at Badger Pass (13A15S, current 42.9", previous record 41.7" 2002, period of record (por) 28 years) and Madison Plateau (11E31S, 19.3", record 15.6" 1995, por 39 years).

There are some spectacular SWE records as of 10 June in Oregon/Washington, such as:

Station	Name	Current	Previous Record*	% of Normal	Peak SWE Date
21D33S	BLAZED ALDER	68.8	26.4	2457	31-Mar
22E09S	LITTLE MEADOWS	37.1	28.3	1484	31-Mar
21D35S	MUD RIDGE	22.7	16.0	3243	31-Mar
21D04S	RED HILL	50.5	45.7	639	13-Apr
22C09S	JUNE LAKE	68.6	53.9	966	12-Mar
21B42S	COUGAR MOUNTAIN	17.2	6.3	1911	19-Mar

*All the prior records were set in 1999. Values are in inches.

Temperature: For the past seven days, average temperature anomalies were significantly below average across much of the northern half of the West. Above normal temperatures occurred over extreme southeast New Mexico and parts of California (Fig. 2). Specifically, the greatest negative temperature departures extended from central Oregon to southern Wyoming and eastern Montana (<-10F) and the greatest positive departures occurred over southeast New Mexico (>+8F) (Fig. 2a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 12 June shows an abundant amount of precipitation falling over a large portion of the West. Areas devoid of precipitation were over most of California, western Nevada, southern Oregon, western Nevada, and southern 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 above normal totals over much of Colorado, central Arizona, parts of Oregon, and northern Wyoming. Parts of Nevada and southern New Mexico are experiencing significant shortfalls. No significant changes occurred since last week (Fig. 3a).

Weekly Snowpack and Drought Monitor Update Report

WESTERN DROUGHT STATUS

The West: The only change of note this past week in the West is the removal of D1 in north central Montana. Recent rains and totals since the beginning of the year and even back to the beginning of the water year have led to this change. Cooler temperatures have also helped aid the cause. Author: [Mark Svoboda, National Drought Mitigation Center](#)

A comprehensive narrative describing drought conditions for the nation can be found at the end of this document.

DROUGHT IMPACTS DEFINITIONS (<http://drought.unl.edu/dm/classify.htm>)

The possible impacts associated with **D4 (H, A)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (H, A)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (H, A)** drought are focused on water shortages common and water restrictions imposed and crop or pasture losses likely. The possible impacts associated with **D1 (H, A)** drought are focused on water shortages developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs. 4, 4a, 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.

VEGETATION HEALTH

Associated with vegetation health are pasture and rangeland conditions (Fig. 8), as noted at: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/pasture-range-statewide-conditions.pdf>. **Remarks:** *Difference exists in 'condition' categories used by NASS, NOAA, etc., compared to NRCS definitions. The condition in this report only considers present grass growth. NRCS often considers 10 - 17 indicators as appropriate for vegetation health.*

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

Weekly Snowpack and Drought Monitor Update Report

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

SNOTEL 7-Day Snow Depth Change (Inches)

Jun 11, 2008

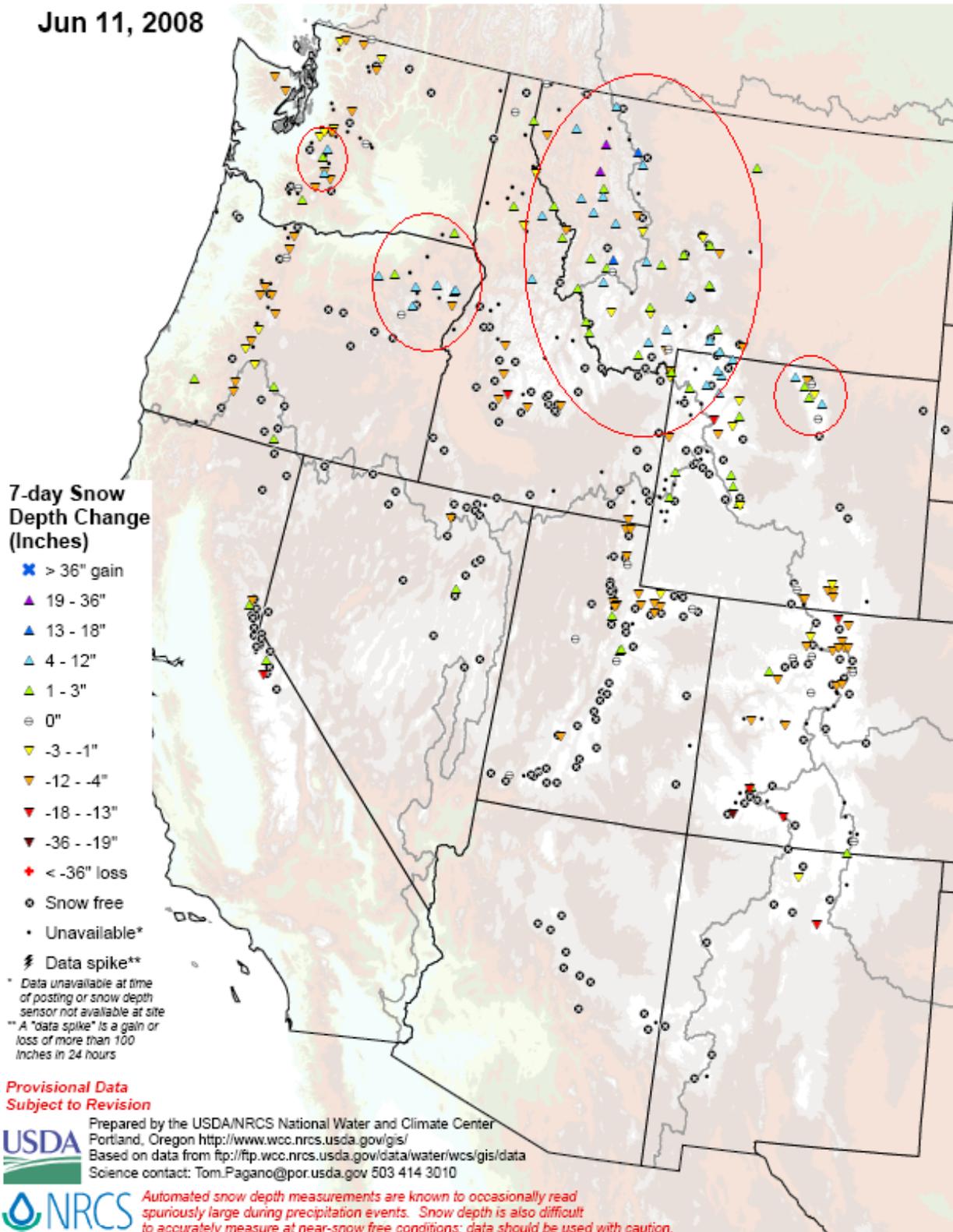


Fig. 1. Red circles show areas across the West that have experienced a remarkable increase in snow depth during the past week (mostly since late Sunday).

