



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

---

**Weekly Report - Snowpack / Drought Monitor Update**      **Date: August 2, 2007**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Temperature:** During the past seven days, temperatures ranged from +/-5°F of normal across the West with the exception of the Montana Rockies where they were up to 10°F above normal (Fig. 1). For the month of July, record hi all-time average temperatures were set over much of Montana and central Idaho (Fig. 1a).

**Precipitation:** For the past week, the Southwest Monsoon extended from Arizona to western Wyoming causing precipitation amounts to easily exceed an inch (Fig. 2). A lack of significant precipitation was noted across California and the Pacific Northwest. Figure 2a shows that for the past week, the monsoon rains exceeded up to eight times the normal weekly values. For July, the big moisture winners were half of the West with the notable exceptions over southern California, the Intermountain West (Nevada, eastern Oregon, and Idaho), and most of western Montana (Fig. 2b). For the Water Year (began 1 October 2006), total amounts have not changed appreciably since last week. Slight surpluses still persist over the Cascades, northern Rockies, Wyoming's Bighorn Mountains, and Colorado - New Mexico Front Ranges. Elsewhere, totals remain well below normal (Fig. 2c).

## **WESTERN DROUGHT STATUS**

**The West:** Dry and mainly hot conditions dominated the week in the western United States. The seasonal monsoon rains started in Arizona, with relief from the heat along with widely scattered precipitation. Drought status was maintained this week, as the effects of the recent wet pattern were not known at this time. If the pattern continues, changes in the Arizona drought status should be warranted. In Idaho, the areas of D2 in the south were expanded north with regard to the very low streamflow conditions in several basins that are close to record low levels. The record-breaking heat continued in Idaho, as Pocatello recorded the warmest July on record, with records going back to 1939. For Montana, the recent heat has really taken a toll on crops around the state as well as water supplies. D2 was expanded in northern Montana from the Idaho border and to the east as well. Two pockets of D1 in Utah were removed in favor of D2 conditions that cover almost the entire state. **Author:** Brian Fuchs, National Drought Mitigation Center.

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

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

The possible impacts associated with **D4 (H, A)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (H, A)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (H, A)** drought are focused on water shortages common and water restrictions imposed and crop or pasture losses likely. The possible impacts associated with **D1 (H, A)** drought are focused on water shortages developing in streams, reservoirs, or wells, and some damage to crops and pastures (Fig. 3 and 3a).

## Weekly Snowpack and Drought Monitor Update Report

### 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 Fig. 5. Fig. 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/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

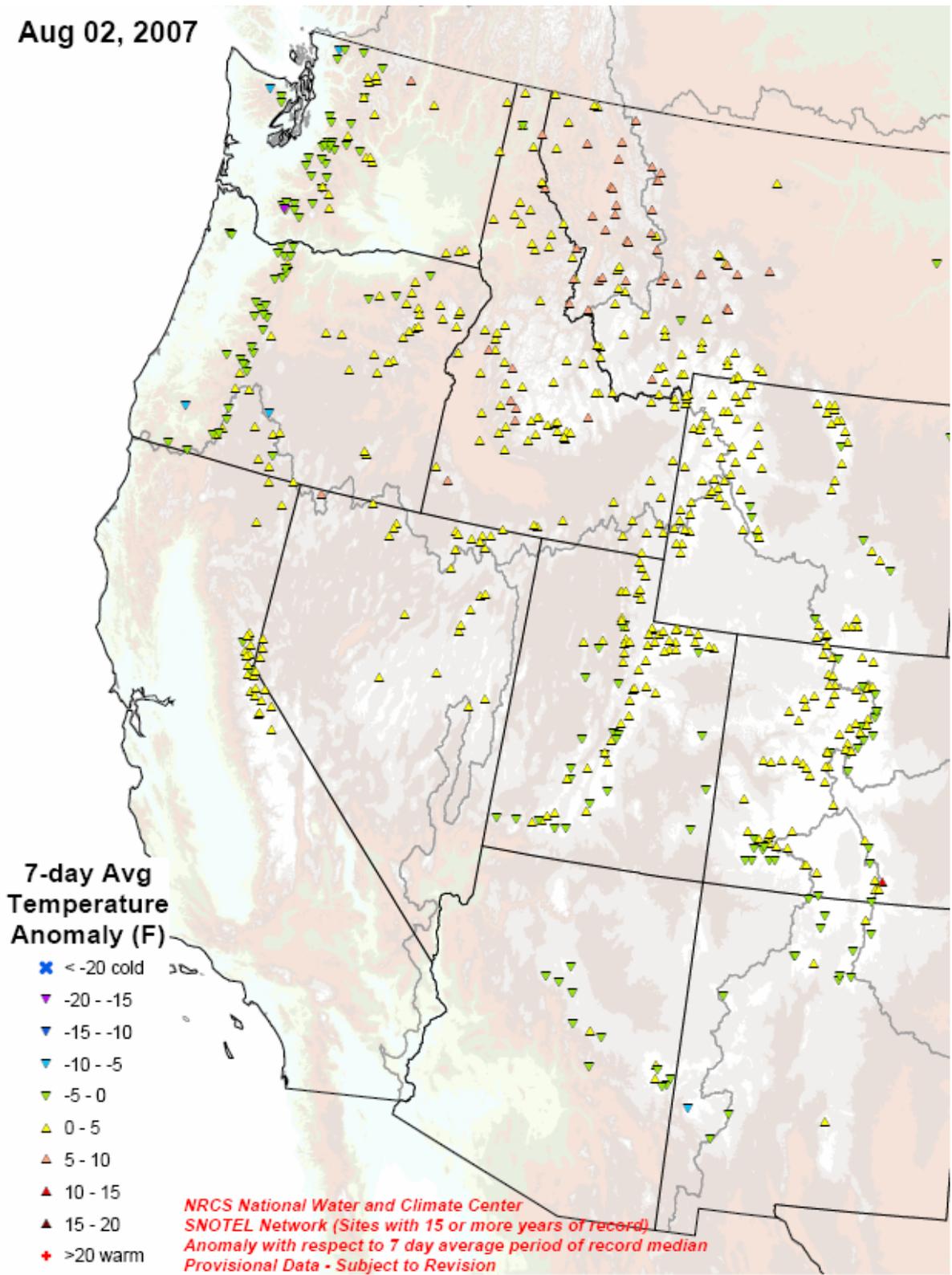
The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>

