



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

Weekly Report - Snowpack / Drought Monitor Update **Date: September 20, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: During the past seven days, mountain SNOTEL sites fell within 5°F of normal with the coldest departures over the Cascades and Sierra Nevada Ranges (Fig. 1). At lower elevation weather stations temperatures were a bit colder over parts of California (Fig. 1a).

Precipitation: For the past week, precipitation fell mainly over Colorado with widely scattered amounts occurring over the Northern and Southern Rockies as well as in Arizona (Fig. 2). For the Water Year (began 1 October 2006), very low totals persist over the Sierra Nevada and Arizona mountains. Slightly above normal totals continue to be reflected over the Cascades, Front Range of the southern Rockies, and Northern Bighorn Mountains of Wyoming (Fig. 2a).

WESTERN DROUGHT STATUS

The West: With precipitation normally at a minimum during September across most of the West, dry weather is usually not a concern, except possibly for wildfires. However, after a subnormal wet season (November-March) and a very early melt off of the snow pack thanks to an unseasonably mild March, hydrological impacts are now being seen in parts of the West. In eastern Oregon, western and eastern Idaho, and western Wyoming, the Bureau of Reclamation's major reservoir storage and stream flow statistics depicted some very low storages (lakes at less than 5% capacity) and stream flow values, especially in the Upper Snake and Owyhee River basins. Accordingly, D3(H) was expanded into eastern Idaho, western Wyoming, and northeastern Oregon. In western Montana, information from the state's August technical drought assessment depicted worsening conditions due to an overall lack of decent rain during the past 90 days, and D3 was slightly expanded. Elsewhere, conditions were left status-quo, although a discrepancy between short- and long-term impacts led to a reanalysis of the Impact lines. With short- and long-term drought indicator blends now becoming similar, the 'A' designation was changed to 'AH', and in areas where short-term surplus rainfall (most notable at 60-days) existed, the 'H' designation prevailed.

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, and 3b).

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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/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>

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

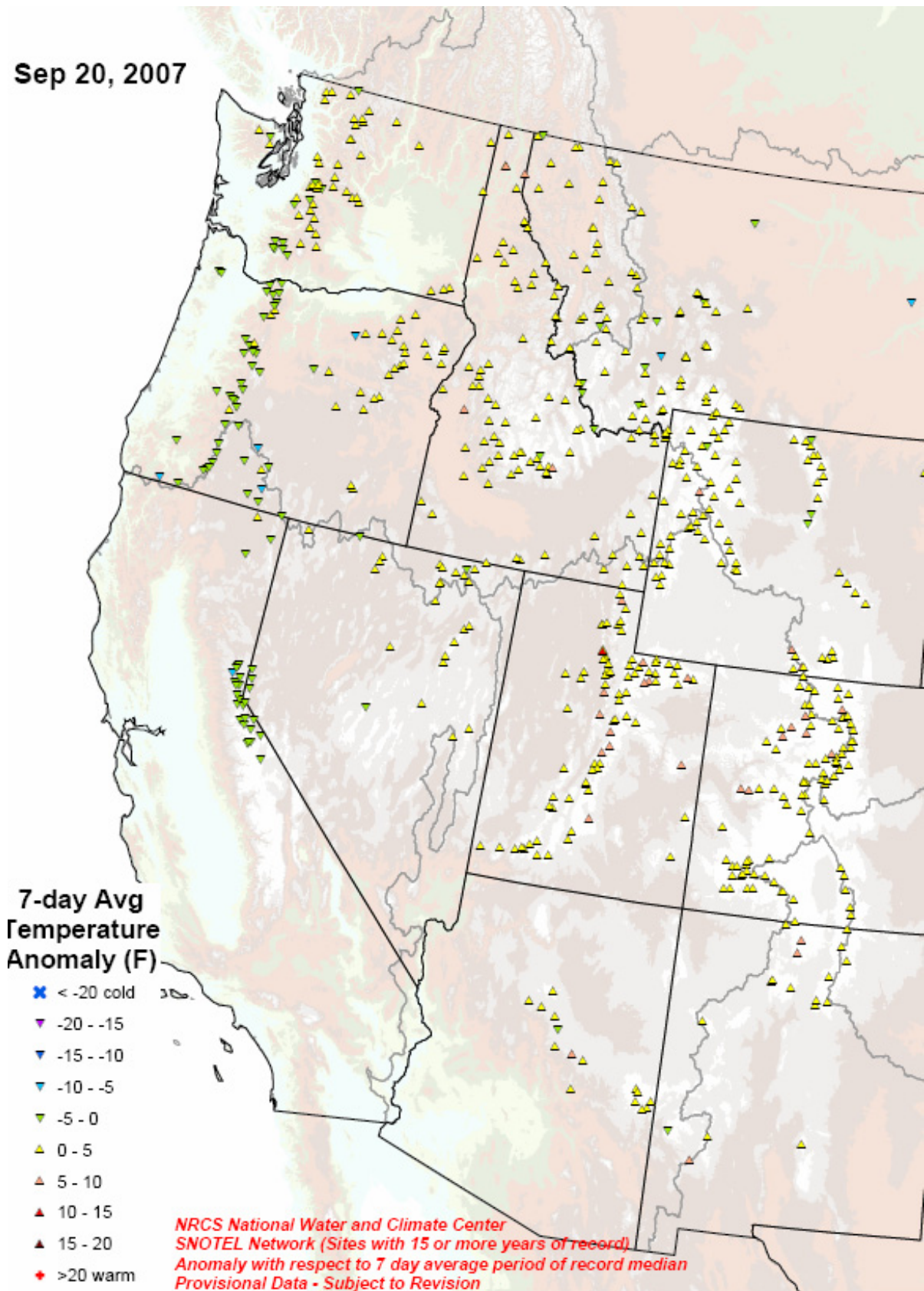
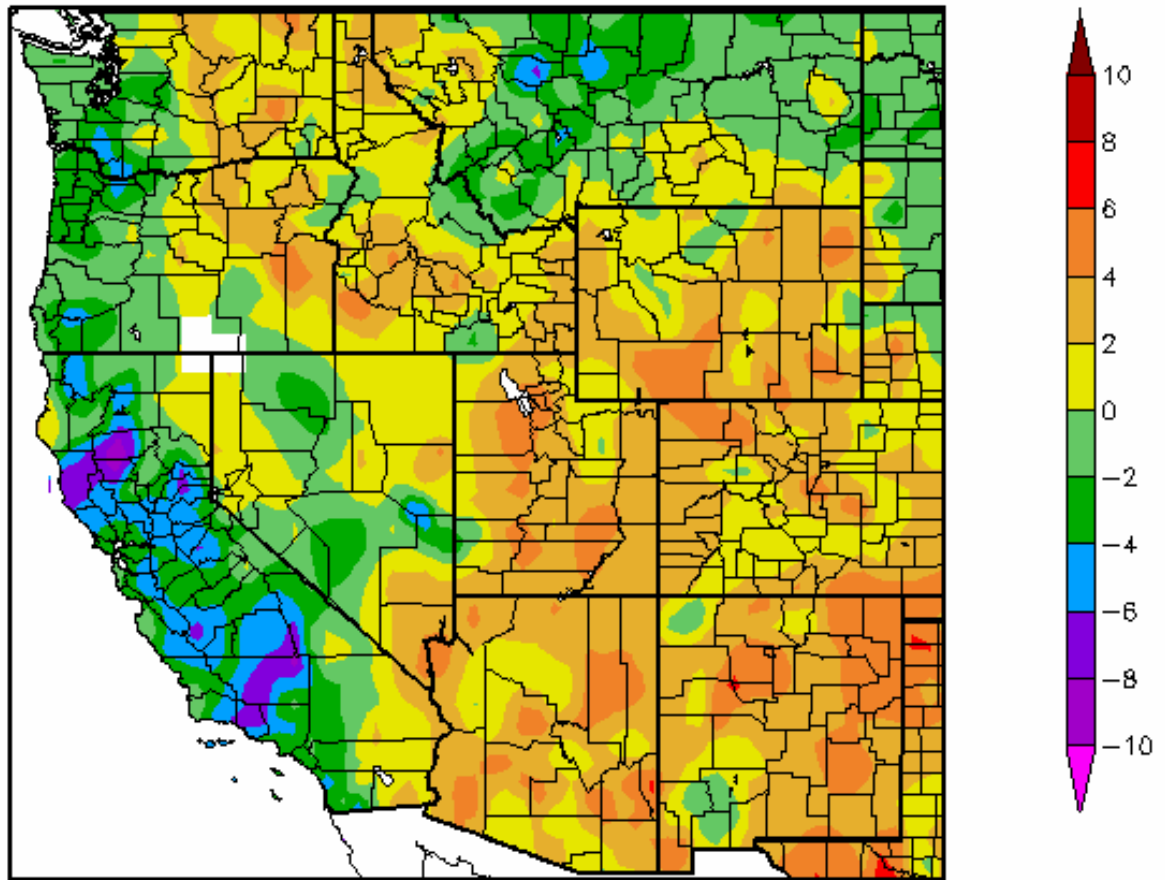


