



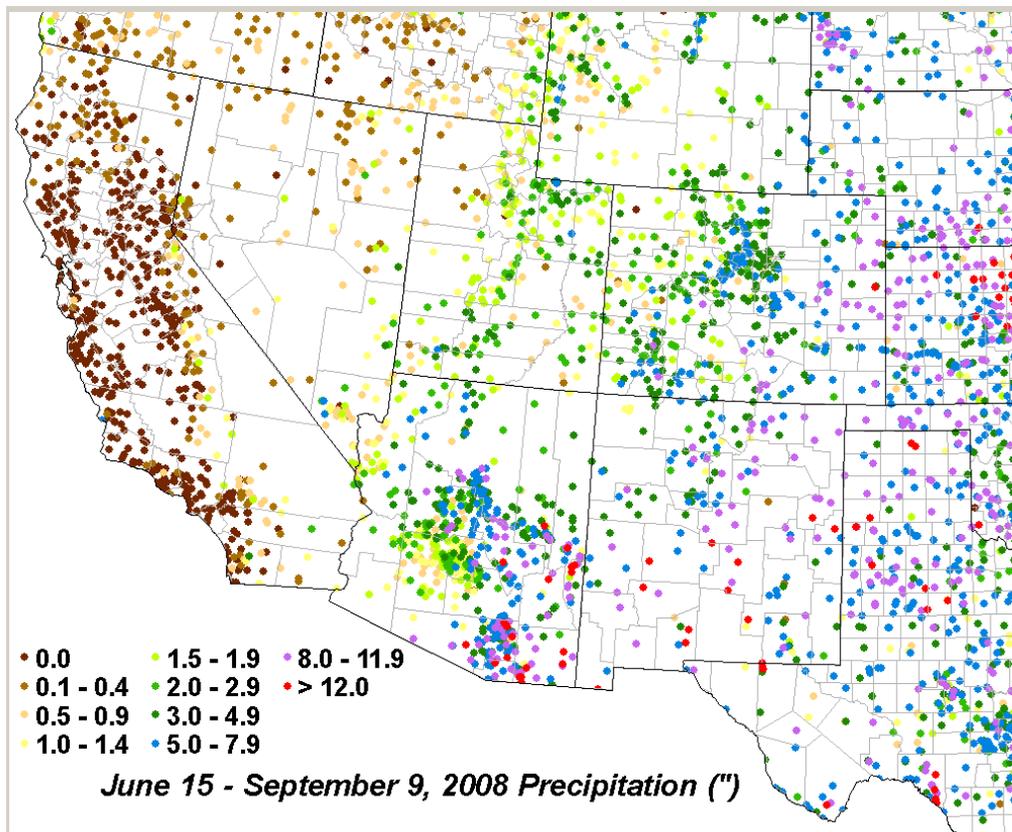
Natural Resources Conservation Service  
 P.O. Box 2890  
 Washington, D.C. 20013

**Weekly Report - Snowpack / Drought Monitor Update**      **Date: 11 September, 2008**

**SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Temperature:** SNOTEL and ACIS-day station average temperature anomalies were highest (positive departures) were located over the Northern Sierra and lowest (negative departures) over the Northern Rockies (Fig. 1). Specifically, the greatest positive temperature departures occurred over Central Interior California (>+6F) and the greatest negative departures occurred over Northern High Plains (<-10F) (Fig. 1a).

**Precipitation:** Preliminary precipitation totals for the 7-day period ending 10 September shows areas of heavy precipitation over portions of the Wyoming and Montana while the Southwest Monsoon is continuing over southern New Mexico. Otherwise, typical dry conditions prevail over the much of California and the Pacific Northwest (Fig. 2). For the latest information on the status of the Southwest Monsoon, see: [http://www.wrh.noaa.gov/twc/monsoon/monsoon\\_tracker.php](http://www.wrh.noaa.gov/twc/monsoon/monsoon_tracker.php):



**Rainfall totals for the 2008 Monsoon Season**

Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 (Fig. 2a) shows above normal totals over northeastern Wyoming, parts of the Snake and Columbia River Basins in Washington, Oregon, and Idaho, and over parts of Arizona, New Mexico and Colorado. Parts of Nevada are experiencing significant

## Weekly Snowpack and Drought Monitor Update Report

shortfalls and to a lesser extent in southern Idaho. No change since last week. For precipitation totals, departures, and percent of normal for several time periods see: <http://water.weather.gov/>.

### WESTERN DROUGHT STATUS

**The West:** Mostly dry weather prevailed in the West, with cooler conditions (weekly temperatures averaged 4 to 12 degrees F below normal) in the Rockies and eastern Great Basin. Above-normal departures (+2 to +6 degrees F), however, remained in California and Arizona, with triple-digit highs in California's Central Valley. According to the NIFC, 5 large wildfires remained active in northern California, while California's pastures and ranges were still rated 100% poor or very poor, according to USDA/NASS. With continued declines in pasture and range productivity, the D2 was expanded northward into counties of northwestern (Del Monte) and northeastern (Lassen) California. In central Nevada, low flows on the Humboldt River below Winnemucca have reduced irrigation allocations to 58% of normal below Rye Patch reservoir, dropping Pershing County into D1 status.

In contrast, a reassessment from the local western experts suggested improvement in some western Nevada and eastern California counties where water year-to-date precipitation (since Oct. 1, 2007) was at or above normal and no water restrictions were in place. Accordingly, counties in western Nevada (northern Churchill, southern Mineral, Esmeralda), southern Nevada (southern Clark), and eastern California (southern Mono and northern Inyo) were changed from D1 to D0. Author: David Miskus, Joint Agricultural Weather Facility, CPC/NCEP/NWS/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).

### 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](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

## Weekly Snowpack and Drought Monitor Update Report

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](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.

