



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

Weekly Report - Snowpack / Drought Monitor Update **Date: October 11, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: During the past seven days, mountain SNOTEL sites were up to 10 degrees below normal over the Sierras and Great Basin Ranges while the eastern most sites were slightly above normal (Fig. 1). At lower elevation weather stations, the same temperature pattern was observed (Fig. 1a).

Precipitation: For the past week, heavier precipitation (rain and snow) fell across much of the Northern Rockies, Northern High Plains, and northern California. Little precipitation occurred over southern California and Central and Southern High Plains. (Fig. 2).

WESTERN DROUGHT STATUS

The West: The Northwest was affected again by an active storm track and fast-moving Pacific storms that brought rain and snow to many parts of the region. Western Washington from the coast to the Cascades received the most precipitation with several locations receiving more than 3 inches. Lighter amounts fell elsewhere but in sufficient totals to provide areas including western Oregon, the northern Rockies, and much of the plains of Montana and Wyoming with wetter than average conditions for the week. The additional precipitation combined with recent weeks of above average totals led to the removal of D0(AH) along the coast of Oregon and an eastward nudge of D0(AH) along the Cascades. In eastern Washington and the western edge of the Idaho Panhandle, D0(AH) and D1(AH) were moved eastward to reflect improving conditions from several weeks of precipitation. Additional improvements will likely occur during coming weeks if the pattern remains active as forecasted. In south-central Montana, D1(H) conditions improved to D0(H) to reflect the benefits of the 2-4 inches of precipitation that has fallen in the past month. Improving conditions in western Wyoming led to the removal of a small area of D3, and the D0(H) line was pushed farther south in central Wyoming. Although parts of central Wyoming along the North Platte River received unusually heavy rainfall in recent weeks, D1(H) conditions were left in place due to the effects of eight years of well below average inflows that have left two main storage reservoirs at less than 30% of average for this time of year.

Author: [Jay Lawrimore, National Climatic Data 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 (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.

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/>

Weekly Snowpack and Drought Monitor Update Report

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

Oct 11, 2007

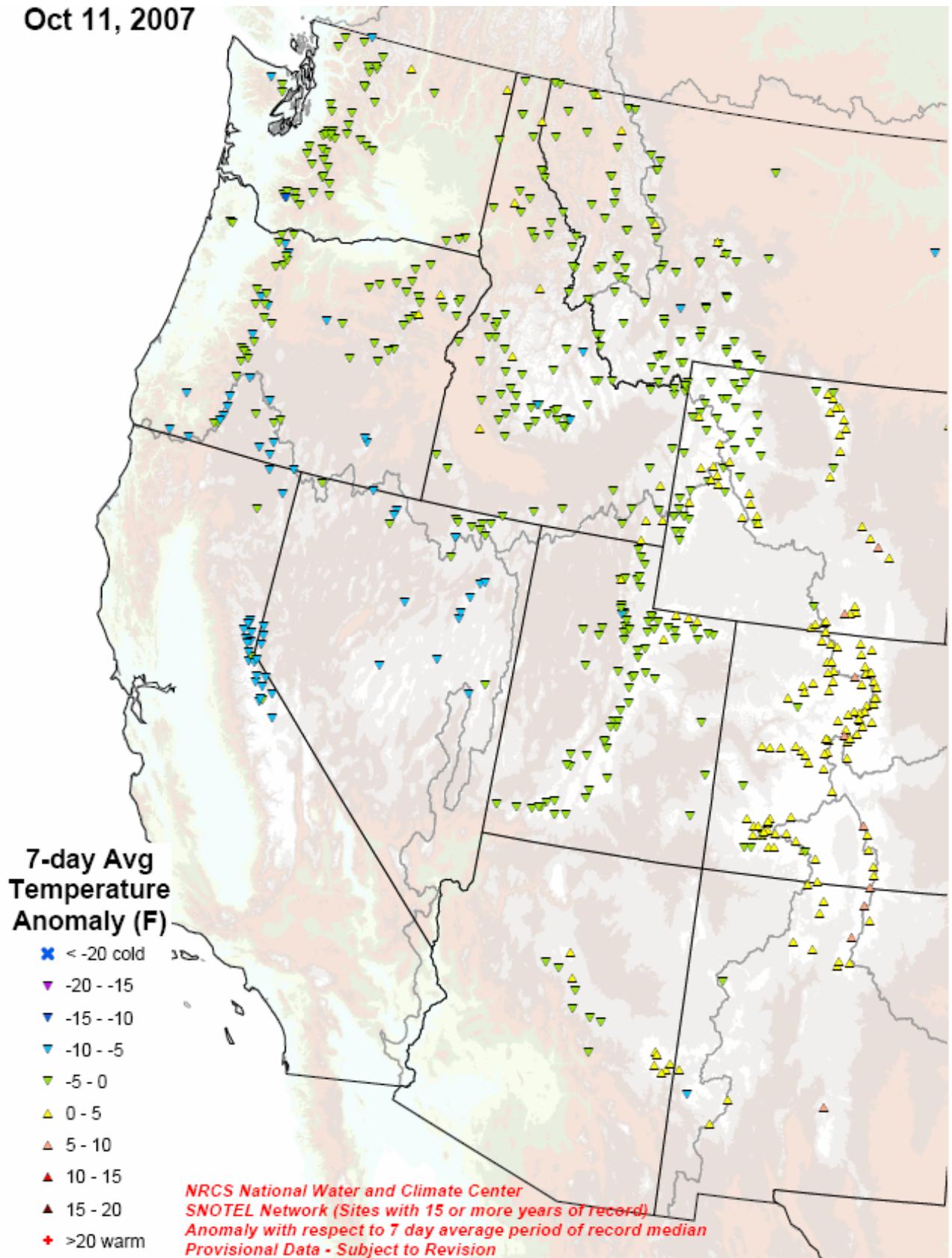
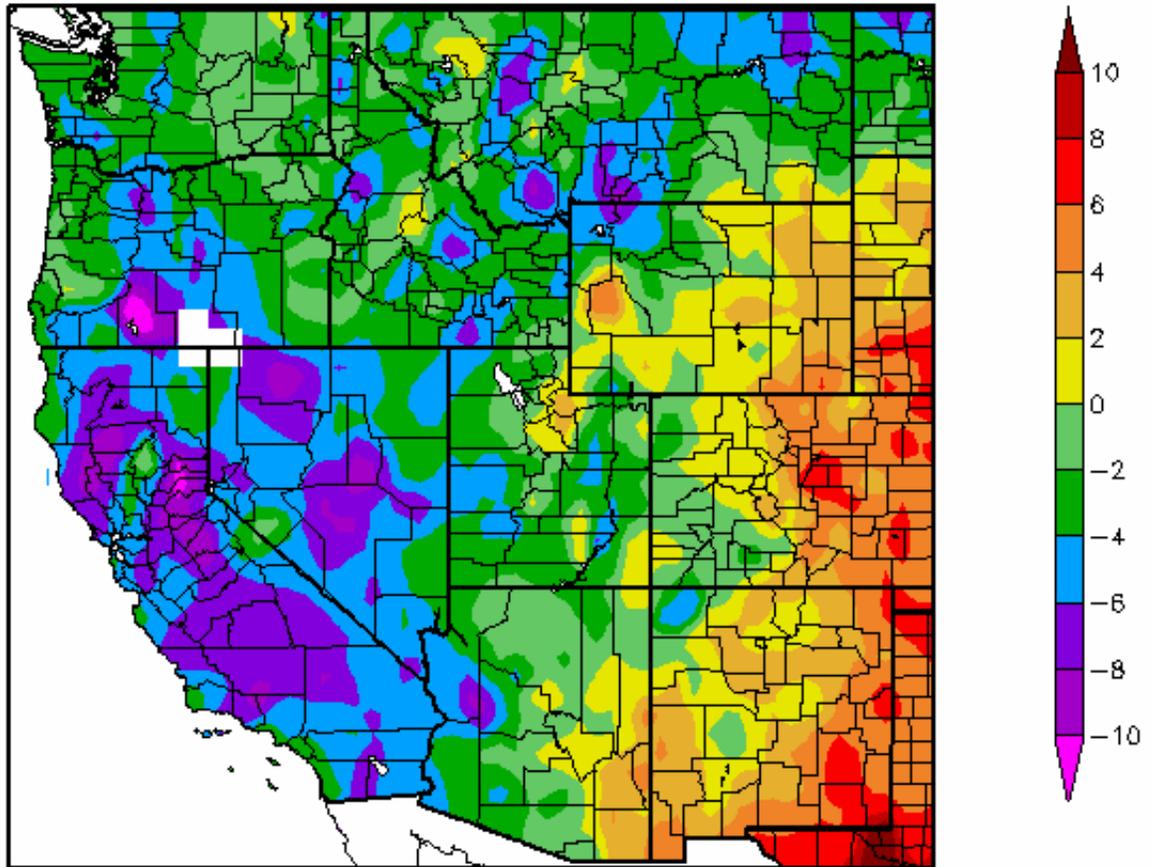


