



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

Weekly Report - Snowpack / Drought Monitor Update **Date: 23 October, 2008**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: SNOTEL and ACIS-day station average temperature anomalies were within 5 degrees of normal for this week (Fig. 1). Specifically, the greatest positive temperature departures occurred over southern California and Arizona (>+6F) and greatest negative departures occurred over western Washington and Oregon (<-4F) (Fig. 1a).

Precipitation: Preliminary precipitation totals for the 7-day period ending 22 October shows a wet pattern over parts of the Rockies but moistly dry from southern Oregon-Idaho southward to Mexico (Fig. 2).

Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the new 2009 Water Year that began on October 1, 2008 shows above normal totals scattered across the West with pockets of below normal amounts in northern Montana, eastern Utah, and central Arizona (Fig. 2a). Individual SNOTEL station shows (as of today) snow water-equivalent as a percent of normal. Some improvement is noted over Wyoming's Bighorn Mountains during the past week but otherwise no significant change elsewhere (Fig. 2b). For precipitation totals, departures, and percent of normal for several time periods see: <http://water.weather.gov/> and <http://cig.mesonet.org/~derek/public/droughtmonitoring/>.

WESTERN DROUGHT STATUS

The West: A few tenths of an inch of precipitation fell on north-central Washington, parts of central and southeastern Idaho, western Montana, and northwestern Wyoming while little or none fell elsewhere. This precipitation pattern by itself did little to change the dryness and drought picture across the western states, but a re-assessment of precipitation deficits for the past 6 months to 2 years, in addition to reports of the degree to which this dryness is affecting streamflows and other aspects of surface moisture, led to some changes.

Part of east-central California to the east of the southern Sierra Nevada was improved to D0, but deterioration was the rule in other areas of change. D0 and D1 expanded eastward in Washington while D0 was returned to southwestern Montana and expanded into northern Utah and central Arizona. Meanwhile, moderate drought replaced abnormal dryness in much of central and southern Idaho, central and northeastern Nevada, and northwestern Utah. D2 also expanded slightly to cover more of central and eastern Nevada and a small part of west-central Utah. 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

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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 (Figs. 3, 3a, 3b, and 3c).

SOIL MOISTURE

Soil moisture (Figs. 4a and 4b), 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://activefiremaps.fs.fed.us/lq_fire2.php. The latest Observed Fire Danger Class is shown in Figs. 5 shows the current active wildfires across the West - <http://geomac.usgs.gov/>.

U.S. HISTORICAL STREAMFLOW

This map, (Fig. 6) 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/ NOLLER HERBERT

Director, Conservation Engineering Division

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

Oct 23, 2008

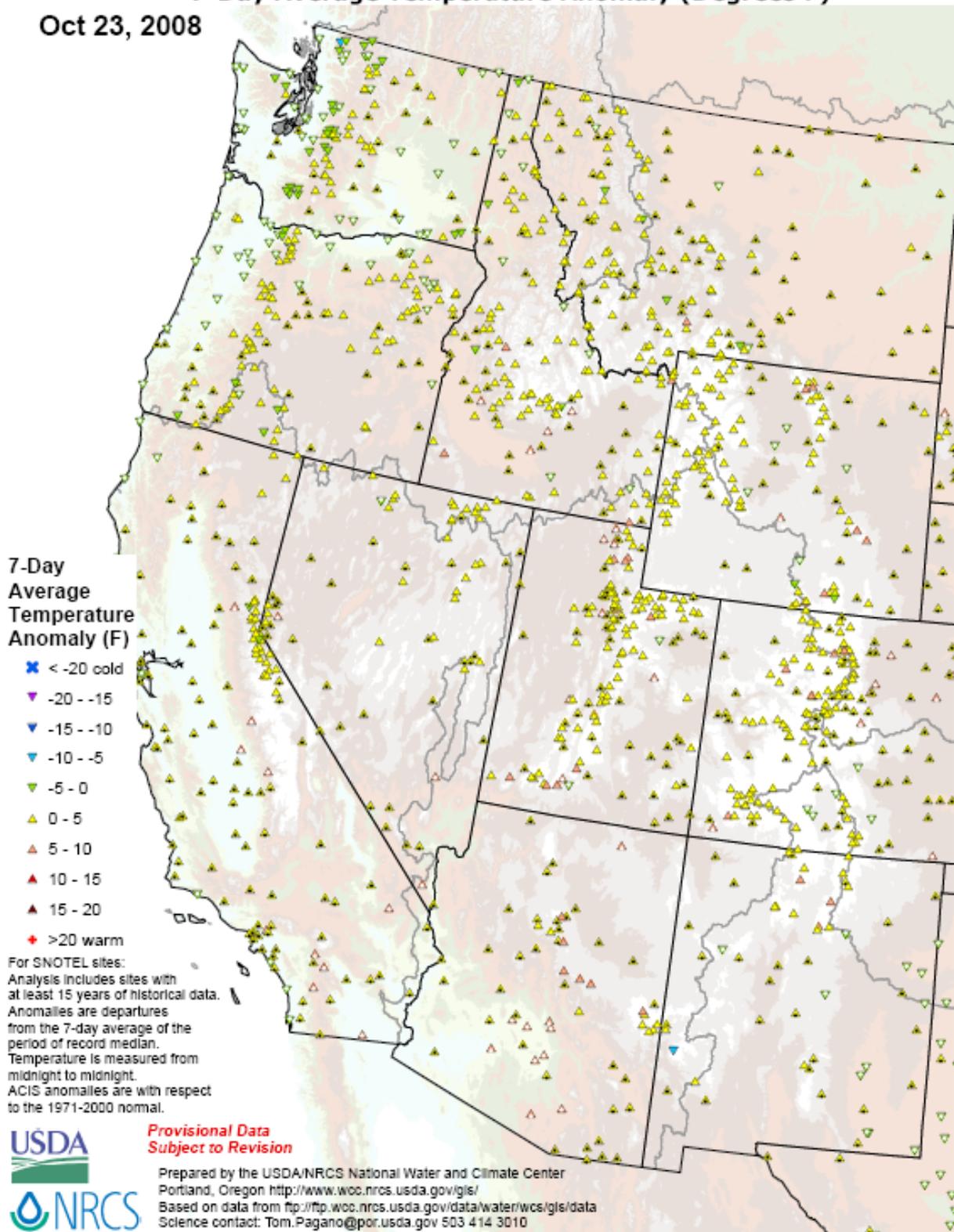
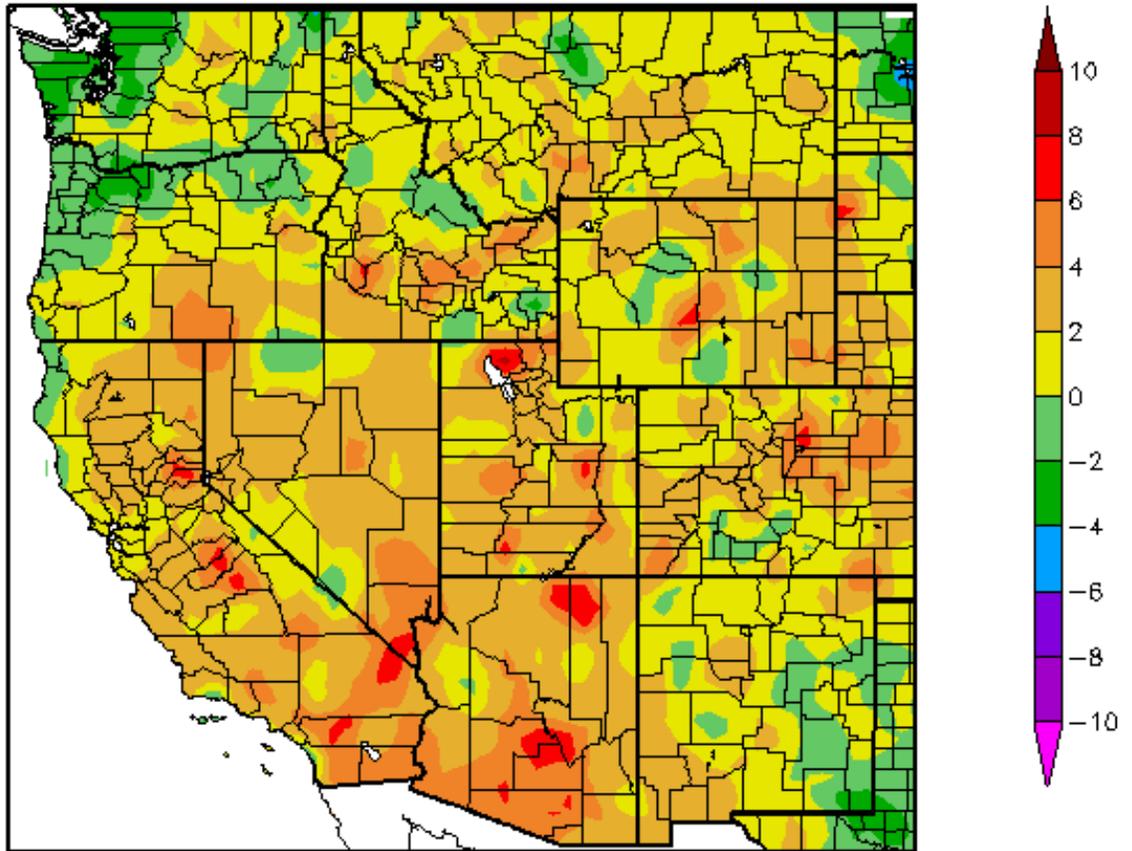