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

Aug 02, 2007

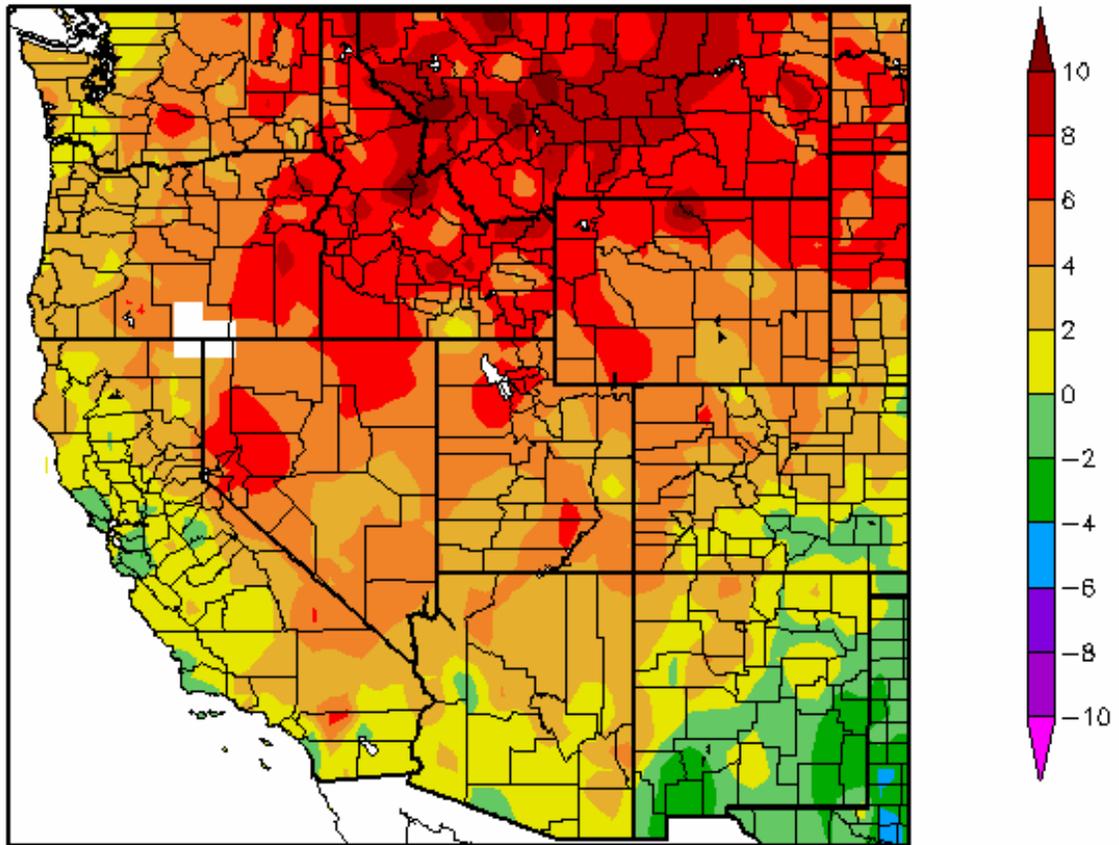


**Fig. 1. SNOTEL 7-day average temperature anomaly.**

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

Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)  
7/1/2007 - 7/31/2007



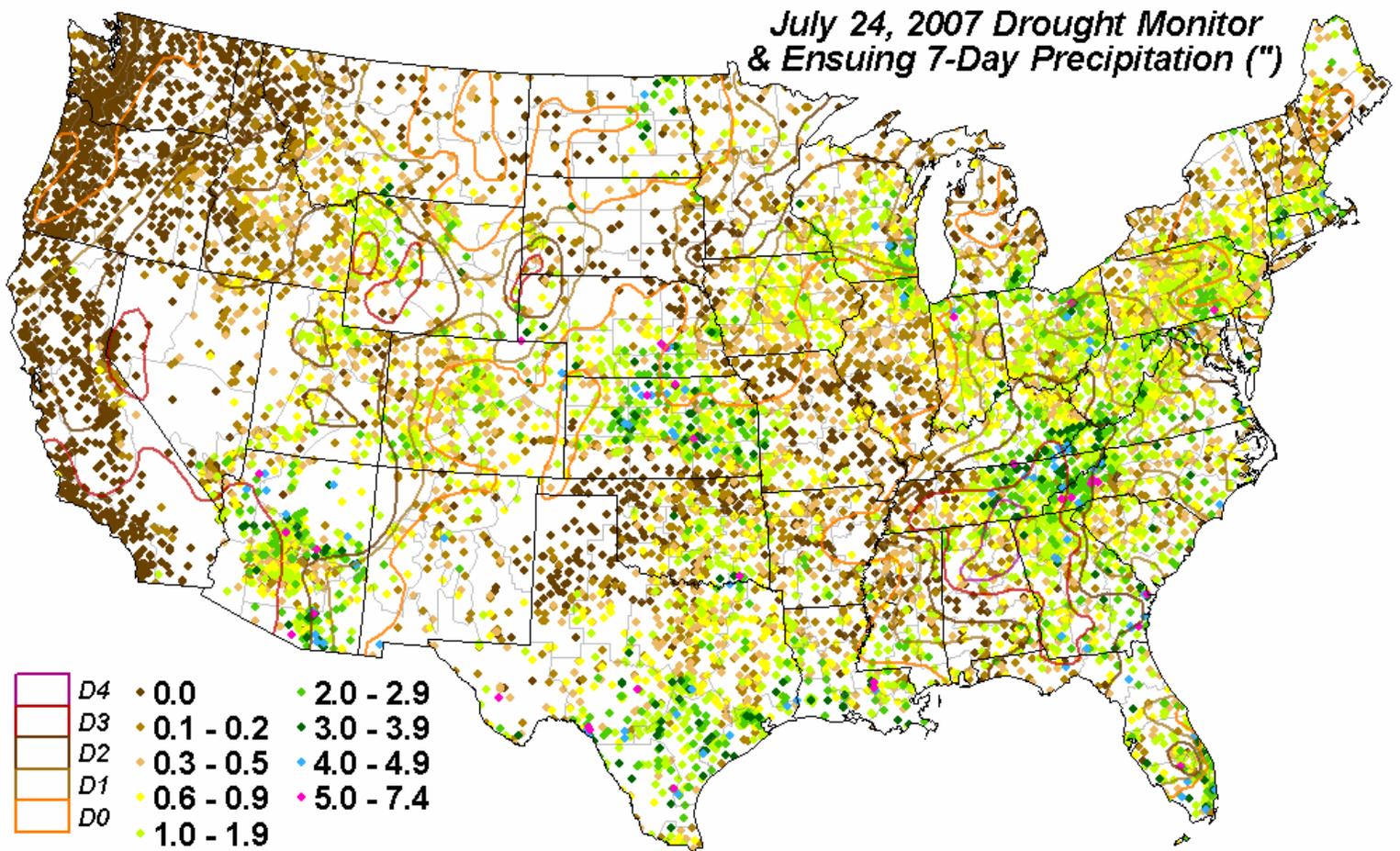
Generated 8/1/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