Fig. 1. SNOTEL 7-day average temperature anomaly.

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

Departure from Normal Temperature (F)
9/13/2007 – 9/19/2007



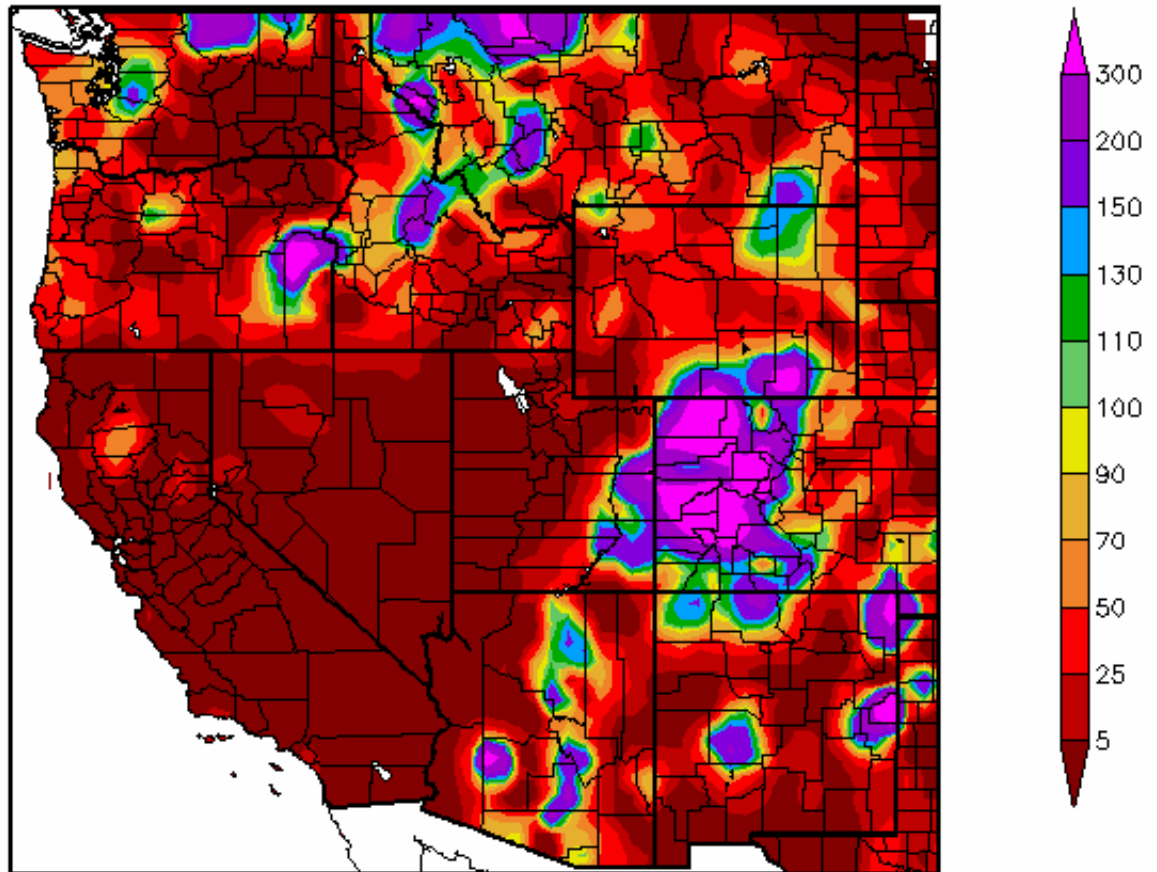
Generated 9/20/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 1a. September 13-19, 2007: Temperature departure from normal show warmer than normal temperatures over the Southern and Central Rockies and Interior Western States with coolest temperatures over much of Montana and West Coast.

Ref: http://www.hprcc.unl.edu/maps/index.php?action=update_region®ion=WRCC

Percent of Normal Precipitation (%)
9/13/2007 – 9/19/2007



Generated 9/20/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2. Preliminary precipitation totals for the 7-day period ending 19 September 2007 shows heavier rain falling across Colorado. Spotty showers dominated elsewhere except for an absence of precipitation over California and Nevada.