Fig. 1. SNOTEL and ACIS-day station average temperature anomalies were within 5 degrees of normal for this week. Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>

Departure from Normal Temperature (F)
10/16/2008 - 10/22/2008



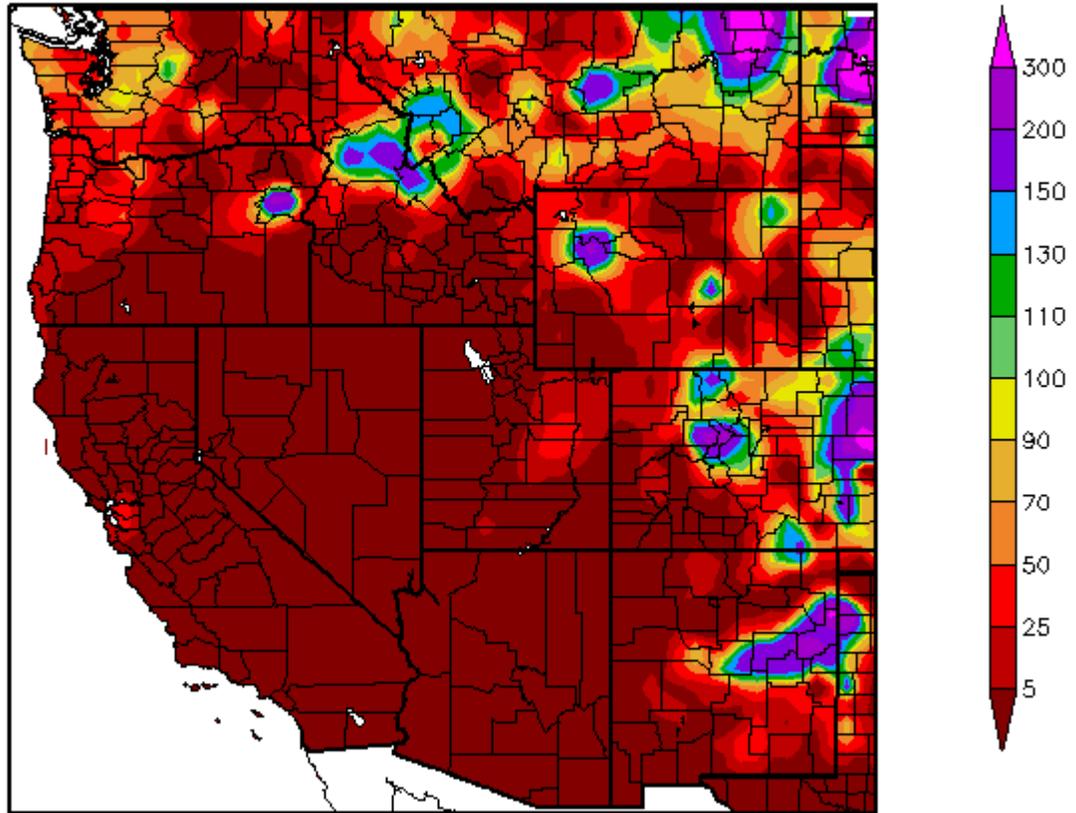
Generated 10/23/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 1a. ACIS 7-day average temperature anomalies: Greatest positive temperature departures occurred over southern California and Arizona (>+6F) and greatest negative departures occurred over western Washington and Oregon (<-4F).

