



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

Weekly Report - Snowpack / Drought Monitor Update **Date: 16 October, 2008**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: SNOTEL and ACIS-day station average temperature anomalies were highest (positive departures) over the extreme southeastern regions of the West and lowest (negative departures) over the Northern Rockies (Fig. 1). Specifically, the greatest positive temperature departures occurred over southeast New Mexico (>+3F) and greatest negative departures occurred over Wyoming and southwest Montana (<-15F) (Fig. 1a.).

Precipitation: Preliminary precipitation totals for the 7-day period ending 15 October shows a wet pattern over much of the eastern third of the West. Lack of any precipitation occurred over most of California and the Lower Colorado River Basin (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 throughout most of the West (Fig. 2a). Individual SNOTEL station, as of today, shows snow water-equivalent as a percent of normal with well above normal values over Wyoming and southwest Montana due to a major snow storm that hit this area this past week (Fig. 2b). For precipitation totals, departures, and percent of normal for several time periods see: <http://water.weather.gov/>.

WESTERN DROUGHT STATUS

The West: Heavy snow blanketed much of central and western Wyoming and the southern tier of Montana, with the largest amounts (10 to 33 inches) piling up on the north-central Wyoming highlands, a few sites in central Wyoming, and the eastward-facing slopes of the western Wyoming mountains. Note, however, that snowfall totals were highly variable, as is typical in mountainous terrain, and a number of locations in central and western Wyoming recorded only a few inches of snow, if any. In terms of liquid-equivalent precipitation, the eastward-facing slopes of the west-central Wyoming mountains measured 2 to 3 inches, with amounts over an inch common across southern Montana and most of central and western Wyoming. This led to the elimination of abnormal dryness and a decline in the northern extent of D1 conditions through most of southwestern Montana and part of central Wyoming. 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. 3, 3a, 3b, and 3c).

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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/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/>

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 16, 2008

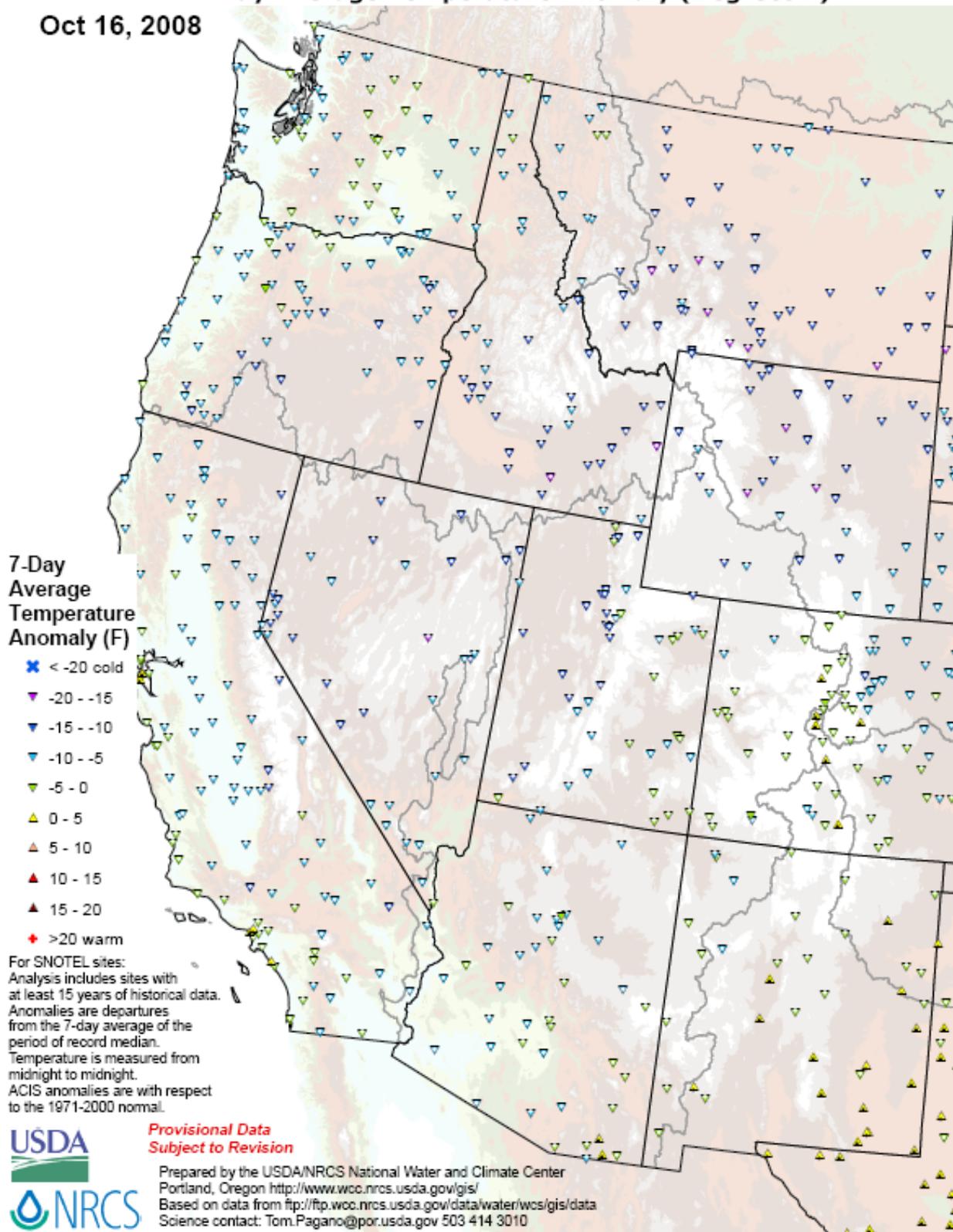
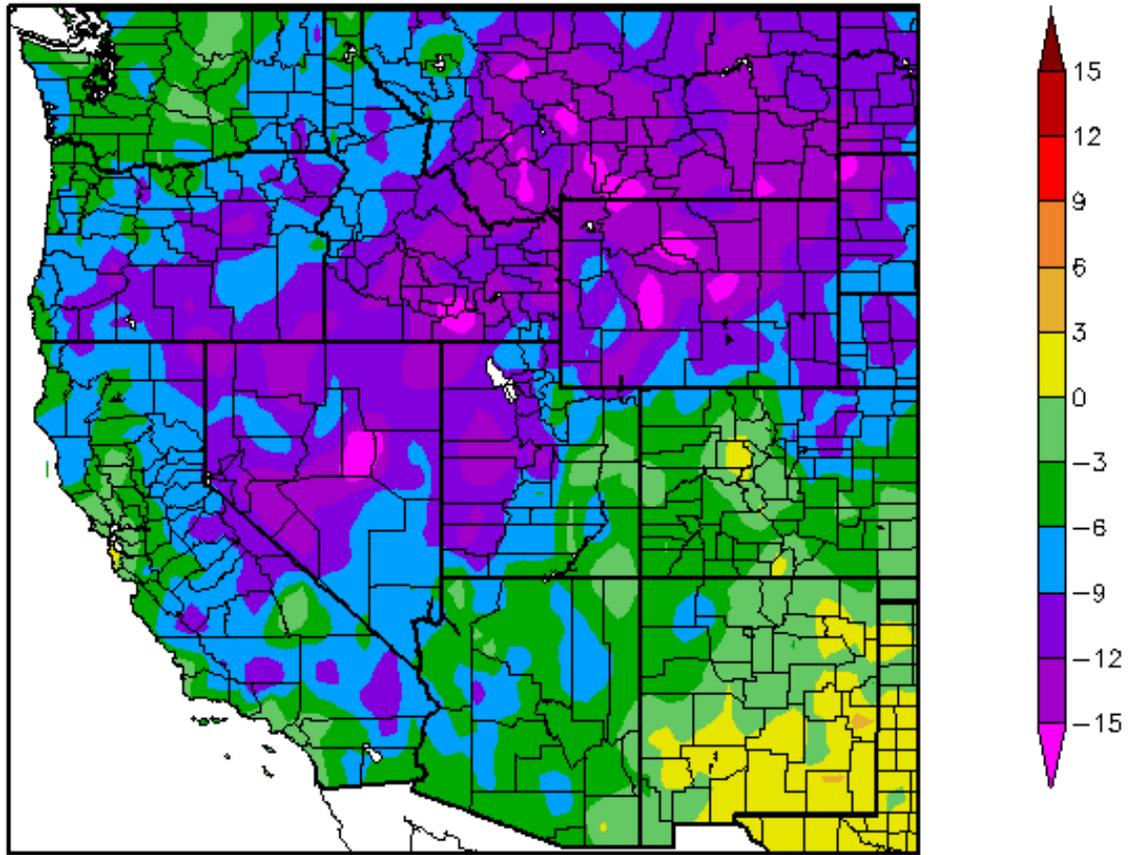


