



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

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**Weekly Report - Snowpack / Drought Monitor Update**      **Date: October 4, 2007**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Temperature:** During the past seven days, the western mountain SNOTEL sites were up to 10 degrees below normal while the eastern most sites were near normal (Fig. 1). At lower elevation weather stations the same pattern of temperatures occurred with coldest departures from normal over the Great Basin (Fig. 1a).

**Precipitation:** For the past week, heavier precipitation (rain and snow) fell over the Pacific Northwest and over portions of the Rockies. Little precipitation fell over southern California, western Nevada, and southwestern Arizona (Fig. 2). For the 2007 Water Year (began 1 October 2006), very low precipitation totals occurred over California and the Interior West while the Central and Southern Rockies and the Northern Great Plain experienced greater than normal totals.(Fig. 2a).

## **WESTERN DROUGHT STATUS**

**The West:** Two fast-moving Pacific storms raced across the Northwest U.S. during the period. The heaviest rain and snow fell from the Cascades to the Pacific coast where drought or abnormally dry conditions have been absent. Precipitation amounts generally less than 1 inch fell in areas in need of drought relief, which was not sufficient for widespread improvements. But combined with precipitation that fell the previous week across the northern Rocky Mountains, precipitation totals of 1 to 3 inches supported a 1-category improvement, from D2(AH) to D1(H) over a small area of western Montana. Precipitation during the past month has improved short-term conditions to the point that the designation was changed from AH to H across much of Montana.

In western and northern Colorado, precipitation that fell during the past two weeks (1 to 4 inches) allowed for the removal of D0(H) conditions from western Colorado along with a small retraction of D0(H) and D1(H) conditions in extreme eastern Utah. Conditions also improved in much of northern Colorado, allowing for D0(H) to be pushed farther north along the Wyoming border. With the retraction of D2(H) and D1(H) to extreme southwest Wyoming, D2 conditions are now absent from Colorado and only a small area of D1(H) remains in the northwest corner of the state. **Author:** [Jay Lawrimore, National Climatic Data Center, NOAA](http://www.nclimatic.com)

***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

## Weekly Snowpack and Drought Monitor Update Report

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, and 3b).

### SOIL MOISTURE

Soil moisture (Fig. 4), 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. 5 and 5a 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](http://water.usgs.gov/cgi-bin/waterwatch?state=us&map_type=dryw&web_type=map).

### VEGETATION HEALTH

The images (Fig. 7) are color-coded maps of vegetation condition (health) estimated by the Vegetation and Temperature Condition Index (VT). The VT is a numerical index, which changes from 0 to 100 characterizing change in vegetation conditions from extremely poor (0) to excellent (100). Fair conditions are coded by green color (50), which changes to brown and red when conditions deteriorate and to blue when they improve.

<http://www.orbit.nesdis.noaa.gov/smcd/emb/vci/usa.html>. 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>

### 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>

## **Weekly Snowpack and Drought Monitor Update Report**

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

/s/ NOLLER HERBERT  
Director, Conservation Engineering Division

# Weekly Snowpack and Drought Monitor Update Report

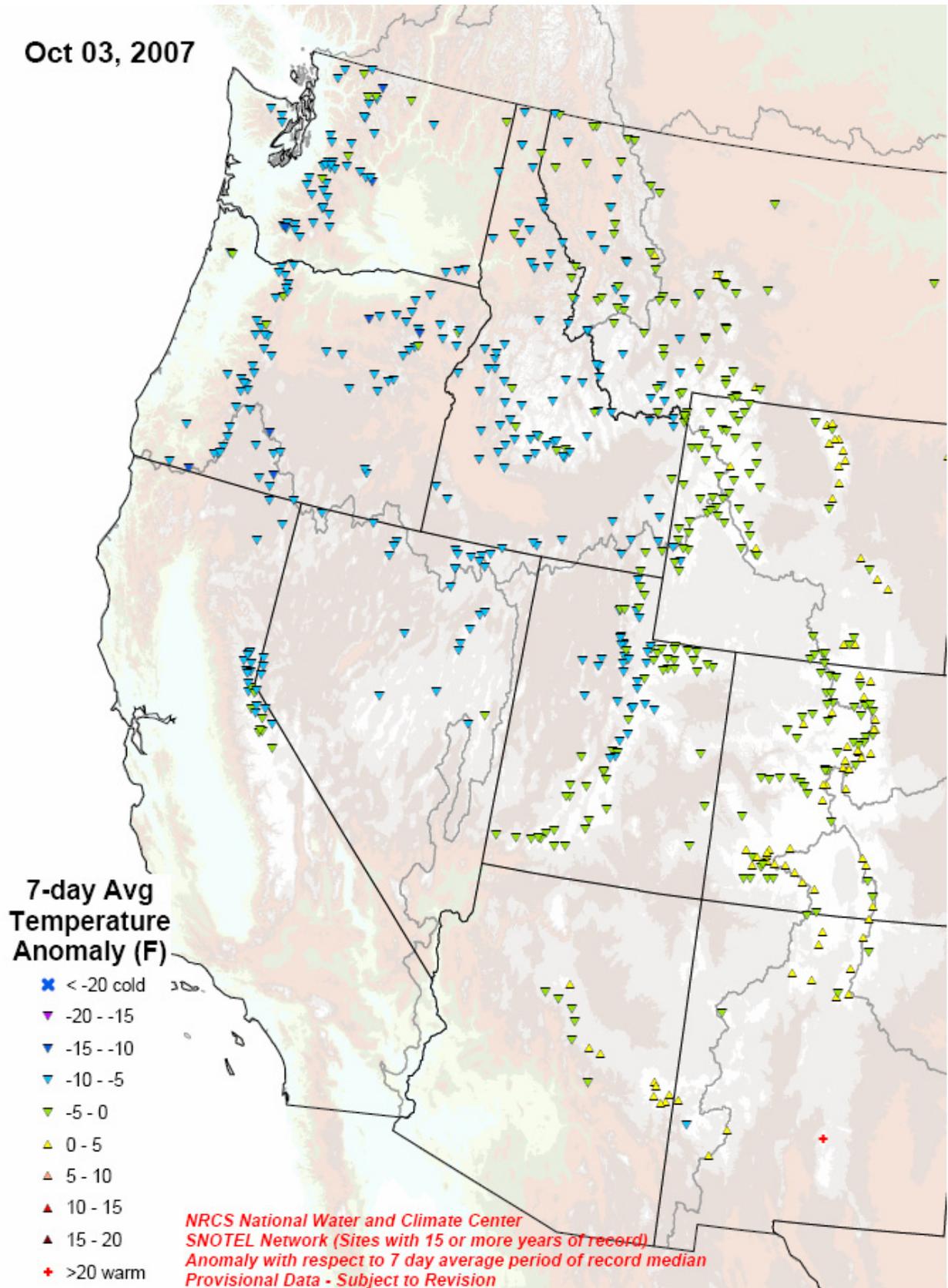
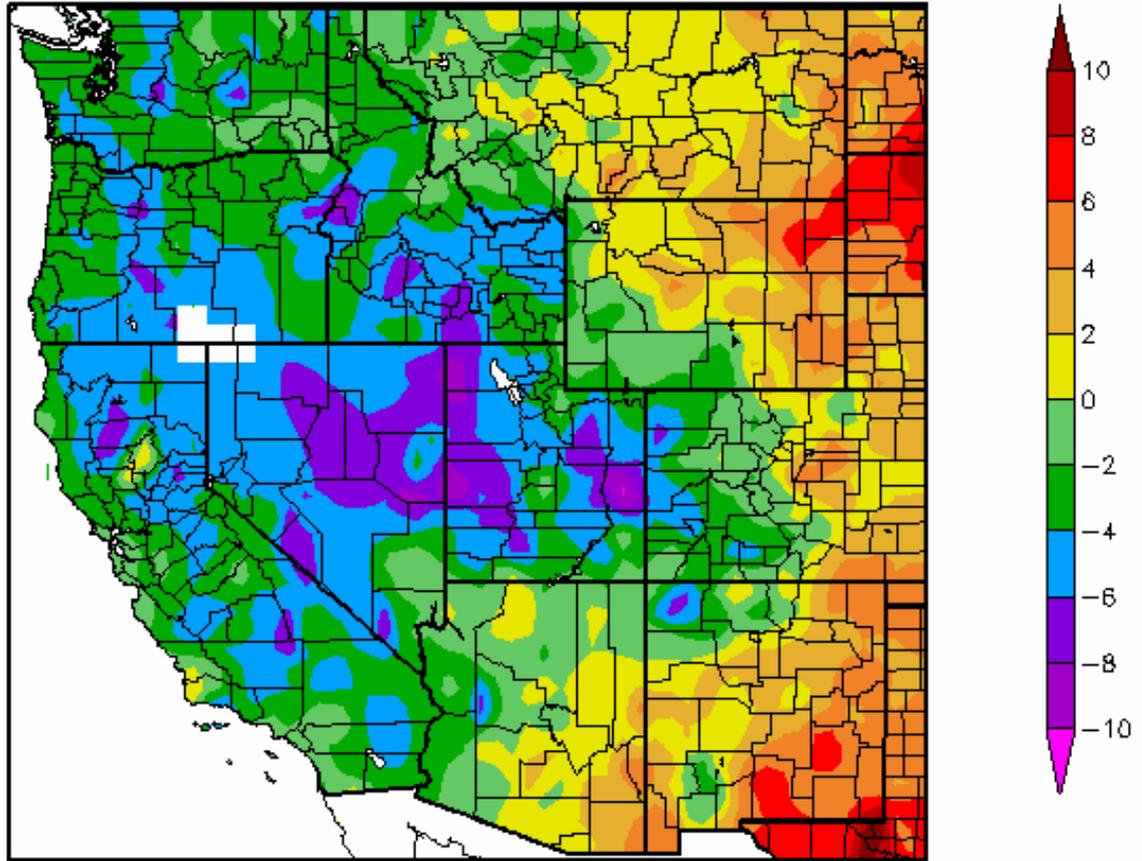