**Fig. 1a. July 2007 temperature departure from normal shows all-time record warmth over much of western Montana and central Idaho.**

Ref: [http://www.hprcc.unl.edu/maps/index.php?action=update\\_daterange&daterange=Month](http://www.hprcc.unl.edu/maps/index.php?action=update_daterange&daterange=Month)

# Weekly Snowpack and Drought Monitor Update Report

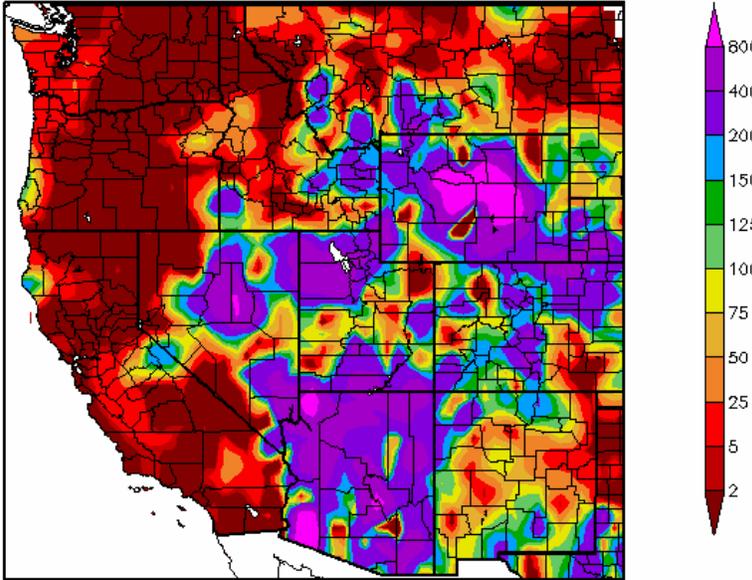


**Fig. 2. Preliminary precipitation totals for the 7-day period ending 30 July 2007. Note the high precipitation totals as a result of the Southwest Monsoon over Arizona and Colorado**

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/usdm-precip-overlay.gif>

## Weekly Snowpack and Drought Monitor Update Report

Percent of Normal Precipitation (%)  
7/25/2007 – 7/31/2007



**Fig. 2a. Percent of normal precipitation for the past week. Note the large area of percentages exceeding two to eight time the normal weekly amounts for this time of year.**

Ref:

[http://www.hprcc.unl.edu/maps/index.php?action=update\\_daterange&daterange=7d](http://www.hprcc.unl.edu/maps/index.php?action=update_daterange&daterange=7d)

Generated 8/1/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

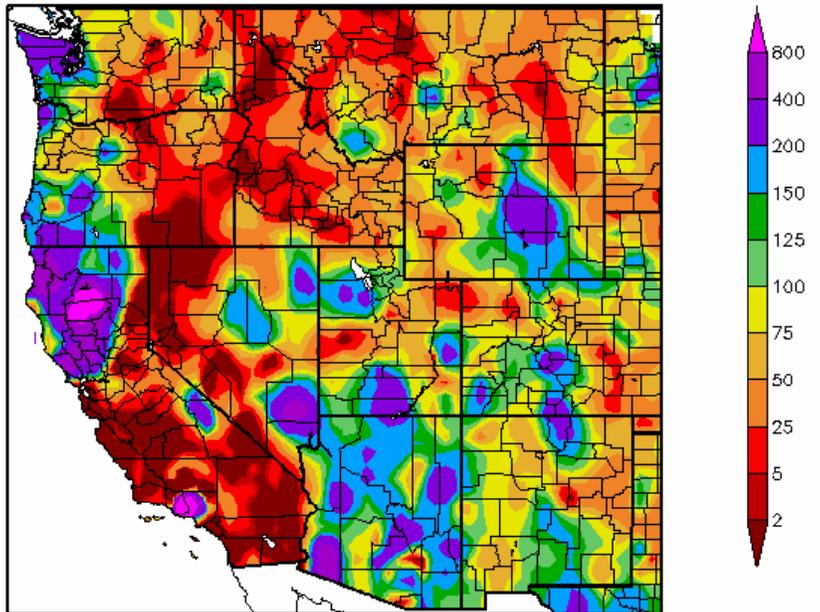
\*\*\*\*\*

Percent of Normal Precipitation (%)  
7/1/2007 – 7/31/2007

**Fig. 2b. Percent of normal precipitation for July 2007. Note the influence of the SW Monsoon.**

Ref:

[http://www.hprcc.unl.edu/maps/index.php?action=update\\_daterange&daterange=Month](http://www.hprcc.unl.edu/maps/index.php?action=update_daterange&daterange=Month)