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

Percent of Normal Precipitation (%)
10/16/2008 – 10/22/2008



Generated 10/23/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2. ACIS 7-day average precipitation anomaly: Preliminary precipitation totals for the 7-day period ending 22 October shows a wet pattern over parts of the Rockies but moistly dry from southern Oregon-Idaho southward to Mexico.

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

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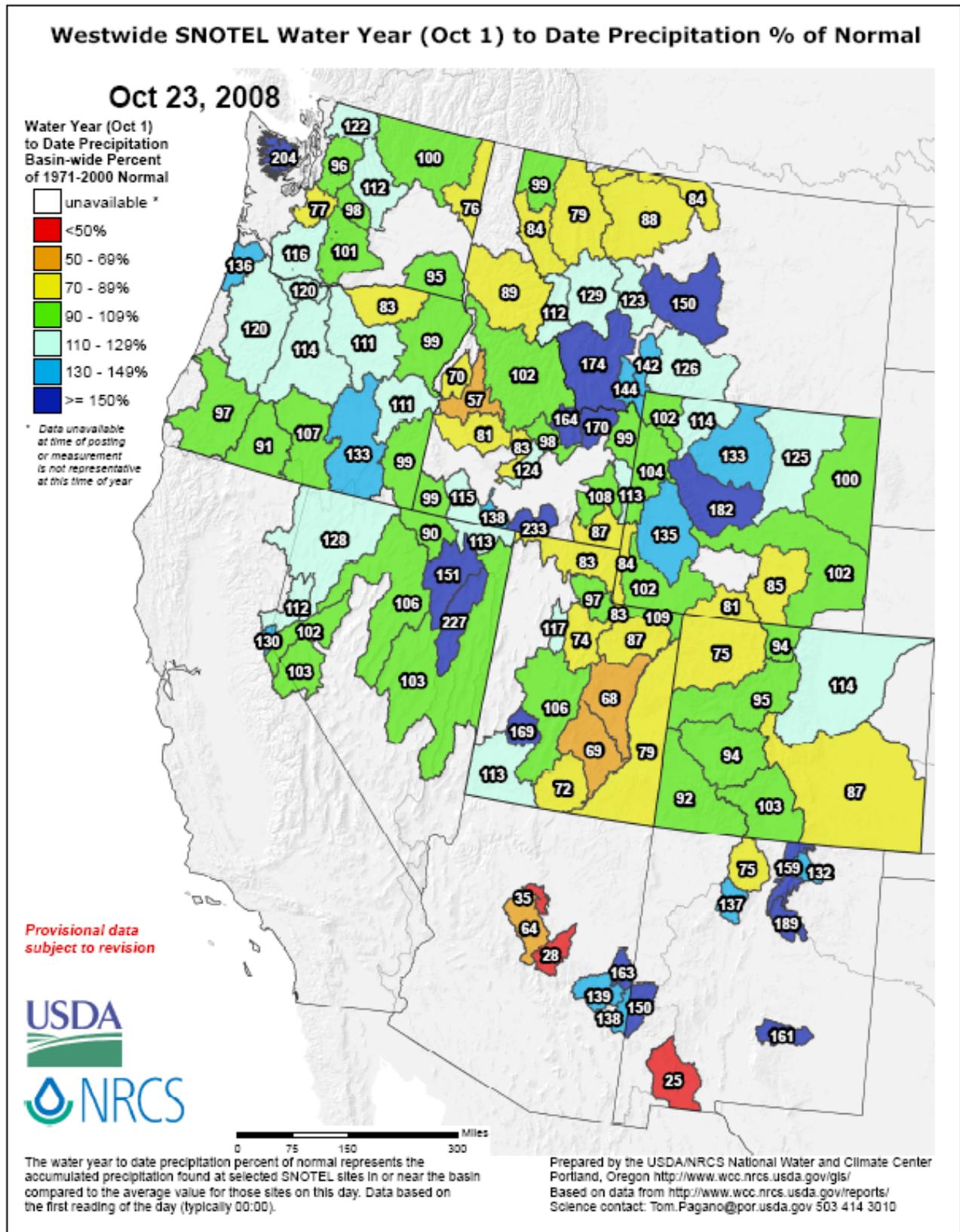


Fig 2a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the new 2009 Water Year that began on October 1, 2008 shows above normal totals scattered across the West with pockets of below normal amounts in northern Montana, eastern Utah, and central Arizona.