Fig. 1. SNOTEL 7-day average temperature anomaly.

Ref: <http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomay.pdf>

Departure from Normal Temperature (F)  
9/26/2007 - 10/2/2007



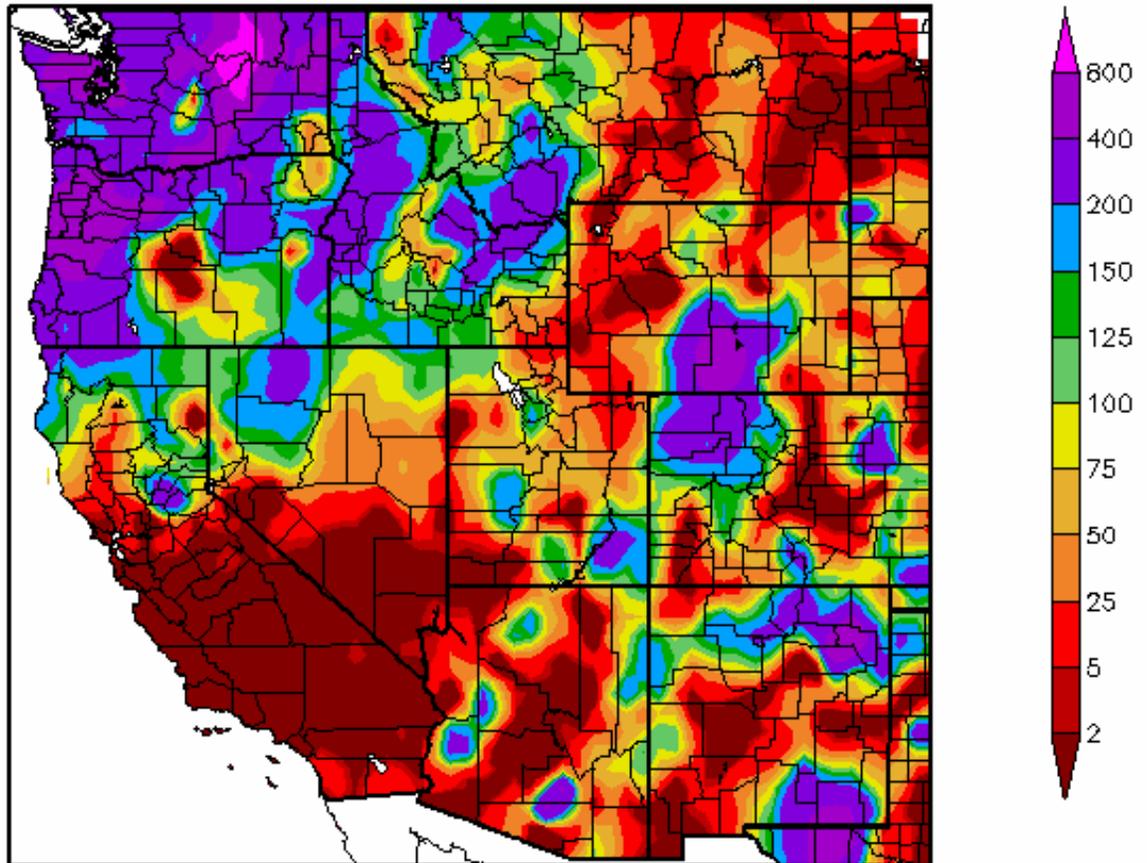
Generated 10/3/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 1a. September 26 – October 2, 2007: Temperature departure from normal show warmer than normal temperatures over the Great Plains with coolest temperatures over much of Interior West.**

Ref: [http://www.hprcc.unl.edu/maps/index.php?action=update\\_region&region=WRCC](http://www.hprcc.unl.edu/maps/index.php?action=update_region&region=WRCC)

Percent of Normal Precipitation (%)  
9/26/2007 - 10/2/2007



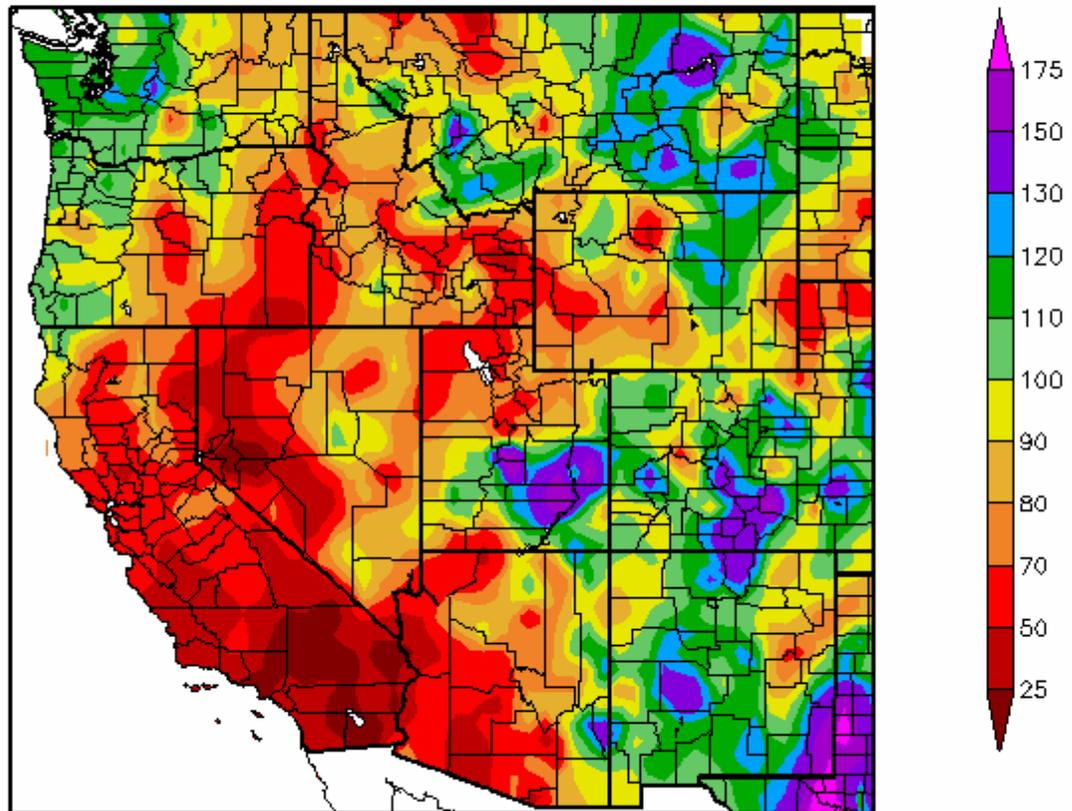
Generated 10/3/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 2. Preliminary precipitation totals for the 7-day period ending 2 October 2007 shows rain and snow falling across much of the Pacific Northwest and portions of the Rockies. However, little precipitation occurred over southern California and southern Nevada.**