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

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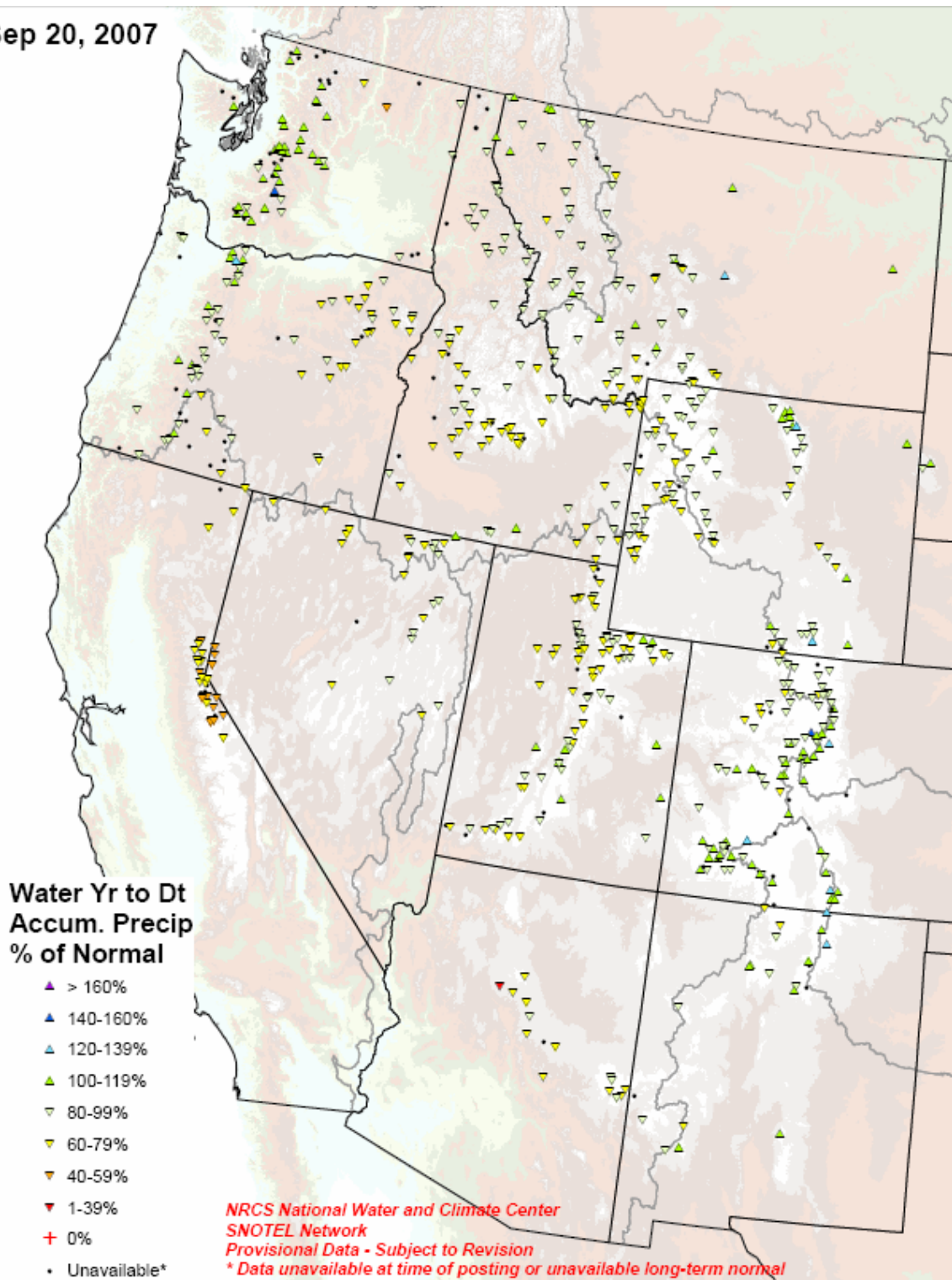


Fig. 2a. SNOTEL station water year (since October 1) precipitation as a percent of normal.

Note: No change from last week's map.

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

U.S. Drought Monitor

September 18, 2007

Valid 8 a.m. EDT

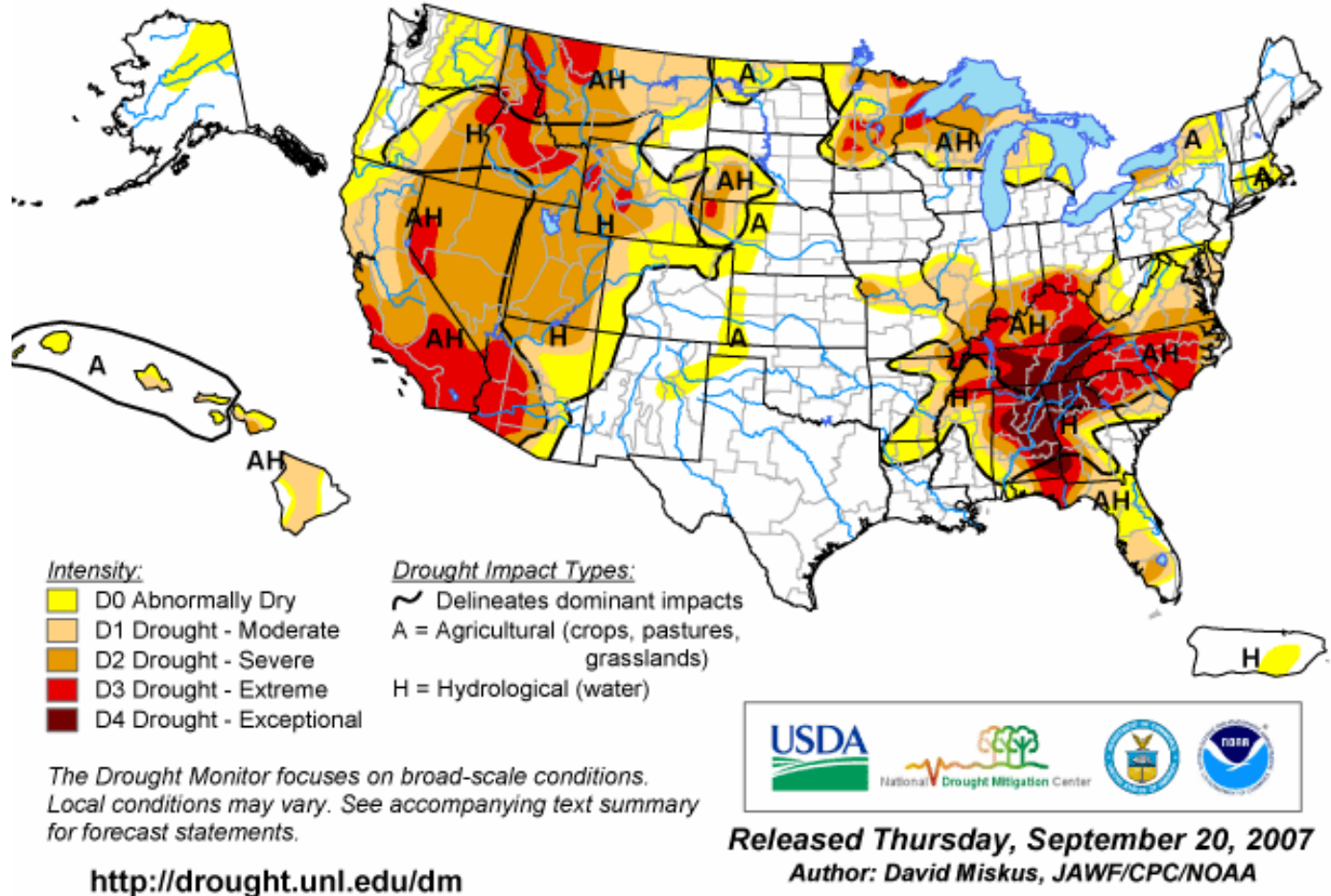


Fig. 3. Current Drought Monitor weekly summary.