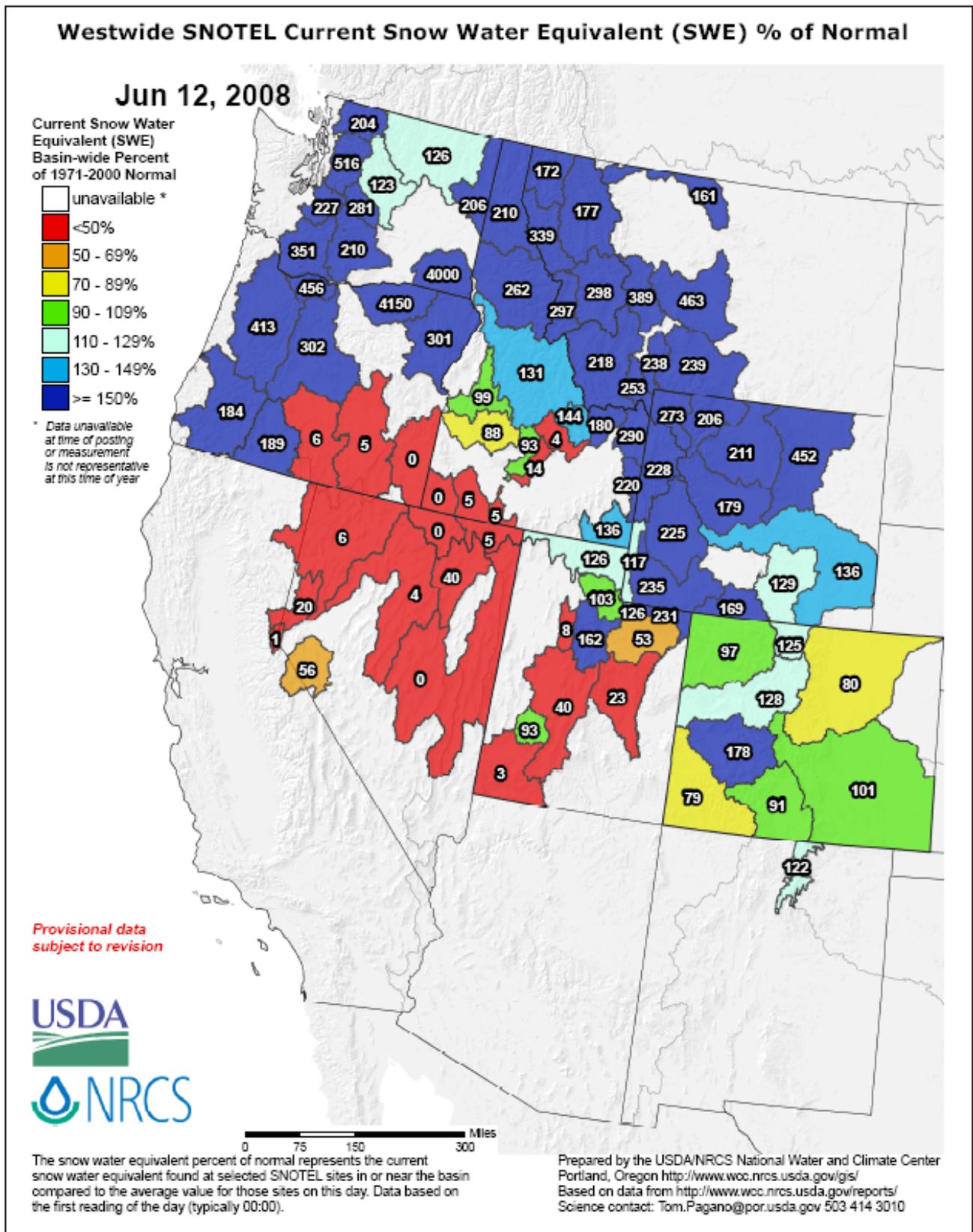


Fig. 1a. Snow-water equivalent percent for this Water Year as of 12 June shows exceptionally late snow melt over the northern states in the West. A transiting late winter type storm combined with record cold temperatures during the first week in June were contributing factors for perhaps the highest SWE for so late in the season on record.

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)

Jun 12, 2008

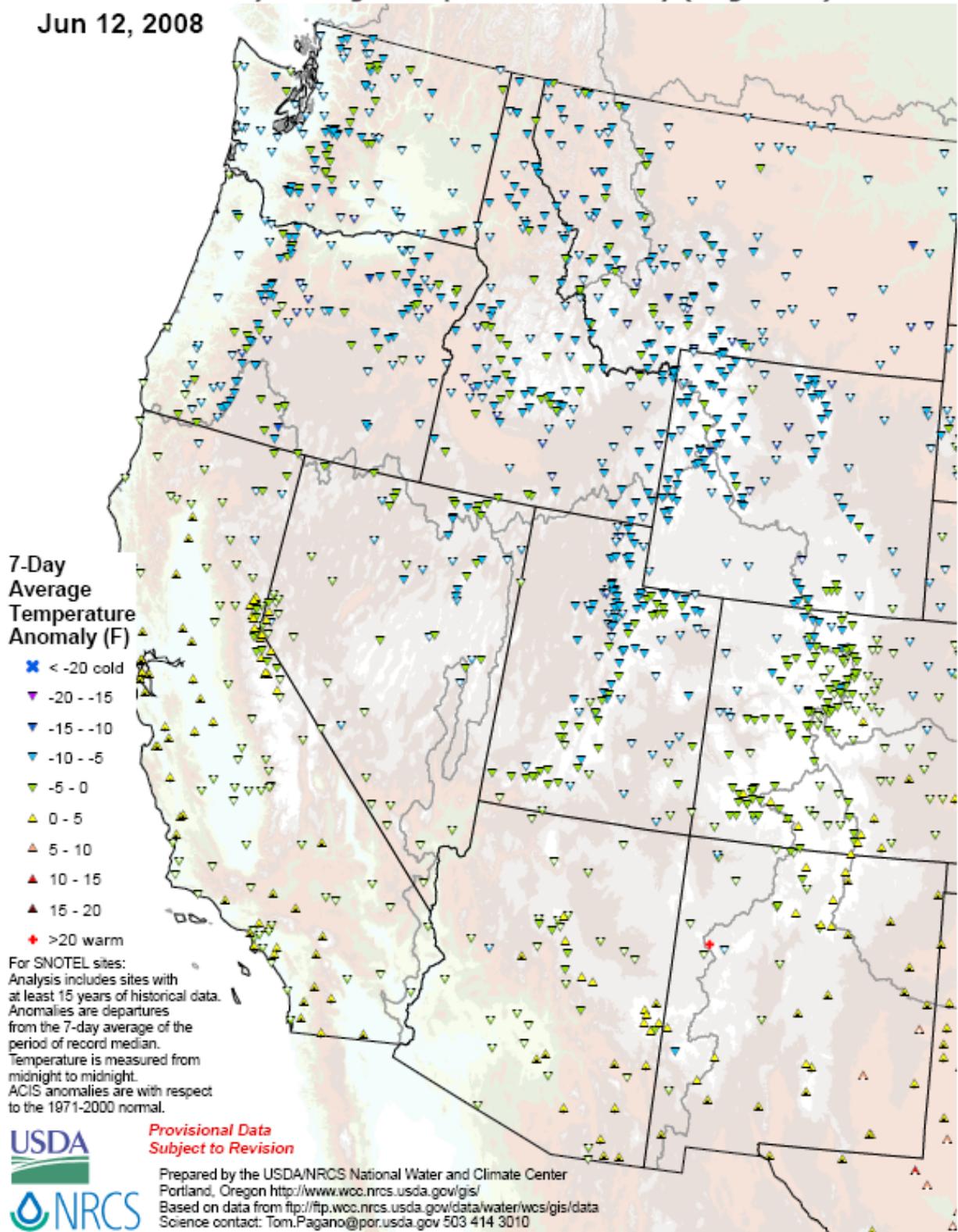
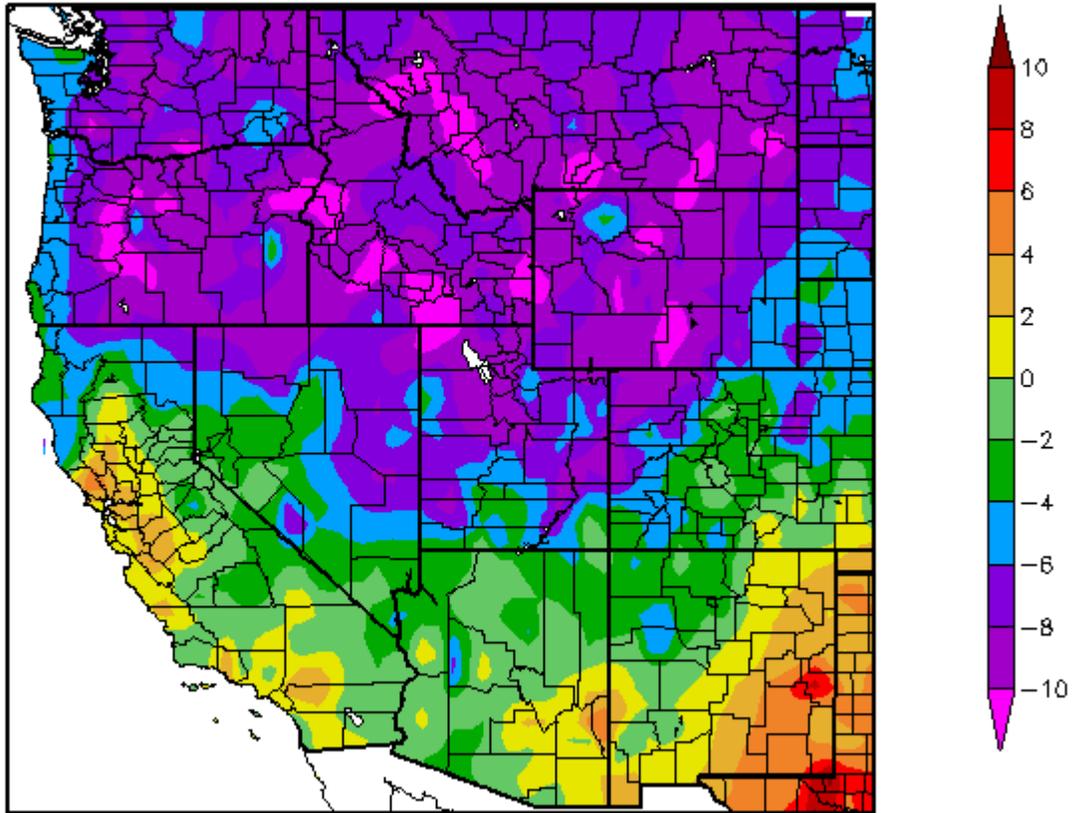