Generated 8/1/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

# Weekly Snowpack and Drought Monitor Update Report

Jul 19, 2007

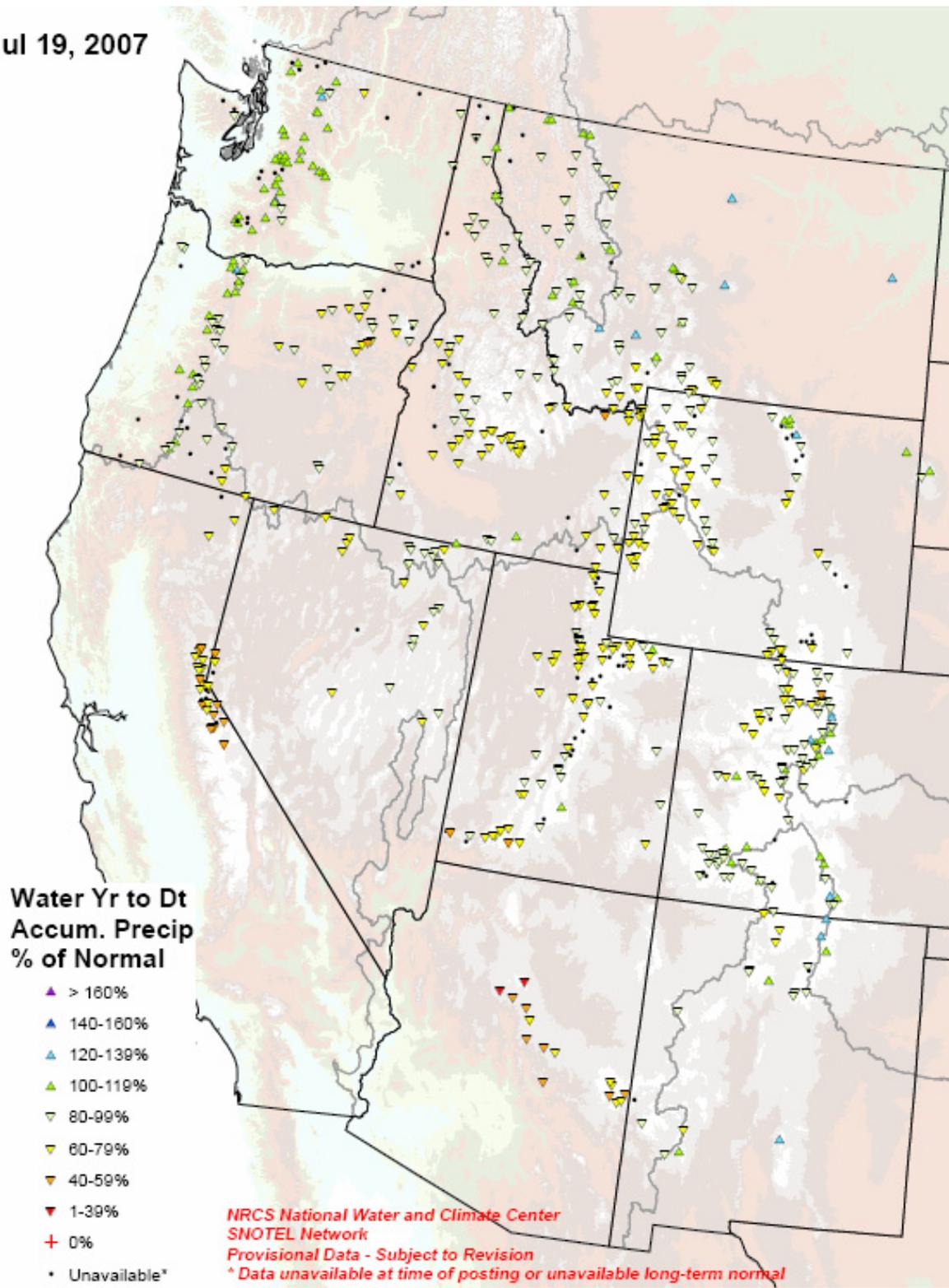
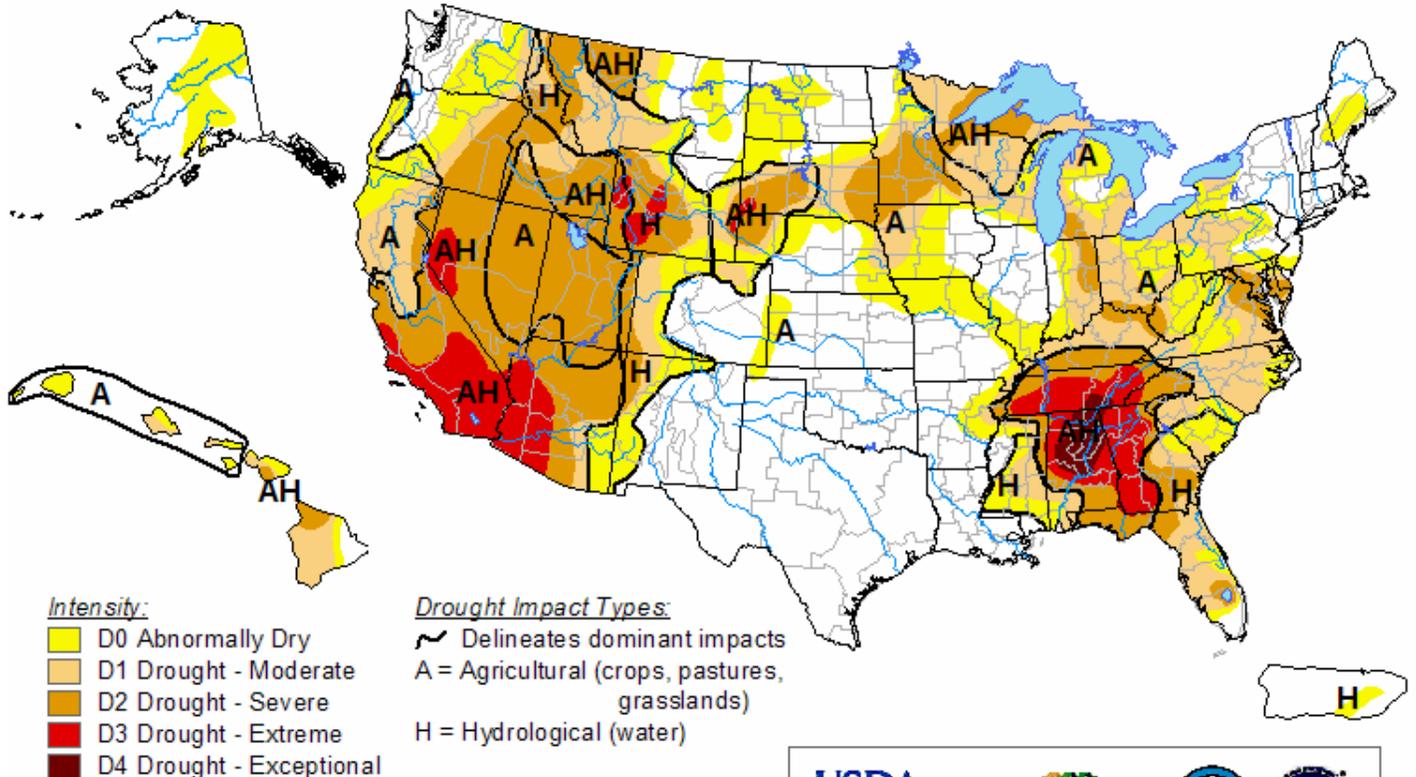


Fig. 2c. SNOTEL station water year (since October 1) precipitation as a percent of normal.  
Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideWYTDPrecipPercent.pdf>

# U.S. Drought Monitor

July 31, 2007  
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, August 2, 2007

Author: Brian Fuchs, National Drought Mitigation Center

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

Fig. 3. Current Drought Monitor weekly summary.