Fig. 1. SNOTEL and ACIS-day station average temperature anomalies were highest (positive departures) over the extreme southeastern regions of the West and lowest (negative departures) over the Northern Rockies. Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>

Departure from Normal Temperature (F)
10/9/2008 – 10/15/2008



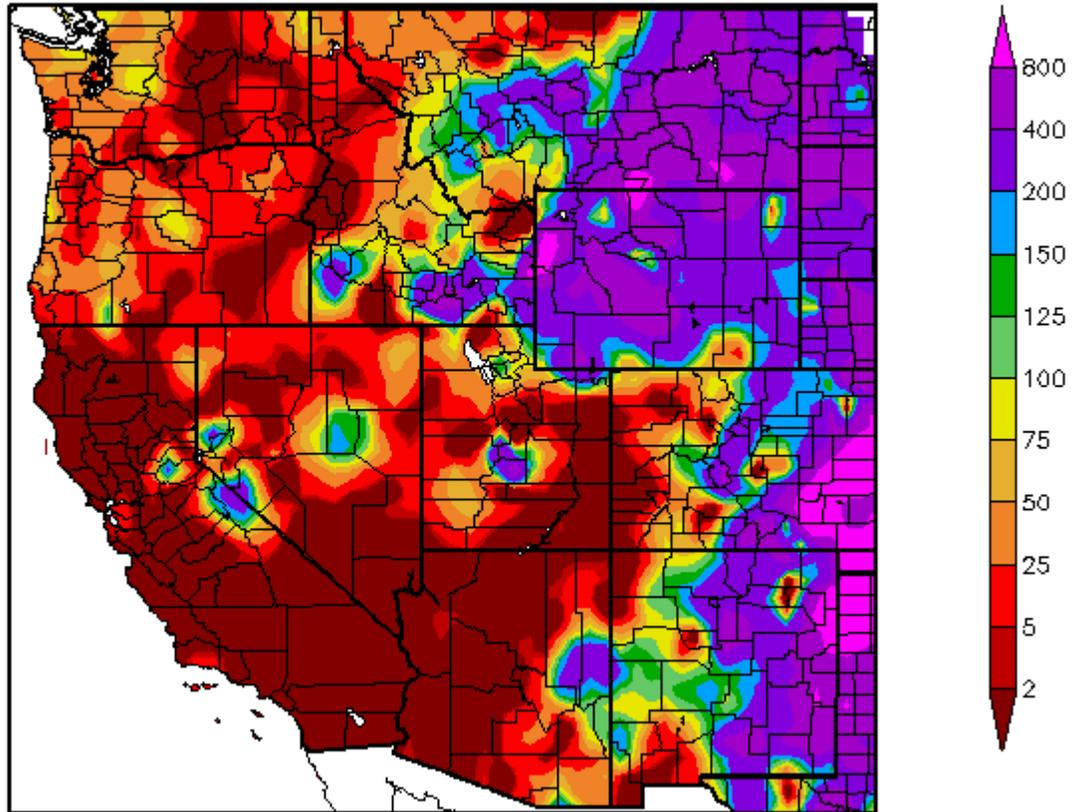
Generated 10/16/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 1a. ACIS 7-day average temperature anomalies: Greatest positive temperature departures occurred over southeast New Mexico (>+3F) and greatest negative departures occurred over Wyoming and southwest Montana (<-15F).

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

Percent of Normal Precipitation (%)
10/9/2008 – 10/15/2008



Generated 10/16/2008 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 15 October shows a wet pattern over much of the eastern third of the West. Lack of precipitation occurred over most of California and the Lower Colorado River Basin.