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

U.S. Drought Monitor

West

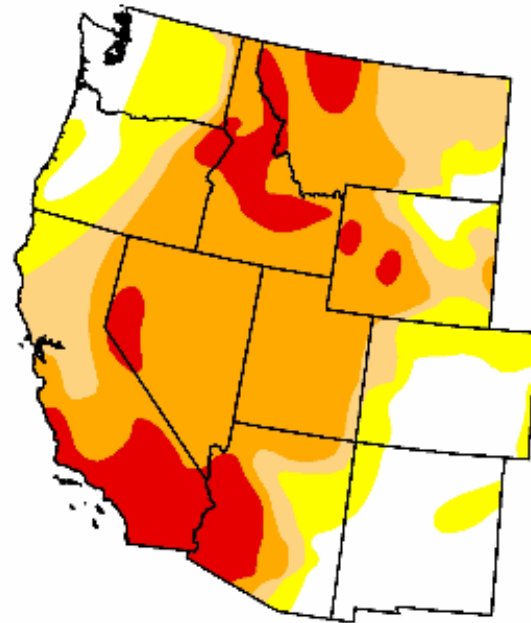
September 18, 2007

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	19.7	80.3	64.2	49.9	13.4	0.0
Last Week (09/11/2007 map)	21.4	78.6	63.9	49.4	12.2	0.0
3 Months Ago (06/26/2007 map)	33.5	66.5	48.7	28.3	7.9	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 (09/19/2006 map)	43.4	56.6	35.5	16.3	4.9	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, September 20, 2007

Author: David Miskus, JAWF/CPC/NOAA

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

Weekly Snowpack and Drought Monitor Update Report

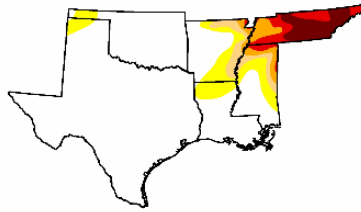
U.S. Drought Monitor South

September 18, 2007
Valid 7 a.m. EST

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	79.0	21.0	13.2	10.2	7.4	4.0
Last Week (09/11/2007 map)	75.1	24.9	15.0	10.6	8.0	4.7
3 Months Ago (06/26/2007 map)	72.9	27.1	19.6	13.1	9.3	0.8
Start of Calendar Year (01/02/2007 map)	39.8	60.2	33.3	22.3	12.1	1.9
Start of Water Year (10/03/2006 map)	22.6	77.4	48.4	28.6	13.0	0.8
One Year Ago (09/19/2006 map)	18.5	81.5	53.0	28.9	12.5	1.7

Intensity:

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



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



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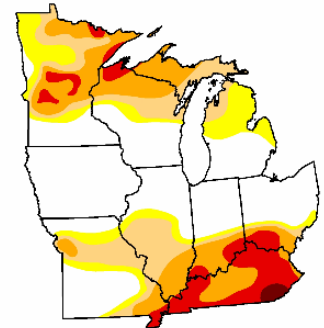
U.S. Drought Monitor Midwest

September 18, 2007
Valid 7 a.m. EST

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	46.0	54.0	42.1	27.0	9.8	0.6
Last Week (09/11/2007 map)	43.1	56.9	41.8	25.2	10.7	1.1
3 Months Ago (06/26/2007 map)	41.1	58.9	23.5	7.4	0.6	0.0
Start of Calendar Year (01/02/2007 map)	57.8	42.2	18.0	11.1	7.1	0.0
Start of Water Year (10/03/2006 map)	63.5	36.5	21.9	10.3	7.7	0.0
One Year Ago (09/19/2006 map)	60.9	39.1	21.1	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>



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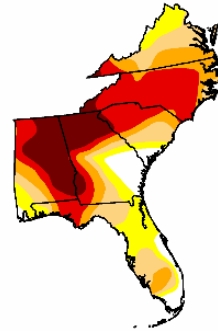
U.S. Drought Monitor Southeast

September 18, 2007
Valid 7 a.m. EST

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	8.2	91.8	76.7	58.1	41.7	15.9
Last Week (09/11/2007 map)	5.7	94.3	80.6	62.7	44.7	19.2
3 Months Ago (06/26/2007 map)	3.0	97.0	68.4	42.8	26.4	8.1
Start of Calendar Year (01/02/2007 map)	52.2	47.8	10.2	1.5	0.0	0.0
Start of Water Year (10/03/2006 map)	47.0	53.0	33.2	0.0	0.0	0.0
One Year Ago (09/19/2006 map)	52.6	47.4	28.3	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.

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Soil Moisture Percentiles (wrt/ 1915-2003)
20070918