Ref: [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)

Percent of Normal Precipitation (%)  
10/1/2006 – 9/30/2007



Generated 10/1/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

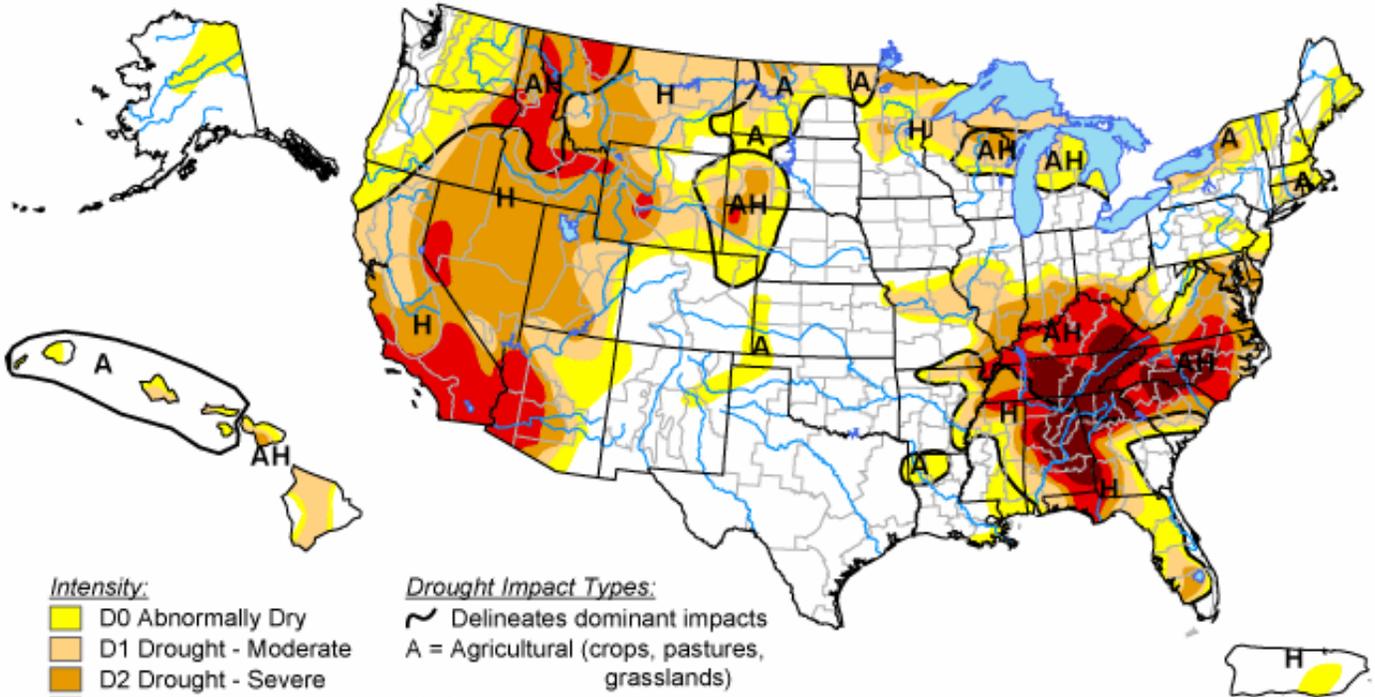
**Fig. 2a.** Final 2007 Water Year (since October 1) precipitation map as a percent of normal shows that California, western Nevada, southwestern Arizona and the Intermountain West all had significantly below normal precipitation totals.

Ref: [http://www.hprcc.unl.edu/maps/index.php?daterange=AnnSep&year=07&action=update\\_userdate](http://www.hprcc.unl.edu/maps/index.php?daterange=AnnSep&year=07&action=update_userdate)

# U.S. Drought Monitor

October 2, 2007

Valid 8 a.m. EDT



Intensity:

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

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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



Released Thursday, October 4, 2007

Author: Jay Lawrimore/Liz Love-Brotak, NOAA/NESDIS/NCDC

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

Fig. 3. Current Drought Monitor weekly summary.

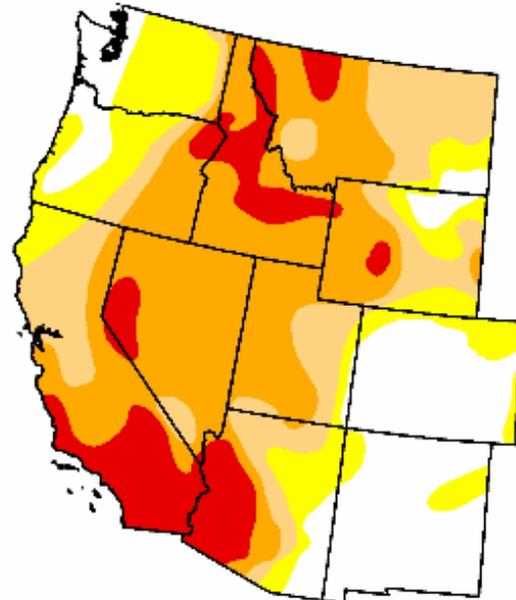
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

# U.S. Drought Monitor

## West

October 2, 2007  
Valid 7 a.m. EST

|   | Drought Conditions (Percent Area) |       |       |       |       |     |
|---|-----------------------------------|-------|-------|-------|-------|-----|
|   | None                              | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4  |
| Current                                       | 22.0                              | 78.0  | 62.3  | 44.7  | 12.4  | 0.0 |
| Last Week<br>(09/25/2007 map)                 | 20.3                              | 79.7  | 63.0  | 45.4  | 12.4  | 0.0 |
| 3 Months Ago<br>(07/10/2007 map)              | 24.9                              | 75.1  | 57.6  | 31.8  | 9.4   | 0.0 |
| Start of<br>Calendar Year<br>(01/02/2007 map) | 51.2                              | 48.8  | 25.8  | 9.4   | 4.0   | 0.0 |
| Start of<br>Water Year<br>(10/02/2007 map)    | 22.0                              | 78.0  | 62.3  | 44.7  | 12.4  | 0.0 |
| One Year Ago<br>(10/03/2006 map)              | 43.5                              | 56.5  | 33.5  | 16.9  | 5.2   | 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, October 4, 2007