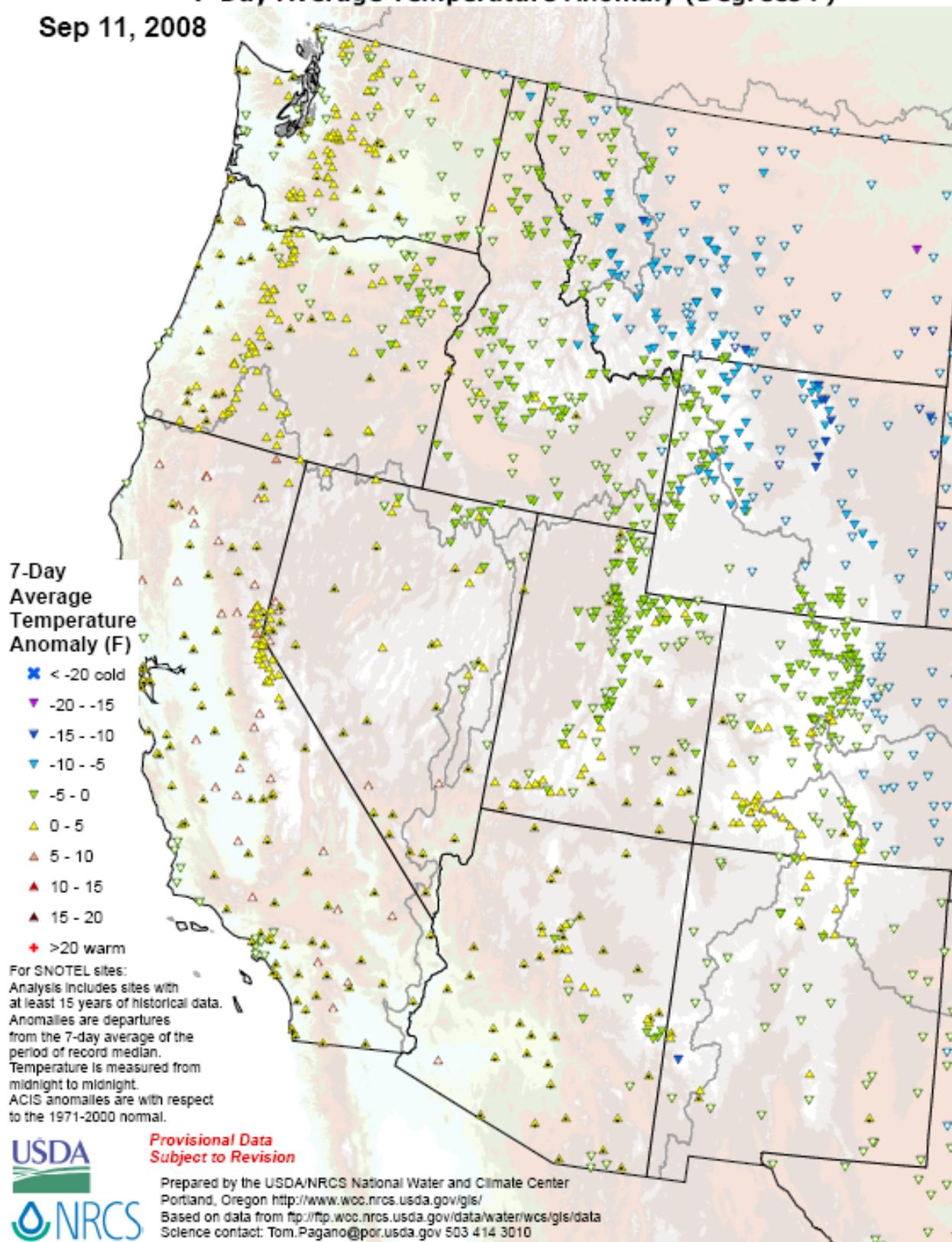
/s/ NOLLER HERBERT

Director, Conservation Engineering Division

# Weekly Snowpack and Drought Monitor Update Report

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

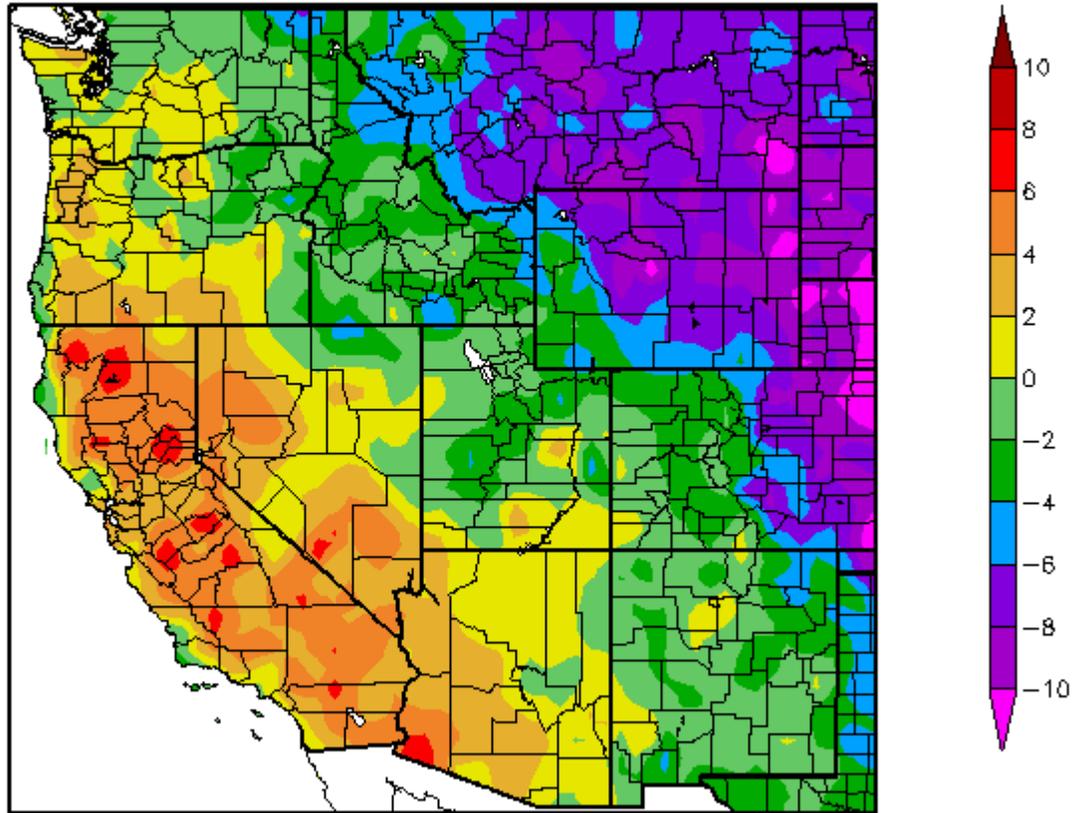
Sep 11, 2008



**Fig. 1. SNOTEL and ACIS-day station average temperature anomalies were highest (positive departures) were located over the Northern Sierra 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)  
9/4/2008 - 9/10/2008