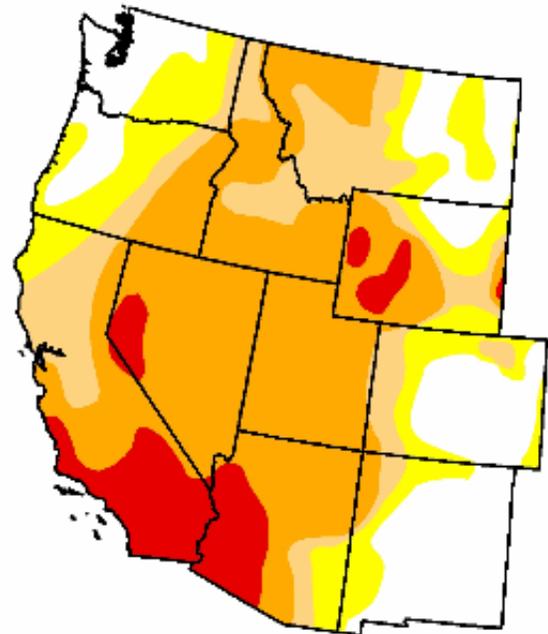
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

# U.S. Drought Monitor West

July 31, 2007  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	21.1	78.9	63.2	47.9	9.5	0.0
Last Week (07/24/2007 map)	21.2	78.8	61.4	43.0	9.5	0.0
3 Months Ago (05/08/2007 map)	31.1	68.9	49.3	21.2	6.5	0.0
Start of Calendar Year (01/02/2007 map)	51.2	48.8	25.8	9.4	4.0	0.0
Start of Water Year (10/03/2006 map)	43.5	56.5	33.5	16.9	5.2	0.0
One Year Ago (08/01/2006 map)	46.9	53.1	39.7	18.9	4.0	0.1



Intensity:

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

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



**Released Thursday, August 2, 2007**

**Author: Brian Fuchs, National Drought Mitigation Center**

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

**Fig 3a. Drought Monitor for the Western States with statistics over various time periods.**

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

Soil Moisture Percentiles (wrt/ 1915-2003)  
20070731

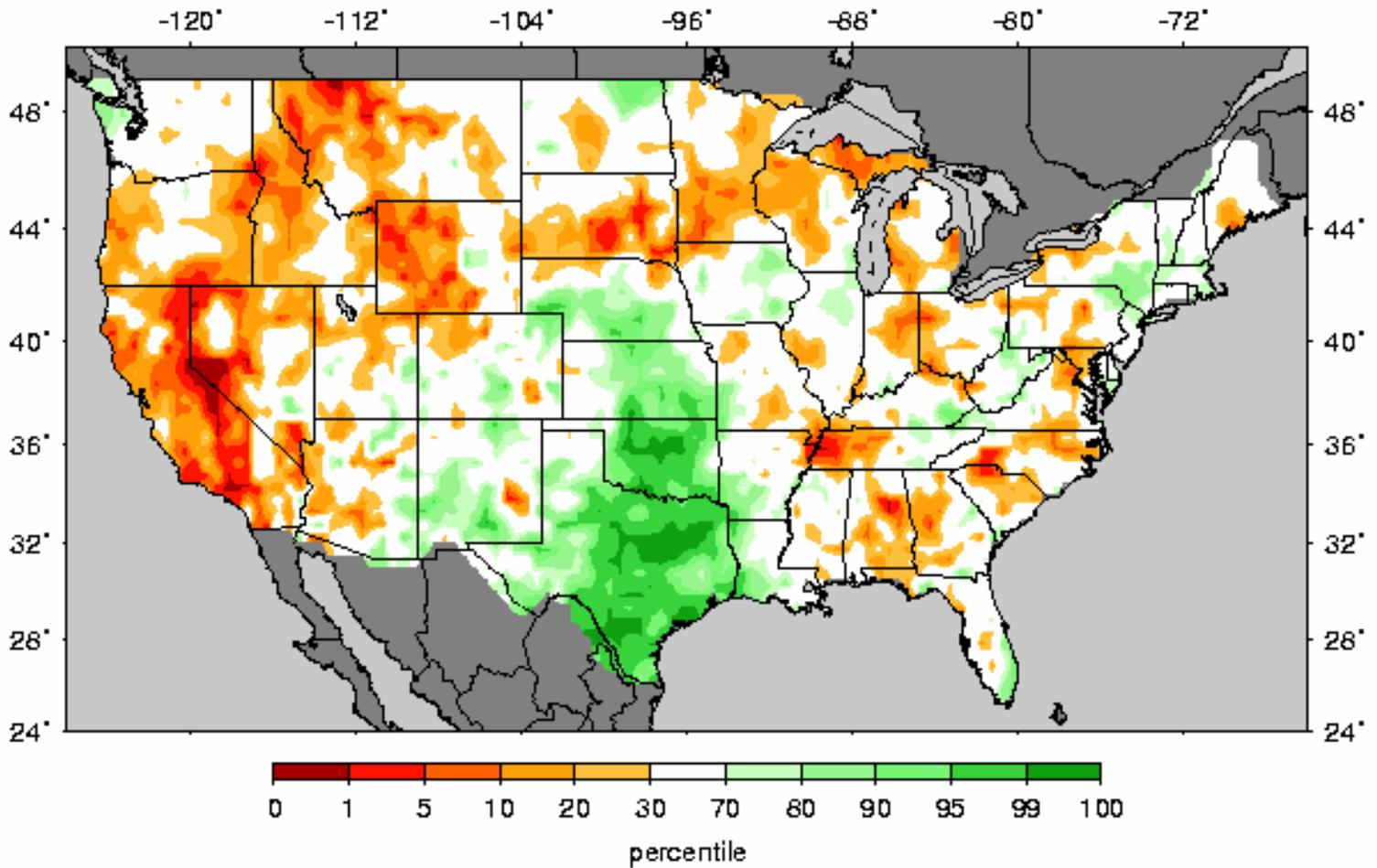


Fig. 4: Soil Moisture Ranking Percentile based on 1915-2003 climatology. (source: Univ. of Washington). Ref: [http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm\\_qnt.gif](http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_qnt.gif)