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

SNOTEL Current Snow Water Equivalent (SWE) Percent of Normal
Oct 23, 2008

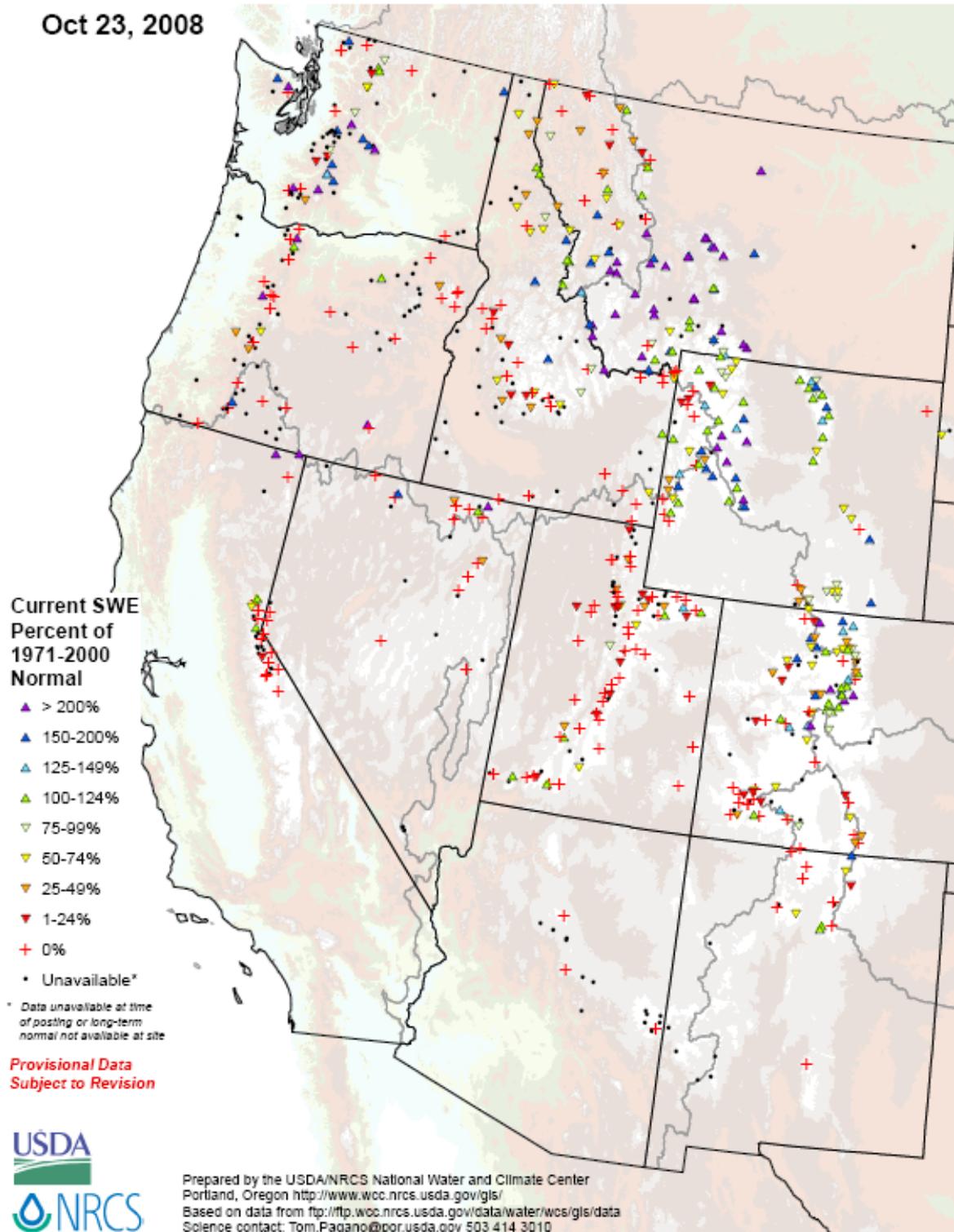
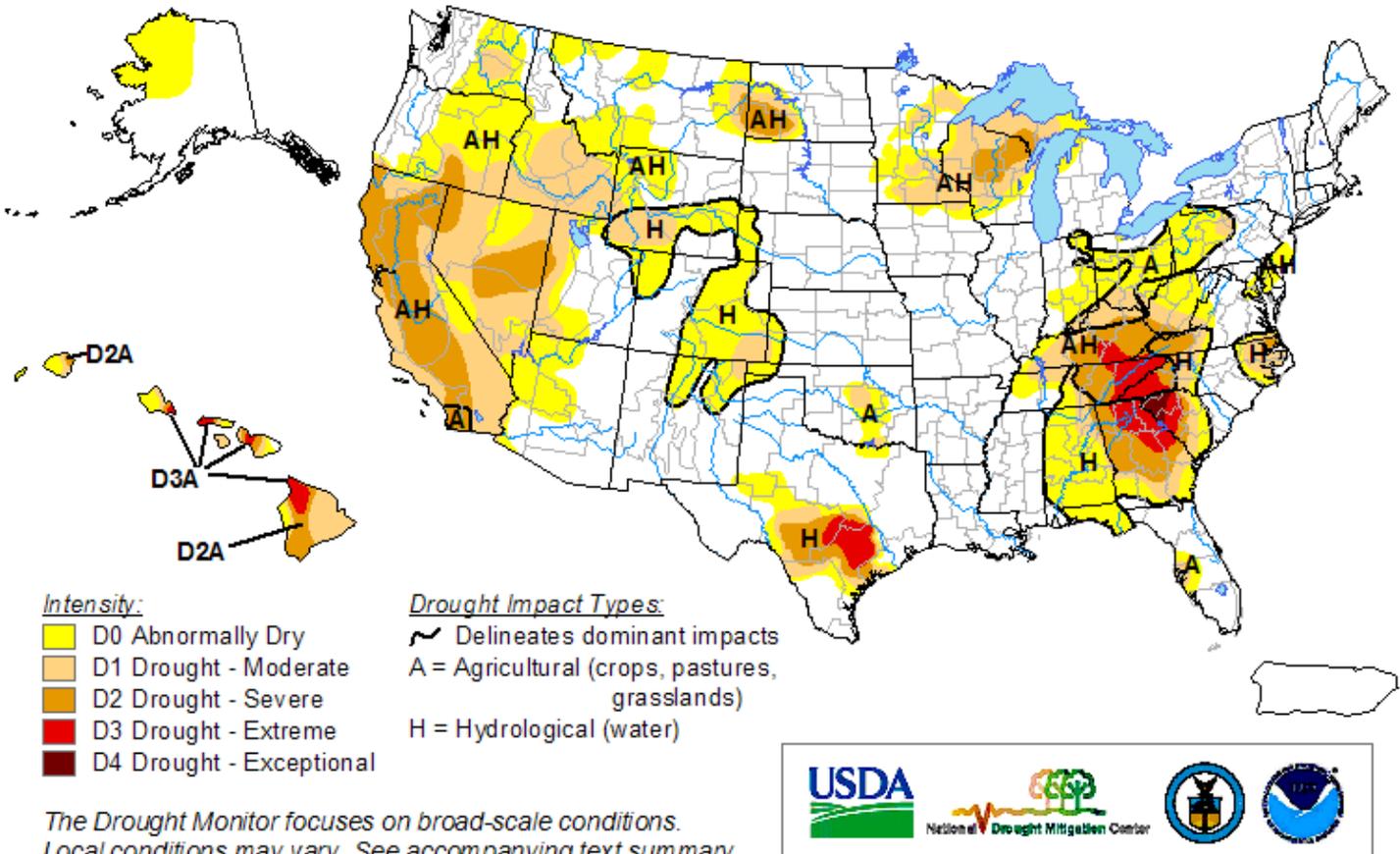


Fig. 2b. Individual SNOTEL station shows (as of today) snow water-equivalent as a percent of normal. Some improvement is noted over Wyoming's Bighorn Mountains during the past week but otherwise no significant change elsewhere.