Fig. 2. SNOTEL & ACIS 7-day station average temperature anomalies were significantly below average across much of the northern half of the West. Above normal temperatures occurred over extreme southeast New Mexico and parts of California.

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

Departure from Normal Temperature (F)
6/5/2008 – 6/11/2008



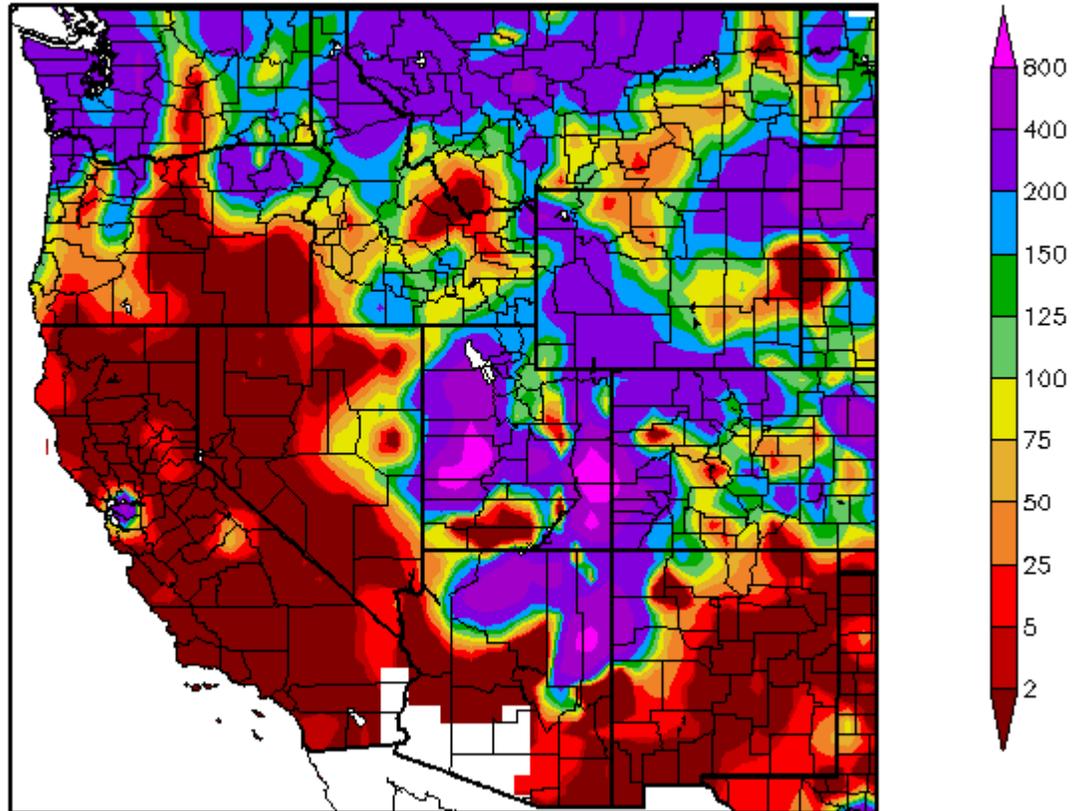
Generated 6/12/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2a. ACIS 7-day average temperature anomalies: Greatest negative temperature departures extended from central Oregon to southern Wyoming and eastern Montana (<-10F) and greatest positive departures over southeast New Mexico (>+8F).

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

Percent of Normal Precipitation (%)
6/5/2008 – 6/11/2008



Generated 6/12/2008 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 12 June shows an abundant amount of precipitation falling over a large portion of the West. Areas devoid of precipitation were over most of California, western Nevada, southern Oregon, western Nevada, and southern 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