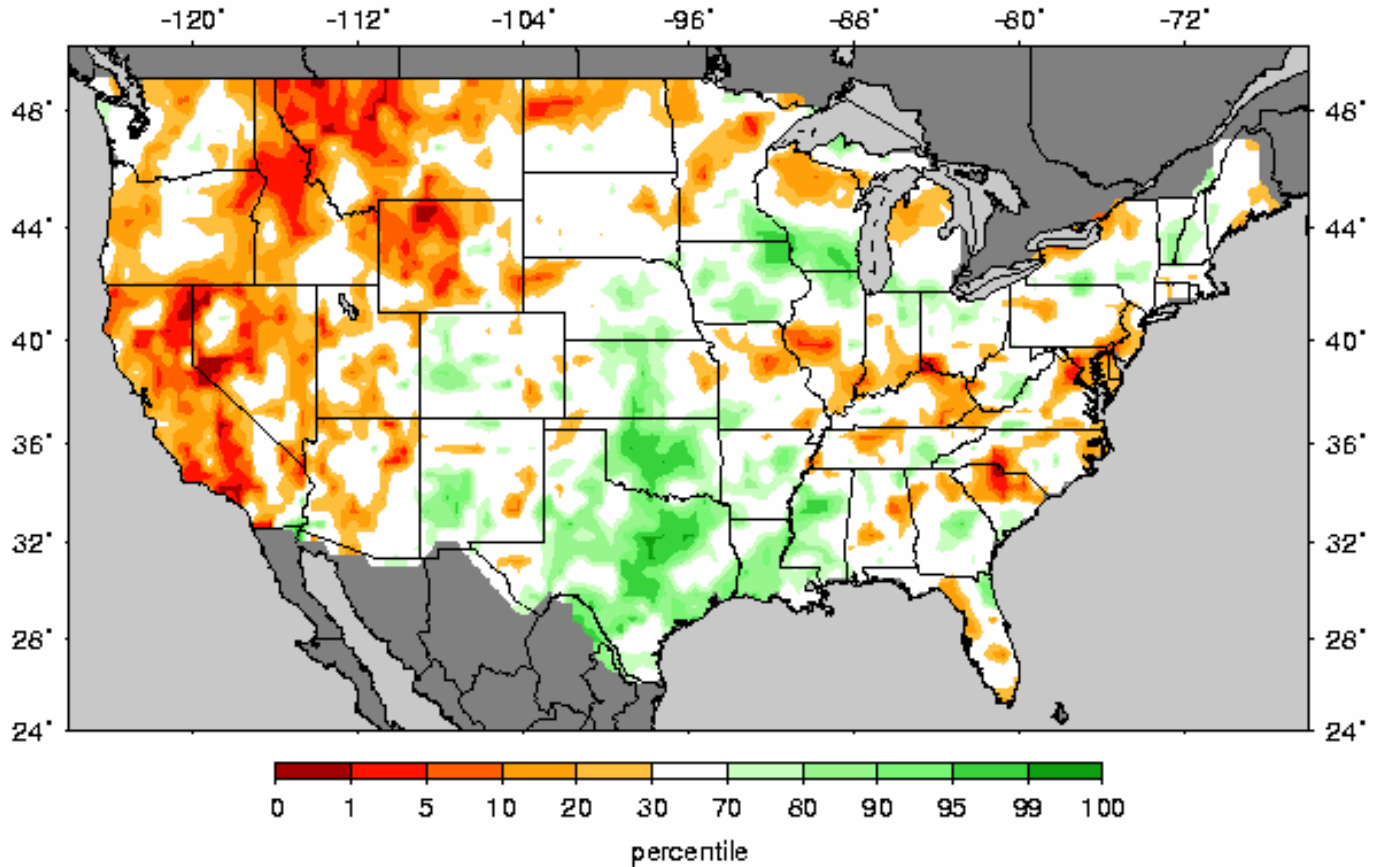


Fig. 4: Soil Moisture Ranking Percentile based on 1915-2003 climatology. Note some improvement over NW Colorado and NE New Mexico since last week.

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

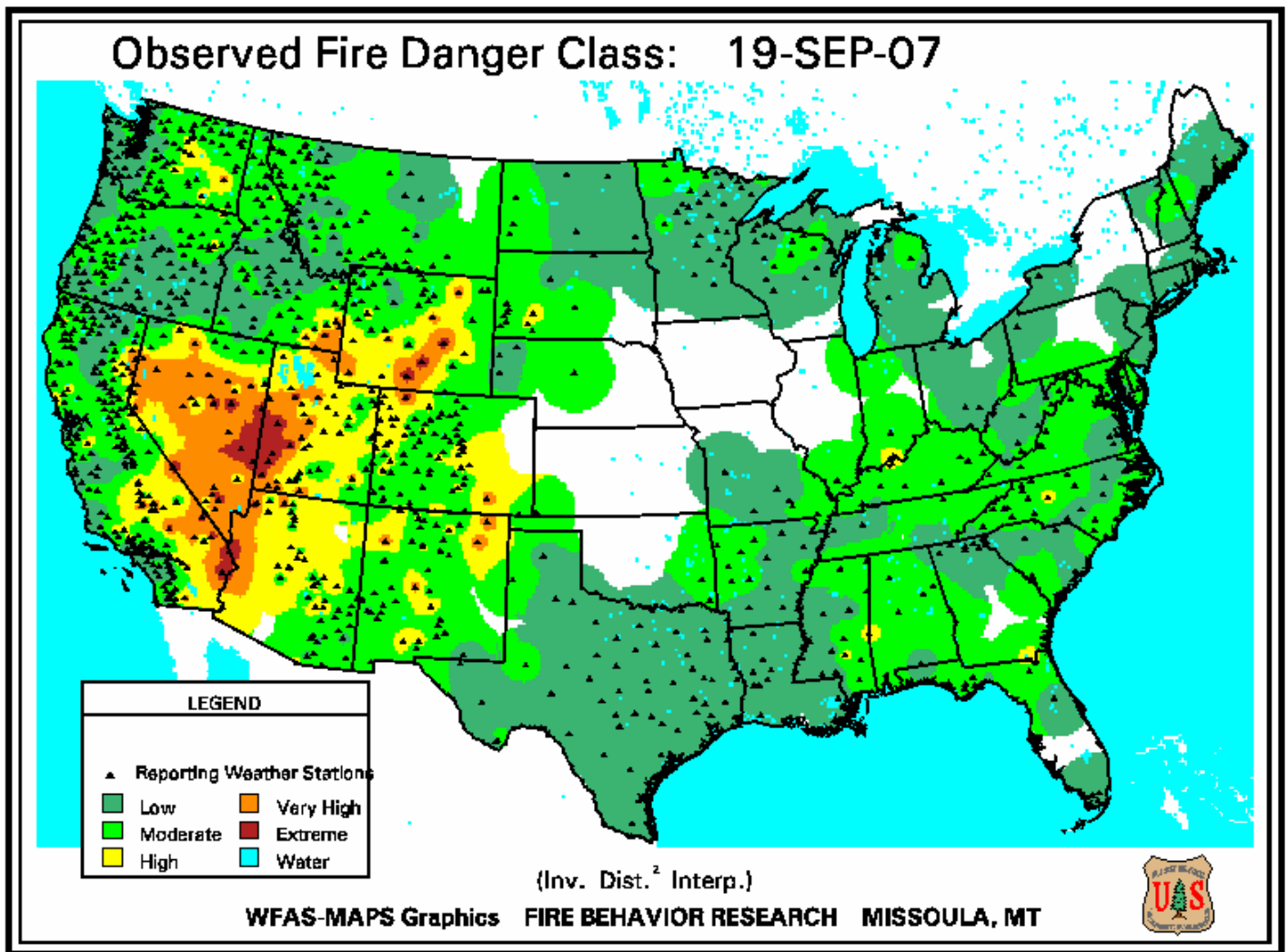


Fig. 5. Observed Fire Danger Class. Fire threat is still high over much of the Great Basin. Conditions have greatly improved over the Northern Rockies and the Pacific NW since last week. Source: Forest Service Fire Behavior Research – Missoula, MT. Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