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

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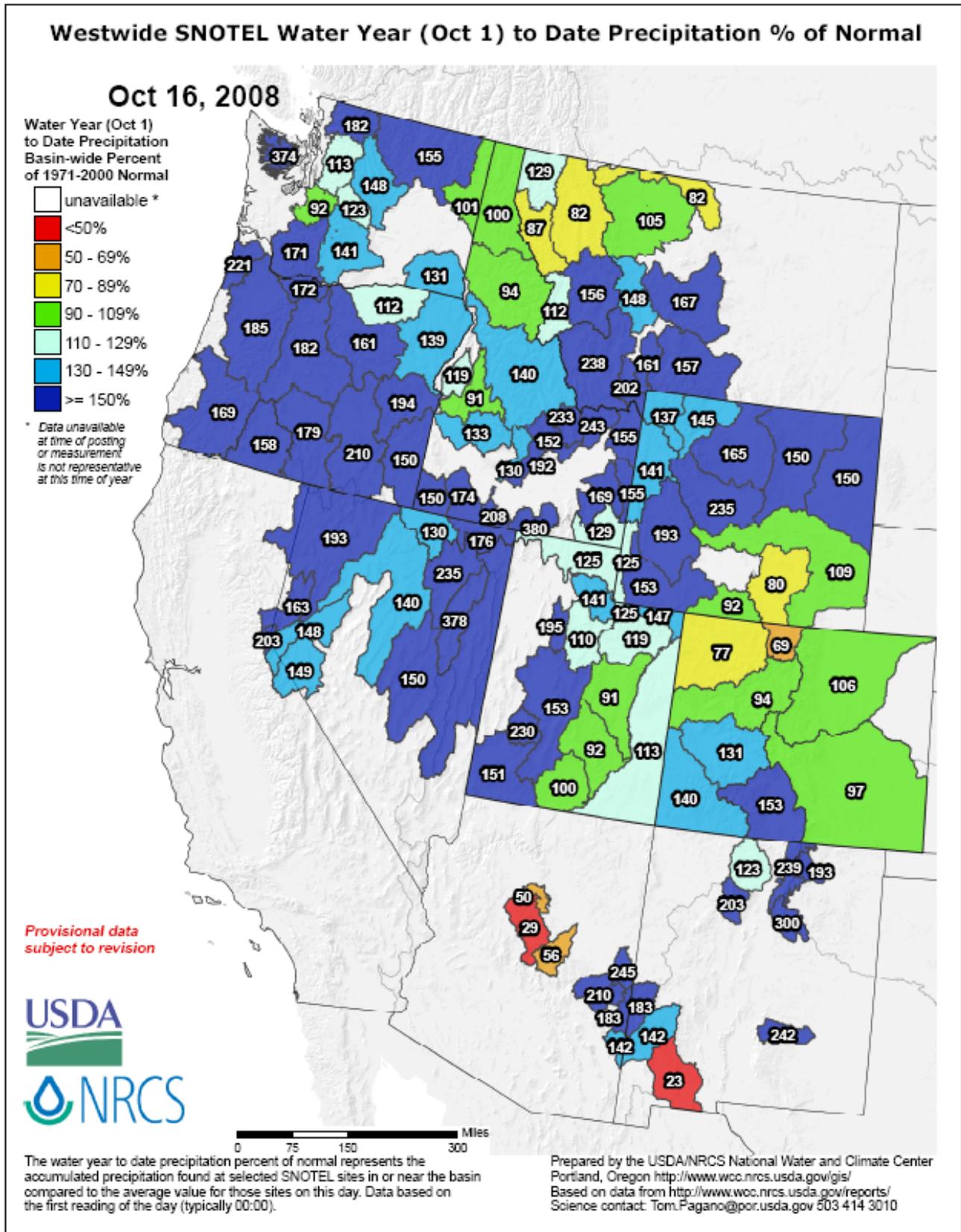


Fig 2a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the new 2009 Water Year that began on October 1, 2008 shows above normal totals throughout most of the West.
 Ref: http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecptnormal_update.pdf