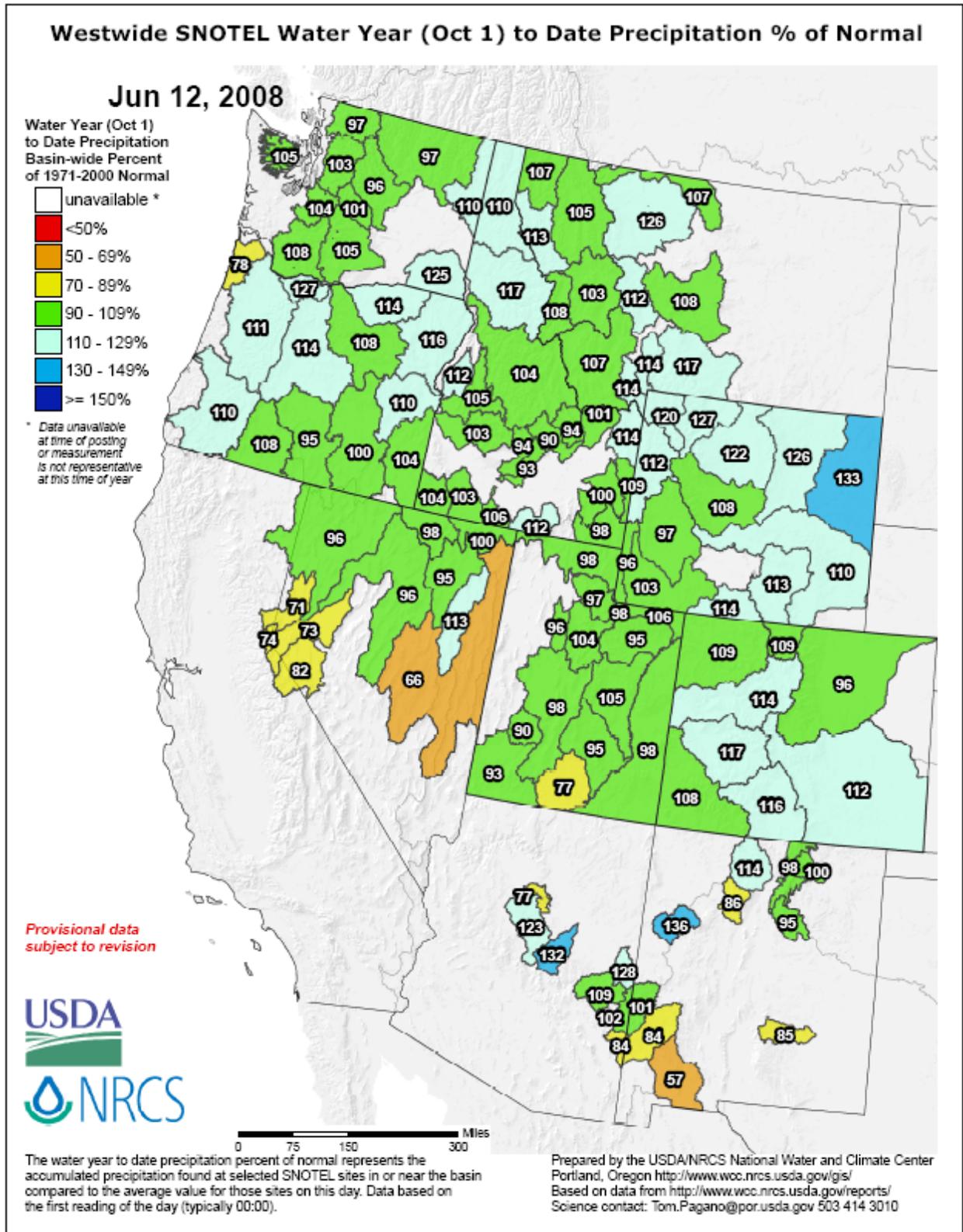
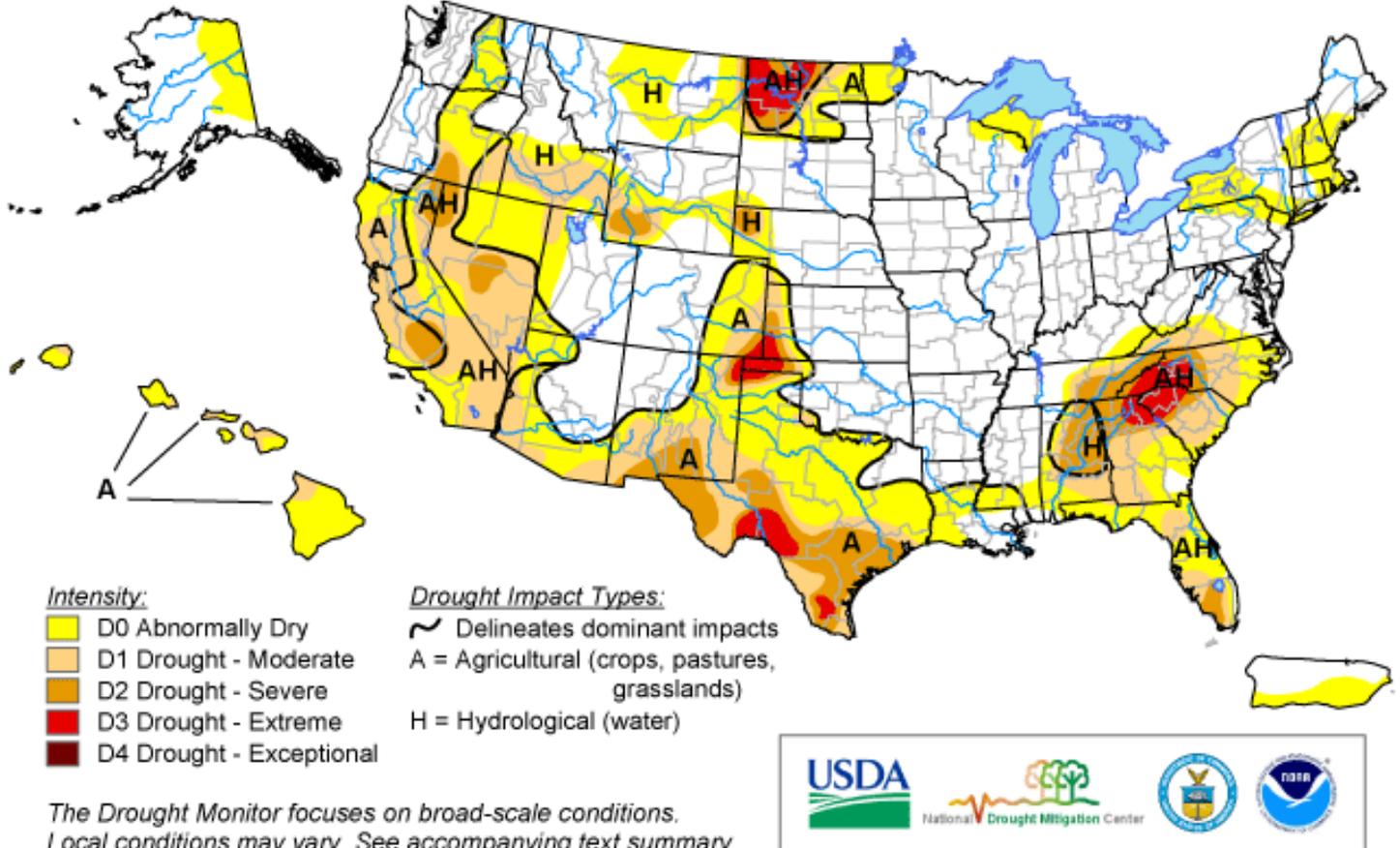


Fig 3a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows above normal totals over much of Colorado, central Arizona, parts of Oregon, and northern Wyoming. Parts of Nevada and southern New Mexico are experiencing significant shortfalls. No significant change since last week. Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf

U.S. Drought Monitor

June 10, 2008
Valid 8 a.m. EDT



Released Thursday, June 12, 2008

Author: Mark Svoboda, National Drought Mitigation Center

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

Fig. 4. Current Drought Monitor weekly summary.