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

U.S. Drought Monitor

October 21, 2008
Valid 8 a.m. EDT



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

Released Thursday, October 23, 2008
Author: Rich Tinker, Climate Prediction Center, NOAA

Fig. 3. Current Drought Monitor weekly summary.

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

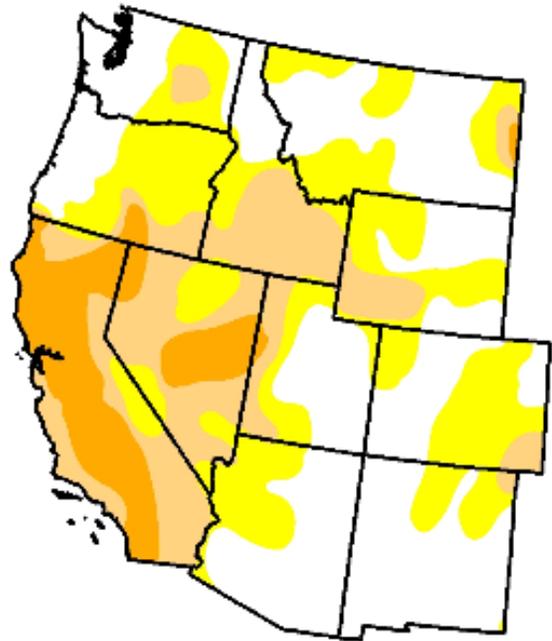
U.S. Drought Monitor

West

October 21, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	40.5	59.5	30.0	10.4	0.0	0.0
Last Week (10/14/2008 map)	44.1	55.9	27.5	9.8	0.0	0.0
3 Months Ago (07/29/2008 map)	35.5	64.5	31.2	10.2	0.8	0.1
Start of Calendar Year (01/01/2008 map)	26.3	73.7	54.7	33.1	2.7	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (10/23/2007 map)	26.0	74.0	57.7	42.6	10.1	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, October 23, 2008

Author: Rich Tinker, CPC/NOAA

Fig. 3a. Drought Monitor for the Western States with statistics over various time periods. Note a slight worsening since last week. Ref: http://www.drought.unl.edu/dm/DM_west.htm

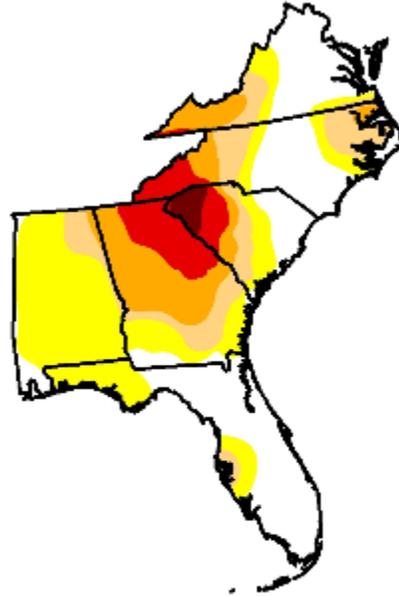
U.S. Drought Monitor

Southeast

October 21, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	35.4	64.6	35.5	22.5	9.6	1.3
Last Week (10/14/2008 map)	36.0	64.0	34.9	22.5	9.6	1.3
3 Months Ago (07/29/2008 map)	23.0	77.0	58.7	34.4	12.2	6.3
Start of Calendar Year (01/01/2008 map)	9.6	90.4	74.3	58.5	41.0	22.0
Start of Water Year (10/07/2008 map)	35.2	64.8	41.8	20.8	9.4	1.9
One Year Ago (10/23/2007 map)	13.6	86.4	73.6	64.3	50.0	31.4



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, October 23, 2008
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Fig. 3b: Drought Monitor for the Southeastern shows no significant change since last week. A small area of D4 continues over NW South Carolina. Ref: http://www.drought.unl.edu/dm/DM_southeast.htm