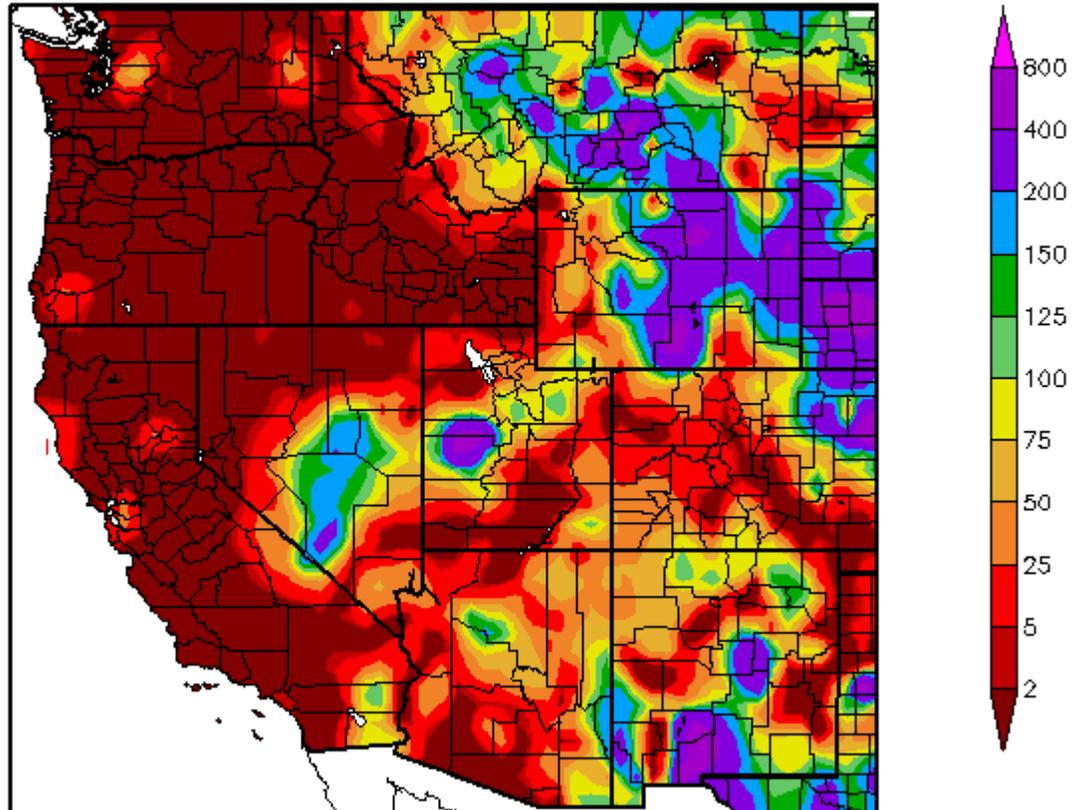
Generated 9/11/2008 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 1a. ACIS 7-day average temperature anomalies: Greatest positive temperature departures occurred over Central Interior California (>-6F) and greatest negative departures occurred over Northern High Plains (<-10F).**

Ref: [http://www.hprcc.unl.edu/maps/current/index.php?action=update\\_product&product=TDdept](http://www.hprcc.unl.edu/maps/current/index.php?action=update_product&product=TDdept)

Percent of Normal Precipitation (%)  
9/4/2008 – 9/10/2008



Generated 9/11/2008 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 10 September shows areas of heavy precipitation over portions of the Wyoming and Montana while the Southwest Monsoon is continuing over southern New Mexico. Otherwise, typical dry conditions prevail over the much of California and the Pacific Northwest. For information on the status of the Southwest Monsoon, see: Ref: [http://www.wrh.noaa.gov/twc/monsoon/monsoon\\_tracker.php](http://www.wrh.noaa.gov/twc/monsoon/monsoon_tracker.php)  
[http://www.hprcc.unl.edu/maps/index.php?action=update\\_product&product=PNorm](http://www.hprcc.unl.edu/maps/index.php?action=update_product&product=PNorm)**