Fig. 1. SNOTEL 7-day average temperature anomaly.

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

Departure from Normal Temperature (F)
10/4/2007 - 10/10/2007



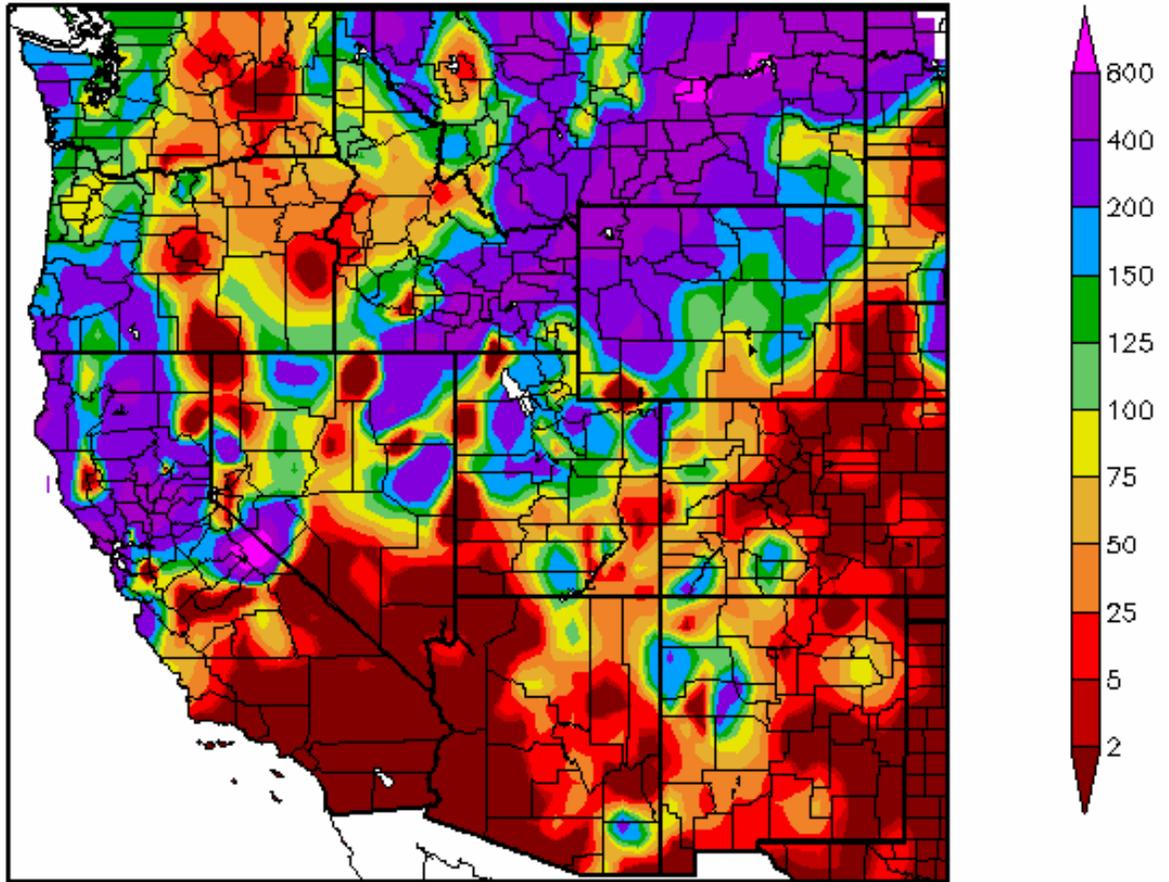
Generated 10/11/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 1a. October 4 - 10, 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®ion=WRCC

Percent of Normal Precipitation (%)
10/4/2007 – 10/10/2007



Generated 10/11/2007 at HPRCC using provisional data.