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

Weekly Snowpack and Drought Monitor Update Report

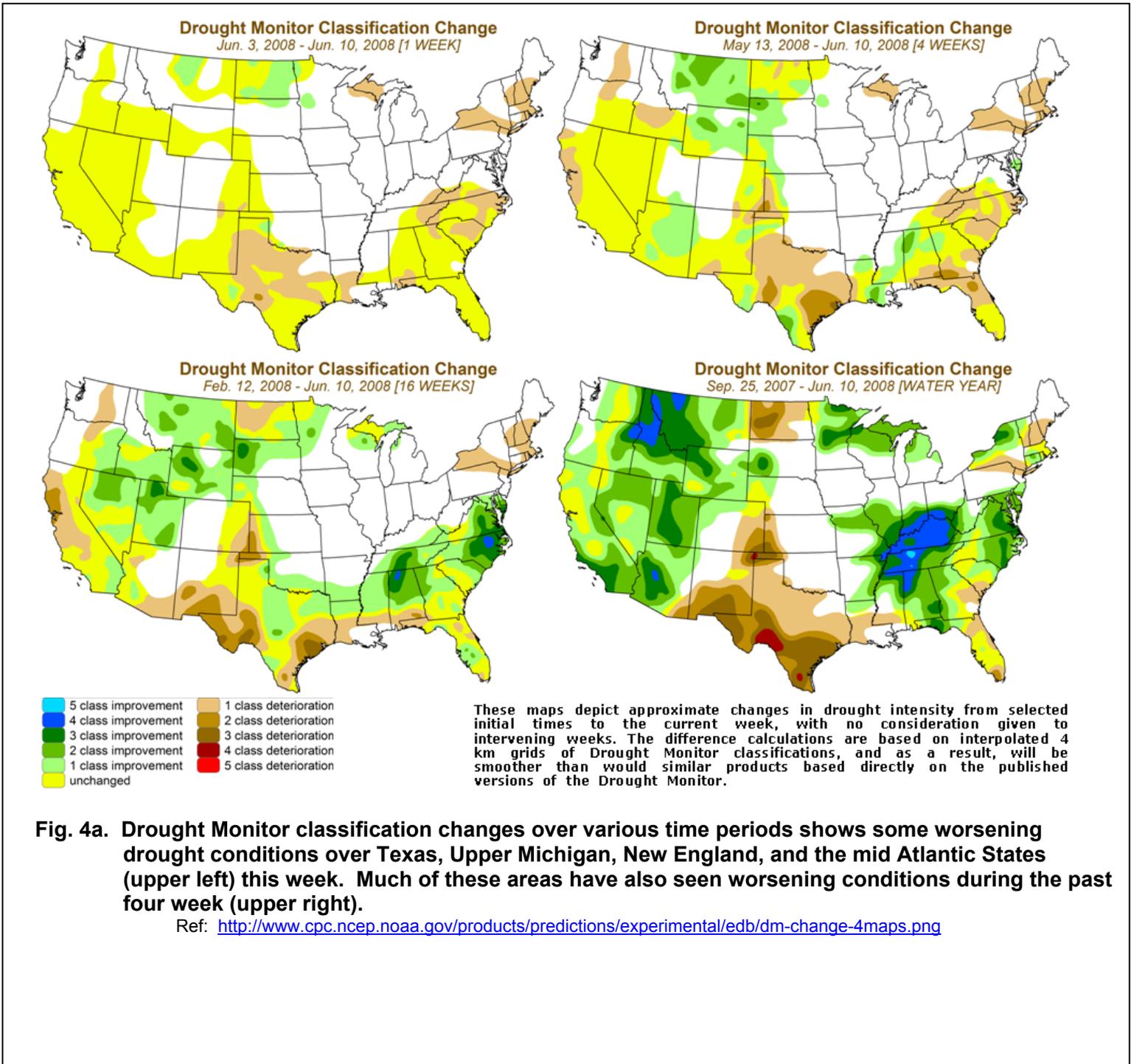


Fig. 4a. Drought Monitor classification changes over various time periods shows some worsening drought conditions over Texas, Upper Michigan, New England, and the mid Atlantic States (upper left) this week. Much of these areas have also seen worsening conditions during the past four week (upper right).

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

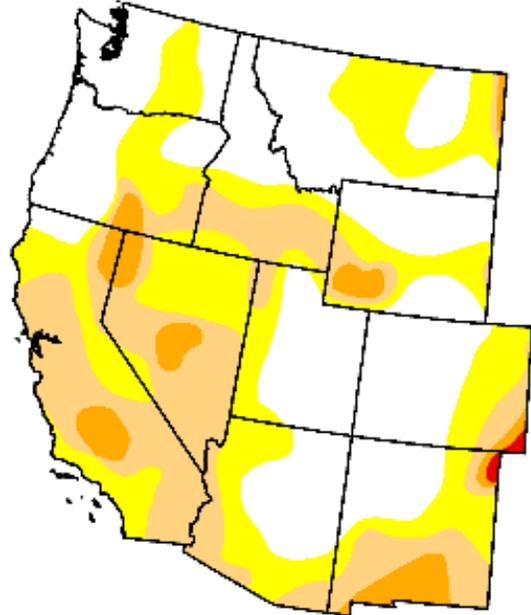
U.S. Drought Monitor

West

June 10, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	42.2	57.8	28.2	5.5	0.2	0.0
Last Week (06/03/2008 map)	43.0	57.0	29.2	5.3	0.1	0.0
3 Months Ago (03/19/2008 map)	42.3	57.7	36.2	16.0	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 (06/12/2007 map)	34.2	65.8	48.9	25.5	7.8	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, June 12, 2008

Author: Mark Svoboda, National Drought Mitigation Center

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

Fig. 4b. 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

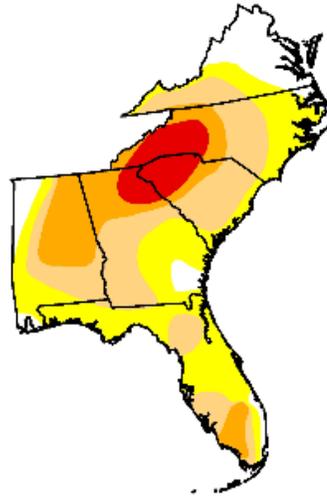
U.S. Drought Monitor

Southeast

June 10, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	12.6	87.4	54.6	24.6	8.2	0.0
Last Week (06/03/2008 map)	20.3	79.7	43.7	21.9	5.2	0.0
3 Months Ago (03/18/2008 map)	23.8	76.2	58.5	40.5	18.8	0.3
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 (06/12/2007 map)	10.9	89.1	66.5	47.0	23.2	7.1



Intensity:

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

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



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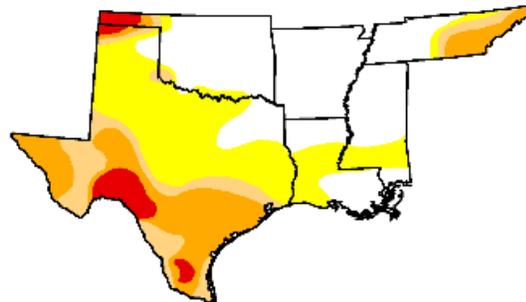
U.S. Drought Monitor

South

June 10, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.4	58.6	30.7	20.2	4.0	0.0
Last Week (06/03/2008 map)	60.0	40.0	26.7	16.2	1.5	0.0
3 Months Ago (03/18/2008 map)	55.7	44.3	35.5	11.8	3.9	0.5
Start of Calendar Year (01/01/2008 map)	57.5	42.5	12.9	4.3	3.8	1.6
Start of Water Year (10/02/2007 map)	77.6	22.4	12.6	10.2	7.5	4.9
One Year Ago (06/12/2007 map)	66.4	33.6	19.1	13.6	6.7	1.2