Weekly Snowpack and Drought Monitor Update Report

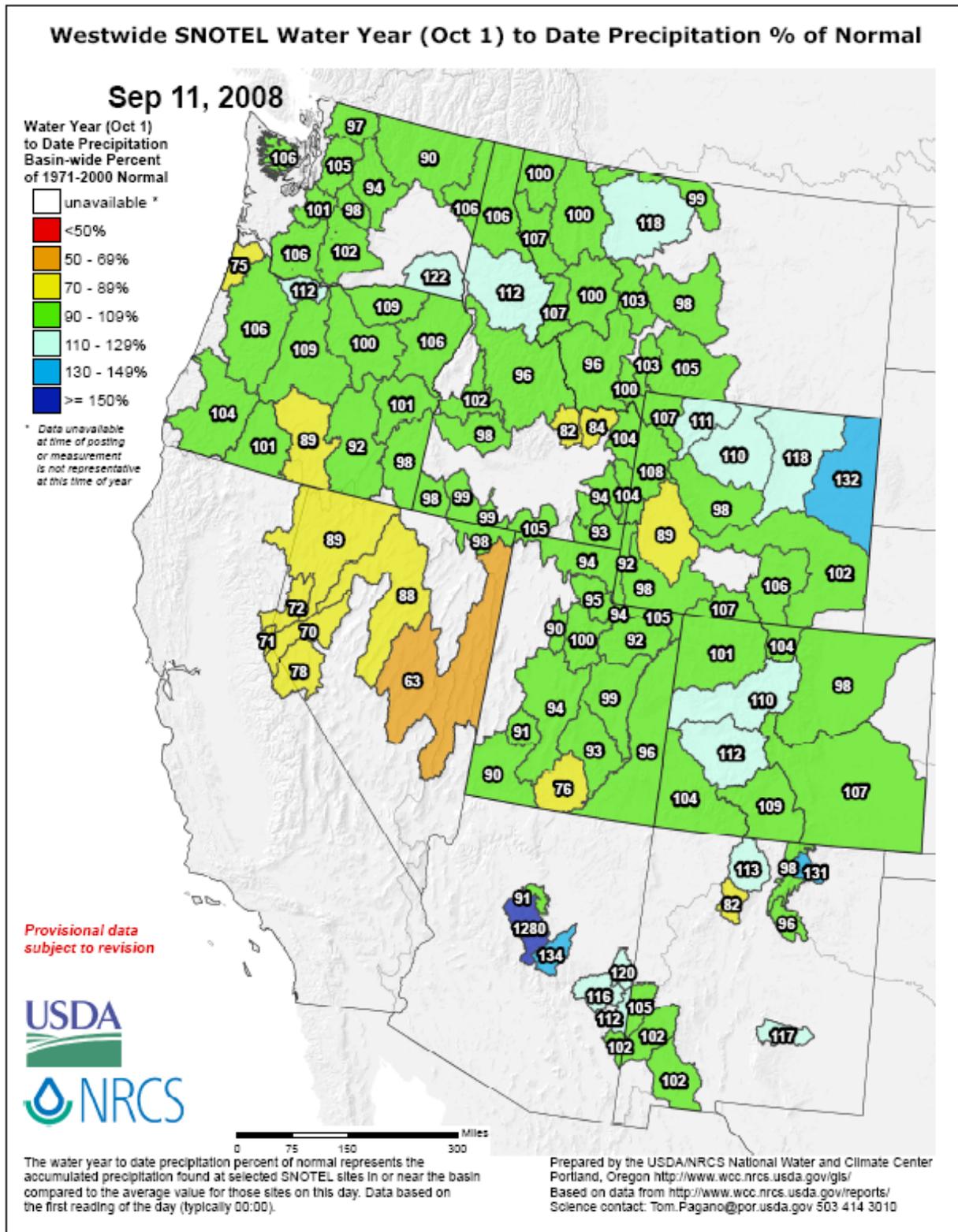
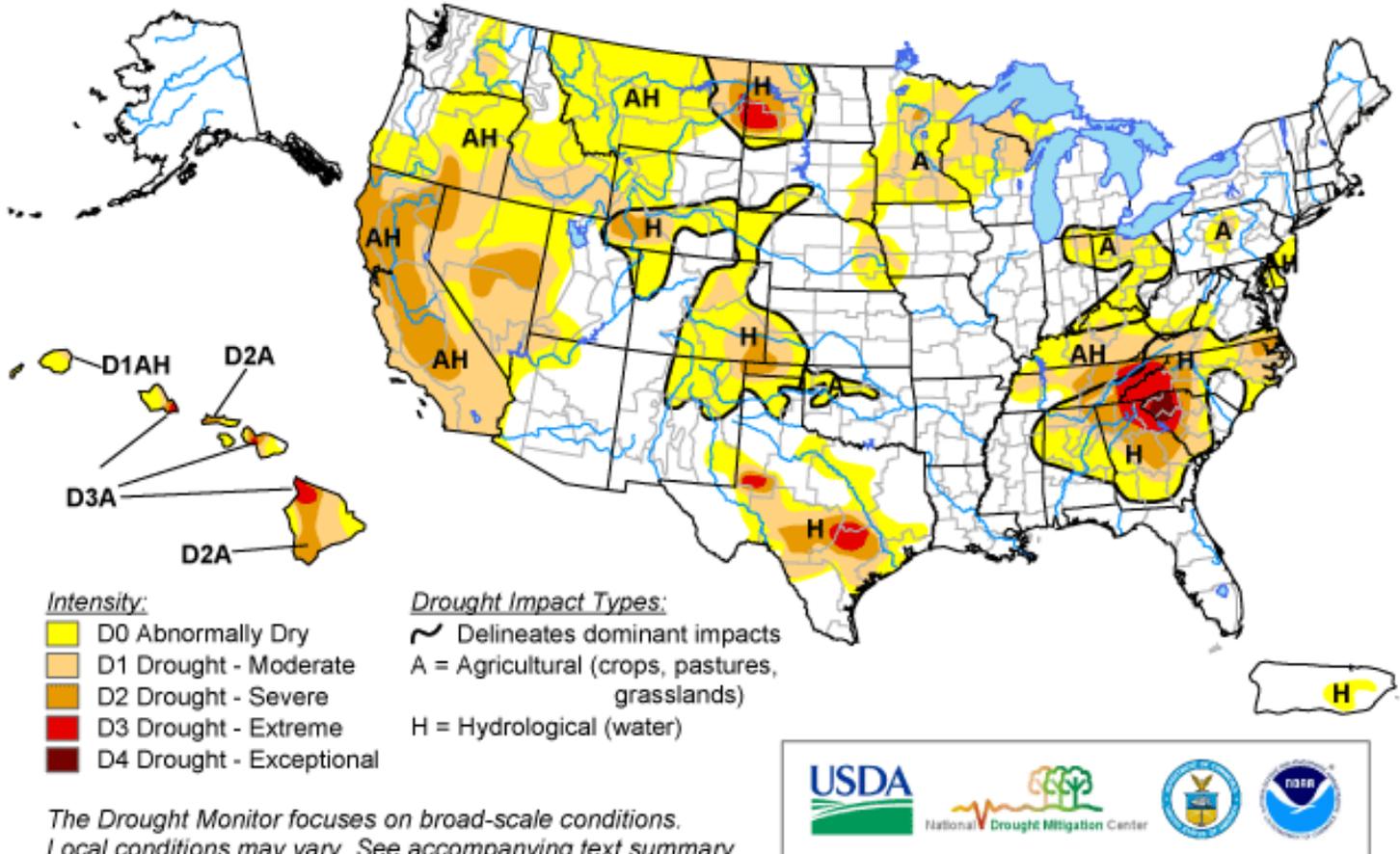


Fig 2a. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2008 Water Year that began on October 1, 2007 shows above normal totals over northeastern Wyoming, parts of the Snake and Columbia River Basins in Washington, Oregon, and Idaho, and over parts of Arizona, New Mexico and Colorado. Parts of Nevada are experiencing significant shortfalls and to a lesser extent in southern Idaho. No change since last week.

Ref: [ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west\\_wytdprecptnormal\\_update.pdf](ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecptnormal_update.pdf)

# U.S. Drought Monitor

September 9, 2008  
Valid 8 a.m. EDT



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

Released Thursday, September 11, 2008  
Author: David Miskus, JAWF/CPC/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

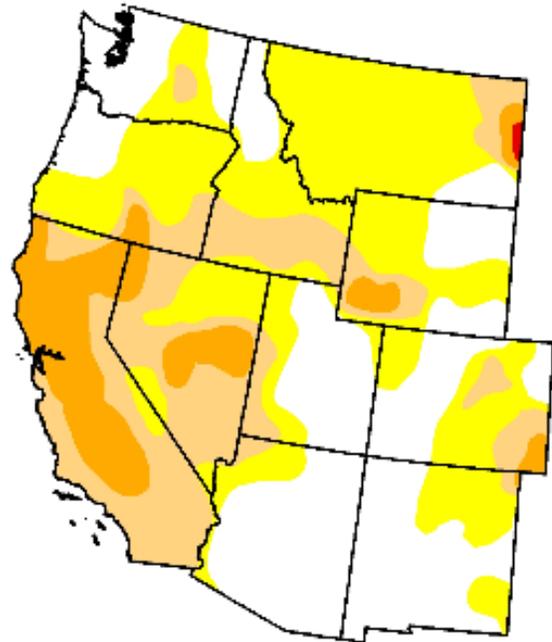
## West

September 9, 2008

Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.3	65.7	30.1	10.2	0.1	0.0
Last Week (09/02/2008 map)	34.2	65.8	31.1	10.1	0.2	0.0
3 Months Ago (06/17/2008 map)	40.1	59.9	35.9	9.4	1.8	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 (10/02/2007 map)	22.0	78.0	62.3	44.7	12.4	0.0
One Year Ago (09/11/2007 map)	21.4	78.6	63.9	49.4	12.2	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, September 11, 2008**