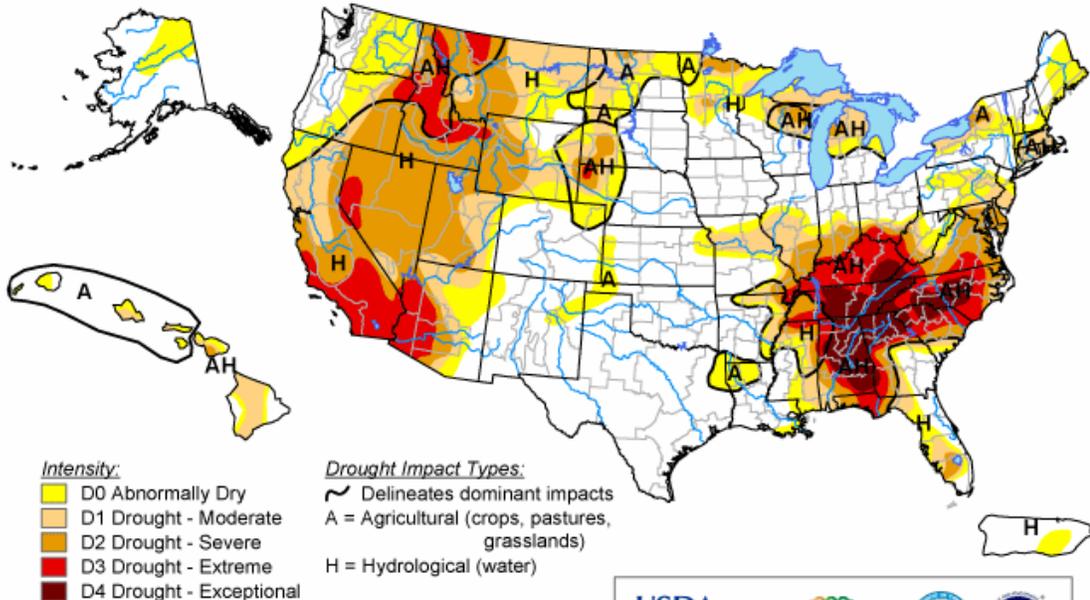
NOAA Regional Climate Centers

Fig. 2. Preliminary precipitation totals for the 7-day period ending 10 October 2007 shows rain and snow falling across much of the Northern Rockies, Northern High Plains, and northern California. Little precipitation occurred over southern California and Central and Southern High Plains.

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

U.S. Drought Monitor

October 9, 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, October 11, 2007

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

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

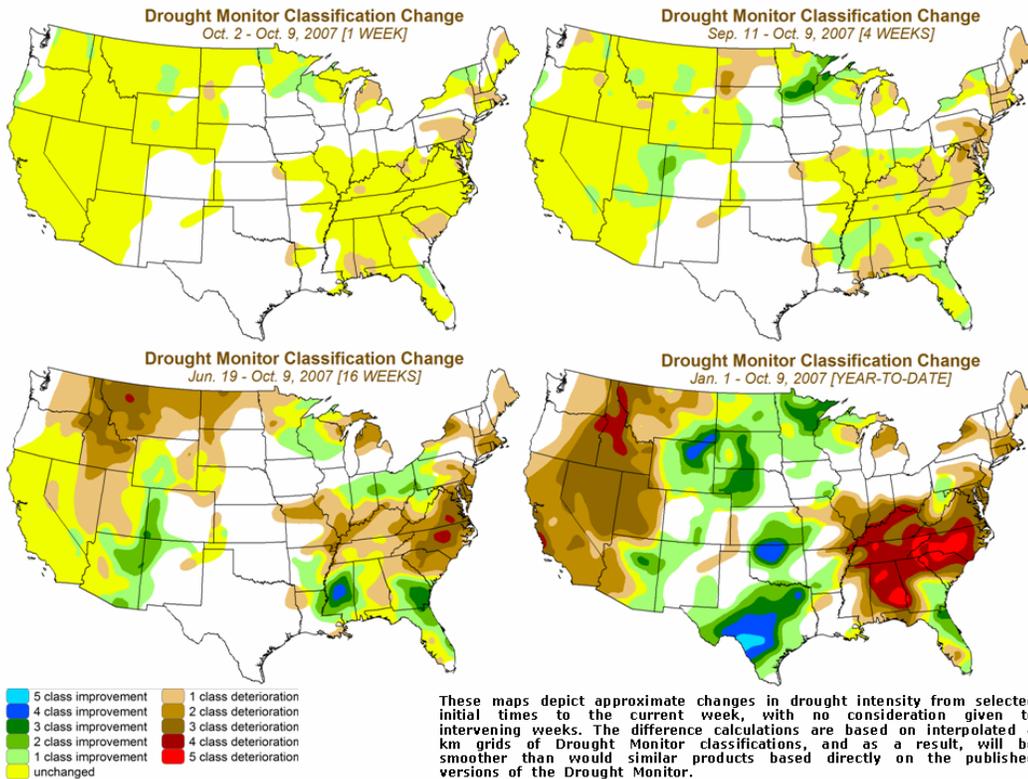


Fig. 3 and 3a. Current Drought Monitor weekly summary and classification changes.

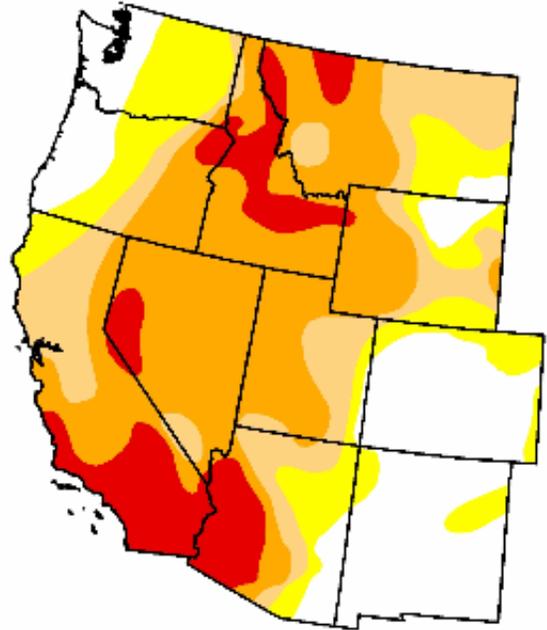
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor West

October 9, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	23.6	76.4	60.9	44.3	12.1	0.0
Last Week (10/02/2007 map)	22.0	78.0	62.3	44.7	12.4	0.0
3 Months Ago (07/17/2007 map)	23.7	76.3	60.6	32.1	9.5	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 (10/02/2007 map)	22.0	78.0	62.3	44.7	12.4	0.0
One Year Ago (10/10/2006 map)	47.9	52.1	31.6	15.2	4.8	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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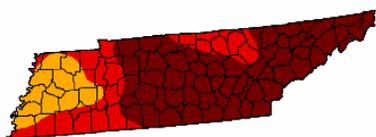
Fig. 3b. Drought Monitor for the Western States with statistics over various time periods. No significant change since last week's map. Ref: http://www.drought.unl.edu/dm/DM_west.htm

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October 9, 2007
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	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	100.0	100.0	85.7	61.3
Last Week (10/02/2007 map)	0.0	100.0	100.0	100.0	85.7	61.3
3 Months Ago (07/17/2007 map)	0.0	100.0	99.2	93.9	56.6	5.7
Start of Calendar Year (01/02/2007 map)	37.7	62.3	0.0	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	100.0	85.7	61.3
One Year Ago (10/10/2006 map)	34.7	65.3	0.0	0.0	0.0	0.0



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

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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U.S. Drought Monitor Kentucky