SNOTEL Current Snow Water Equivalent (SWE) Percent of Normal
Oct 16, 2008

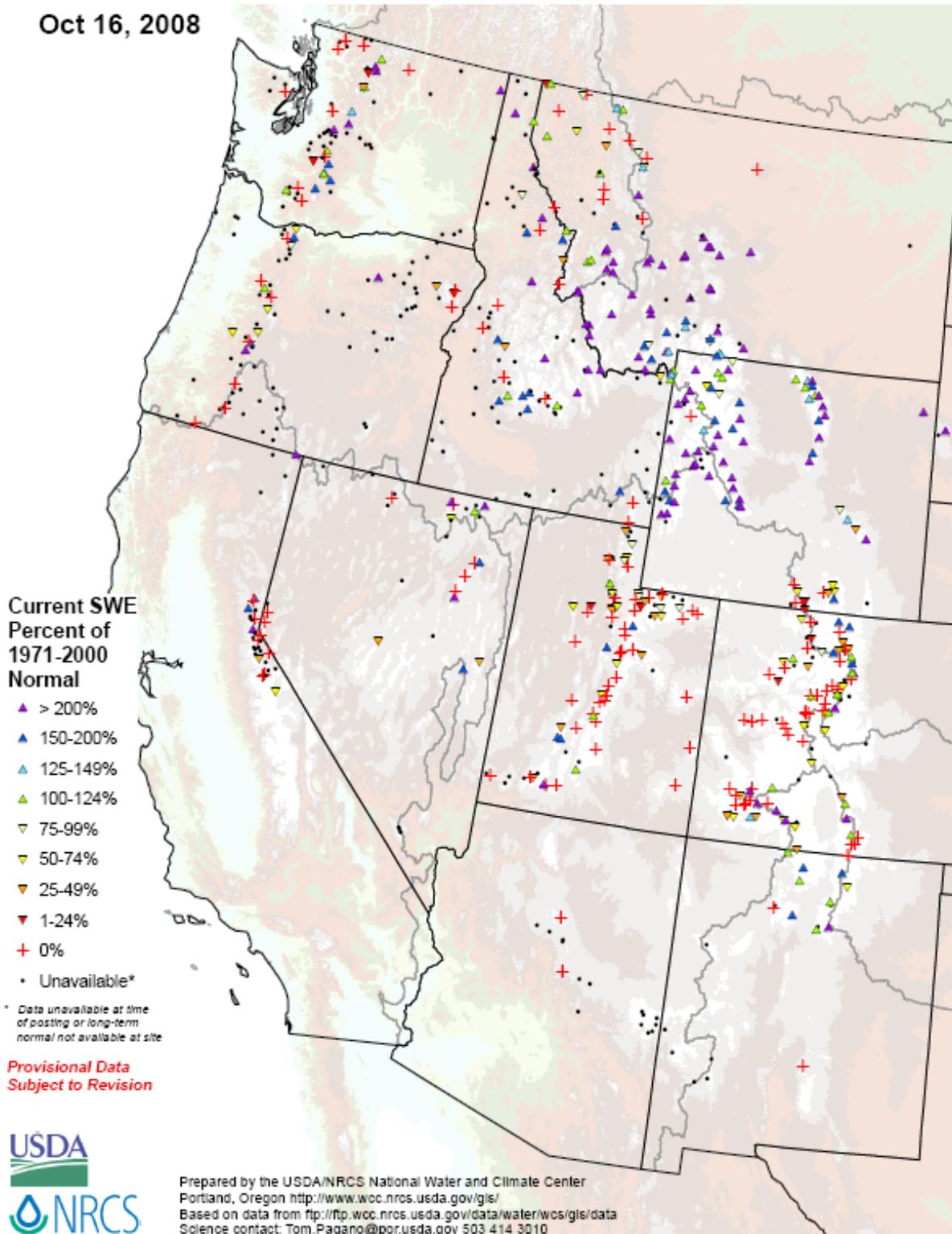
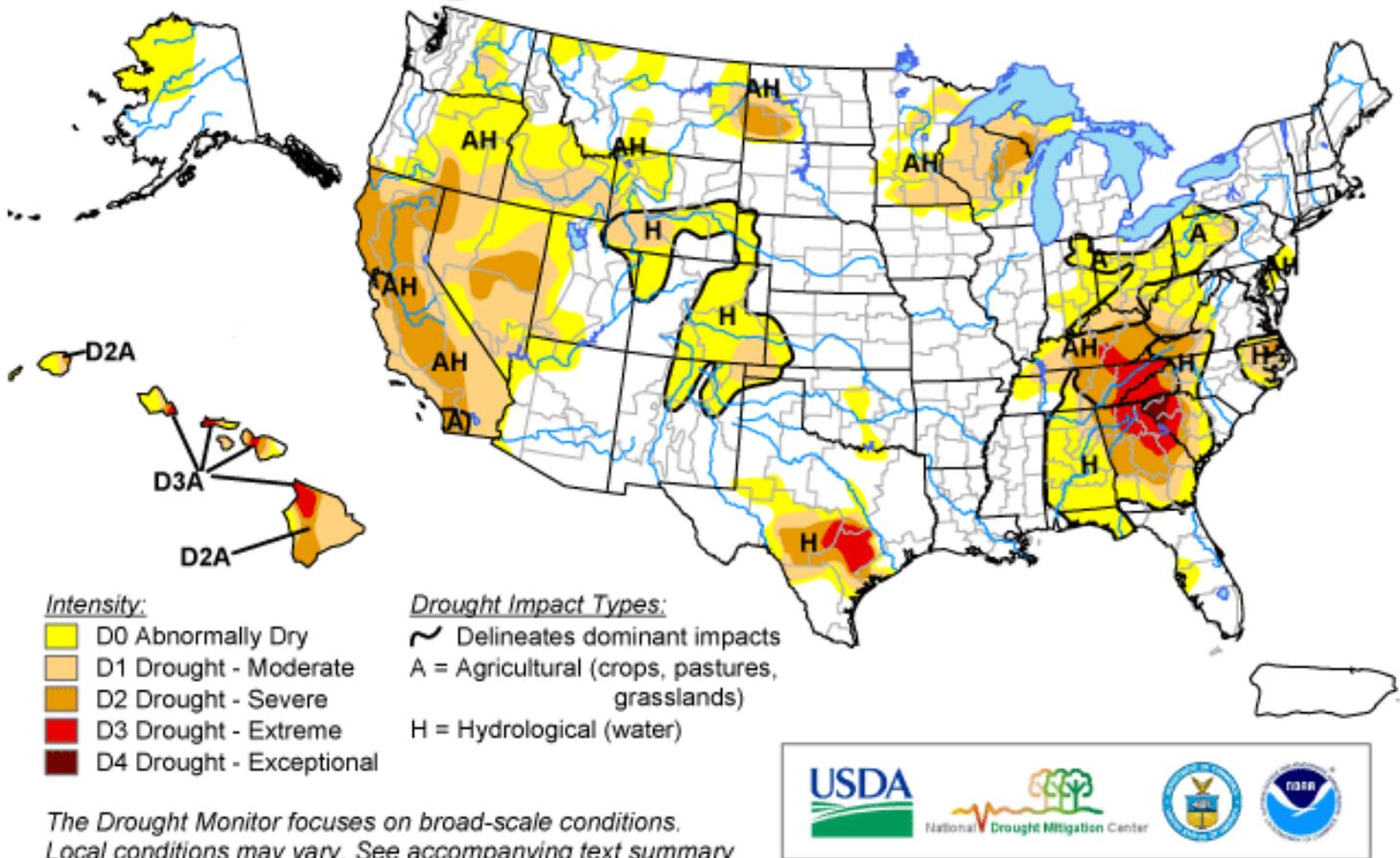


Fig. 2b. Individual SNOTEL station shows (as of today) snow water-equivalent as a percent of normal. Note the record values (>200%) over Wyoming and southwest Montana due to a major snow storm this past week.

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

U.S. Drought Monitor

October 14, 2008
Valid 8 a.m. EDT



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



Released Thursday, October 16, 2008
Author: Rich Tinker, Climate Prediction Center, NOAA

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

Fig. 3. Current Drought Monitor weekly summary.