Author: David Miskus, JAWF/CPC/NOAA

**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](http://www.drought.unl.edu/dm/DM_west.htm)**

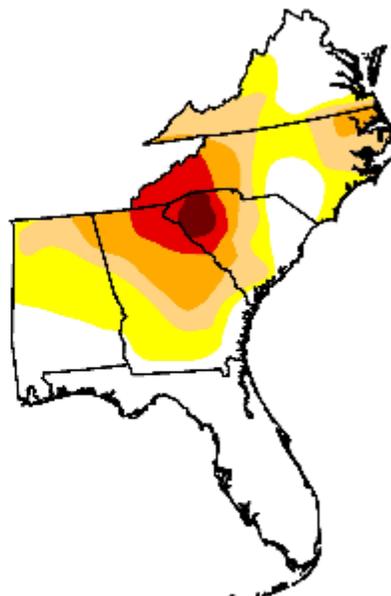
# U.S. Drought Monitor

## Southeast

September 9, 2008  
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	43.3	56.7	35.1	18.7	7.6	1.5
Last Week (09/02/2008 map)	34.5	65.5	42.6	20.0	7.6	1.5
3 Months Ago (06/17/2008 map)	13.5	86.5	61.8	24.1	10.5	0.9
Start of Calendar Year (01/01/2008 map)	9.6	90.4	74.3	58.5	41.0	22.0
Start of Water Year (10/02/2007 map)	10.1	89.9	77.9	63.8	45.2	24.0
One Year Ago (09/11/2007 map)	5.7	94.3	80.6	62.7	44.7	19.2



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>

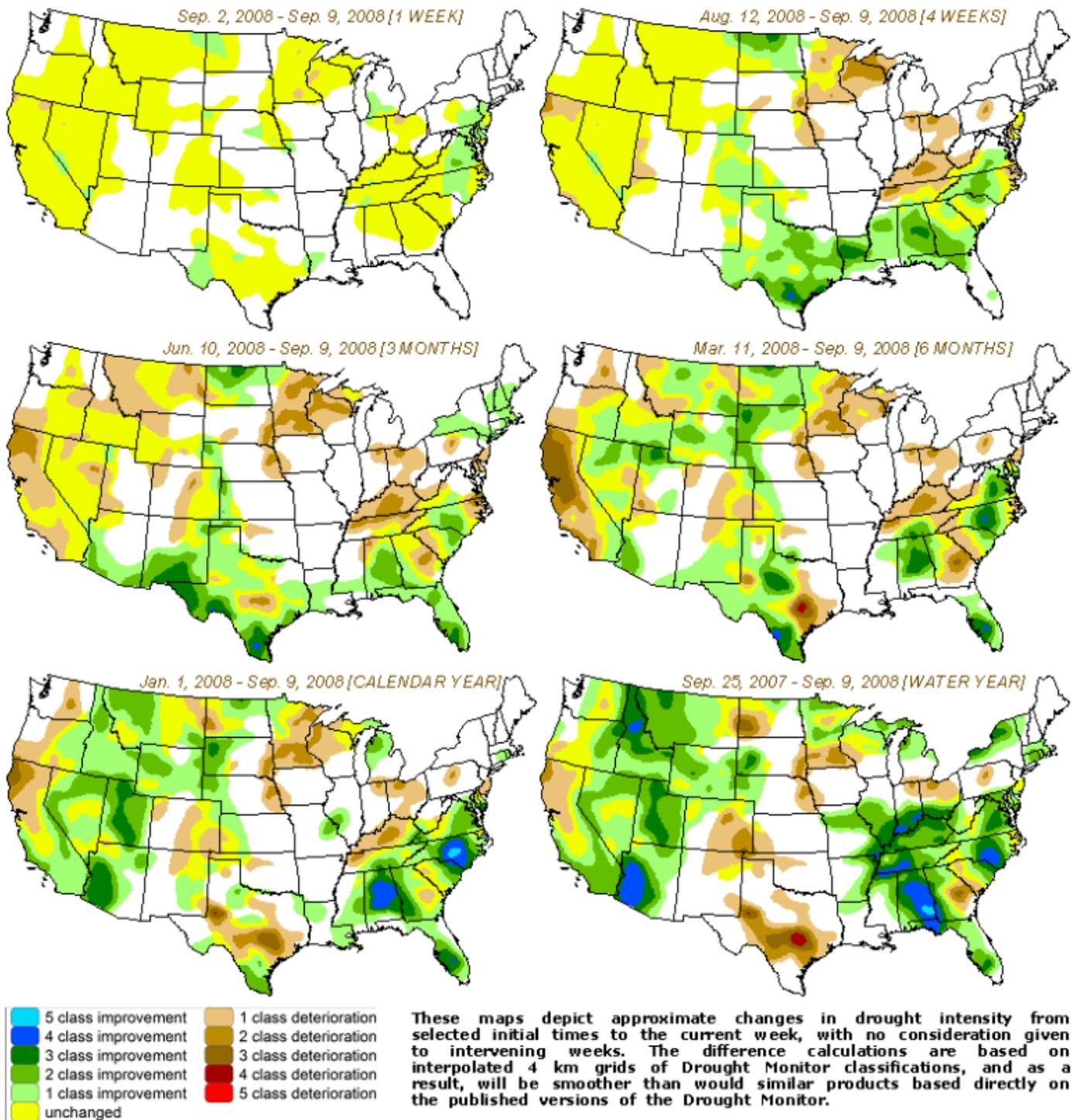


Released Thursday, September 11, 2008  
Author: David Miskus, JAWF/CPC/NOAA

Fig. 3b: Drought Monitor for the Southeastern shows significant improvement (D0 to D3) since last week. A small area of D4 continues over NW South Carolina.