October 9, 2007
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.0	100.0	100.0	100.0	99.5	14.7
Last Week (10/02/2007 map)	0.0	100.0	100.0	100.0	88.7	14.7
3 Months Ago (07/17/2007 map)	1.4	98.6	82.3	55.9	3.7	0.0
Start of Calendar Year (01/02/2007 map)	51.5	48.5	0.0	0.0	0.0	0.0
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	100.0	88.7	14.7
One Year Ago (10/10/2006 map)	100.0	0.0	0.0	0.0	0.0	0.0



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

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

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

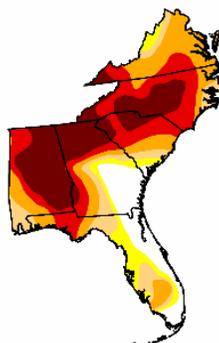


Released Thursday, October 11, 2007
Author: J. Lawrimore/L. Love-Brotak, NOAA/NESDIS/NCDC

U.S. Drought Monitor Southeast

October 9, 2007
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	12.8	87.2	79.7	68.2	47.7	26.0
Last Week (10/02/2007 map)	10.1	89.9	77.9	63.8	45.2	24.0
3 Months Ago (07/17/2007 map)	4.1	95.9	76.7	39.0	17.7	4.5
Start of Calendar Year (01/02/2007 map)	52.2	47.8	10.2	1.5	0.0	0.0
Start of Water Year (10/02/2007 map)	10.1	89.9	77.9	63.8	45.2	24.0
One Year Ago (10/10/2006 map)	46.8	53.2	38.6	0.0	0.0	0.0



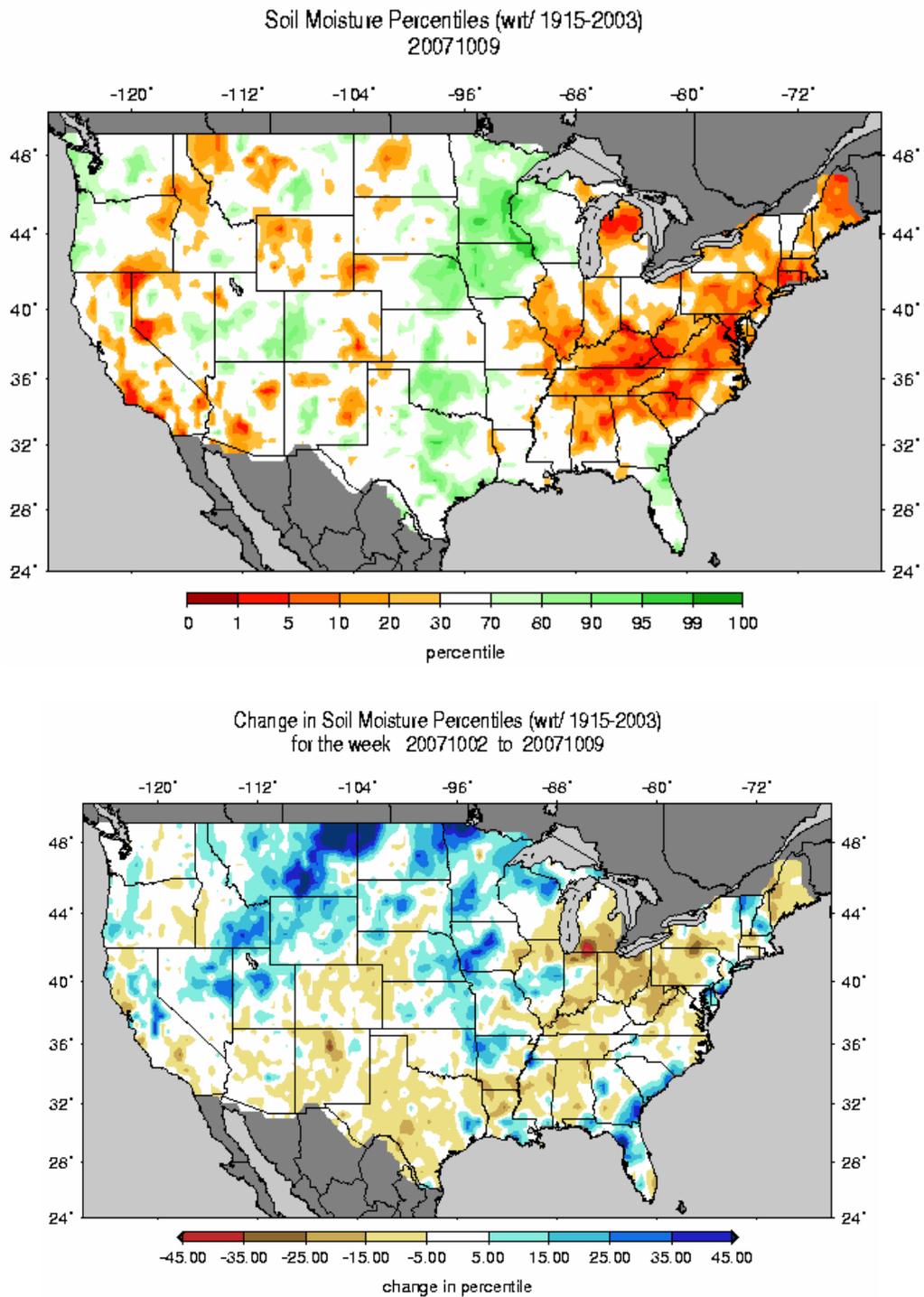
Intensity:
■ D0 Abnormally Dry ■ D3 Drought - Extreme
■ D1 Drought - Moderate ■ D4 Drought - Exceptional
■ D2 Drought - Severe

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



Fig. 3c. Drought Monitor for Tennessee, Kentucky, and the Southeastern States with statistics over various time periods shows some of the severest drought conditions in the US.

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Figs. 4 and 4a: Soil Moisture Ranking Percentile based on 1915-2003 climatology. Note major improvement over much of the Northern Plains and Northern Rockies