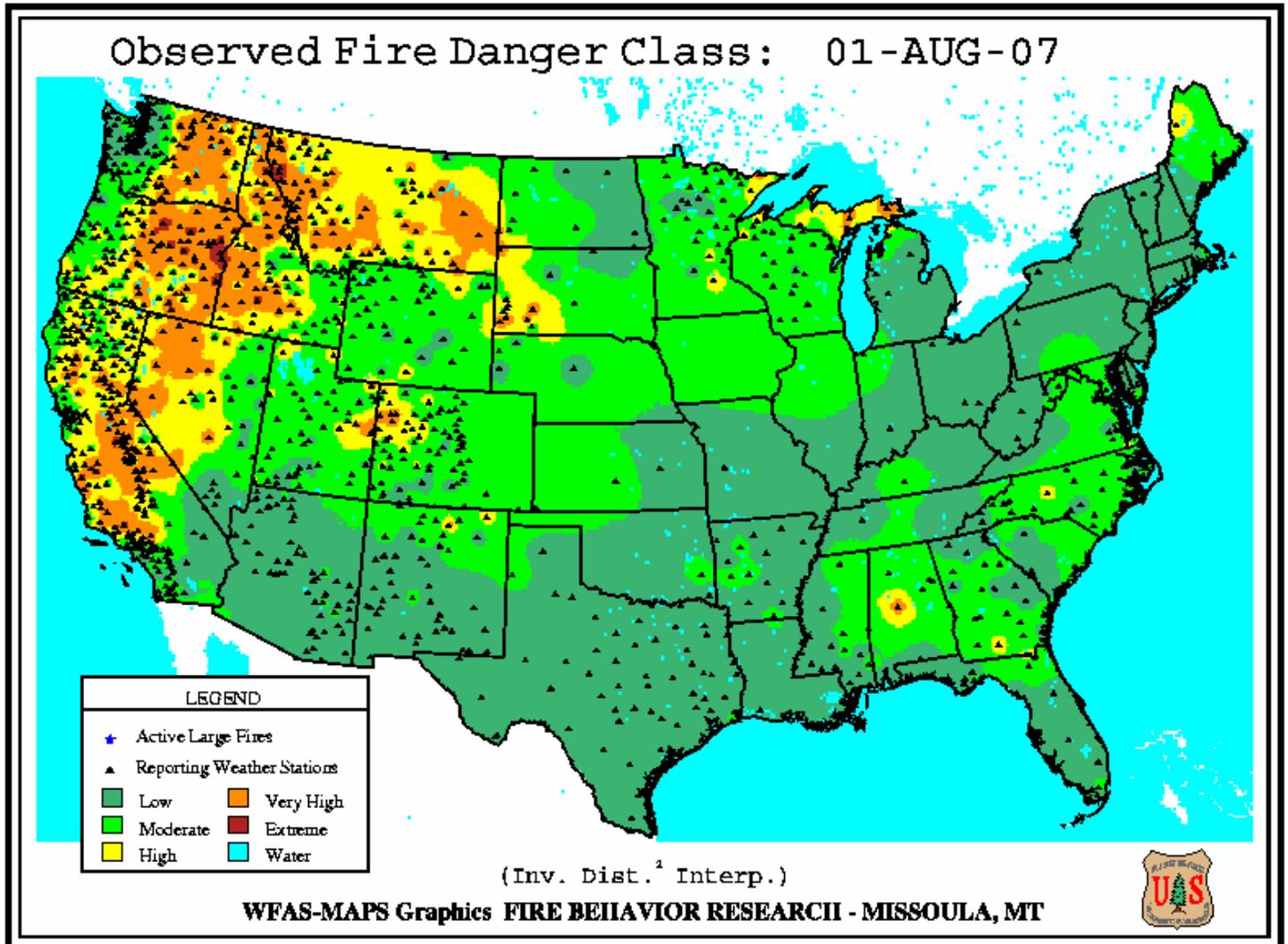


Fig. 5. Observed Fire Danger Class. Source: Forest Service Fire Behavior Research – Missoula, MT  
Ref: [http://www.fs.fed.us/land/wfas/fd\\_class.gif](http://www.fs.fed.us/land/wfas/fd_class.gif)

## Weekly Snowpack and Drought Monitor Update Report

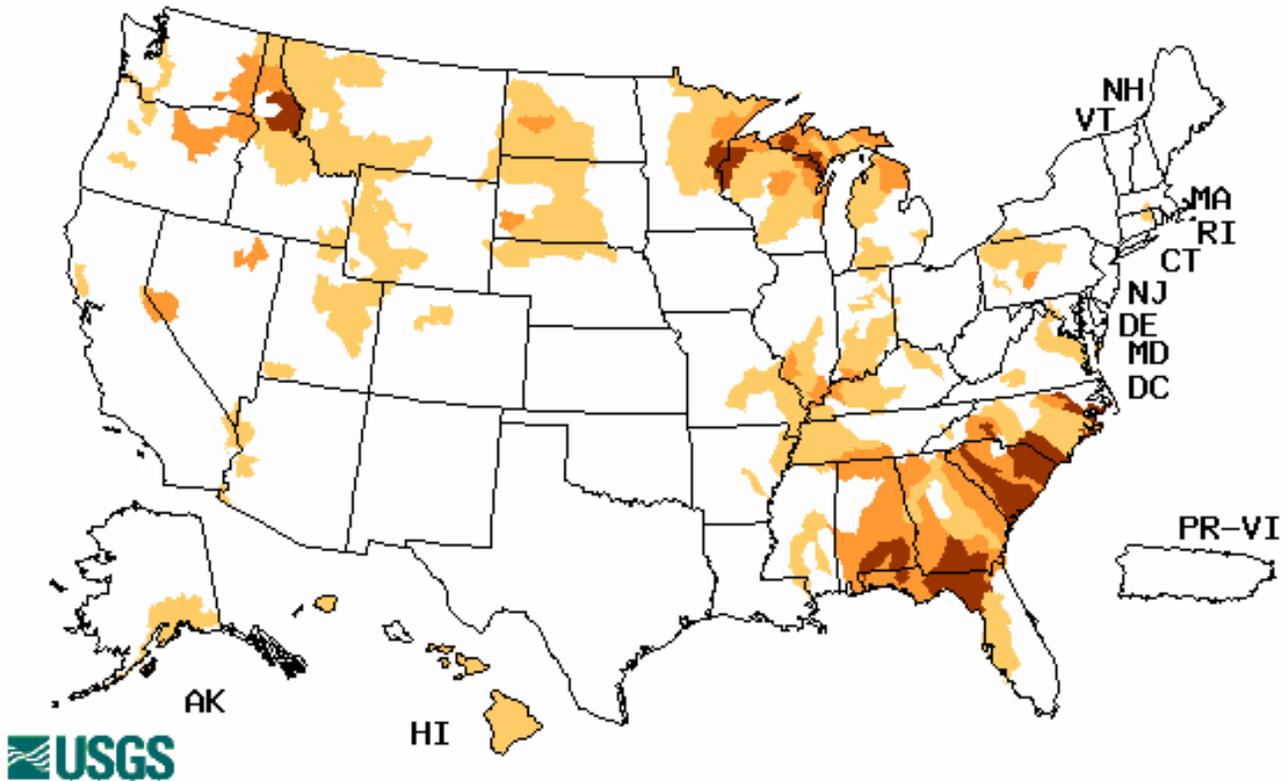


Fig. 5a. Location of active wildfires across the West as of 1 August 2007.