Drought Monitor Classification Changes for Selected Time Periods

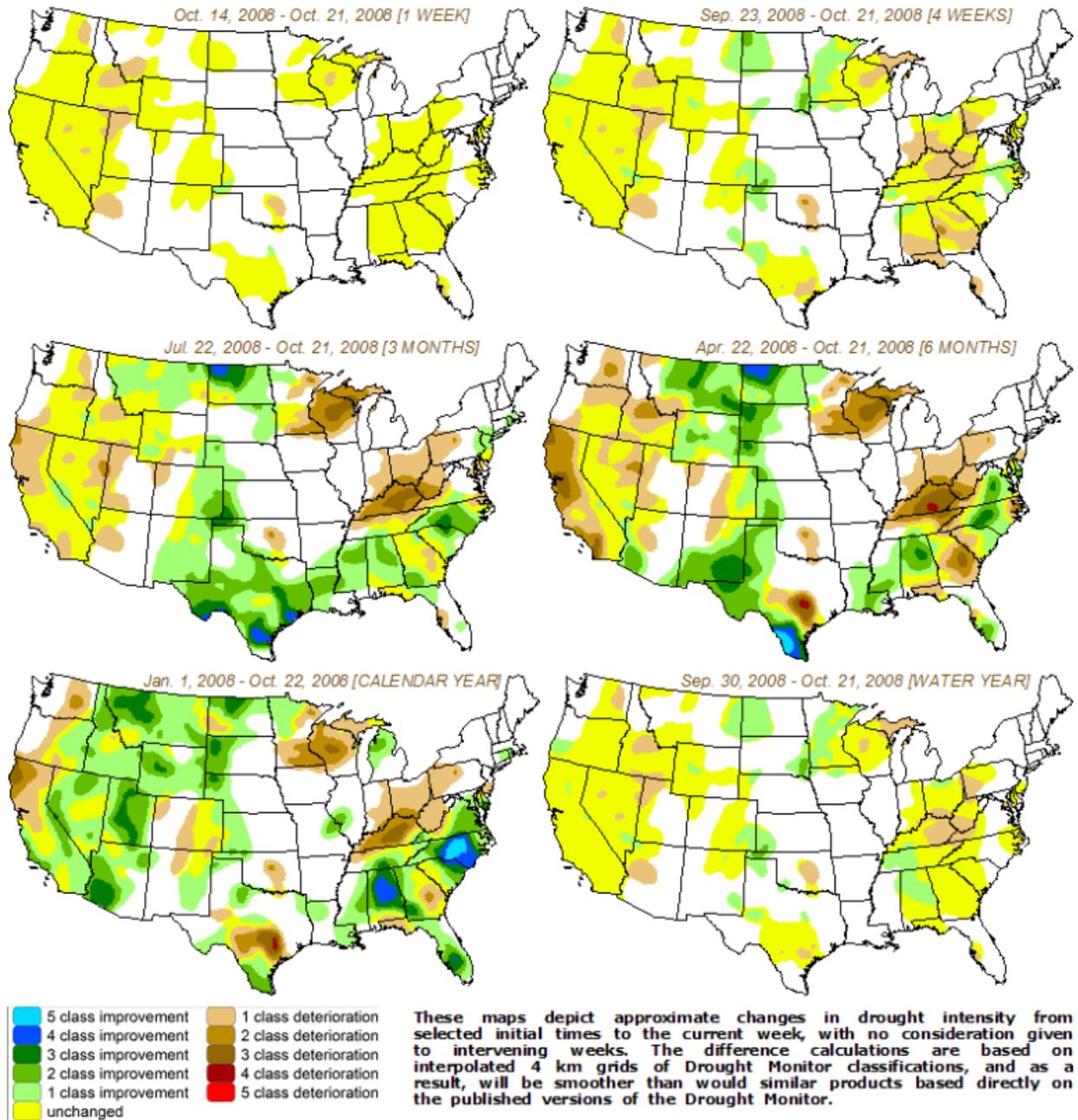
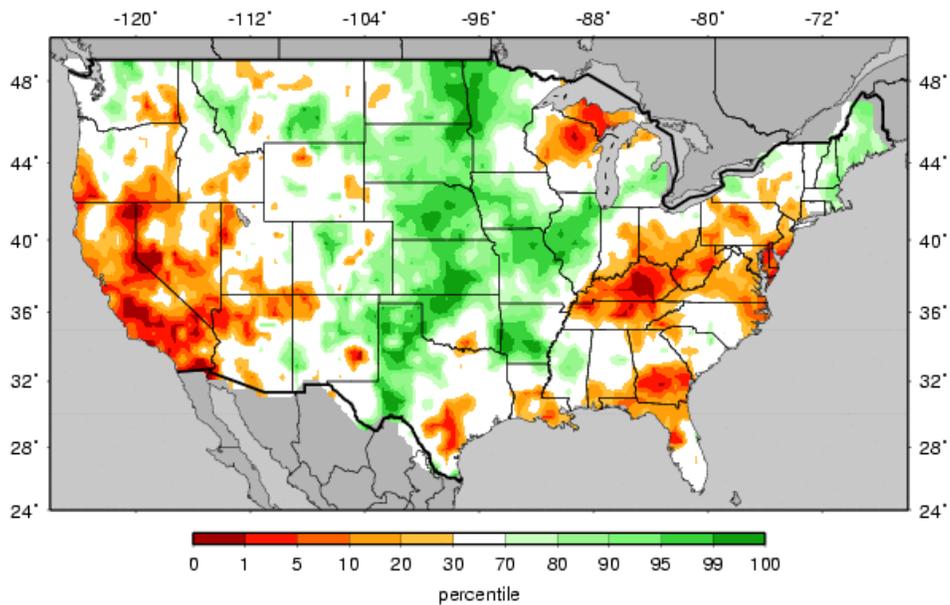


Fig. 3c: Drought Monitor Classification Changes for Selected Time Periods.

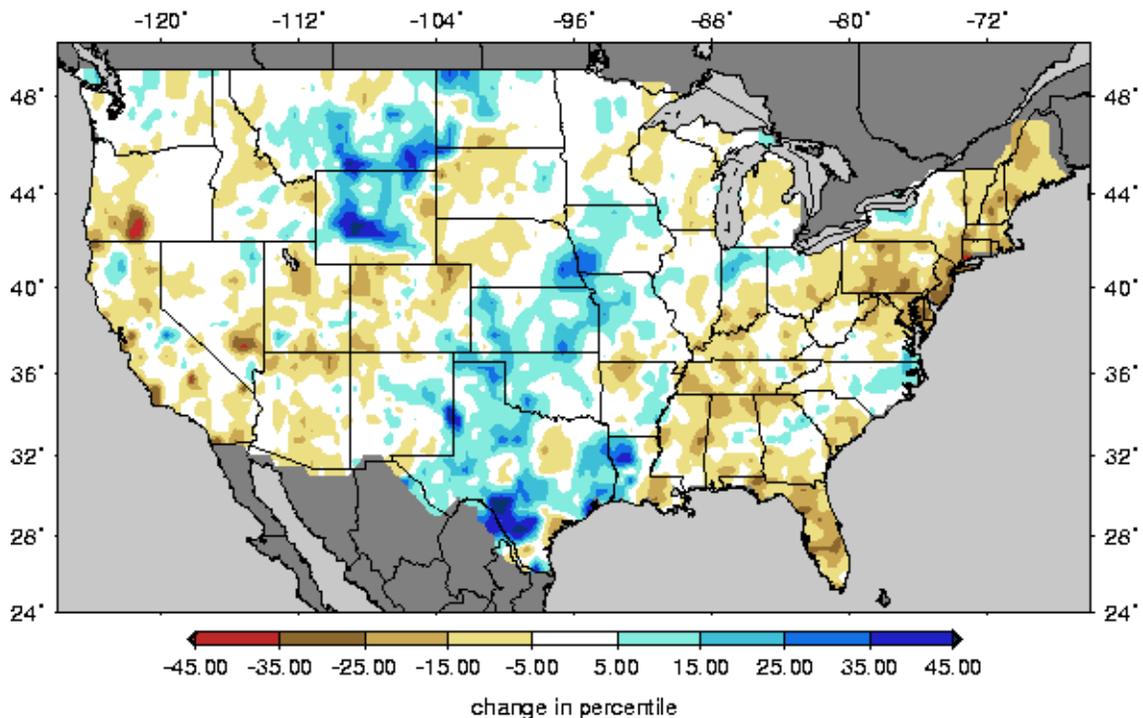
Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