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

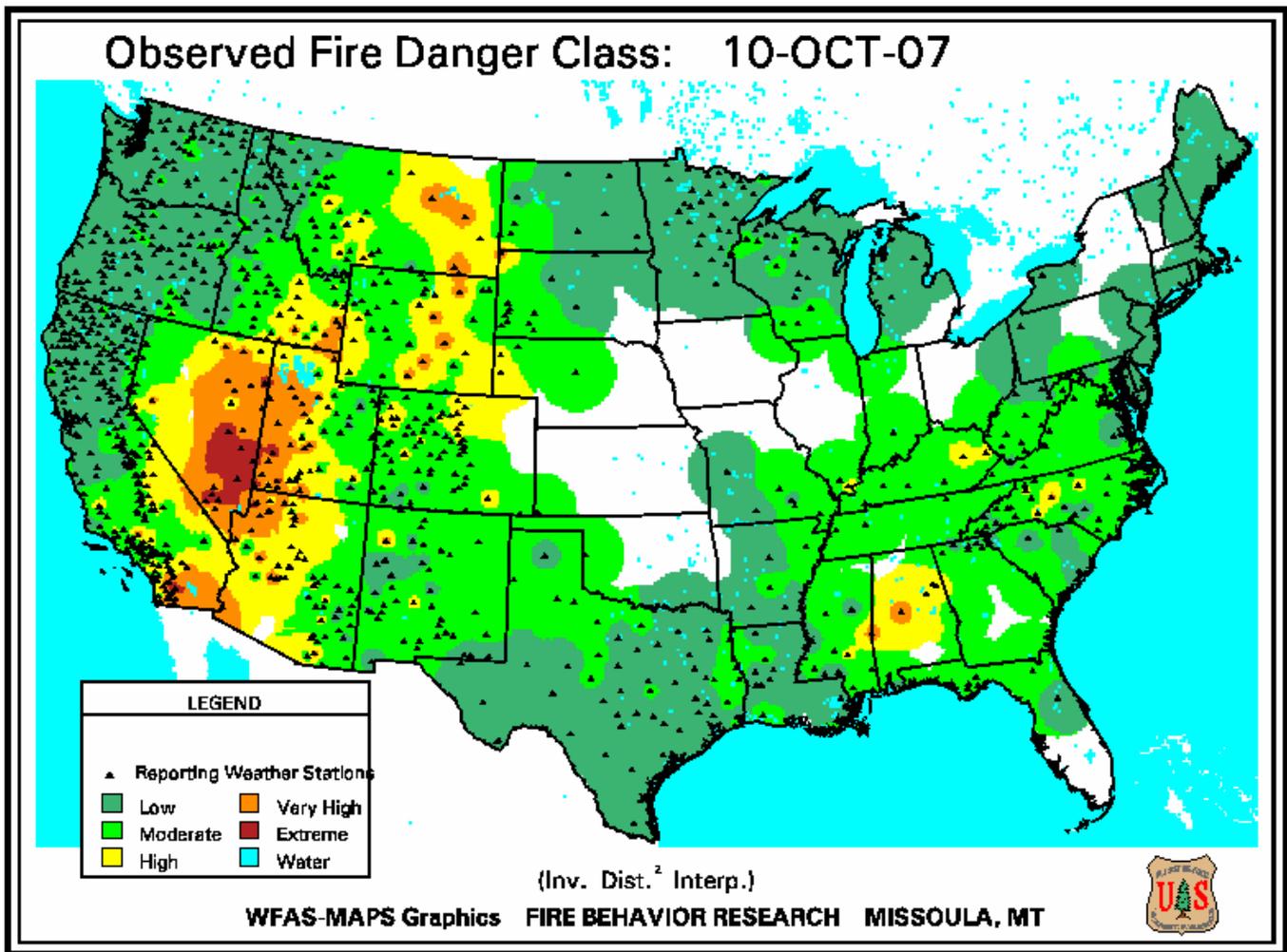


Fig. 5. Observed Fire Danger Class. Conditions have greatly improved over the Eastern Plains since last week. Source: Forest Service Fire Behavior Research – Missoula, MT.

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

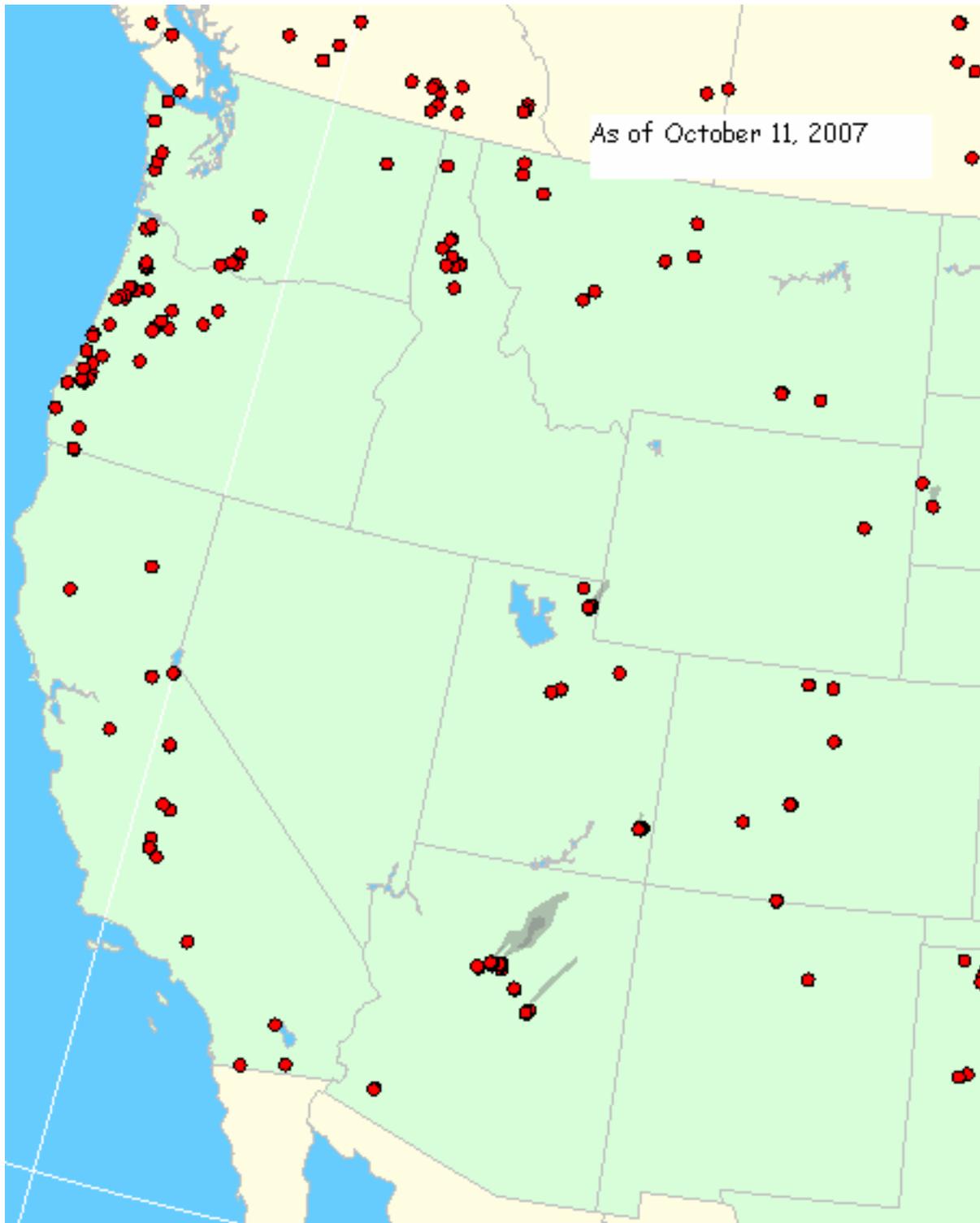


Fig. 5a. Location of active wildfires as detected from satellite across the West as of 11 October 2007. Gray areas depict smoke and blue areas depict fire potential.
Ref: <http://www.firedetect.noaa.gov/viewer.htm>