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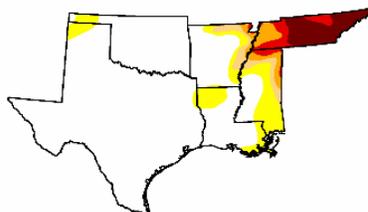
Fig. 3a. Drought Monitor for the Western States with statistics over various time periods. No significant change since last week's map. Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)

# Weekly Snowpack and Drought Monitor Update Report

## U.S. Drought Monitor South

October 2, 2007  
Valid 7 a.m. EST

|   | Drought Conditions (Percent Area) |       |       |       |       |     |
|---|-----------------------------------|-------|-------|-------|-------|-----|
|   | None                              | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4  |
| Current                                       | 77.6                              | 22.4  | 12.6  | 10.2  | 7.5   | 4.9 |
| Last Week<br>(09/25/2007 map)                 | 79.0                              | 21.0  | 13.2  | 10.2  | 7.4   | 4.0 |
| 3 Months Ago<br>(07/10/2007 map)              | 80.2                              | 19.8  | 13.0  | 8.7   | 4.9   | 0.5 |
| Start of<br>Calendar Year<br>(01/02/2007 map) | 39.8                              | 60.2  | 33.3  | 22.3  | 12.1  | 1.9 |
| Start of<br>Water Year<br>(10/02/2007 map)    | 77.6                              | 22.4  | 12.6  | 10.2  | 7.5   | 4.9 |
| One Year Ago<br>(10/03/2006 map)              | 22.6                              | 77.4  | 48.4  | 28.6  | 13.0  | 0.8 |



**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>

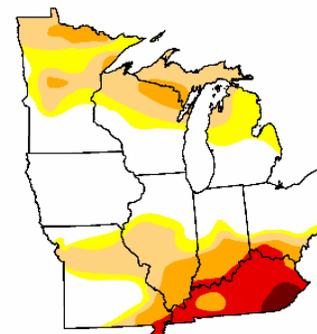


Released Thursday, October 4, 2007  
Author: J. Lawrimore/L. Love-Brotak, NOAA/NESDIS/NCDC

## U.S. Drought Monitor Midwest

October 2, 2007  
Valid 7 a.m. EST

|   | Drought Conditions (Percent Area) |       |       |       |       |     |
|---|-----------------------------------|-------|-------|-------|-------|-----|
|   | None                              | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4  |
| Current                                       | 46.3                              | 53.7  | 39.3  | 18.8  | 8.6   | 1.2 |
| Last Week<br>(09/25/2007 map)                 | 45.1                              | 54.9  | 40.7  | 23.7  | 10.2  | 0.6 |
| 3 Months Ago<br>(07/10/2007 map)              | 39.3                              | 60.7  | 34.0  | 7.5   | 0.3   | 0.0 |
| Start of<br>Calendar Year<br>(01/02/2007 map) | 57.8                              | 42.2  | 18.0  | 11.1  | 7.1   | 0.0 |
| Start of<br>Water Year<br>(10/02/2007 map)    | 46.3                              | 53.7  | 39.3  | 18.8  | 8.6   | 1.2 |
| One Year Ago<br>(10/03/2006 map)              | 63.5                              | 36.5  | 21.9  | 10.3  | 7.7   | 0.0 |



**Intensity:**

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

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

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

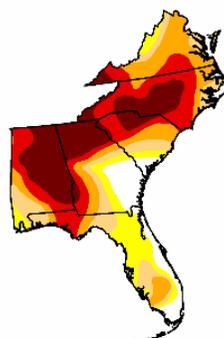


Released Thursday, October 4, 2007  
Author: J. Lawrimore/L. Love-Brotak, NOAA/NESDIS/NCDC

## U.S. Drought Monitor Southeast

October 2, 2007  
Valid 7 a.m. EST

|   | Drought Conditions (Percent Area) |       |       |       |       |      |
|---|-----------------------------------|-------|-------|-------|-------|------|
|   | None                              | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4   |
| Current                                       | 10.1                              | 89.9  | 77.9  | 63.8  | 45.2  | 24.0 |
| Last Week<br>(09/25/2007 map)                 | 10.4                              | 89.6  | 76.7  | 59.0  | 41.0  | 15.5 |
| 3 Months Ago<br>(07/10/2007 map)              | 4.1                               | 95.9  | 71.7  | 38.2  | 18.1  | 4.6  |
| Start of<br>Calendar Year<br>(01/02/2007 map) | 52.2                              | 47.8  | 10.2  | 1.5   | 0.0   | 0.0  |
| Start of<br>Water Year<br>(10/02/2007 map)    | 10.1                              | 89.9  | 77.9  | 63.8  | 45.2  | 24.0 |
| One Year Ago<br>(10/03/2006 map)              | 47.0                              | 53.0  | 33.2  | 0.0   | 0.0   | 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

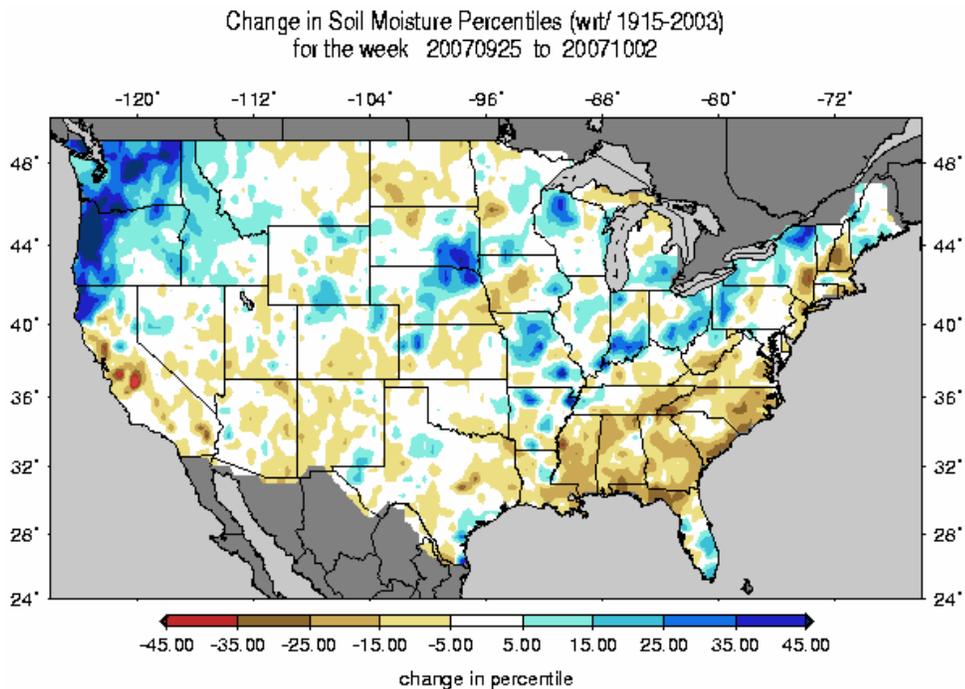
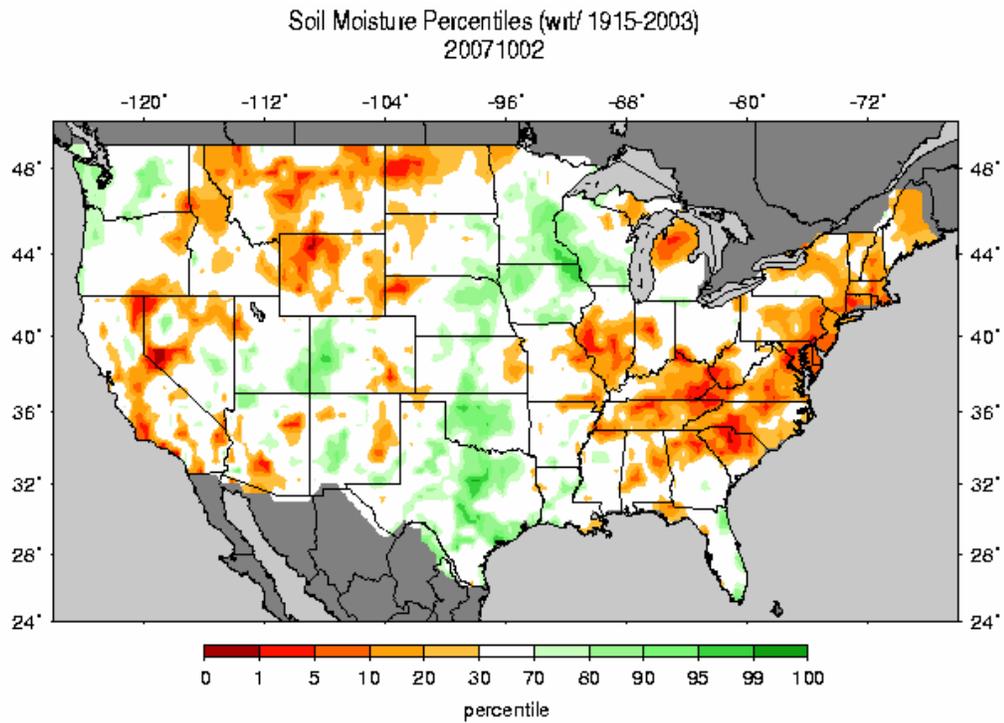
<http://drought.unl.edu/dm>