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>

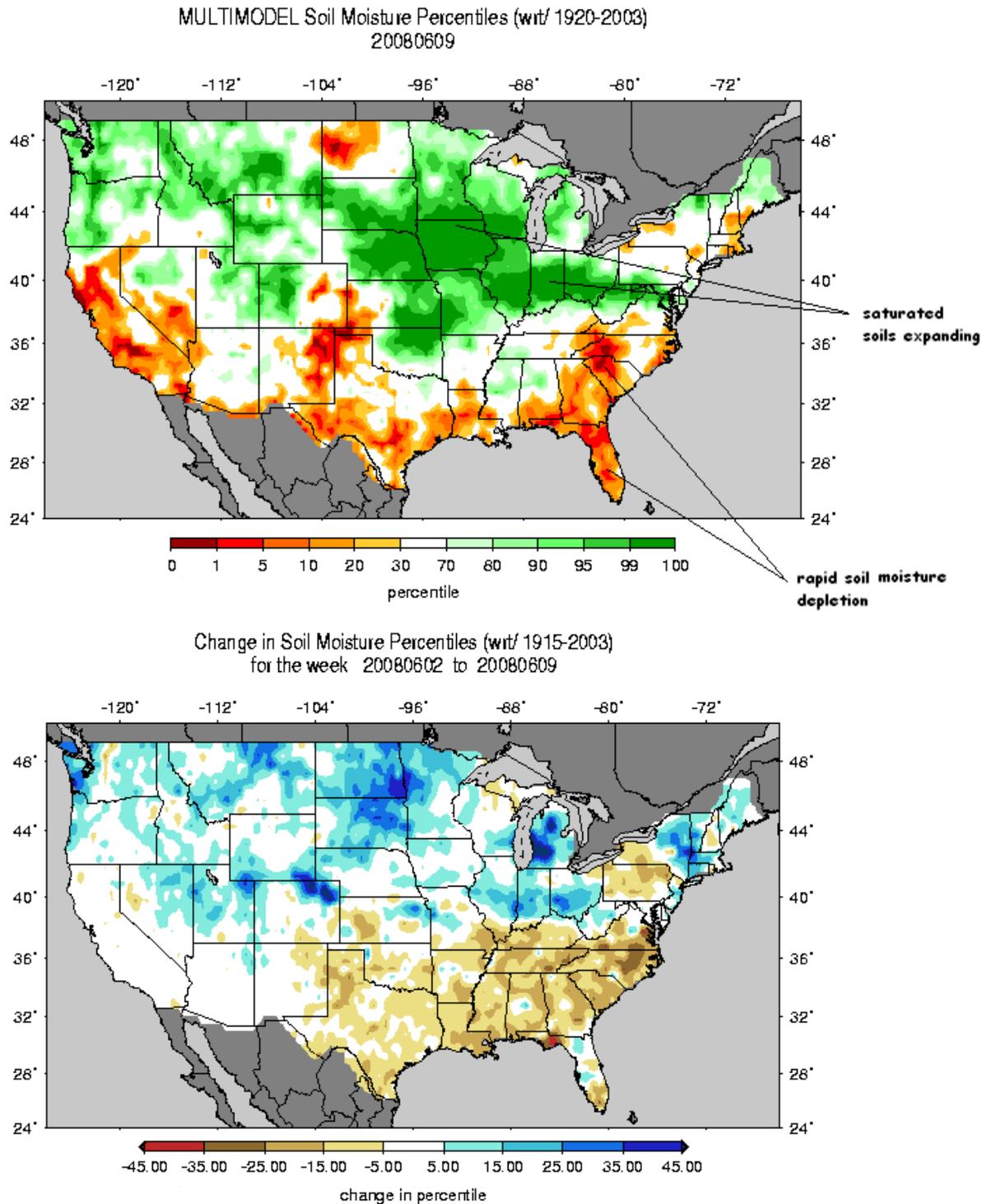


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Fig. 4c: Drought Monitor for some areas across the US with worst drought conditions include the Southeastern and Southcentral States with statistics for various time periods. Note worsening conditions over the Texas. Ref: http://www.drought.unl.edu/dm/DM_southeast.htm

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. Excessive moisture dominates the mid section of the nation (major flooding) while dryness dominates and is expanding across the Southeast (Fig. 5). Last week saw a significant increase in soil moisture over western Washington, the Northern High Plains, Upper Mississippi River Valley, Ohio Valley, and Michigan while much of the Tennessee and Lower Mississippi River Valleys were drying out (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

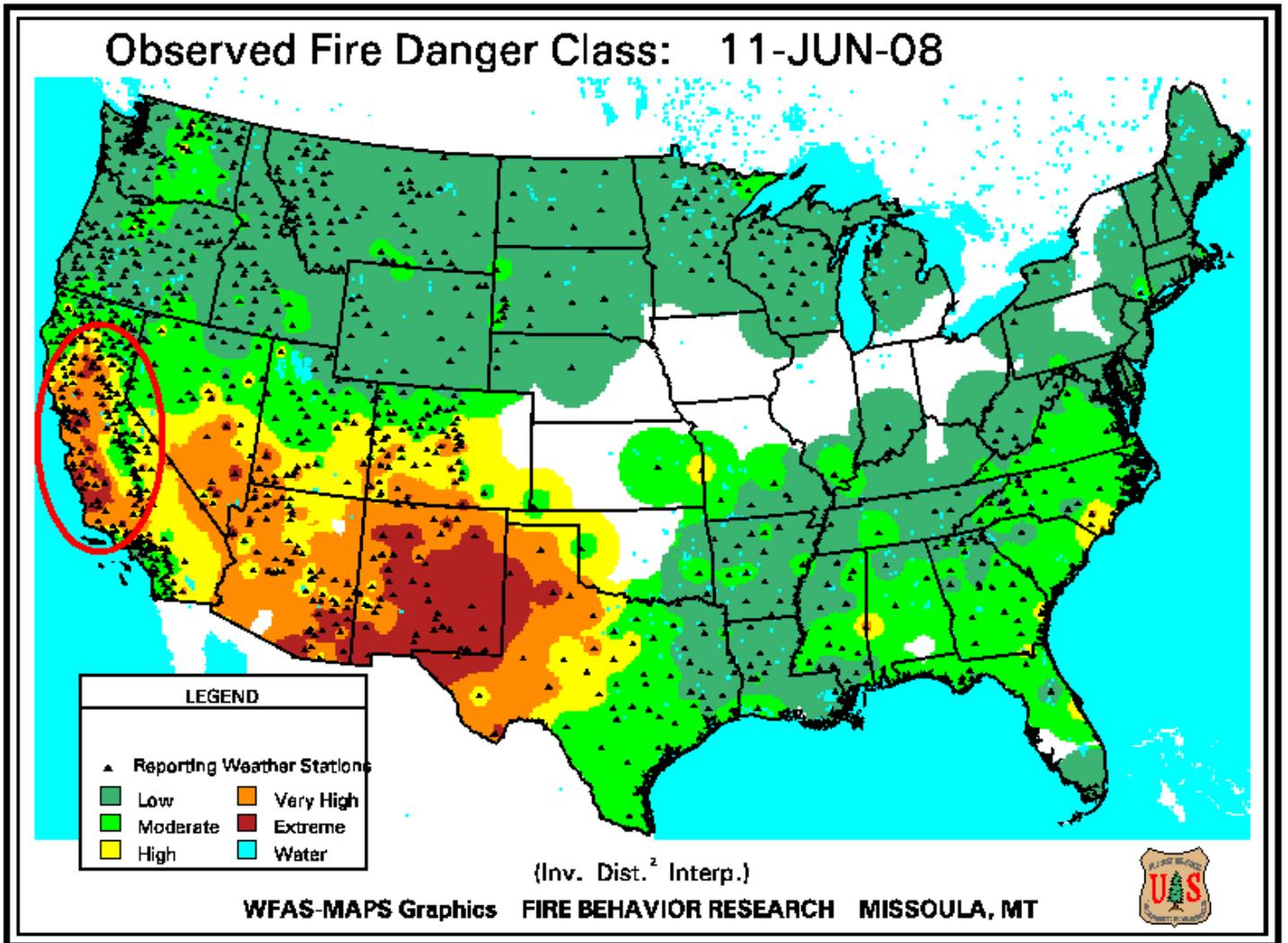


Fig. 6. Observed Fire Danger Class. Note extreme fire danger over the Southwest (especially New Mexico). Conditions have rapidly worsened over California (red circle) since last week while the fire potential is down over the Southeast. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

Map of below normal 7-day average streamflow compare to historical streamflow for the day of year (United State:

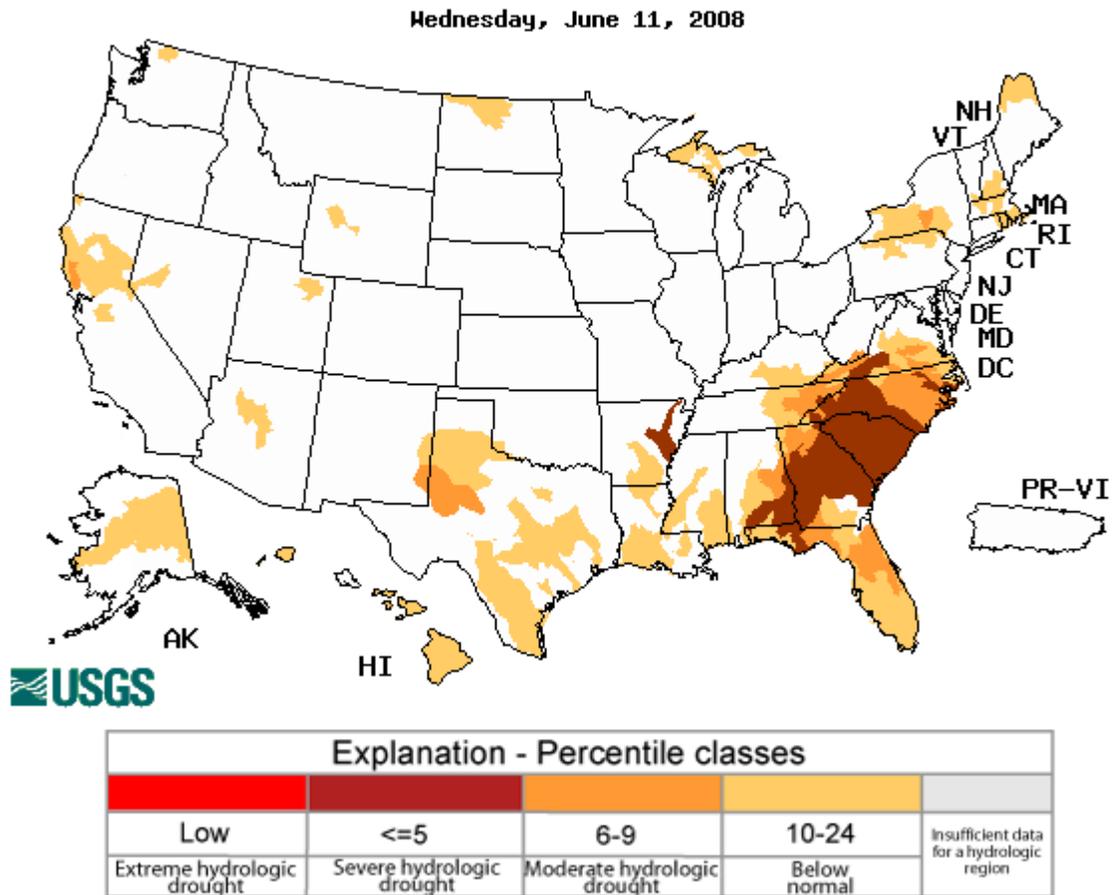
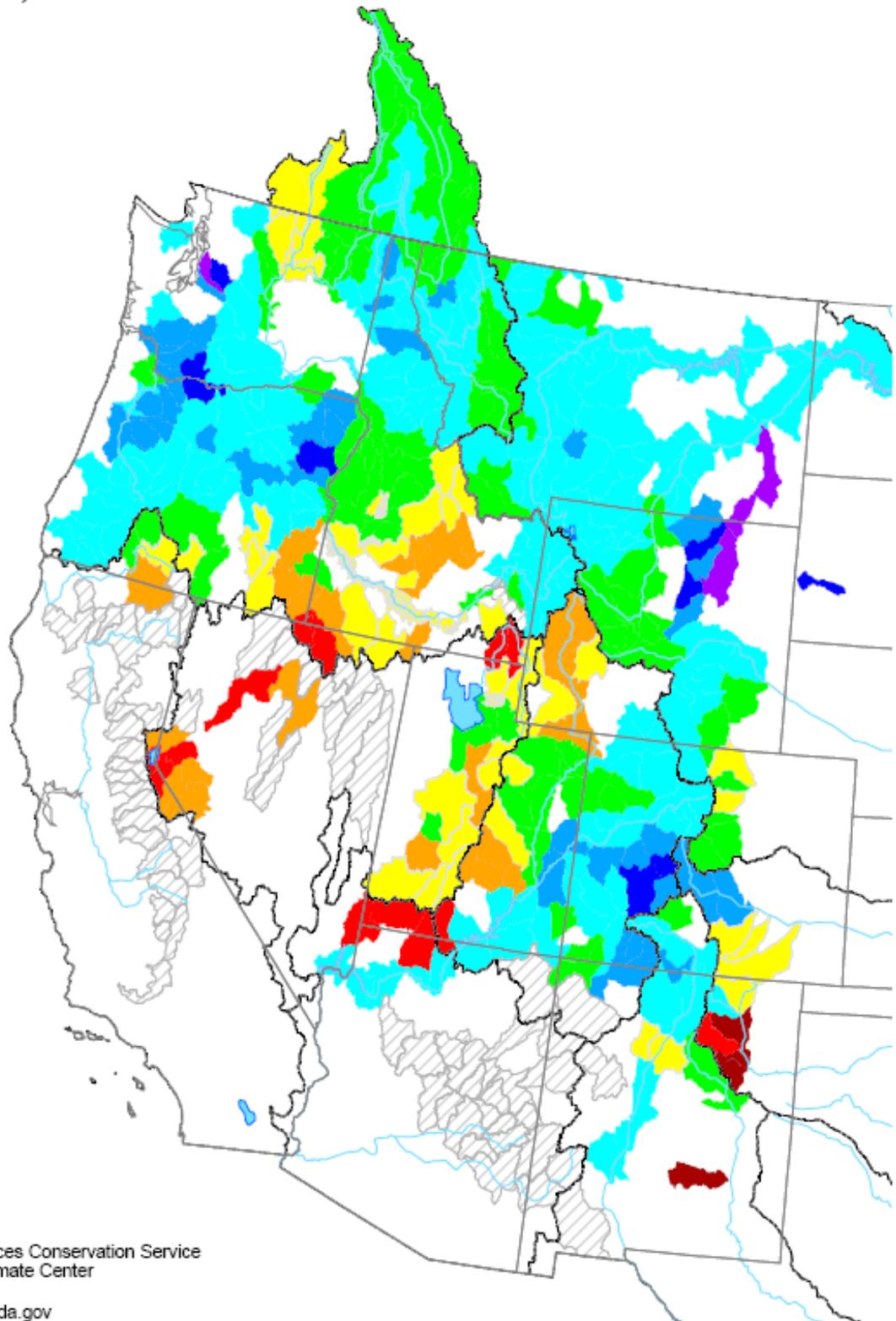
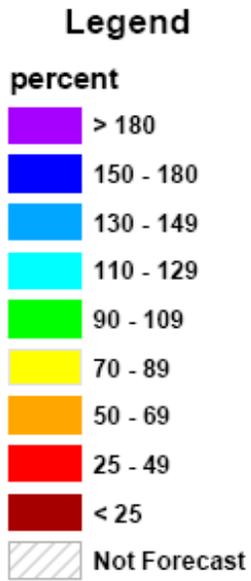


Fig. 7. This week’s map shows continued low stream flow over parts of the Southeast. Significant worsening is also noted over Arkansas and the Southeast since last week while some improvement has occurred over New England.

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

Spring and Summer Streamflow Forecasts as of June 1, 2008



Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

Fig. 7a: Projected stream flow forecast as of 1 June 2008 as a percent of the long term average.