Weekly Snowpack and Drought Monitor Update Report

Wednesday, October 10, 2007

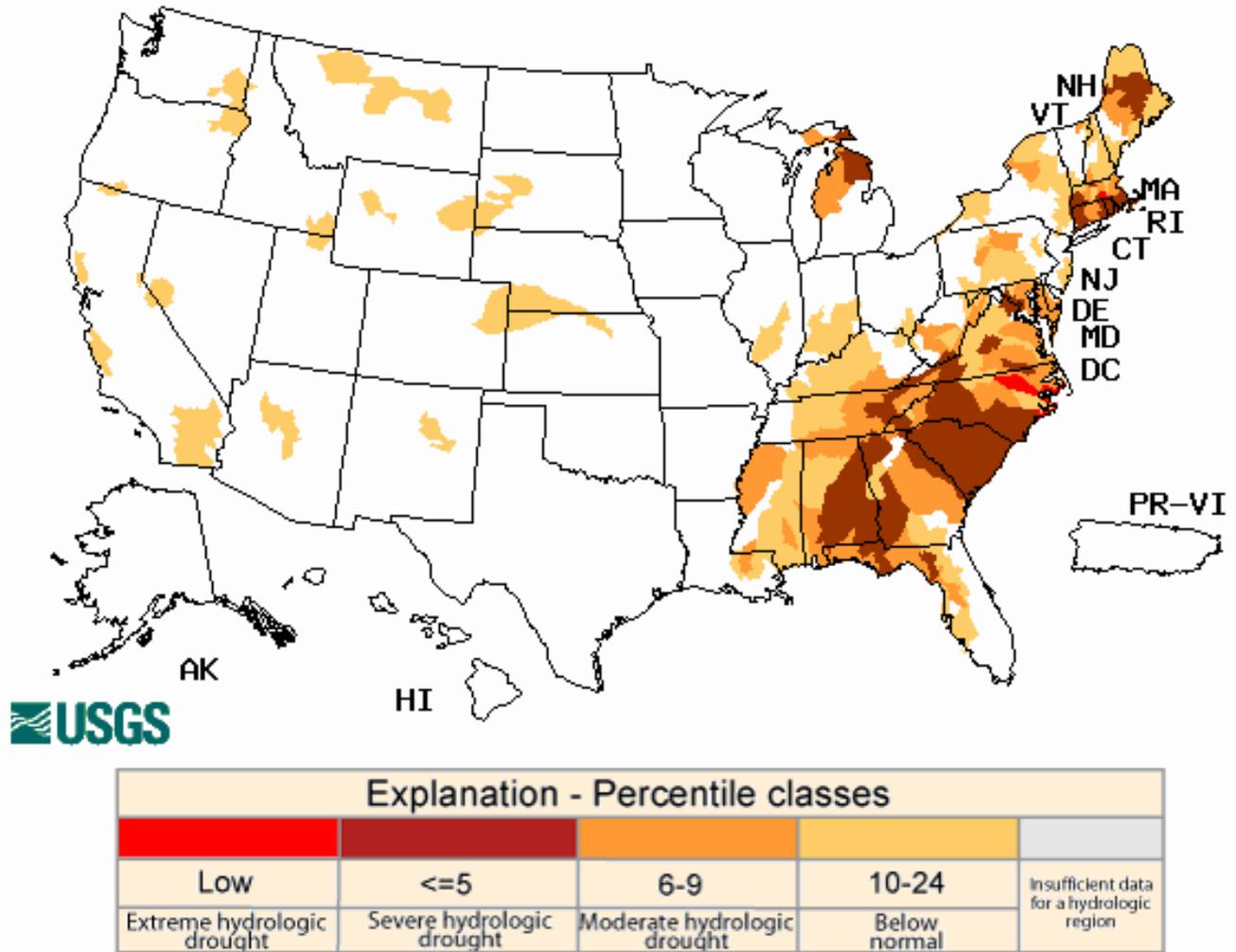


Fig. 6. This week's map shows near normal stream flows over the West but severe conditions over much of the over Southeastern States this week.