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

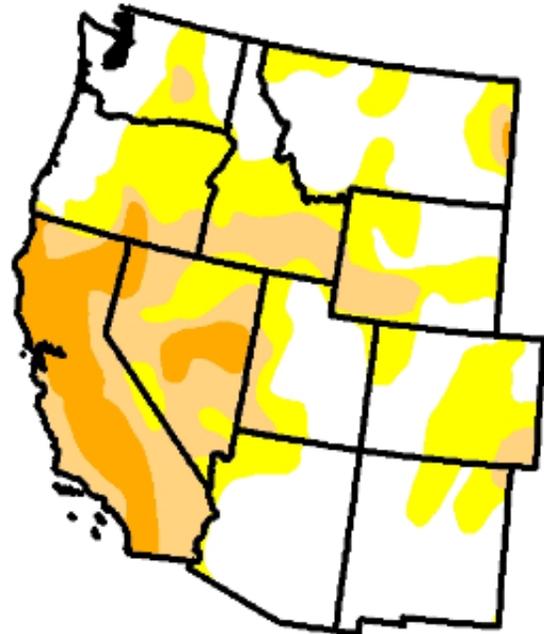
U.S. Drought Monitor

West

October 14, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	44.1	55.9	27.5	9.8	0.0	0.0
Last Week (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
3 Months Ago (07/22/2008 map)	34.0	66.0	30.2	6.0	0.4	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 (10/16/2007 map)	23.2	76.8	60.9	44.2	12.1	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>



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Fig. 3a. 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

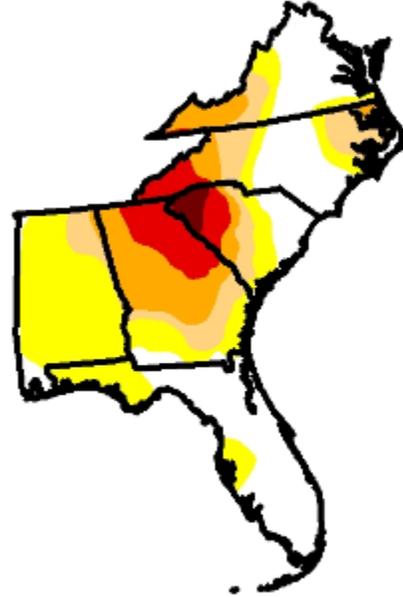
U.S. Drought Monitor

Southeast

October 14, 2008
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.0	64.0	34.9	22.5	9.6	1.3
Last Week (10/07/2008 map)	35.2	64.8	41.8	20.8	9.4	1.9
3 Months Ago (07/22/2008 map)	23.0	77.0	58.7	33.2	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 (10/16/2007 map)	11.1	88.9	81.1	71.3	51.2	32.6



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

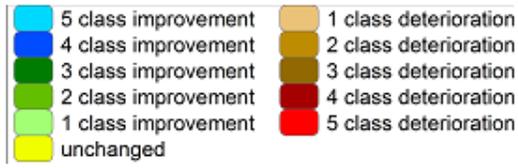
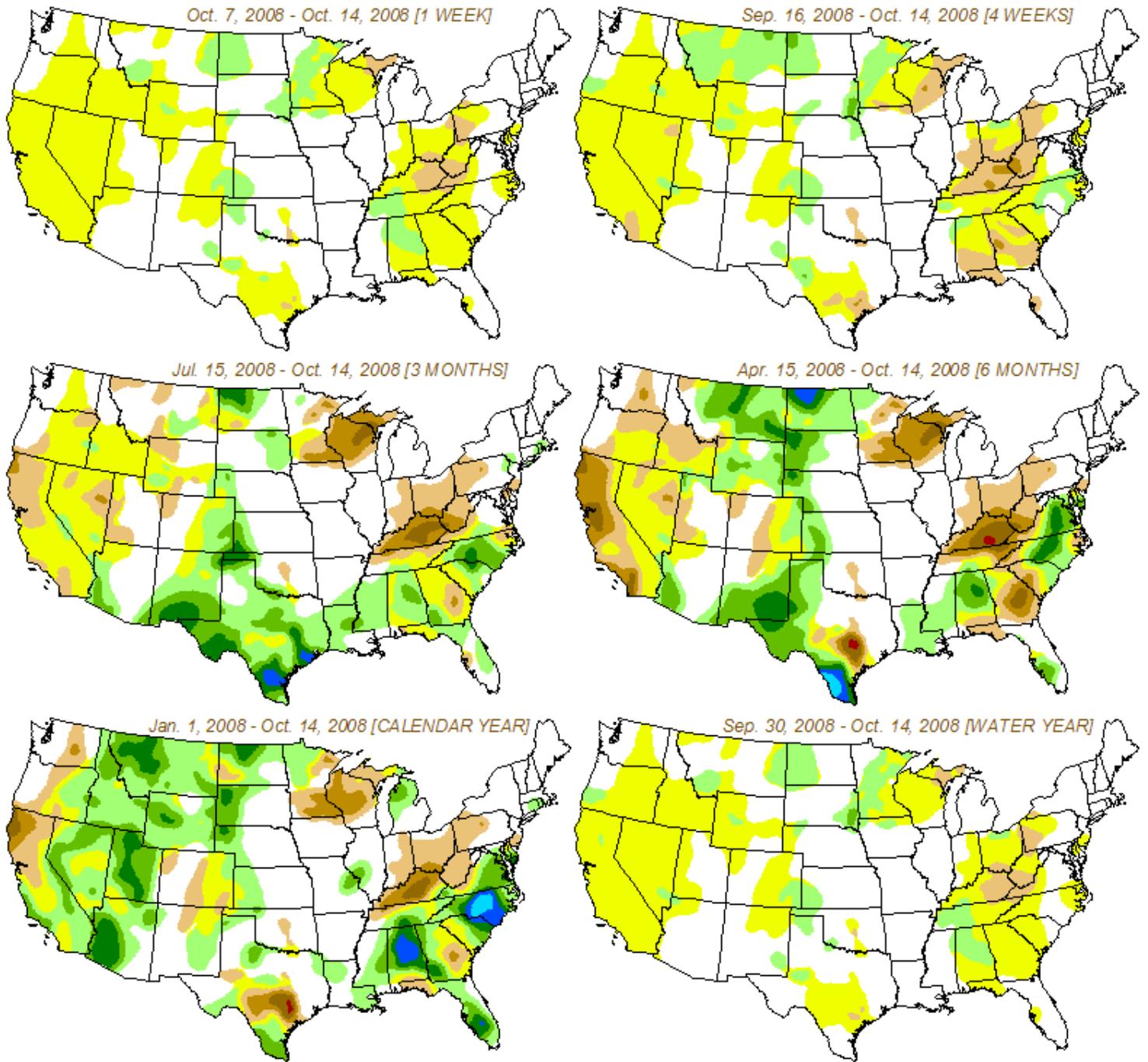
<http://drought.unl.edu/dm>