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**Fig. 3b. Drought Monitor for the South, Midwest and Southeastern States with statistics over various time periods shows some of the severest drought conditions in the US.**

## Weekly Snowpack and Drought Monitor Update Report



**Figs. 4 and 4a: Soil Moisture Ranking Percentile based on 1915-2003 climatology. Note major improvement over much of the Pacific Northwest for the 2<sup>nd</sup> straight week.**

Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm\\_gnt.gif](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_gnt.gif) and  
[http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm\\_gnt.1wk.gif](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_gnt.1wk.gif).

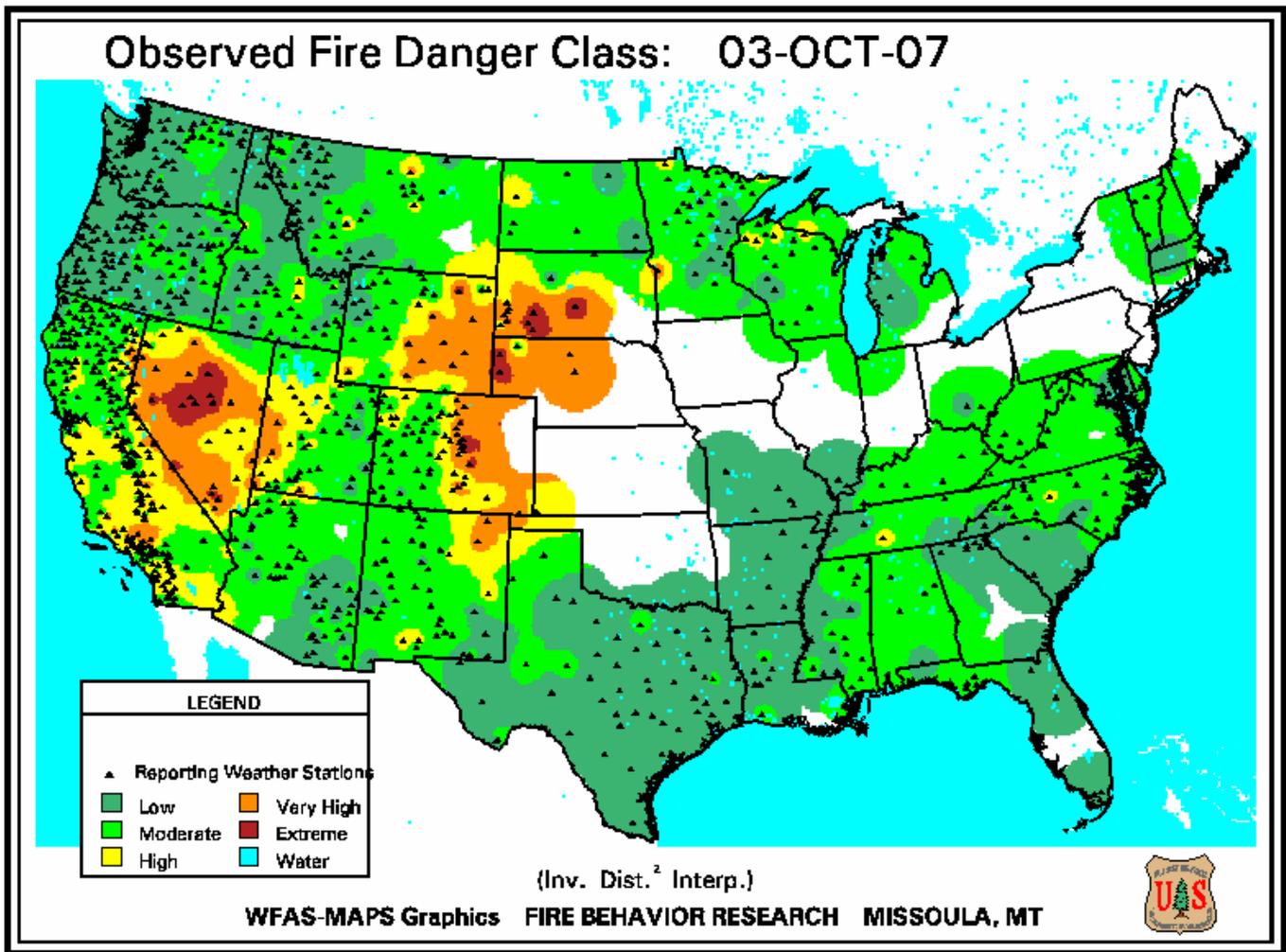
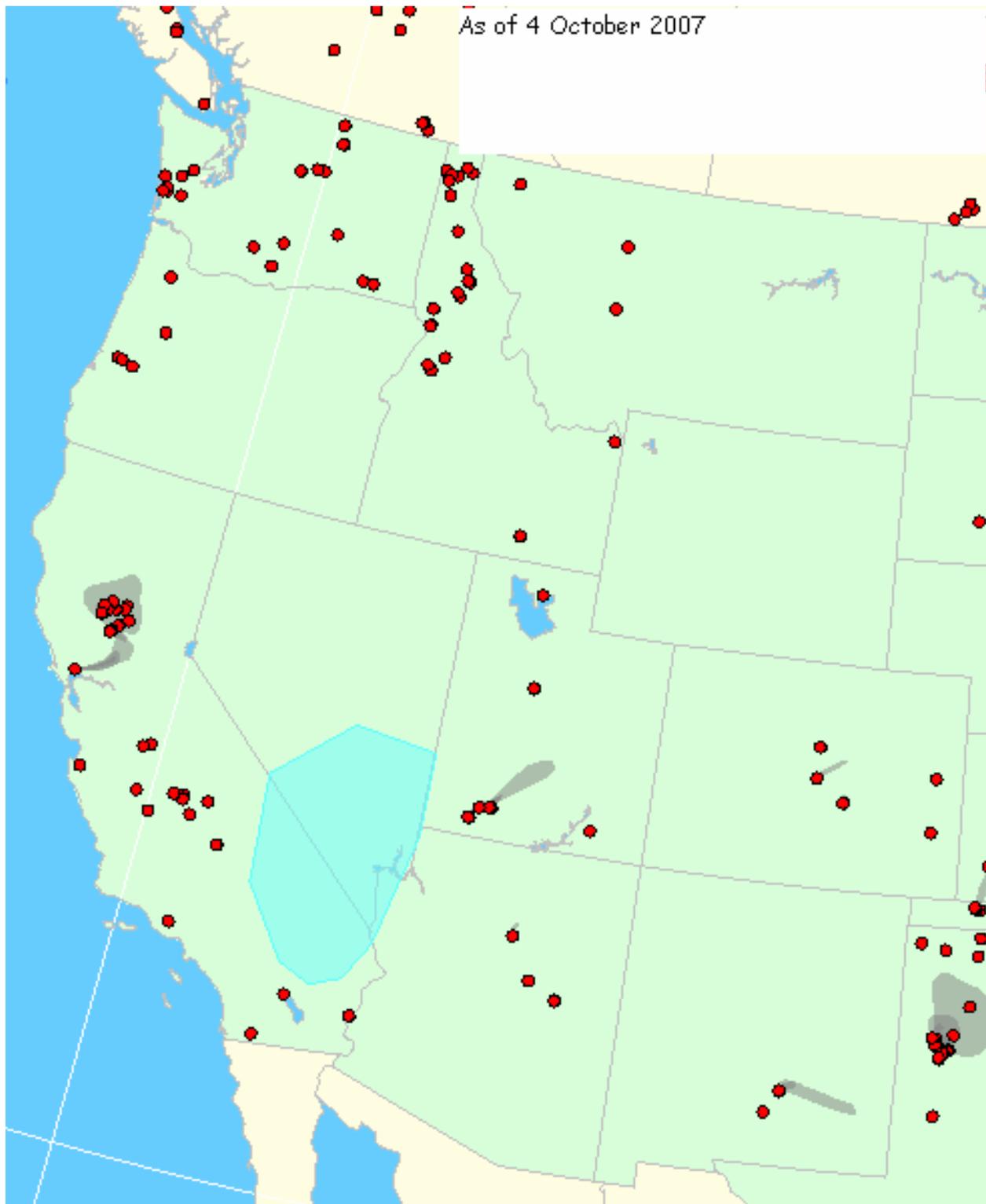