Ref: [http://www.drought.unl.edu/dm/DM\\_southeast.htm](http://www.drought.unl.edu/dm/DM_southeast.htm)

## Drought Monitor Classification Changes for Selected Time Periods

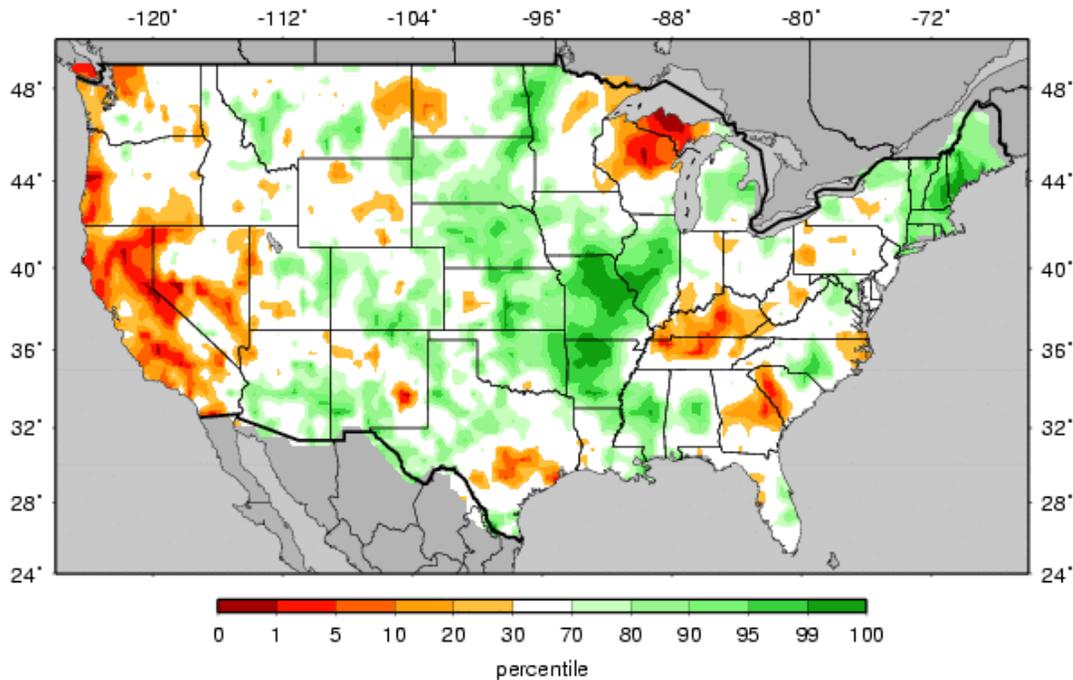


**Fig. 3c: Drought Monitor classification changes. Note improvement over the Mid-Atlantic States this past week.**

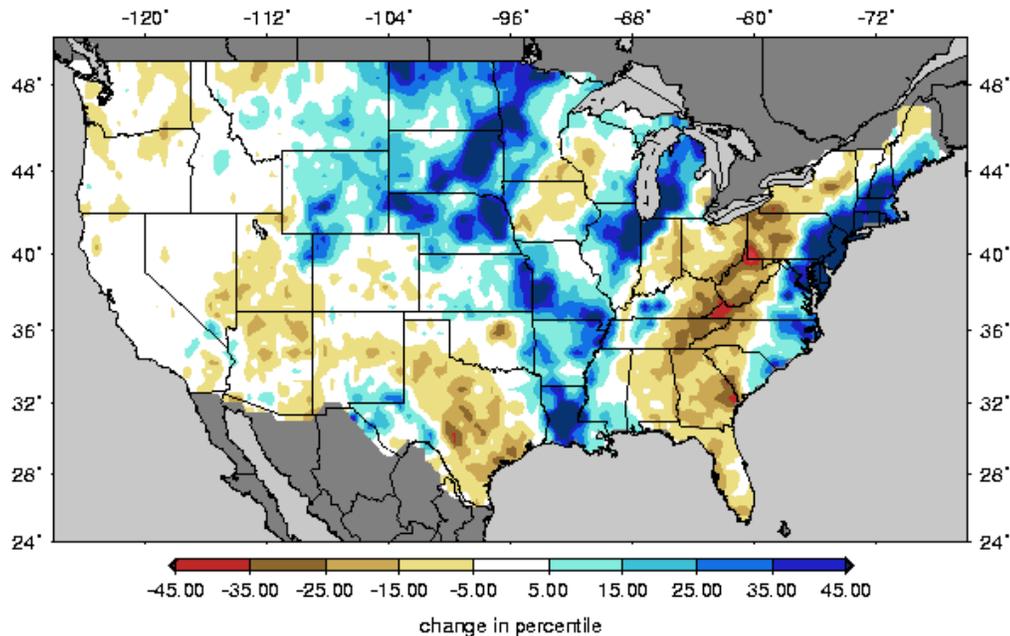
Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>

## Weekly Snowpack and Drought Monitor Update Report

MULTIMODEL Soil Moisture Percentiles (wrt/ 1920-2003)  
20080909



Change in Soil Moisture Percentiles (wrt/ 1915-2003)  
for the week 20080902 to 20080909



**Figs. 4a & 4b: Soil Moisture Ranking and change in percentile based on 1915-2003 climatology for this past week. The driest conditions persist over California and part of Nevada, Wisconsin, and Kentucky (Fig. 5). Last week saw a significant increase in soil moisture over the Eastern Seaboard (TD Hanna) and central region of the nation. Significant decreases in soil moisture occurred over the Appalachian Mountains.**

Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.multimodel.sm\\_qnt.gif](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](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.vic.sm_qnt.1wk.gif)