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Author: Rich Tinker, CPC/NOAA

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



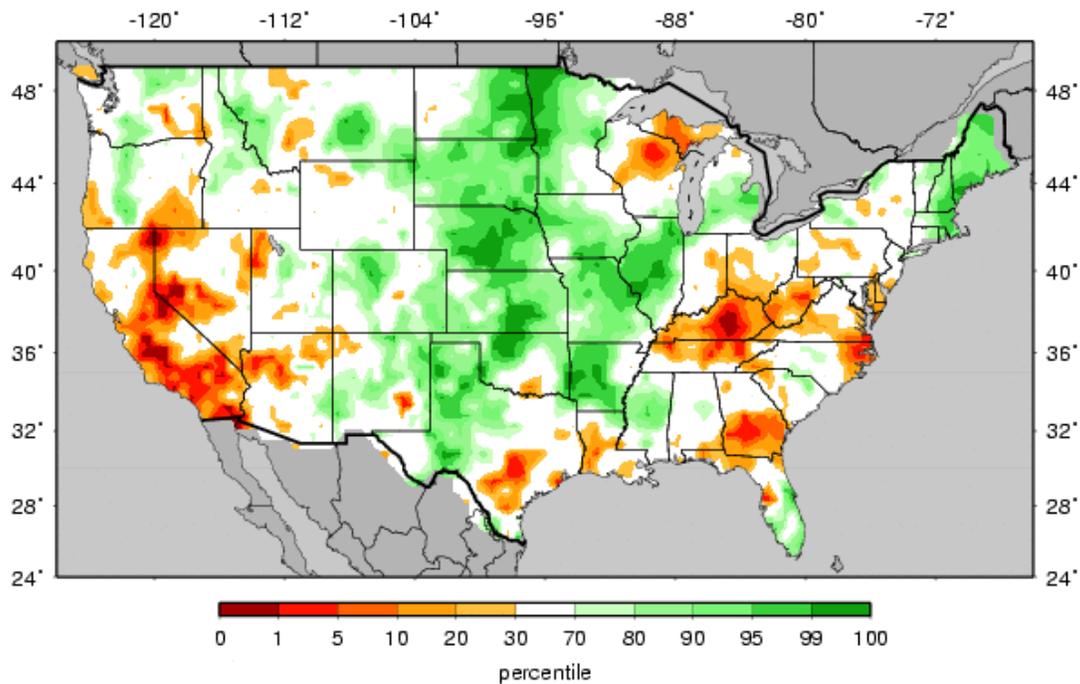
These maps depict approximate changes in drought intensity from selected initial times to the current week, with no consideration given to intervening weeks. The difference calculations are based on interpolated 4 km grids of Drought Monitor classifications, and as a result, will be smoother than would similar products based directly on the published versions of the Drought Monitor.

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

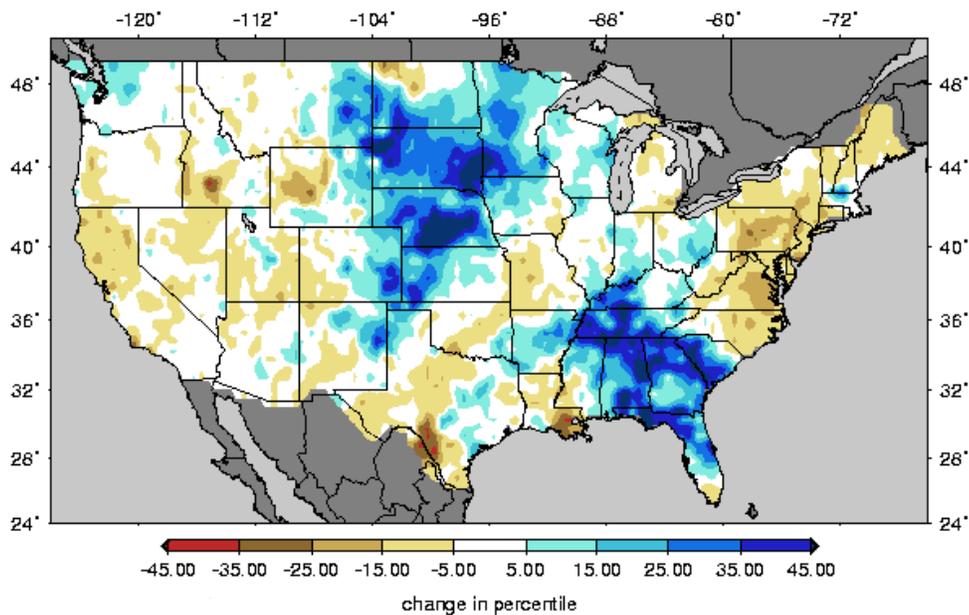
Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

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MULTIMODEL Soil Moisture Percentiles (wrt/ 1920-2003)
20081014



Change in Soil Moisture Percentiles (wrt/ 1915-2003)
for the week 20081007 to 20081014



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 from North Carolina to Maine and Louisiana while increases are noted over Southeast and Central-Northern Plains (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