Ref: <http://geomac.usgs.gov/>

# Weekly Snowpack and Drought Monitor Update Report

Wednesday, August 01, 2007

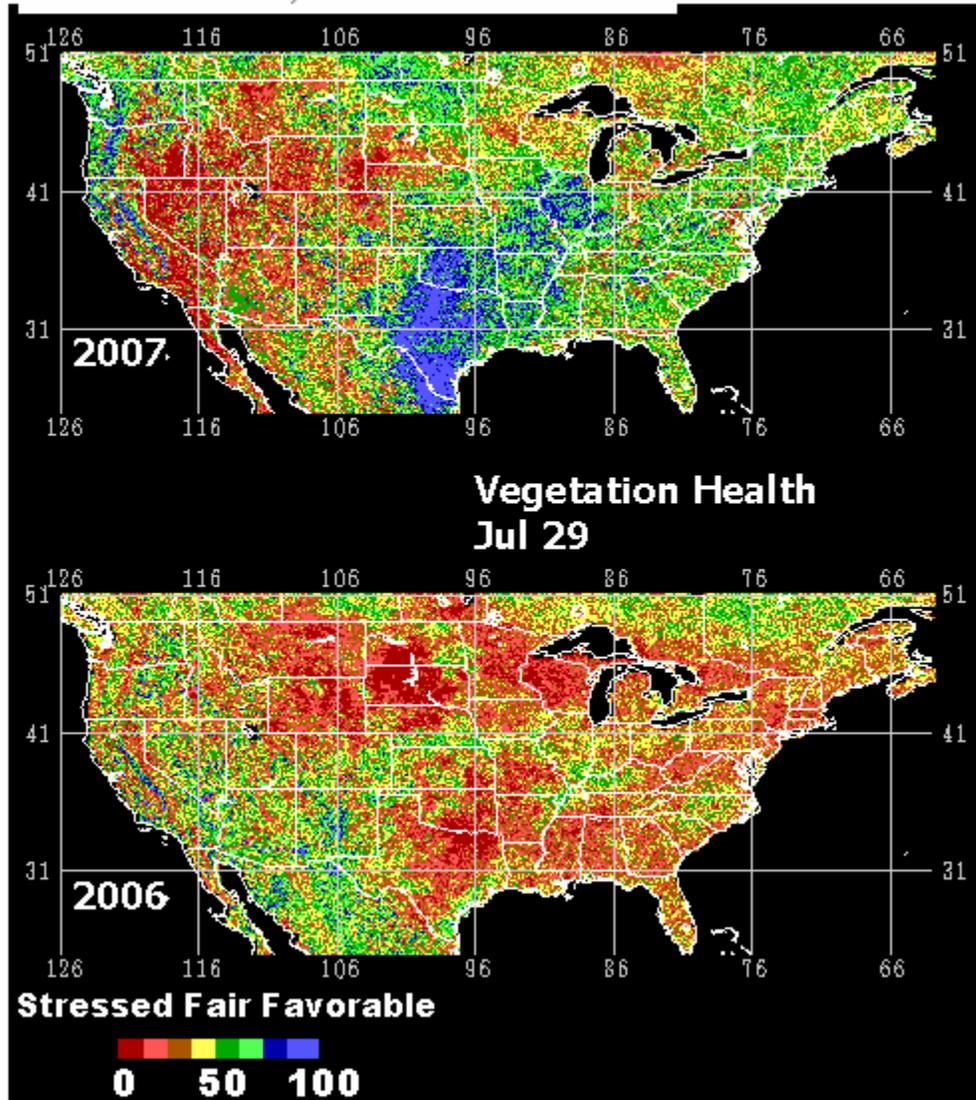


Explanation - Percentile classes				
Low	≤5	6-9	10-24	Insufficient data for a hydrologic region
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal	

Fig. 6. Map of below normal 7-day average streamflow compared to historical stream flow for the day of the year. Ref: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

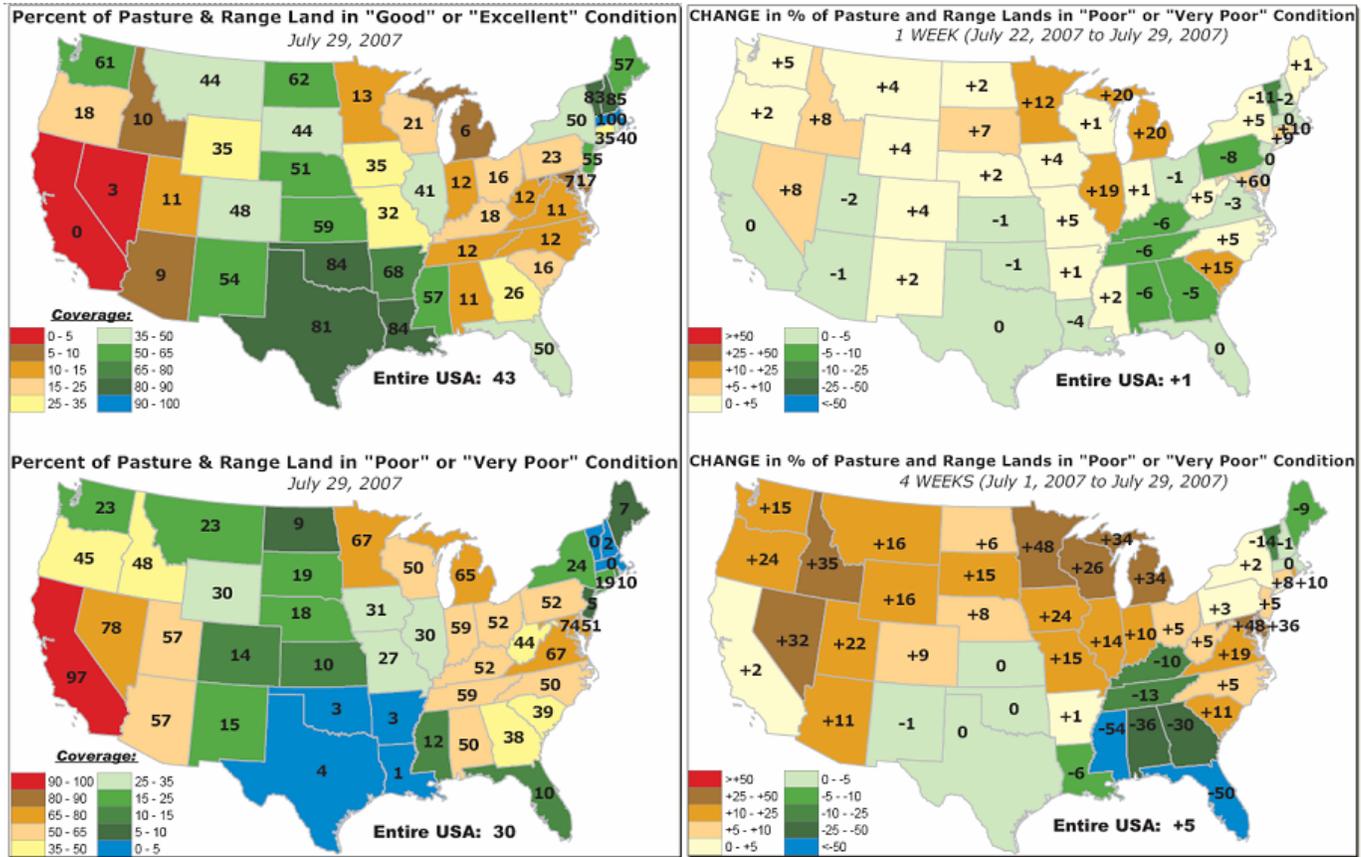
## Weekly Snowpack and Drought Monitor Update Report

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



**Fig. 7:** This remote satellite AVHRR map shows stressed vegetation increasing over the Northern High Plains and southeast Colorado during the past two weeks.  
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 periods. Nevada and Idaho shows the largest increase in poor to very poor conditions during the past week and past four weeks for the Western States.**

Interesting to note that, despite a relatively wet week in a lot of drought areas, the proportion of pastures and rangelands in poor or very poor condition actually increased by 1% across the contiguous 48 states (to be fair, that's probably less than the climatological rate at this time of year). Right now, 18 states report 20% to 60% more of their pastures in poor or very poor condition than is typical for this time of year (since 1996, anyway) while 3 states report 20% to 35% less of their pasture lands in poor or very poor condition than is seasonable. (credit: Rich Tinker)

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 -- July 31, 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/>.