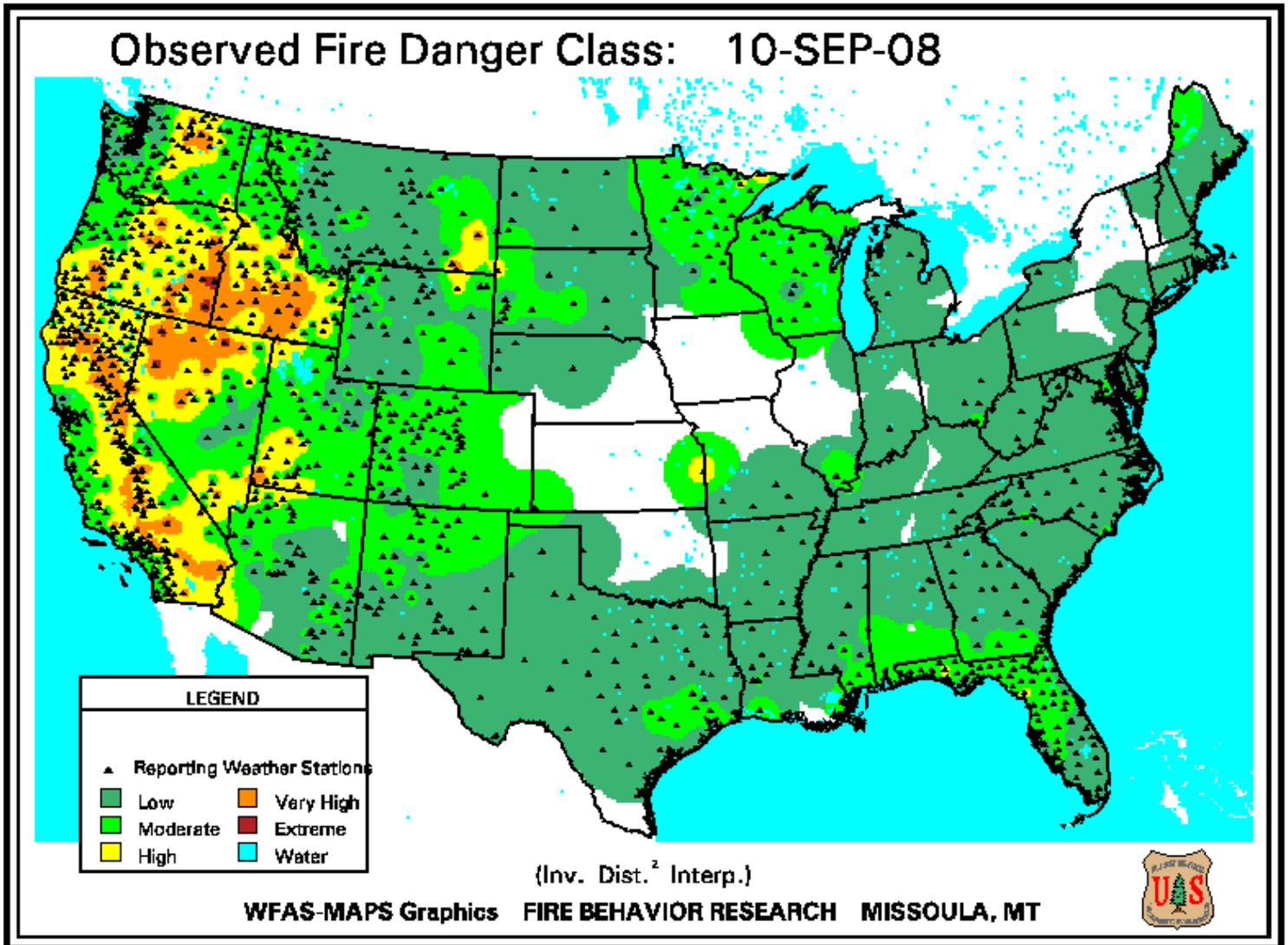
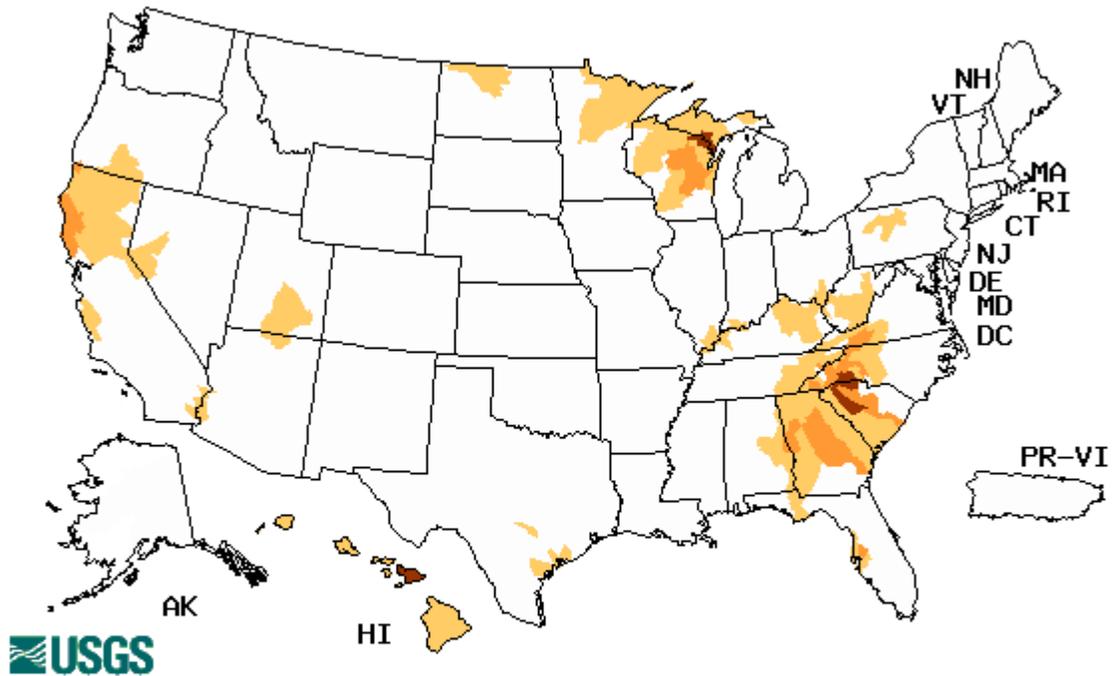


Fig. 5. Observed Fire Danger Class. Note some improvement in fire threat over portion of the West since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

Ref: [http://www.fs.fed.us/land/wfas/fd\\_class.gif](http://www.fs.fed.us/land/wfas/fd_class.gif)

# Weekly Snowpack and Drought Monitor Update Report

Wednesday, September 10, 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.

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

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- September 9, 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/>.

**Weather Summary:** After meandering Tropical Storm Fay dumped heavy rains on the Southeast in late August, two more tropical systems impacted the lower 48 States. After raking Louisiana, slow-moving Hurricane Gustav drenched the lower and middle Mississippi valleys and middle Great Lakes region, while fast-tracking Tropical Storm Hanna inundated the eastern portions of the Atlantic Coast States. Meanwhile, feeder bands from Tropical Storm Hanna soaked Puerto Rico and flooded northern Haiti.

Spotty, locally heavy thunderstorms dropped 1 to 4 inches of rain on parts of the central and southern Plains; however, only light rains fell on the upper Midwest and in-between the heavy rain tracks of Gustav and Hanna, particularly on the core D2-D4 drought areas of the southern Appalachians. Unseasonably cool weather enveloped the Rockies, Plains, and Mississippi River Valley, while above-normal temperatures prevailed in California, Arizona, and the eastern third of the nation.

**The Northeast and mid-Atlantic:** Tropical Storm Hanna (*see Delta and Southeast below*) rapidly tracked northeastward, dumping moderate to heavy rains on eastern sections of the mid-Atlantic and New England. A wide swath of more than 2 inches was measured in the eastern half of Virginia, most of Maryland, Delaware, and New Jersey, eastern Pennsylvania, and points northeastward. Isolated amounts of over 9 inches were measured south of Washington, D.C., causing flash flooding in Prince William County, VA. As a result, a 1-category reduction was made in the aforementioned areas as short-term dryness D0(A) was eliminated. Moderate drought was alleviated in the Delmarva Peninsula and southern New Jersey, but D0 remained as rains from Hanna were lower (less than 2 inches).