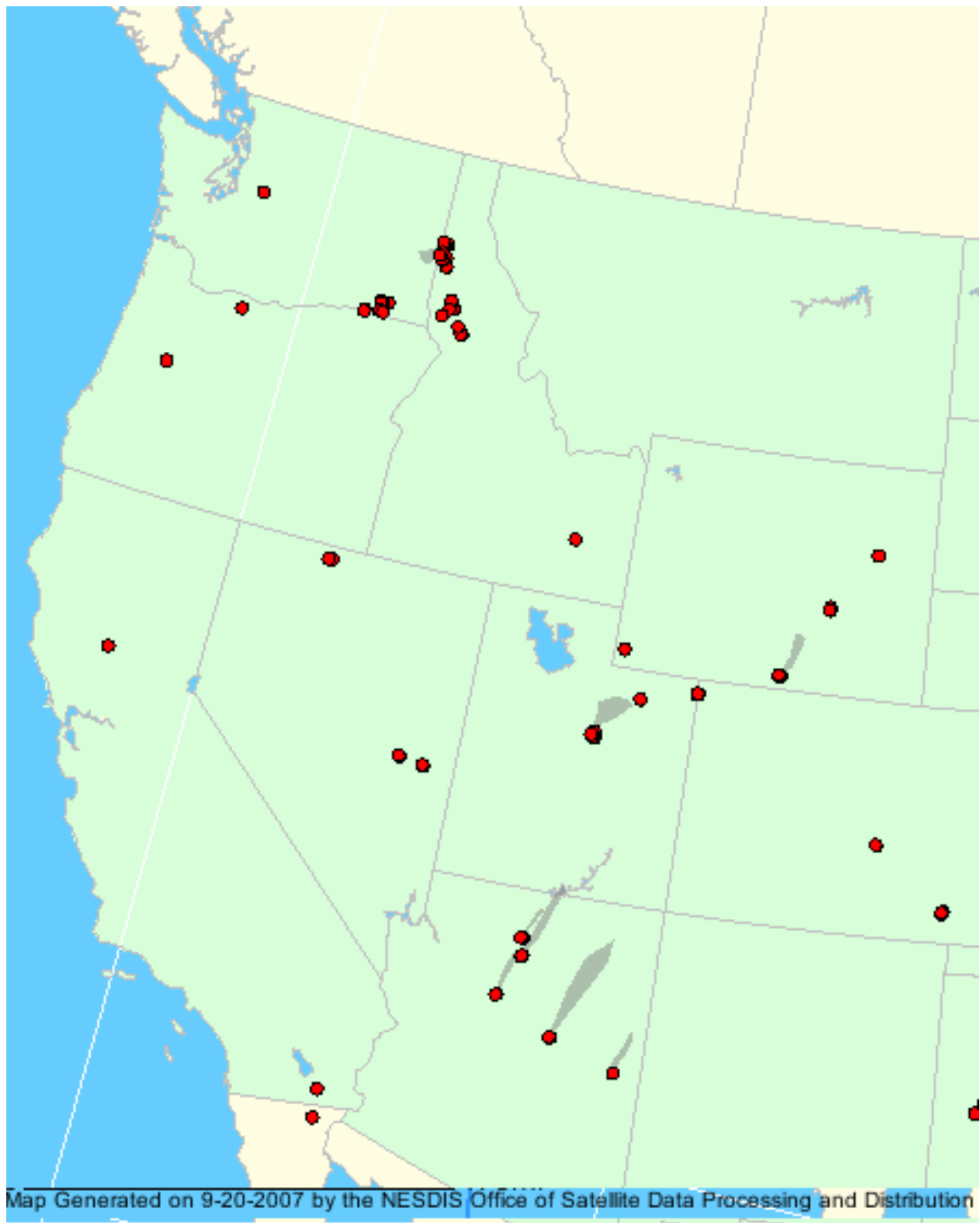
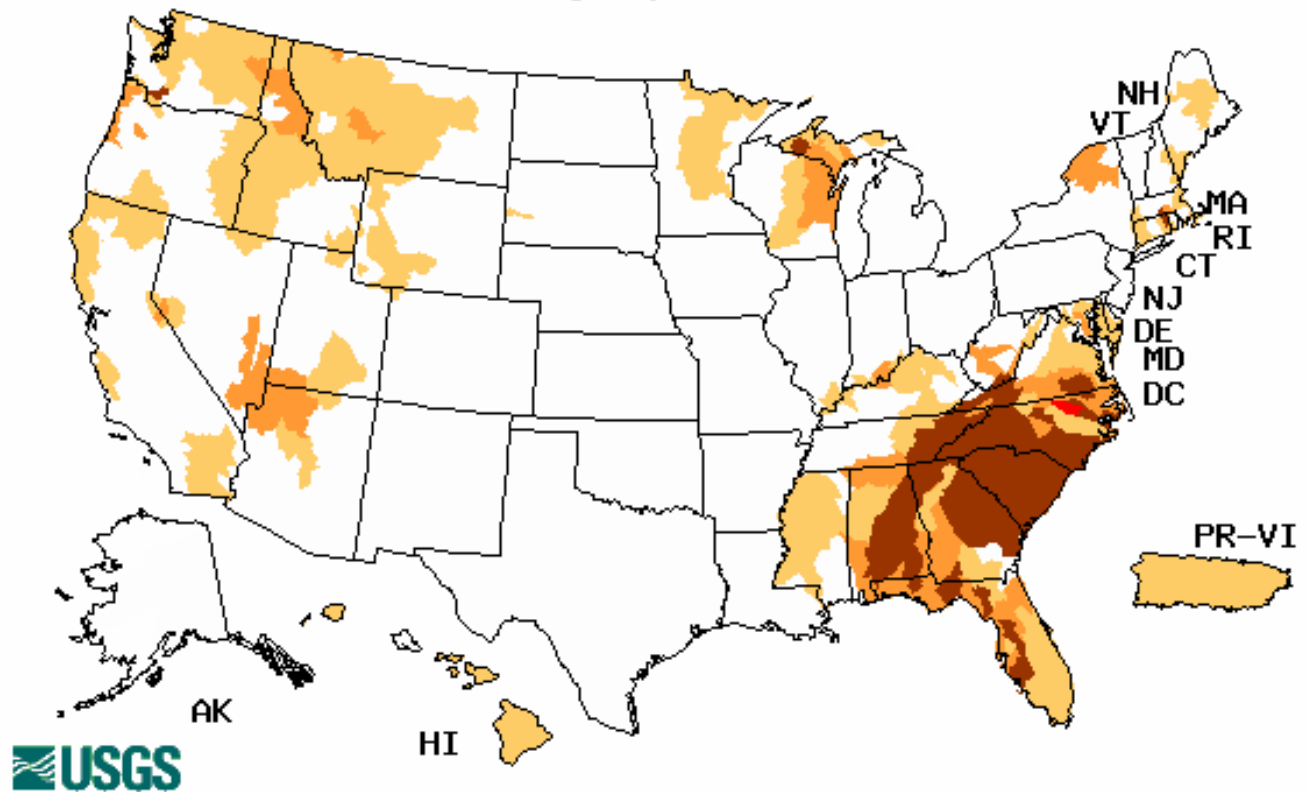


Fig. 5a. Location of active wildfires as detected from satellite across the West as of 20 September 2007. Gray areas depict smoke and blue areas depict fire potential. Note marked improved since last week. Ref: <http://www.firedetect.noaa.gov/viewer.htm>

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Wednesday, September 12, 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. This week's map shows a significant improvement over the Southeastern States but little change over the West 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