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**

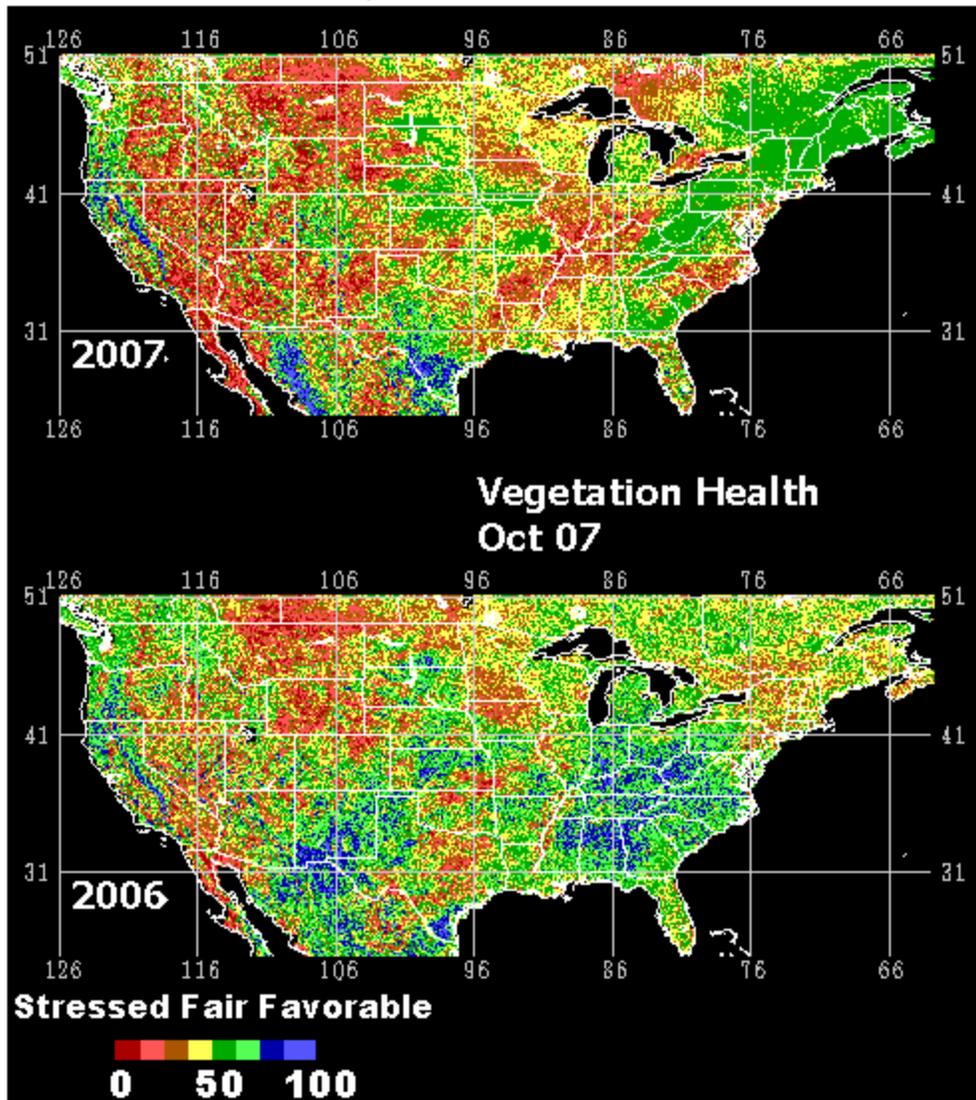


Fig. 7: This remote satellite AVHRR map shows stressed vegetation as compared to last year. Note worse conditions over the Interior West (especially over the Southwestern States) as compared to last October. Note: except for irrigated land, plants in the northern regions tend to show die-off as first freeze occurs. Ref: <http://www.orbit.nesdis.noaa.gov/smcd/emb/vci/usa.html>.

Weekly Snowpack and Drought Monitor Update Report

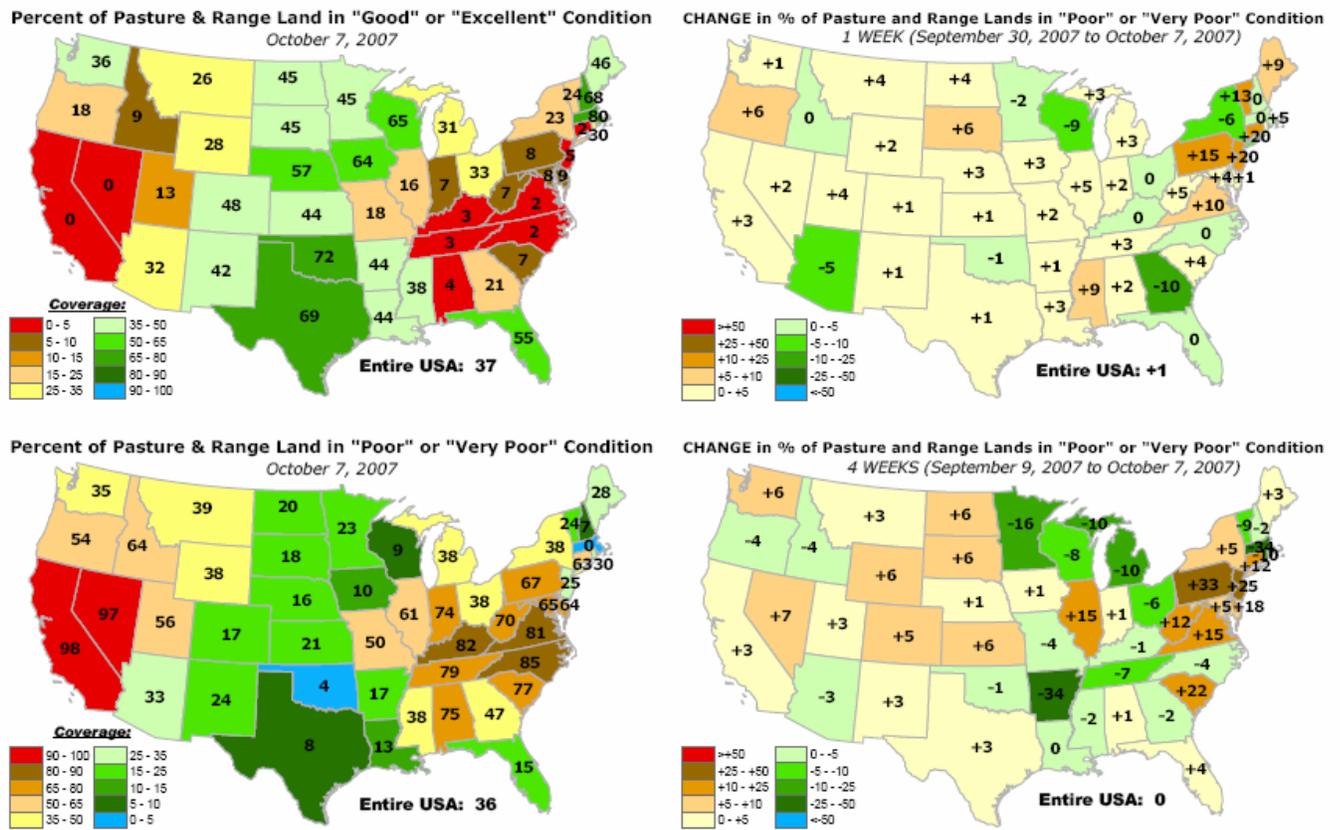


Fig. 8. Pasture and rangeland conditions for various time periods are shown above. The worst conditions exist over California, Idaho, and Nevada (left panels). During the past week, Arizona shows the greatest improvement conditions (top right panel) and during the past four weeks Oregon and Idaho shows the greatest improvements while Washington, Nevada, and Wyoming 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>

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National Drought Summary -- October 9, 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: The Northwest was affected again by an active storm track and fast-moving Pacific storms that brought rain and snow to many parts of the region. Western Washington from the coast to the Cascades received the most precipitation with several locations receiving more than 3 inches. Lighter amounts fell elsewhere but in sufficient totals to provide areas including western Oregon, the northern Rockies, and much of the plains of Montana and Wyoming with wetter than average conditions for the week. The additional precipitation combined with recent weeks of above average totals led to the removal of D0(AH) along the coast of Oregon and an eastward nudge of D0(AH) along the Cascades. In eastern Washington and the western edge of the Idaho Panhandle, D0(AH) and D1(AH) were moved eastward to reflect improving conditions from several weeks of precipitation. Additional improvements will likely occur during coming weeks if the pattern remains active as forecasted. In south-central Montana, D1(H) conditions improved to D0(H) to reflect the benefits of the 2-4 inches of precipitation that has fallen in the past month. Improving conditions in western Wyoming led to the removal of a small area of D3, and the D0(H) line was pushed farther south in central Wyoming. Although parts of central Wyoming along the North Platte River received unusually heavy rainfall in recent weeks, D1(H) conditions were left in place due to the effects of eight years of well below average inflows that have left two main storage reservoirs at less than 30% of average for this time of year.