Although the bulk of significant rains from Hanna stayed east of the Appalachians, a cold front on Monday produced 1 to 2 inches of rain that shrank the D0-D1 area of central Pennsylvania. In addition, the Monday thunderstorms insured that short-term dryness D0(A) did not spread into western Pennsylvania and northern West Virginia, another area missed by Hanna.

**Midwest:** In the eastern Corn Belt, rains from Gustav dumped over 2 inches on northwestern Indiana and much of Lower Michigan, including almost 5 inches near Grand Rapids, MI, eliminating the western and northern D0 area, and trimming away the western edge of D1. In southwestern Ohio, thunderstorms dropped 1 to 2 inches of rain, further easing D0(A) there. Just to the north, however, rainfall sharply diminished, and weekly totals in northeastern Indiana and northwestern Ohio were less than 0.5 inches, maintaining D0 and even adding a new D1 area in the latter region. Since July 9, only 44% of normal precipitation (2.64 inches observed vs. 6.03 inches normal) has been measured at Toledo, OH.

In the western Corn Belt, Gustav dumped 1.5 to 2 inches of rain on northwestern Missouri and northeastern Kansas, eliminating any lingering abnormal dryness, but dropped less than 0.5

## Weekly Snowpack and Drought Monitor Update Report

inches on southwestern Iowa, maintaining D0-D1 there. In the upper Midwest, Gustav completely bypassed Minnesota and northern Wisconsin, and deficits since early summer continued to grow. Since June 17, under 60% of normal precipitation was measured across most of northeastern, north-central, and southeastern Minnesota, including less than 40% between Grand Rapids and Brainerd where a small D2 was added. With similar departures existing across northern Wisconsin, and 28-day USGS stream flow values in the lower 10th percentile, D1 was expanded across the upper Midwest.

**The Delta and Southeast:** Although heavy rains from Hurricane Gustav mainly fell on non-drought areas of the lower and middle Mississippi valleys, a small remaining area of D0 in west-central Louisiana and extreme southeastern Texas was alleviated as 1 to 6 inches of rain fell. Additional Gustav relief also occurred in northeastern Mississippi and western Tennessee as 1.5 to 3 inches removed abnormal dryness there.

Farther east, Tropical Storm Hanna made landfall near the South and North Carolina border early in the morning Saturday, and rapidly tracked northeastward. Totals were greatest to the northwest of Hanna's track and less to the east where winds were stronger. In the Carolinas, storm totals of 2 to 6 inches, locally to 9 inches, occurred in eastern South Carolina and east-central North Carolina, improving conditions by at least one category. In eastern North Carolina, amounts under 2 inches improved short-term dryness, but with long-term deficits still persisting and real-time wells and stream flows still at near-record low levels, only the impact type designation changed (AH to H). Farther west in the core D2-D4 areas of the southern Appalachians, little to no rain fell courtesy of Hanna and Gustav, and drought conditions remained. In fact, 7-day USGS average stream flows ending September 9 were still near or at record-low values from northern Georgia northward into southwestern Virginia.

**The Plains:** Scattered showers and thunderstorms dropped 1 to 4 inches on parts of the Great Plains, specifically in northwestern North Dakota, most of Nebraska and Kansas, northern Oklahoma, southeastern New Mexico, and southwestern and west-central Texas. The rains were enough to make some 1-category improvements in the aforementioned areas. In North Dakota, however, the driest conditions shifted southward into southwestern sections, namely Bowman and Adams counties, while improvements were made to northern drought areas. In Nebraska, 1-2 inches of rain eliminated D1 in the Panhandle and southeastern sections, while locally heavy thunderstorms trimmed the D0 in southwestern Kansas and extreme northern Oklahoma. Farther south, scattered thundershowers late in the period provided relief from abnormal dryness in southeastern New Mexico and southwestern and west-central Texas, especially around San Angelo, where a September 8 record of 3.05 inches of rain fell.

**The West:** Mostly dry weather prevailed in the West, with cooler conditions (weekly temperatures averaged 4 to 12 degrees F below normal) in the Rockies and eastern Great Basin. Above-normal departures (+2 to +6 degrees F), however, remained in California and Arizona, with triple-digit highs in California's Central Valley. According to the NIFC, 5 large wildfires remained active in northern California, while California's pastures and ranges were still rated 100% poor or very poor, according to USDA/NASS. With continued declines in pasture and range productivity, the D2 was expanded northward into counties of northwestern (Del Monte) and northeastern (Lassen) California. In central Nevada, low flows on the Humboldt River below Winnemucca have reduced irrigation allocations to 58% of normal below Rye Patch reservoir, dropping Pershing County into D1 status.

In contrast, a reassessment from the local western experts suggested improvement in some western Nevada and eastern California counties where water year-to-date precipitation (since Oct. 1, 2007) was at or above normal and no water restrictions were in place. Accordingly, counties in western Nevada (northern Churchill, southern Mineral, Esmeralda), southern Nevada

## Weekly Snowpack and Drought Monitor Update Report

(southern Clark), and eastern California (southern Mono and northern Inyo) were changed from D1 to D0.

**Puerto Rico and Hawaii:** Heavy, widespread rains from Tropical Storm Hanna feeder bands (the center passed well to the west of Puerto Rico) dropped 5 to 12 inches across much of the island, producing localized flooding but improving drought conditions by one category. D0(H), however, was left where the former D1 area was as long-term deficiencies (50-75% of normal rainfall at 90- and 180-days) remained. In Hawaii, light occasional showers, more frequent on the windward than leeward sides, were not enough for any improvement, keeping conditions status-quo.

**Looking Ahead:** During the next 5 days (September 11-15), all eyes will be watching Hurricane Ike, currently intensifying in the central Gulf of Mexico and tracking west-northwestward. Ike is expected to make landfall in Texas early this weekend as a dangerous Category 3 hurricane, then curve north into the south-central Plains, and northeast into the middle Mississippi Valley. Expect heavy rains to occur along the track of Ike. Meanwhile, cooler, drier air will prevail in the Northeast, while wet weather will continue along a front extending from western Texas through the Carolinas. A second system is expected to bring rain across the northern and central Plains and Midwest. The Far West should remain warm and dry throughout the period.

The CPC 6-10 day forecast (September 16-20) calls for above-normal chances of rain in the Southwest and Sierra Nevada and southern Texas, and from the Appalachians eastward. Drier than usual weather is expected from the Pacific Northwest southeastward into the central Plains and northeastward into the upper Midwest. Unseasonable warmth is predicted for the Northwest and Great Basin, with subnormal readings in the South and East (except Florida).

**Author:** [David Miskus, Joint Agricultural Weather Facility, CPC/NCEP/NWS/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 September 10, 2008