Fig. 5. Observed Fire Danger Class. Conditions have greatly worsened over Nevada and the Front Range of the Central and Southern Rockies since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

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

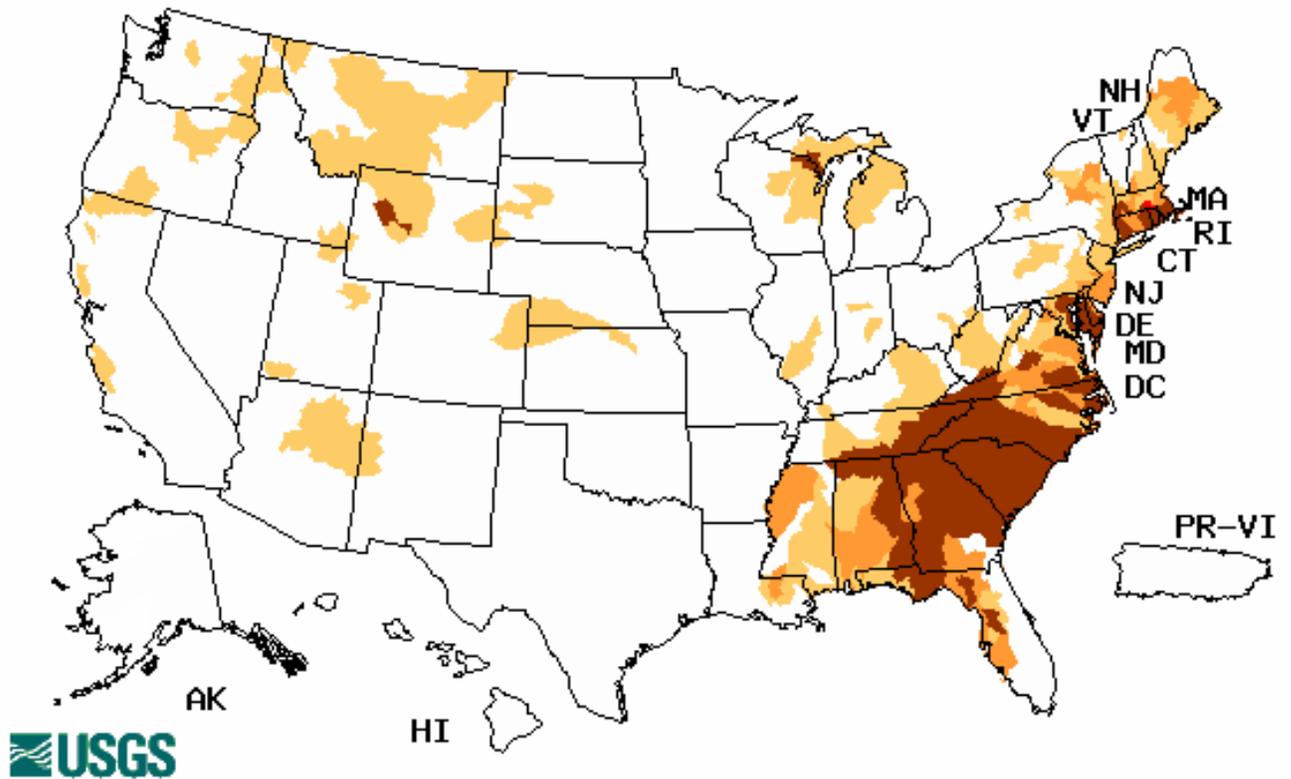


**Fig. 5a.** Location of active wildfires as detected from satellite across the West as of 4 October 2007. Gray areas depict smoke and blue areas depict fire potential.