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MULTIMODEL Soil Moisture Percentiles (wrt/ 1920-2003)
20081021



Change in Soil Moisture Percentiles (wrt/ 1915-2003)
for the week 20081014 to 20081021



Figs. 4a & 4b: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. The driest conditions persist over Kentucky, Tennessee, southern Georgia, and northern Wisconsin while the wettest conditions are occurring over the middle Mississippi River Valley, Central Plains, and much of New England (Fig. 4a). Last week saw a significant decrease in moisture over most Eastern States while increases are noted over Texas, Wyoming, and Montana (Fig 4b).

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

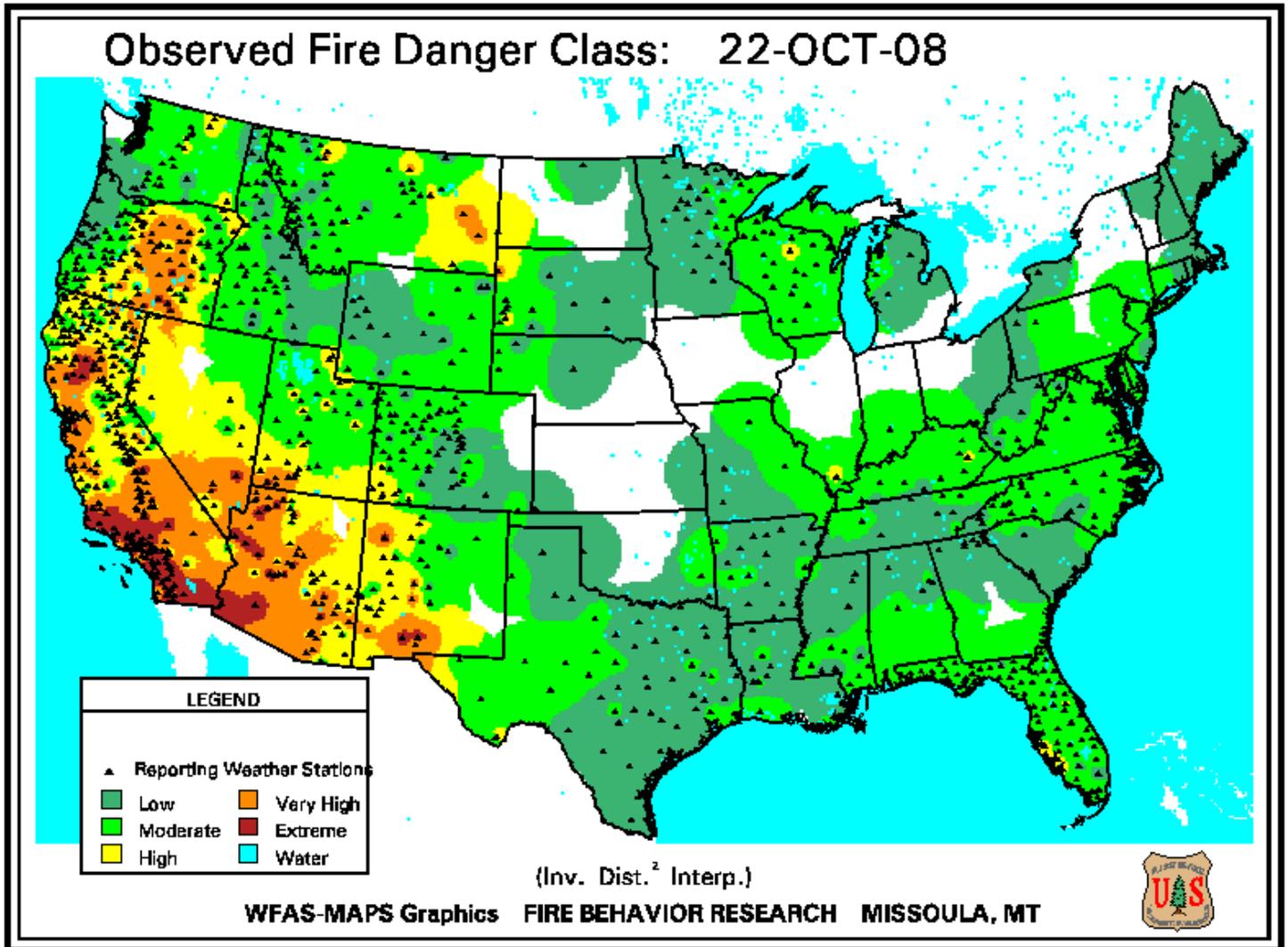
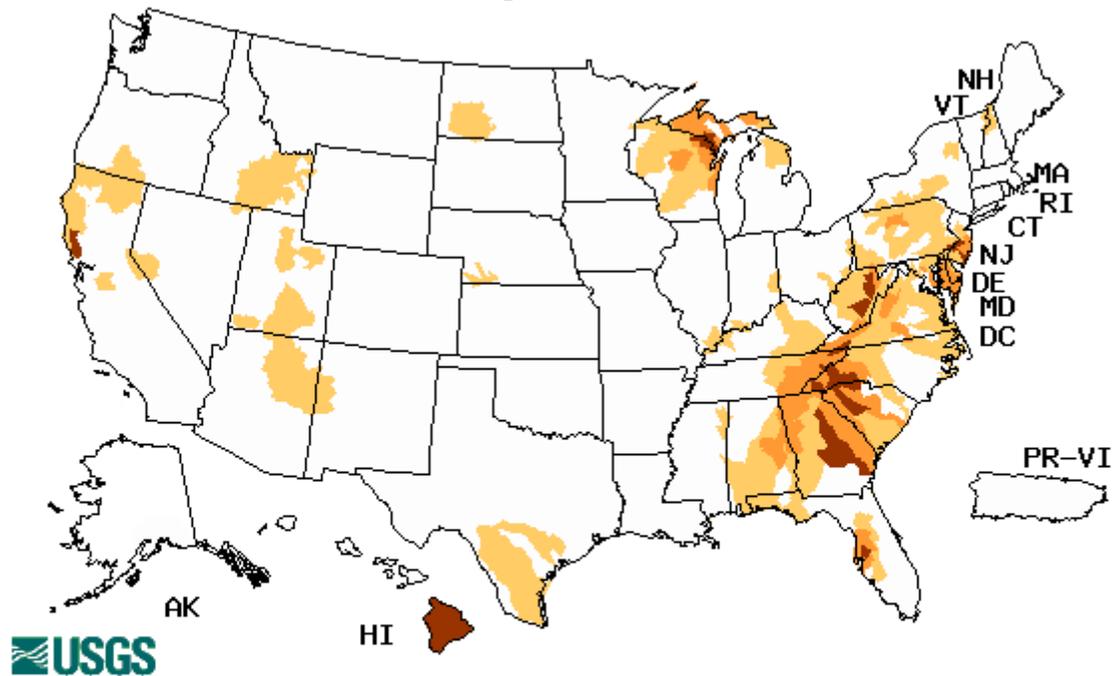