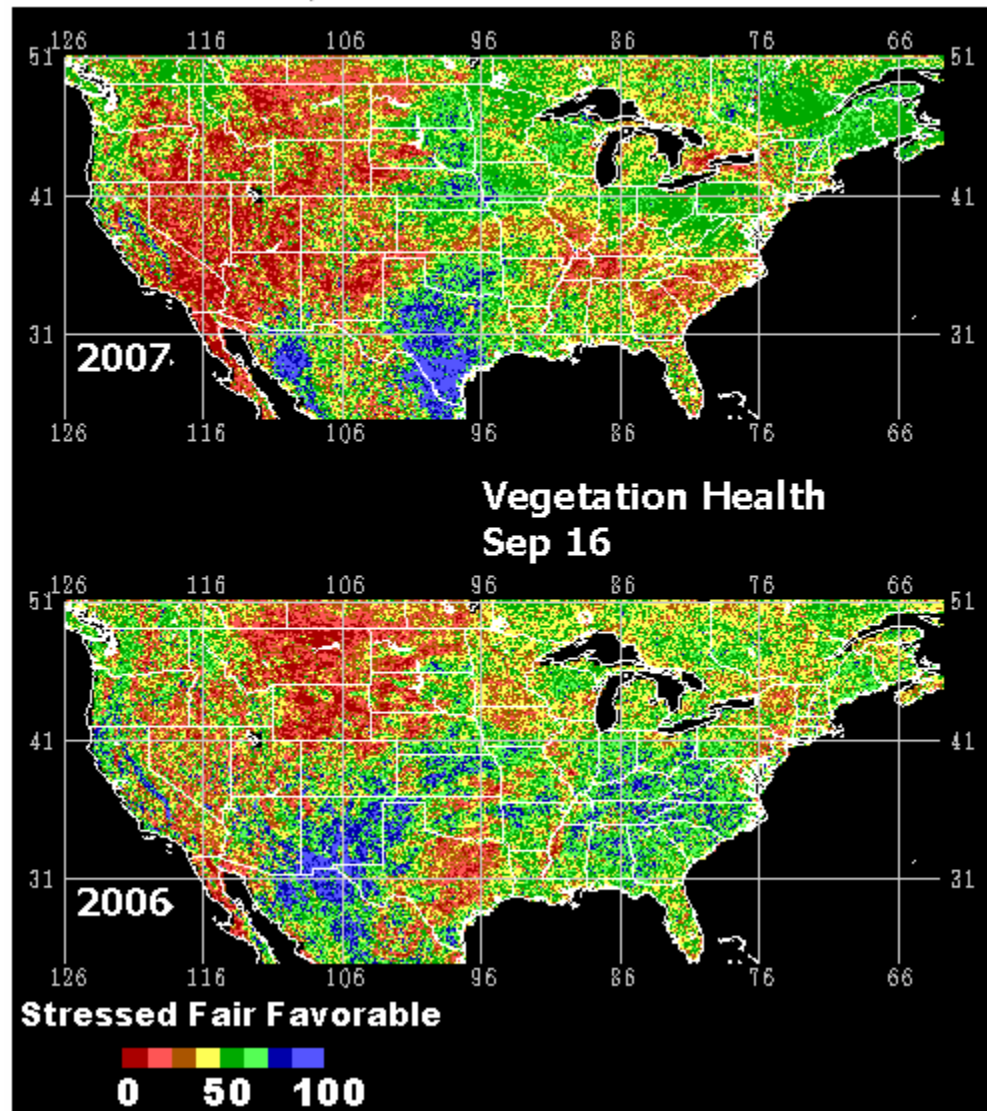


Fig. 7: This remote satellite AVHRR map shows stressed vegetation as compared to last year. Much of Texas continues to show the greatest improvement since last September. Ref: <http://www.orbit.nesdis.noaa.gov/smcd/emb/vci/usa.html>).

Weekly Snowpack and Drought Monitor Update Report

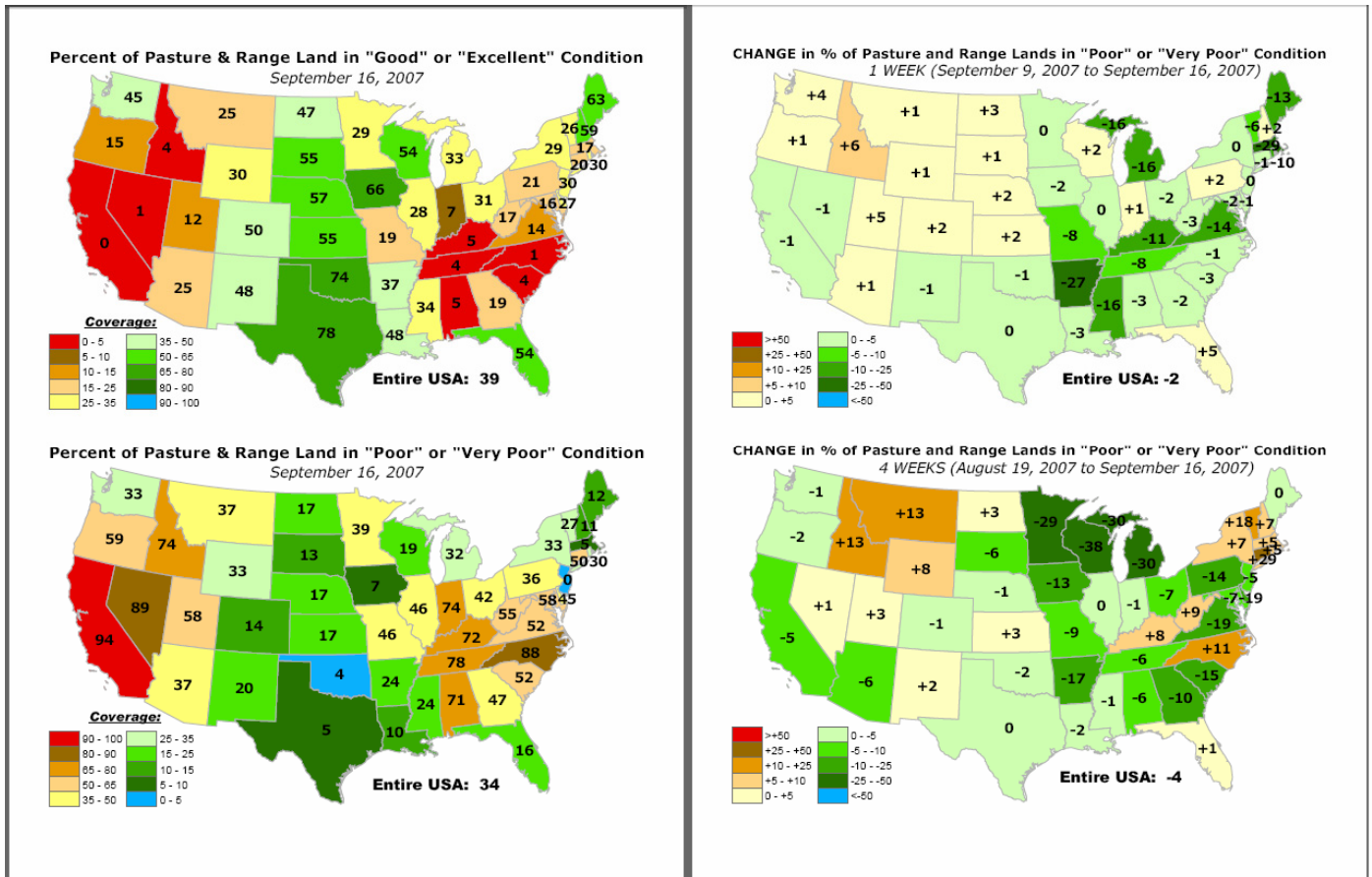


Fig. 8. Pasture and rangeland conditions for various time periods are shown above. The worst conditions exist over California, Idaho, and Nevada (left panels). During the past week, Idaho shows the largest increase in poor to very poor conditions (top right panel) and during the past four weeks Montana and Idaho shows the largest increase in deteriorated lands (bottom right panel). Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/pasture-range-statewide-conditions.pdf>

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National Drought Summary -- September 18, 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/>.