Ref: <http://www.firedetect.noaa.gov/viewer.htm>

# Weekly Snowpack and Drought Monitor Update Report

Wednesday, October 03, 2007

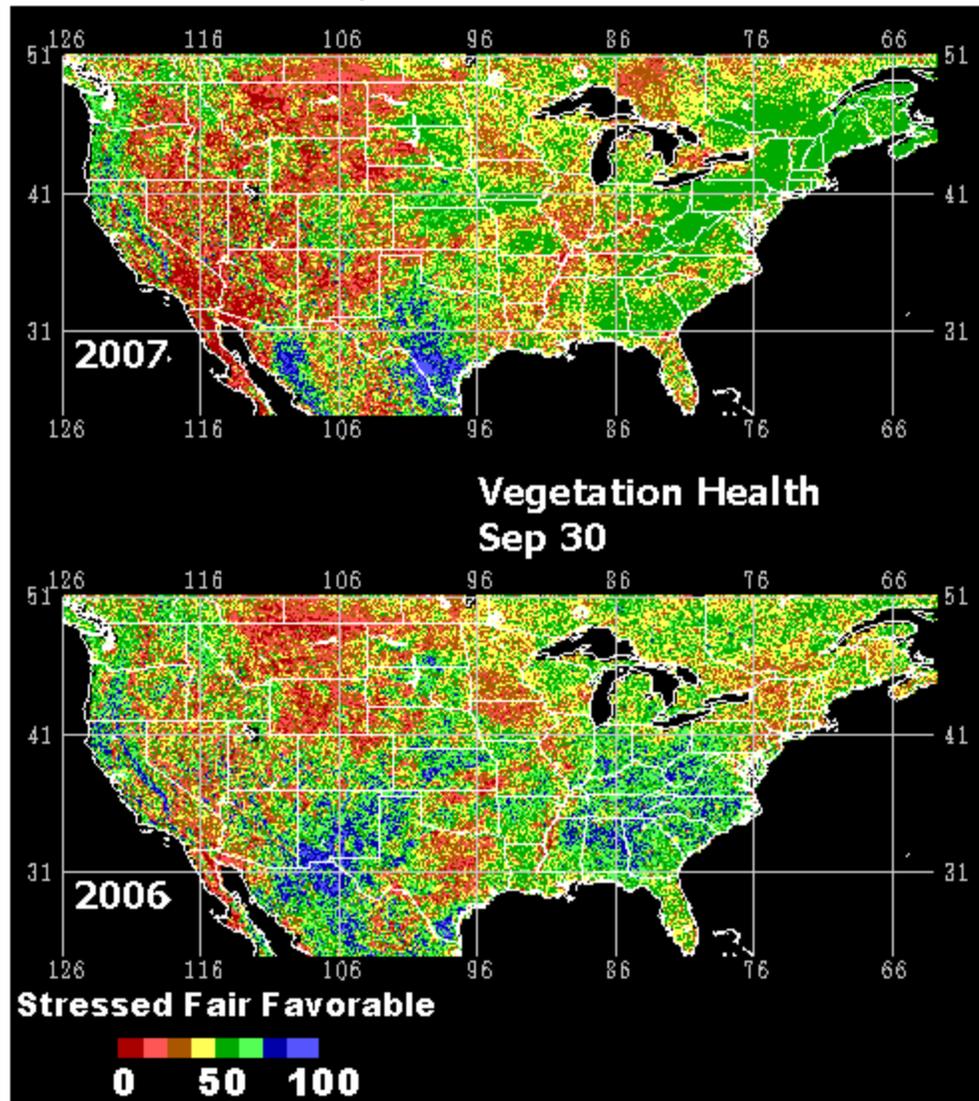


| Explanation - Percentile classes |                           |                             |              |   |
|----------------------------------|---------------------------|-----------------------------|--------------|---|
| Low                              | $\leq 5$                  | 6-9    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

Fig. 6. This week's map shows improvement over the Pacific Northwest but some worsening over portions of the Southeastern States since last week.

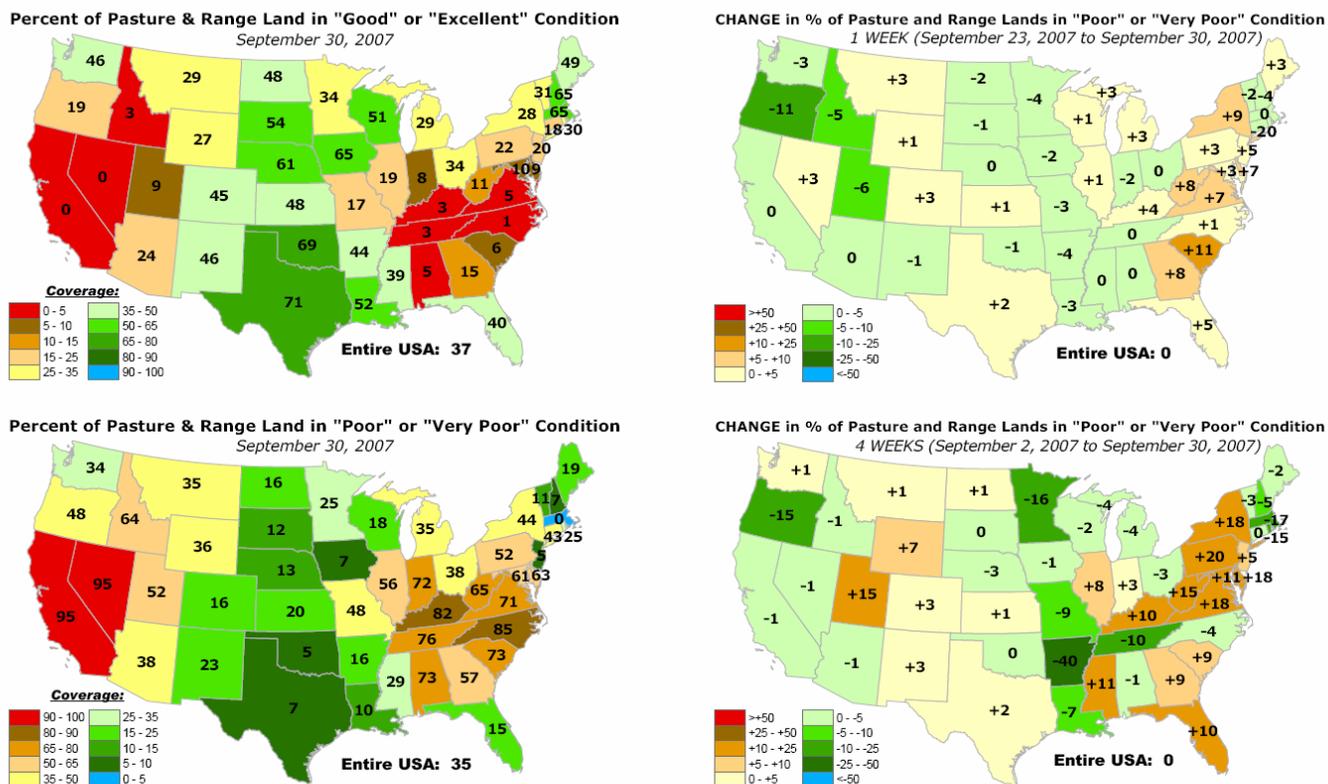
Ref: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

**Vegetation Health: Red - stressed. Green - fair,  
Blue - favorable, White - Cold Surface**



**Fig. 7:** This remote satellite AVHRR map shows stressed vegetation as compared to last year. Not worse conditions over the Interior West (especially over the Southwestern States) as compared to last September. Note: except for irrigated land, plants in the northern regions tend to show die-off as first freeze occurs.  
Ref: <http://www.orbit.nesdis.noaa.gov/smcd/emb/vci/usa.html>.

## Weekly Snowpack and Drought Monitor Update Report



**Fig. 8. Pasture and rangeland conditions for various time periods are shown above. The worst conditions exist over California, Idaho, and Nevada (left panels). During the past week, Idaho, Utah, and Oregon shows the largest decrease in poor to very poor conditions (improving lands) (top right panel) and during the past four weeks Oregon shows the largest increase improvement while Utah shows the greatest deteriorated lands (bottom right panel) over the West.**

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

## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- October 2, 2007

*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 West:** Two fast-moving Pacific storms raced across the Northwest U.S. during the period. The heaviest rain and snow fell from the Cascades to the Pacific coast where drought or abnormally dry conditions have been absent. Precipitation amounts generally less than 1 inch fell in areas in need of drought relief, which was not sufficient for widespread improvements. But combined with precipitation that fell the previous week across the northern Rocky Mountains, precipitation totals of 1 to 3 inches supported a 1-category improvement, from D2(AH) to D1(H) over a small area of western Montana. Precipitation during the past month has improved short-term conditions to the point that the designation was changed from AH to H across much of Montana.

In western and northern Colorado, precipitation that fell during the past two weeks (1 to 4 inches) allowed for the removal of D0(H) conditions from western Colorado along with a small retraction of D0(H) and D1(H) conditions in extreme eastern Utah. Conditions also improved in much of northern Colorado, allowing for D0(H) to be pushed farther north along the Wyoming border. With the retraction of D2(H) and D1(H) to extreme southwest Wyoming, D2 conditions are now absent from Colorado and only a small area of D1(H) remains in the northwest corner of the state.

**The Plains:** Much of the Dakotas received little or no precipitation during the past week, and precipitation totals for the past two to three months remained below average from central North Dakota to northwest South Dakota. Although 7- to 30-day rainfall totals were above average from southeastern North Dakota through eastern South Dakota, September rainfall was less than 50% of average elsewhere. Deteriorating conditions were reflected by an extension of D0(A) conditions from northeastern North Dakota to northwest South Dakota. There was also an expansion of D1(A) in western and extreme northeastern North Dakota and an introduction of D2(A) along the Canadian border. Elsewhere from South Dakota to Kansas there was no change in drought conditions. Heavier precipitation fell in central Nebraska, but rainfall in the drought-affected areas of western Nebraska and eastern Wyoming was generally less than 0.25 inch, and no change was made to the drought designations in this area.