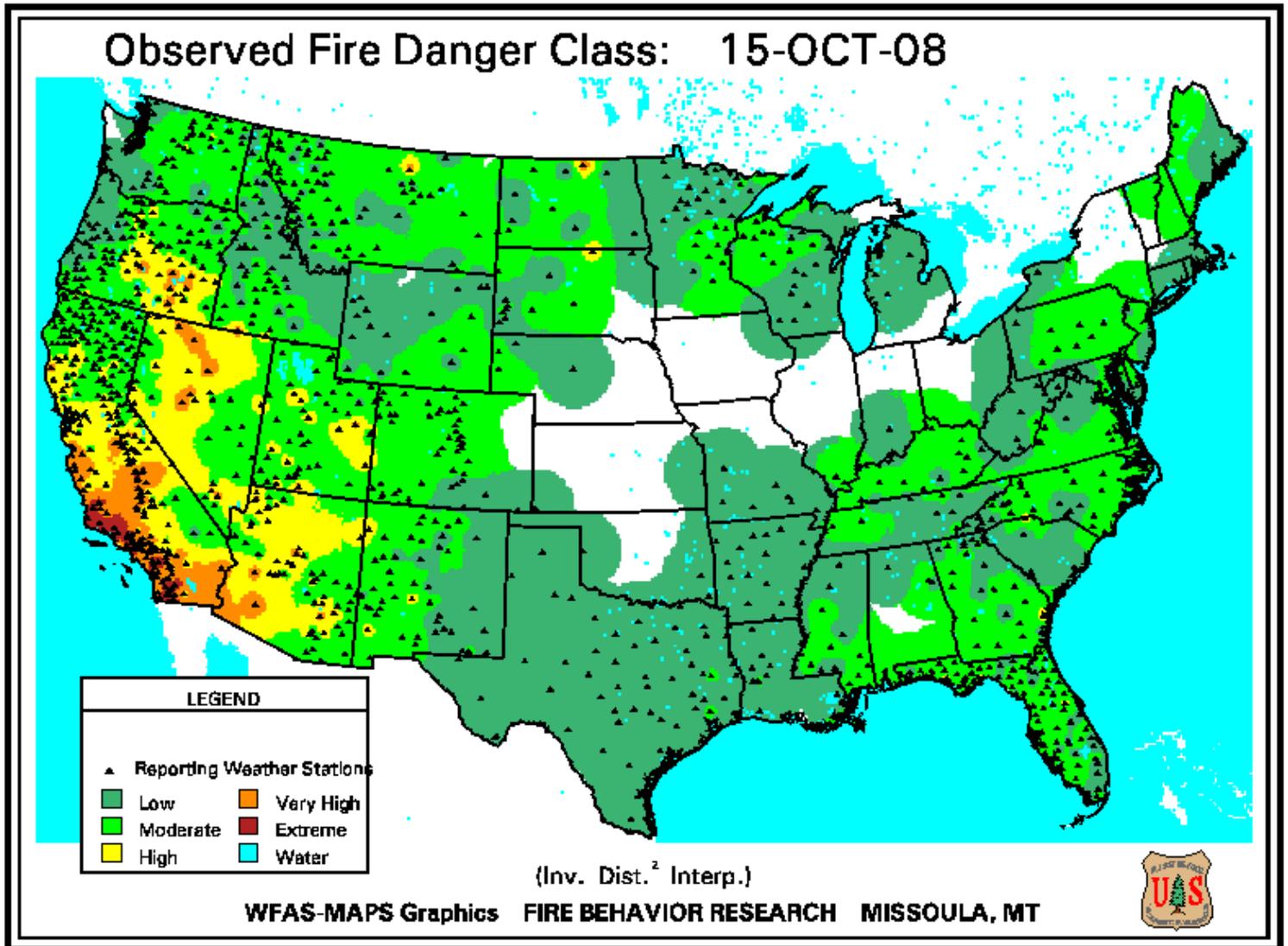
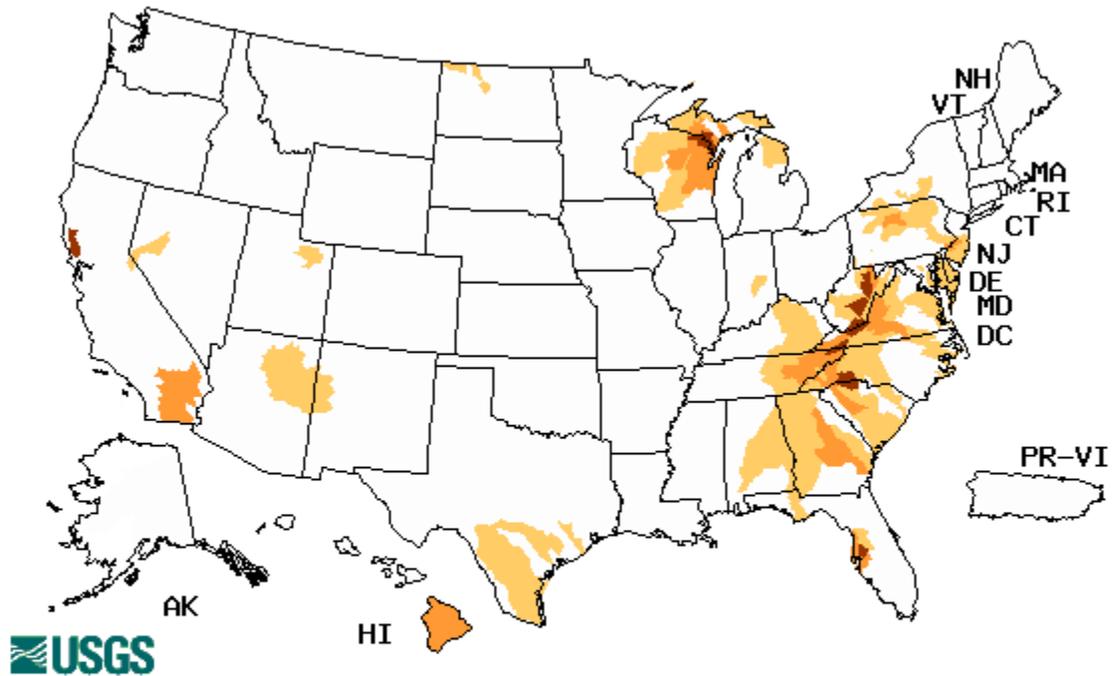


Fig. 5. Observed Fire Danger Class. Note marked increase fire threat over southern California since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

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Wednesday, October 15, 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 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 14, 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: Moderate to heavy rains were reported in most areas from the southern Atlantic states westward through Alabama and northwestward to the Mississippi and lower Ohio Rivers. Almost all of these areas recorded over 1 inch of rain, with isolated totals exceeding 5 inches in northeastern, upper coastal and south-central Georgia. Only southwestern Alabama, parts of southwestern Georgia, and the west-central Florida Peninsula received less than 1 inch. These rains substantially improved surface moisture conditions; however, because of the large precipitation shortfalls that have accumulated during the past 2 to 3 years (more than 1.5 feet over the interior Southeast, even after last week's rainfall), hydrologic drought improvement was much more limited, and the Drought Monitor reflects primarily this long-term drought situation. D0 to D2 conditions improved in western sections of Tennessee and Kentucky, and across central and northern Alabama. Farther east, exceptional drought (D4) receded from part of upstate South Carolina. From north-central Georgia northeastward through western South Carolina, and across central Tennessee, most locations recorded at least 2 inches of rain, but because of the large long-term precipitation deficits still existent throughout these areas, the only change made to the Drought Monitor was to replace former D1AH to D4AH conditions with D1H to D4H designations.