Weekly Snowpack and Drought Monitor Update Report

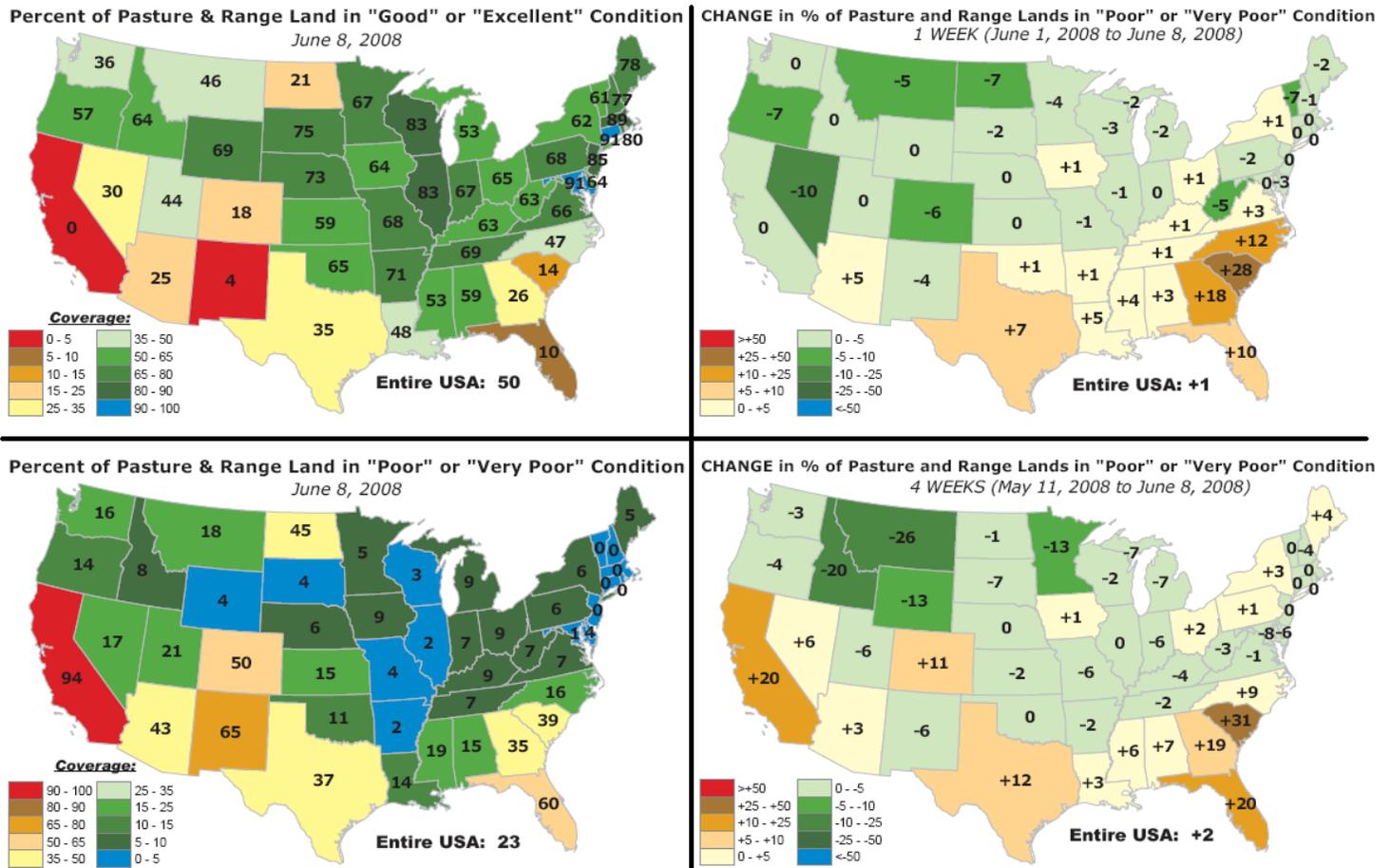


Fig. 8: Pasture and rangeland conditions and changes for various periods. Note poor conditions over California, New Mexico and Florida (lower left) and worsening conditions over the Southeast since last week (upper right). During the past four weeks, conditions have worsened significantly over California, South Carolina, Georgia, and Florida (lower right).

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/pasture-range-statewide-conditions.pdf>

Remarks: Feedback from the field in California indicates that for most places in the state, forage production is significantly higher than last year but still less than desirable. Several areas of the state are in a state of severe drought from a forage production perspective while much of the state's surface water is still displaying the effects of last year's record drought conditions. This is a considerable problem for those operators dependent upon surface water for livestock use since while forage production may be close to "normal", availability of forage may approach zero late in the grazing season as surface water is depleted.

Jon Gustafson
California State Rangeland
Management Specialist
USDA, Natural Resources Conservation Service

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary – June 10, 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 Northeast: It was hard to beat the heat last week. This recent heat, coupled with generally little precipitation over the past 30 to 60 days, has led to the introduction of D0 in parts of western and southern New York as well as up into New England.

Mid-Atlantic and Southeast: Blistering heat and very little in the way of significant rains has led to more expansion of D0-D3 across the region, particularly in northern Georgia, eastern Tennessee, southeastern Kentucky, Virginia and the Carolinas. After some slow but steady improvement since the beginning of the year, the high-demand season is now in high gear and conditions have slipped a bit under the influence of triple-digit heat in some places. Impacts are now reflective of this shorter-term dryness and heat, leading to the reintroduction of the AH impact designation for much of the region after predominantly being in H (hydrological) status in the months prior. In addition, D0 has also forged its way into portions of central and western Louisiana this week.

The Plains and Upper Midwest: The northern and central Plains can't seem to shake the persistent stormy pattern that has been plaguing them recently, with most of the headlines dedicated to flooding and severe weather. From a drought perspective, though, we continue to see a whittling away of drought in the Dakotas and portions of Minnesota. A general one-category improvement is noted in North Dakota this week, and a pushing of the D0 northward into northern South Dakota occurred as well, where rainfall totals were 2 to 3 inches. Over the past two weeks, eastern North Dakota has seen anywhere from 2 to 4 inches or more. The D3 in western North Dakota has been entrenched for some time now and while some improvement is noted, a lot more timely rain is going to be needed before further recovery is noted. One area that has been missing out on these rains is the western Upper Peninsula of Michigan. An introduction of D0 is noted there this week.

It's a different story in the southern Plains, though, where scorching temperatures, high winds, and very spotty rains have led to more expansion this week across parts of Oklahoma and Texas. In fact, according to the National Weather Service, the period of September 2007 through May 2008 for San Antonio was the driest on record at 6.57 inches, which is a good 2 inches lower than the previous record of 8.89 inches, set during that same period ending May 1956. In addition, Austin has already reached top four all-time status for the number of 100 degree days observed for the May-June period with over half a month to go. Deterioration worth noting is found in the introduction of D3 in the Big Bend region of Texas, and an expansion of D0-D2 is now depicted in western, southern, and much of eastern Texas as well. All of the Texas Panhandle is now in D0, with a small area of D1 emerging in extreme southwest Oklahoma and across into Texas in the extreme southeast corner of the Panhandle.

Weekly Snowpack and Drought Monitor Update Report

The West: The only change of note this past week in the West is the removal of D1 in north central Montana. Recent rains and totals since the beginning of the year and even back to the beginning of the water year have led to this change. Cooler temperatures have also helped aid the cause.

Hawaii, Alaska and Puerto Rico: Impacts are beginning to ramp up now in Hawaii after yet another relatively dry week. The persistent dryness has led to low streamflow levels, and voluntary restrictions are being called for in Kauai County. This has led to the expansion of D1 eastward in Maui along with the introduction of D1 this week to northeastern Kauai. On Maui, the National Weather Service noted that low streamflows have not been adequate enough to support both diversions for Upcountry water supplies and natural streamflow needed for the lowland taro crops.

Spotty rains missed most of the D0 areas in both eastern Alaska and southern Puerto Rico, leading to no changes this week.

Looking Ahead: During the next 5 days (through June 16) heavy rains are expected across the country's midsection, with the best bet found in the eastern portions of the central Plains and into the Midwest and upper and western reaches of the Great Lakes. The northern tier states from Idaho to New York could also see some beneficial precipitation during this period. In general, at least seasonal rains are expected over most of the Southeast, with some areas expected to see a bit more in southern Florida and northern Alabama, two areas that could really stand to benefit. Temperatures are expected to be above normal across most of the West and Southwest and into Texas as well, while below-normal readings will be likely across the northern Plains and western Great Lakes regions. In a respite from last week, more seasonal temperatures are forecasted for the East and Southeast over the next five days.

The CPC 6-10 day forecast (June 17-21) unfortunately shows a greater chance for below-normal precipitation and above-normal temperatures from the southern and high Plains westward into the Southwest and Intermountain West. Cooler temperatures and normal to above-normal precipitation are possible in the Great Lakes and New England. The Southeast looks to be wetter than normal with temperatures likely to be seasonal. Eastern Alaska also looks to be both hotter and drier than normal.

Author: Mark Svoboda, National Drought Mitigation Center.

Dryness Categories

D0 ... Abnormally Dry ... used for areas showing dryness but not yet in drought, or for areas recovering from drought.

Drought Intensity Categories

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

Drought or Dryness Types

A ... Agricultural

H ... Hydrological

Updated June 11, 2008