Temperatures were at or below normal for much of the United States this last week, with the northern High Plains and the West recording temperatures that were 4 to 8 degrees Fahrenheit above normal. Precipitation was varied, with local reporting stations observing over 2 inches in some places. The monsoonal rains were going strong over much of the Southwest, with welcomed rain.

**The West:** Dry and mainly hot conditions dominated the week in the western United States. The seasonal monsoon rains started in Arizona, with relief from the heat along with widely scattered precipitation. Drought status was maintained this week, as the effects of the recent wet pattern were not known at this time. If the pattern continues, changes in the Arizona drought status should be warranted. In Idaho, the areas of D2 in the south were expanded north with regard to the very low streamflow conditions in several basins that are close to record low levels. The record-breaking heat continued in Idaho, as Pocatello recorded the warmest July on record, with records going back to 1939. For Montana, the recent heat has really taken a toll on crops around the state as well as water supplies. D2 was expanded in northern Montana from the Idaho border and to the east as well. Two pockets of D1 in Utah were removed in favor of D2 conditions that cover almost the entire state.

**The High Plains:** The northern High Plains recorded temperatures 6-8 degrees Fahrenheit above normal this week, and little or no rain. Very localized heavy rains fell across Wyoming, Nebraska, and Kansas. In Nebraska and Kansas, the D0 conditions were improved as recent rains helped to make up precipitation deficits rapidly. Wyoming and Nebraska had some improvement of D1 with the help of the recent rains. In the Dakotas, intensification of the dryness was widespread. After a very wet spring, conditions have dried out rapidly in eastern South Dakota, northwest Iowa, and southwest Minnesota, with some stations not recording any precipitation since late June. Several recording stations in eastern South Dakota have had record low rainfall for July, several coming in at less than 0.25 inches for the month. Hawarden, Iowa, had no rain in July while Centerville, South Dakota, had only a trace. The flash drought has prompted the expansion of D2 over much of eastern South Dakota, with damage to crops and cattle deaths prominent over the area. In western South Dakota, an intensification of the current drought has allowed D2 to expand to the east. North Dakota saw an expansion of D0 conditions in the southwest part of the state as dryness in the region has spread, with impacts to crops starting to develop.

**The Midwest:** The dryness observed in eastern South Dakota is also impacting Minnesota. Precipitation during the growing season has been below 50 percent for much of the state, impacting the agricultural industry. D1 and D2 conditions were expanded over much of southern Minnesota this week. Recent dryness has also allowed D0 to expand through Missouri to Illinois and in the northern portions of lower Michigan. D2 conditions have migrated north in Indiana and into southwest Michigan. Scattered rains this last week have allowed for improvements in Ohio and Kentucky. In Ohio, the D1 was reduced in central Ohio to the

## Weekly Snowpack and Drought Monitor Update Report

northern portions of the state. In Kentucky, D2 conditions were improved to D1 in the northern portions of the state, but D1 and D2 conditions expanded in western Kentucky. D1 conditions also spread into Wisconsin and Michigan along the shores of Lake Michigan, as dryness over the last few months has impacted these regions.

**The Northeast and Mid-Atlantic:** Temperatures were near normal over much of the region, with portions of upper New England above normal. Precipitation was varied and widely scattered. Drought areas that did receive rain did not observe enough to warrant any changes. D2 was expanded in Maryland, Virginia, and Delaware as dryness over the last 90 days is below 25 percent for much of the Delmarva region. Most agricultural producers in the region have commented that even with rain now, yields are going to be substantially lower than average. D2 conditions were improved in western Virginia, where recent rains have helped conditions. D0 conditions were expanded into southern New Jersey this week while D1 conditions in portions of West Virginia were improved to D0. D1 in western New York was expanded because of the recent dryness along the lake plains region.

**The Southeast:** With scattered rain last week in the Southeast, drought conditions did not improve, but instead expanded in some areas. Even with recent rains, many recording stations were below normal for July. Mississippi is a good example of conditions in the Southeast: the last 30-day period is one of the wettest on record, but the last 180-day period is the driest on record. D3 and D4 conditions in Alabama also expanded to cover much of the northern and central portions of the state while D3 conditions expanded in southwest Georgia. D2 and D3 conditions expanded to include western Tennessee and into eastern Arkansas. North Carolina saw an expansion of D1 to cover the southern part of the state and D2 expanded in the west. Near record low streamflow and reservoir levels are a big concern in North Carolina.

**Looking Ahead:** Over the next 5 days (August 2-6), temperatures over the northern Rocky Mountains, High Plains, Ohio River Valley, Mid-Atlantic and New England are expected to be well above normal. Temperatures are expected to be 6-9 degrees Fahrenheit above normal, with the area around the Great Lakes experiencing the warmest temperatures. Temperatures are expected to be cooler than normal over much of the Southwest and Gulf Coast, where rains are forecasted to continue. Precipitation should continue in the Southwest with the monsoonal flow, and active conditions over the Southeast will hopefully provide relief from the drought conditions. Precipitation maxima over the next several days are centered over southern Arizona, west Texas, Colorado, Nebraska, Wisconsin, Maine, the Florida panhandle and southern Georgia.

The 6-10 day outlook (August 7-11) has a trough over the western United States with ridging over the Midwest. Temperatures are expected to be above normal for most of the country, except over the West Coast. Precipitation will likely continue in the Southwest and be above normal over the High Plains and northern Rocky Mountains. Below-normal precipitation is projected over much of California and Nevada and through much of the Southeast, Mid-Atlantic and northern New England.

**Author:** Brian Fuchs, National Drought Mitigation Center

### Dryness Categories

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

### Drought Intensity Categories

D1 ... Moderate Drought

## Weekly Snowpack and Drought Monitor Update Report

D2 ... Severe Drought  
D3 ... Extreme Drought  
D4 ... Exceptional Drought

### **Drought or Dryness Types**

A ... Agricultural  
H ... Hydrological

Updated August 1, 2007