Farther north, conditions were considerably drier last week. From south-central Kentucky, eastern Tennessee, and central North Carolina northward to at least the Canadian Border, only a few areas measured over 0.5 inch of rain as dryness and drought persisted or intensified. D1 to D2 conditions expanded northward near the middle Ohio Valley and the southwestern Virginias while D3 designations expanded to cover eastern Tennessee and south-central Kentucky, where precipitation totals for the past 6 months are generally 8 to 12 inches below normal. Farther north, increasing short-term moisture deficits prompted D0 expansion into eastern Ohio, northern West Virginia, central and western Pennsylvania, and westernmost New York. Over the last 3 months, only 25 to 70 percent of normal precipitation fell on these areas.

The Great Lakes and Upper Midwest: A couple of wet weeks in areas west of the Great Lakes led to a substantial reduction in the extent of D0 to D1 across northern and western Minnesota, adjacent areas of eastern South Dakota, northeastern Nebraska, and western and northern Iowa, where 3-month rainfall totals range from slightly below normal to considerably above normal. In contrast, only light precipitation fell on the dry areas farther east as D0 to D2 conditions expanded northeastward across the Upper Peninsula of Michigan and northeastern Wisconsin, and persisted across the remainder of Wisconsin.

The Plains: Moderate precipitation fell on most of eastern Montana and the northwestern Dakotas, including snowfall totals locally approaching 1 foot. In conjunction with a wet first week of October, this led to the elimination of D3 conditions and a substantial reduction in the extent of D0 to D2 designations throughout the area. Farther south, moderate to heavy precipitation also fell on parts of northern and eastern New Mexico, the Texas Panhandle, southwestern Oklahoma and adjacent Texas, much of eastern Colorado, western Kansas, the eastern Nebraska Panhandle, and adjacent South Dakota. As a result, D2 conditions near the Oklahoma/Kansas/Colorado triple point were eliminated, and D0 to D1 designations across the

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central High Plains contracted.

Farther south and east, little or no precipitation fell on the dry areas of central and western Texas, the central Red River Valley, and central Oklahoma, where drought classifications remained constant or deteriorated. More specifically, D0 expanded to cover south-central Oklahoma, and D2 to D3 designations pushed southeastward across interior southeastern Texas. Some improvements were introduced in central Texas (a slight reduction in the northward extent of D1 and D2) and west-central Texas (the elimination of D1 conditions), but these were based on a reassessment of conditions, and not as a result of any significant precipitation this past week.

The West: Heavy snow blanketed much of central and western Wyoming and the southern tier of Montana, with the largest amounts (10 to 33 inches) piling up on the north-central Wyoming highlands, a few sites in central Wyoming, and the eastward-facing slopes of the western Wyoming mountains. Note, however, that snowfall totals were highly variable, as is typical in mountainous terrain, and a number of locations in central and western Wyoming recorded only a few inches of snow, if any. In terms of liquid-equivalent precipitation, the eastward-facing slopes of the west-central Wyoming mountains measured 2 to 3 inches, with amounts over an inch common across southern Montana and most of central and western Wyoming. This led to the elimination of abnormal dryness and a decline in the northern extent of D1 conditions through most of southwestern Montana and part of central Wyoming.

In contrast, precipitation was neither as heavy nor as widespread across the remainder of the dry areas in the West. Isolated precipitation totals of 1 to 3 inches were reported in southeastern Idaho and northeastern Nevada, but most of the region received only a few tenths of an inch, if any. As a result, drought designations remained unchanged outside of Montana and Wyoming.
Author: Rich Tinker, Climate Prediction Center/NOAA

Alaska, Hawaii, and Puerto Rico: Only 2 isolated locations reported over 1 inch of rain in Hawaii, where D0 to D3 conditions cover the entire island chain. A few other scattered sites received 0.5 to 1.0 inch, but most locations in Hawaii measured only a few tenths of an inch. Farther north, the abnormally dry area in northwestern Alaska recorded 0.3 inch or less. This left dryness and drought in Hawaii and Alaska unchanged from the previous week.

Looking Ahead: During the next 5 days (October 16 – 20, 2008), between 1.5 and 2.5 inches of precipitation are expected in the dry areas of the central Texas Coast while lesser amounts (0.5 to 1.5 inches) are forecast for adjacent central Texas and the dry areas of northwestern-most Pennsylvania and adjacent New York, east-central North Carolina, northeastern Indiana, and part of Michigan's Upper Peninsula. Meanwhile, light precipitation (less than 0.5 inch) can be expected along the northern tier of the country and in most areas from the Great Plains eastward to the Atlantic Coast while little or no precipitation is forecast for central and southern sections of the Rockies, High Plains, and Far West, as well as west-central Florida. During this 5-day period, temperatures should average above normal from the northern Great Plains and southern High Plains westward into the West Coast states, and near normal elsewhere.

For the ensuing 5 days (October 21 – 25, 2008), the odds favor above-normal precipitation across the Appalachians, the middle and upper Ohio Valley, the Great Lakes region, the central and northeastern Great Plains, the south-central High Plains, and from central Montana westward through the dry areas of Washington and all but southernmost Oregon. Meanwhile, below-normal precipitation is favored from the north-central High Plains southwestward through most of the central and southern Rockies, much of Nevada, and the southern two-thirds of California. Below-normal precipitation is also favored from central and southern Texas eastward through Alabama and southwestern Georgia, and across northwestern Alaska. During this period, above-normal temperatures are expected in the Southwest, the northern Rockies, the

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Plains from central Texas northward, and most of the Great Lakes region. In contrast, the odds favor cooler than normal conditions in northwestern Alaska and from central and eastern Georgia northeastward through the Appalachians, the upper half of the Ohio Valley, the easternmost Great Lakes region, the Carolinas, the Virginia Piedmont, Delaware, and New Jersey. 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 15 October 2008