Fig. 5. Observed Fire Danger Class. Note marked increase fire threat over southern California, southern Nevada and western Arizona since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

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Hednesday, October 22, 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. 6. Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Note persistent low flows over the Central Appalachian Mountains, Southeastern States, and Wisconsin-Upper Peninsula of Michigan. Ref: <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

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National Drought Summary – October 21, 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 East Coast: Relatively little precipitation fell on areas of dryness and drought, with totals of 0.5 to locally 2.0 inches restricted to parts of northeast Indiana, northwest Pennsylvania, western New York, and a swath from central Alabama into central and northeastern sections of the Carolinas. Most other areas received a few tenths of an inch, but little or none fell on the southern Appalachians, southern sections of Alabama and Georgia, and most of Florida.

As a result, drought classifications remained unchanged in most areas. D0 was pulled from small sections of northeastern Indiana and western New York while D1 expanded through northern Kentucky and adjacent sections of Indiana and southern Ohio. Farther south, increasing short-term rainfall deficits led to D0 expansion in west-central peninsular Florida, with a small area of D1 introduced in the Tampa/St. Petersburg, FL area.

The Great Lakes and Upper Midwest: A few tenths of an inch of precipitation fell on the southern and eastern reaches of the dry region, and little or none was reported elsewhere. With precipitation deficits continuing to slowly increase, D0 was expanded through north-central Michigan, D1 stretched eastward through the central Upper Peninsula of Michigan, and D2 extended to cover more of central Wisconsin.

The Plains: Moderate to heavy rain locally exceeding 4 inches fell on central and eastern sections of the dry area in Texas; however, this is climatologically one of the wettest times of the year for the region, and with 30-day rainfall totals remaining below normal and precipitation shortfalls for the past year still exceeding a foot in the D2 and D3 areas, few changes were made to the Drought Monitor depiction. Some D0 was removed north of Austin, TX, but a bit of D1 and D2 expansion was introduced in some parts of southeastern Texas that missed the heavy rains.

Farther north and west, isolated moderate rains were reported across central and south-central Oklahoma, but dryness persisted or intensified in most of this region, leading to some D0 expansion and the introduction of small areas of D1 in central and south-central Oklahoma.

Meanwhile, moderate to heavy precipitation (up to 2 inches) prompted more D0 and D1 reductions this week in far western Oklahoma, northwestern most Texas, and part of southwestern Kansas. Lesser amounts (generally 0.3 to 0.9 inch) kept existing dryness and drought intact across southeastern Colorado, northeastern New Mexico, and west-central Kansas while a dry week across the northern half of the High Plains likewise kept D0 to D2 conditions as they were last week from central Colorado northward through western North Dakota and eastern Montana.

The West: A few tenths of an inch of precipitation fell on north-central Washington, parts of central and southeastern Idaho, western Montana, and northwestern Wyoming while little or none fell elsewhere. This precipitation pattern by itself did little to change the dryness and drought picture across the western states, but a re-assessment of precipitation deficits for the past 6 months to 2 years, in addition to reports of the degree to which this dryness is affecting

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streamflows and other aspects of surface moisture, led to some changes.

Part of east-central California to the east of the southern Sierra Nevada was improved to D0, but deterioration was the rule in other areas of change. D0 and D1 expanded eastward in Washington while D0 was returned to southwestern Montana and expanded into northern Utah and central Arizona. Meanwhile, moderate drought replaced abnormal dryness in much of central and southern Idaho, central and northeastern Nevada, and northwestern Utah. D2 also expanded slightly to cover more of central and eastern Nevada and a small part of west-central Utah.

Alaska, Hawaii, and Puerto Rico: Another dry week kept D0 conditions intact across northwestern Alaska. In Hawaii, rains of 0.5 to 2.0 inches were reported in a few locations, but most areas received only a few tenths of an inch, if any. As a result, the D0 to D3 conditions covering the state remained unchanged.

Looking Ahead: During October 23 – 27, 2008, at least moderate precipitation (0.5 inch or more) is forecast for most dry areas east of the High Plains, except in Texas, Oklahoma, parts of Wisconsin and Minnesota, and northeastern North Carolina. Totals locally approaching 2 inches are expected in parts of western Pennsylvania, southwestern Virginia, and northwestern North Carolina. In contrast, little or no precipitation is anticipated from the High Plains westward to the Pacific Coast. Temperatures should average above normal from the Rockies and northern High Plains westward, especially through northern and eastern California, central and western Nevada, and southern Oregon, while cooler than normal weather settles into the southeastern quarter of the country away from Florida and the immediate Atlantic and Gulf of Mexico Coasts.

For the ensuing 5 days (October 28 – November 1, 2008), the odds favor below-normal precipitation in the Southwest and across the southeastern quarter of the country. In contrast, wet weather is more likely in the northern High Plains, central and western Texas, part of northeastern New Mexico, the far eastern Great Lakes region, and portions of northwestern Alaska. Warmer than normal conditions appear favored in northwestern Alaska and through all but the northern tier of the West and High Plains while the odds tilt toward cooler than normal weather in the northern High Plains and throughout the dry areas east of the Mississippi River.

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 22 October 2008