The Plains: The greatest amount of precipitation during the week occurred with the movement of an upper low and passage of a frontal system through the Plains during the latter half of the period. The greatest rainfall amounts fell in eastern areas of the Plains unaffected by drought. More than 1.5 inches of rain in central South Dakota, along and to the west of the Missouri River, resulted in a slight westward reduction of D0(AH) and D1(AH) conditions. But in northwestern South Dakota and southwestern North Dakota where little precipitation fell and 30-day precipitation is 25% of average, D1(A) was extended northward from Meade county, South Dakota, across the border of North Dakota. While much of the rain in North Dakota fell in southeastern parts of the state unaffected by drought, rainfall in the northwestern corner of the state allowed for a small reduction of D2(A) along the Canadian border. In central Kansas, rainfall during the past week exceeded 1.5 inches in many locations, but lighter amounts, farther east in areas where 90-day deficits exceeded 4 to 5 inches, did not prevent a small westward expansion of D0(A).

The Upper Mississippi Valley and western Great Lakes Region: The major feature for the week occurred late in the period when a deep low moved northeastward through Minnesota and Wisconsin. Combined with rainfall early in the period, there were widespread accumulations greater than 3 inches from southwestern Minnesota to northern Wisconsin and the Upper Peninsula of Michigan. More than 7 inches fell in some locations. This system affected many of the same areas that received higher than average amounts the past two to three weeks and contributed to widespread reductions in drought severity. A 1-category improvement was made from northern extremes of the Upper Peninsula of Michigan to parts of central and northern

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Minnesota. However, a sharp gradient remained in central Minnesota, reflected by a small area of D2(H) and D1(H).

Increased inflow to Lake Superior resulted in a small rise in the lake level from the record September low reached last month. At the end of September, Lake Superior, the biggest and deepest of the Great Lakes, was about 20 inches below its long-term average level, 1.6 inches below the previous low for the month reached in 1926. Levels of all the Great Lakes remain below average as part of a decline that began in the late 1990s.

The active pattern that eased drought conditions in Minnesota and Wisconsin remained to the west of Michigan. Rainfall throughout northern Michigan was below average during the past 3 months, with 90-day accumulations less than 50 to 70% of average. Combined with recent record and near-record temperatures, conditions deteriorated to D2(AH) in northwest Michigan, while D1 was extended across northern Michigan to Lake Huron.

The Southeast, Mid-Atlantic, and Ohio and lower Missouri valleys: Easterly flow around a high pressure area off the Southeast coast brought showers to parts of the region early in the period. The heaviest rainfall amounts (3 to 6 inches) occurred in southeastern Georgia and northeastern Florida where drought conditions were absent, but a westward retraction of D0(H) was made from central Georgia to central Florida. Enough precipitation fell in upstate South Carolina and the Appalachian Mountains of North Carolina to delay the westward extension of D4(AH) conditions in North Carolina. But in other places, a continued lack of precipitation and much warmer than average conditions led to an expansion of drought. A 1-category degradation was made on the coastal plain of South Carolina and along the Savannah River in Georgia. Temperatures during the past week reached the upper 80s and low 90s, and rainfall totals for the past 30 to 60 days were less than 50% of average in many places. USGS 7-day to 28-day streamflow levels were below the 5th percentile in many places and CPC soil moisture in much of the region was extremely low. The return of hotter and drier than average conditions in recent weeks in much of Georgia and Alabama produced agricultural and other short-term impacts, supporting the return of AH conditions to the region.

In three counties of upstate South Carolina and neighboring areas of North Carolina, where precipitation early in the period was largely absent, D3(AH) was downgraded to D4(AH). Continued lack of precipitation and warmer than average temperatures also led to a 1-category degradation in western Alabama and eastern Mississippi. In eastern Virginia, D1(AH) was replaced with D2(AH). Some locations in the area have not received measureable rainfall in more than 30 days and many locations are under voluntary or mandatory water restrictions. In eastern Kentucky, southern West Virginia, and along the Ohio River, a 1-category degradation was made to the north and east where much warmer than average temperatures and one to three month rainfall totals have been less than 50% of average in many places.

The Northeast: Continued lack of rain and temperatures that were 10 to 20 degrees warmer than average led to an expansion of D0(AH) and D1(AH) conditions in New Jersey and Pennsylvania. In New Jersey, and neighboring areas of Pennsylvania, D1 was expanded to encompass areas with 90-day precipitation totals less than 50% of average. D0 and D1 were also extended westward across areas of northern Pennsylvania where large 3- to 6-month precipitation deficits were present. Low CPC soil moisture and USGS streamflow also reflected the very dry conditions. Farther north, rainfall totals of 1.0 to 1.5 inches south of Lake Ontario led to a 1-category reduction of D2(A) conditions in Monroe and Wayne counties. In upstate New York and northern Vermont, 1 to 2 inches of rain returned streamflows to near average and resulted in a removal of D0(A) conditions. In areas to the south extending into southern New England, a 1-category degradation reflected the accumulating effects of continued drier- and

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warmer-than-average conditions. D1(AH) was extended on all sides to encompass more of western Massachusetts and Connecticut and now stretches across Rhode Island and Massachusetts to the Atlantic coast.

Alaska, Hawaii, and Puerto Rico: Trade wind weather continued on the Hawaiian Islands with windward areas receiving generally higher amounts of rainfall. However, drought-affected areas on the Big Island and Maui received less than 0.50 inch of rain, light amounts also fell in areas of drought on Molokai and Oahu, and there was no change to the drought status on the islands this week. Precipitation was below average in many parts of Alaska during the past week, but near term and year-to-date precipitation totals for much of the state remain near to above average. D0(AH) conditions from the northeast Arctic Plains of Alaska southward across the Brooks Range reflect the continuing effects of below average precipitation. In Puerto Rico, the persistence of long-term deficits was reflected by a continuation of D0(H) across parts of southeastern Puerto Rico.

Looking Ahead: Behind a frontal system moving off the East Coast, a reinforcing cold front will bring an end to the record temperatures in the East early in the period. While many locations on the Eastern Seaboard received more than 1 inch of rain with the passage of the front, high pressure will continue to dominate during the upcoming week and although temperatures will be seasonable, conditions will remain largely dry. The exception may be upstate New York and New England where a developing low may move southward into the region near the start of the weekend. In the Northwest, the active pattern of recent weeks continues. Pacific moisture will be plentiful in many of the same areas impacted in the past several weeks. The movement of systems eastward will also bring rainfall to the Plains, but moisture is expected to be limited by the blocking ridge in the East and lack of inflow from the Gulf of Mexico.

The National Weather Service outlook for October 15-19 indicates the presence of a ridge of high pressure centered over the central U.S. separating troughs off the New England coast and over the Gulf of Alaska. The pattern will support normal to above normal temperatures for much of the country, with the exception of coastal California which will have normal to below normal temperatures due to the presence of the Gulf of Alaska trough. With the presence of the ridge of high pressure, near average to below average precipitation is likely over much of the eastern U.S. Precipitation in the Pacific Northwest and parts of the central and northern Plains will be average to above average.

Author: [Jay Lawrimore, National Climatic Data 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

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