**The Upper Mississippi Valley and western Great Lakes Region:** Wet weather during the past one to two weeks brought drought improvement from central Minnesota to northern Wisconsin and the Upper Peninsula of Michigan. Rainfall totals for the past two weeks exceeded 3 inches with several reports of greater than 5 inches of rain, prompting a 1-category improvement of drought in a large part of the region where conditions ranged from D3(H) to D0(H). However, continued drier-than-normal conditions led to the expansion of D1(A) in Canadian border counties in northwestern Minnesota and adjoining areas of northeastern North Dakota. In south-central Illinois, continued drier-than-average conditions led to a small extension of D2(AH) across Marion County. There have been reports of lower soybean yields in this county and fall planting of winter wheat is in jeopardy because soils are too dry for germination. Although several drought indicators suggest the D2 conditions also should be

## Weekly Snowpack and Drought Monitor Update Report

extended farther north in the state, agricultural production has been generally good, and the small number of reported impacts support retaining the D1(AH) designation in central Illinois.

**The Southeast, Mid-Atlantic, and Ohio and lower Missouri valleys:** Unusually warm and dry conditions persisted across areas of the Southeast where drought conditions have worsened during the past several months. Although the warm and dry conditions were interrupted by the passage of a cold front during the middle of the period, it weakened as it moved east and only scattered showers fell in the areas in most need of rainfall. September precipitation was less than 50% of average throughout much of the region and several locations such as Greensboro, NC, and Norfolk, VA, which normally receive more than 3 inches of rain in September, reported totals less than 1 inch for the month. The continued lack of rain and warmer-than-average temperatures following a record- to near-record warm August led to continued deterioration of conditions across a large region from South Carolina to Virginia. Extremely low USGS stream flows from the Gulf Coast to the mid-Atlantic along with low CPC soil moisture percentiles reflected the extremely dry conditions. The outbreak of several wildfires in parts of the Southeast during the past week was indicative of the extremely dry conditions. The drought also created water supply problems in some areas. In the town of Monteagle, Tennessee, in Grundy County, the town's source of water was reported to be days away from being exhausted, forcing the town to find other sources of water including the possible use of mobile filtration and treatment units to produce potable water. The Tennessee Valley Authority's winter flow reduction for Normandy Dam was enacted two months early to conserve water, and approximately 750,000 Tennesseans began to experience voluntary or mandatory water conservation restrictions, including some areas with a first-ever reported instance of any mandatory water restrictions having to be applied. In Virginia, the governor requested that the Secretary of the United States Department of Agriculture declare Virginia a statewide disaster area due to reductions in farm production caused by drought and high temperatures in 2007.

To reflect the worsening conditions, D4(AH) was introduced in northwestern South Carolina and the western Piedmont of North Carolina to the Tar River Basin in eastern North Carolina. D3(AH) expanded from North Carolina into southern Virginia and D2(AH) in Virginia expanded toward the West Virginia border, north into Maryland, and northeast to the Delmarva Peninsula. Year-to-date precipitation deficits in northern Virginia and Maryland have approached or exceeded 10 inches in many locations. A 1-category degradation of drought also occurred from eastern Kentucky into Virginia, as well as central parts of Tennessee.

Conditions also worsened in southwest Alabama, southeastern Mississippi, and extreme southeastern Louisiana, where D0(AH) conditions were introduced. Extreme D4 drought remained across parts of Georgia. Most types of outdoor residential water use were prohibited in the northern third of the state by the declaration of a level four drought response by the director of the Georgia Environmental Protection Division. In Alabama, water demand dropped for some municipalities with the onset of fall, but about 50 percent of the population was under some type of water restriction, either voluntary or mandatory. Twenty percent of monitored streams in the state were at their all time lows, and the number continued to increase throughout the week.

In contrast to the deteriorating conditions in much of the region, more than 1.5 inches of rain fell near and along the Ohio River from southeastern Missouri to Ohio. This led to scaling back of D3(AH) in southern Indiana, southern Ohio and adjoining areas of West Virginia. In Arkansas, more than 1 inch of rain contributed to a wetter-than-average month and removal of D0(H) conditions in southern Arkansas and northeast Louisiana, and adjacent areas of western Mississippi. Drought conditions were also scaled back in northeastern Arkansas. In southern Florida, a wetter-than-average September led to a 1-category improvement in the Gulf Coast

## Weekly Snowpack and Drought Monitor Update Report

counties of Lee and Charlotte, while continued drier-than-average conditions northwest of Lake Okeechobee led to an expansion of D2(H) in Highlands County.

**The Northeast:** In addition to an extension of D2(AH) conditions from extreme northeastern West Virginia to Baltimore County in Maryland and the Delmarva Peninsula, an unusually warm and dry September led to an expansion of D0(H) in southern New Jersey extending into east and central areas of Pennsylvania. For the month of September, less than 0.75 inch of rain fell in Philadelphia, PA, and Trenton, NJ, and temperatures were 3.2°F and 2.2°F warmer than average, respectively. D0(A) was also introduced in eastern New Hampshire and eastern Maine to reflect a drier-than-average September and low USGS streamflow conditions. Conversely, in western New York, a large area of 1.0 to 1.5 inches of rain led to a 1-category improvement in areas south of Lake Ontario. Conditions also improved in some parts of Upstate New York, but D2(A) to D0(A) conditions remain from the eastern shore of Lake Ontario to central Vermont.

**Alaska, Hawaii, and Puerto Rico:** In Hawaii, near- to above-normal rainfall in September led to the removal of D0 on windward areas of Kauai and Maui. No improvements were made over Upcountry Maui as water restrictions have not been lifted by the local water board. Water is sent from windward Maui to Upcountry Maui by a series of ditches that feed public demand and agriculture operations, and while the boost in windward Maui rainfall has helped improve conditions over Upcountry Maui, the totals have not been sufficient to allow the local board of water supply to remove the water restrictions. September rainfall less than 1.0 inch in much of the drought-affected areas on the Big Island of Hawaii and Oahu was insufficient for improvement. D0 conditions remained unchanged in both Alaska and Puerto Rico.

**Looking Ahead:** In the near term, zonal flow will give way to a deepening trough over the western U.S., while a ridge of high pressure continues to dominate the eastern U.S. Above-average rain and snowfall in the Pacific Northwest may provide some drought relief from Washington State to the northern Rockies. By the weekend, some models predict the development of a cutoff low over the central Rocky Mountains which slowly moves to the northeast bringing light to moderate precipitation to the Northern Plains and Great Lakes. With the ridge in place over the East there is little chance for widespread drought relief from the Deep South to the Ohio Valley and Mid-Atlantic. Additionally, the ridge over the eastern U.S. should direct any systems of tropical or subtropical origin across the Gulf of Mexico. According to the National Hurricane Center, there is the possibility that a broad area of low pressure over the southern Gulf of Mexico may develop into a tropical or subtropical depression within the next day or two. Conditions have also become favorable for the development of a tropical depression east of the Bahamas in the near term with a subsequent slow westward movement.

The National Weather Service outlook for October 8-12 indicates the persistence of a ridge of high pressure over the central and eastern U.S. This will provide for above-normal temperatures from the central and southern Plains to the East Coast. Above-average precipitation is possible in the northern Mississippi Valley with the passing of a frontal system. A deep trough extending into the Northwest may bring below-normal temperatures and above-average precipitation from southern Alaska to the Pacific Northwest, northern Rocky Mountains, and northern California. Outlooks extended to 14 days indicate some retrogression of the ridge and above-average temperatures across the entire contiguous U.S.

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### Dryness Categories

## **Weekly Snowpack and Drought Monitor Update Report**

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 October 3, 2007