Hurricane Humberto, coming ashore near High Island, TX, at 2 am CDT September 13 with 85 mph sustained winds, rapidly intensified from 1006 to 986 millibars central pressure and increased its sustained winds by 50 mph within 14 hours of landfall. Although Humberto rapidly weakened once inland, its northeastward track brought locally heavy but beneficial rains to the drought-stricken Delta and Southeast. Later, moisture from Humberto combined with a strong cold front to drop additional rains on the southern Atlantic Coast. Behind the front, much colder air settled over the eastern half of the nation, including the first widespread freeze in the north-central states. Elsewhere, an early-week cold front triggered rain in the Northeast, with over 2 inches measured in parts of New England, while more showers fell on the southern and central Plains and upper Midwest late in the period. Most of the West was dry, with cool conditions in the Pacific Coast states and above-normal readings in the Southwest and Rockies.

The West: With precipitation normally at a minimum during September across most of the West, dry weather is usually not a concern, except possibly for wildfires. However, after a subnormal wet season (November-March) and a very early melt off of the snow pack thanks to an unseasonably mild March, hydrological impacts are now being seen in parts of the West. In eastern Oregon, western and eastern Idaho, and western Wyoming, the Bureau of Reclamation's major reservoir storage and stream flow statistics depicted some very low storages (lakes at less than 5% capacity) and stream flow values, especially in the Upper Snake and Owyhee River basins. Accordingly, D3(H) was expanded into eastern Idaho, western Wyoming, and northeastern Oregon. In western Montana, information from the state's August technical drought assessment depicted worsening conditions due to an overall lack of decent rain during the past 90 days, and D3 was slightly expanded. Elsewhere, conditions were left status-quo, although a discrepancy between short- and long-term impacts led to a reanalysis of the Impact lines. With short- and long-term drought indicator blends now becoming similar, the 'A' designation was changed to 'AH', and in areas where short-term surplus rainfall (most notable at 60-days) existed, the 'H' designation prevailed.

The Plains: Cooler and mostly dry weather prevailed across the Plains, although scattered showers dropped between 2 and 3 inches on central Kansas, with lighter amounts (less than an inch) in the Texas Panhandle, southern Nebraska, west-central Oklahoma, and the rest of Kansas. Much of this rain fell on non-drought areas. In contrast, short-term dryness D0(A) was expanded southwestward from western Kansas into northeastern New Mexico as 30- and 60-day rainfall has been under half of normal, accumulating deficits exceeding 2 and 4 inches, respectively. In addition, the Sep. 16 NESDIS Vegetative Health Index depicted stressed conditions in the newly added area. In southeastern South Dakota, the small D0(H) area was removed as all products indicated average to wet conditions.

Upper Midwest and western Great Lakes region: During the first half of the week, scattered showers and thunderstorms dropped between 0.5 and 1.5 inches of rain on the western Great Lakes region, continuing a trend of light to moderate rains each week since early August. As a

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result, some D0(A) and D1(A) was shaved away in northern sections of lower Michigan, and the Impact designation was changed to 'AH' with distinctions between short- and long-term dryness less apparent. Farther west, light to moderate rains (0.1 to 1 inches, with isolated values to 2 inches) in central and northeastern Minnesota late in the period were not enough to warrant improvement. However, with detailed precipitation maps from the Minnesota State Climatology Office, D2 and D3 areas were redone to reflect the largest rainfall shortages (more than 5 inches) since June 5. In addition, increasing deficits across northern Wisconsin (3 to 6 inches at 60-days; 6 to 12 inches at 6-months), short- and long-term drought indicator blends at D2 or worse, very low CPC soil moisture percentiles, and USGS stream flows (1-, 7-, 14-, and 28-days) at near- or record low levels justified a D2 expansion. In the short term (60 days), minimal rain in northwestern Minnesota has accumulated deficits exceeding 4 inches, leading to very low inflow into Lake of the Woods and causing its level to drop at a rate faster than climatology would dictate. Accordingly, D1(A) and D2(A) was added into northwestern Minnesota.

The Southeast, Ohio and lower Missouri valleys: Welcome rains from the remnants of Hurricane Humberto plus a cold front provided badly needed moisture to the drought-stricken Southeast and Tennessee Valley; however, the most notable improvements were made to drought areas farthest west (lower Mississippi Valley) and farthest east (southern Coastal Plains). The reasoning for this included moderate to heavy rains in July and late August in the lower Mississippi Valley, and during late August in the southern Atlantic Coast. This created favorable topsoil moisture conditions, allowing Humberto rains to infiltrate deeper into the soil profile. In contrast, there would be more runoff of the current rains as drier topsoils would allow less penetration into the ground. Furthermore, local experts noted that many conditions reverted back to pre-Humberto times once dry weather returned to the Southeast for a few days. This was most notable with the instantaneous USGS stream flow on Sep. 19 as many values dropped right back below the 10th percentile, with several approaching record low levels. Weekly totals exceeding 3 inches occurred in southeastern Texas, southern half of Louisiana, central Mississippi, northern Alabama, northwestern and central Georgia, parts of eastern Tennessee, western and eastern South Carolina, western North Carolina, and south-central Virginia. In addition, where USGS stream flows at 1-, 7-, 14-, and 28-days (ending Sep. 18) rose above the 25th (normal) percentile, a 1-category improvement was made. Hopefully, this would avoid a 'flip-flop' of Drought Monitor conditions where improvements made this week would disappear next week if a period of dry weather occurred. This included central Louisiana, most of Mississippi, northwestern Alabama, parts of the western Carolinas, southeastern and central Georgia, and southeastern South Carolina. Moderate rains also eased drought in parts of the central Appalachians. And after further assessment, improvements from recent September rains were also made to central Kentucky, while the D0-D1 area was trimmed southward from eastern Illinois to eastern Ohio as a very tight gradient exists from north (wet) to south (dry) in the Ohio Valley.

In contrast, reports of poor growing conditions, minimal stream flows and dry local ponds, and low soil moisture in west-central Missouri, plus 30- and 60-day precipitation shortages exceeding 2 to 4 and 3 to 6 inches, respectively, led to an expansion of D0 and D1 in central Missouri and west-central Illinois, and a new D2 near Kansas City, MO. Finally, the Impact lines were redrawn as this week's rains greatly improved the short-term drought indicator blends. Where both long- and short-term blends indicated drought, 'AH' was designated, but where long-term drought was indicated with no short-term dryness, an 'H' was used.

New England and eastern Great Lakes region: An early week frontal system brought welcome rains (0.3 to 2.5 inches) to much of the Northeast, with weekend showers dropping an additional 0.2 to 1 inches. This provided relief from moderate drought in southern coastal New England where weekly rainfall totaled between 2 and 3 inches, but with lower weekly amounts

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and greater long-term deficiencies (6-months: -4 to -12 inches) to the west, no improvements were made in interior New England and the eastern Great Lakes region.

Alaska, Hawaii, and Puerto Rico: With daily light to moderate showers falling during much of the week (totaling between 0.5 and 3 inches for the 7-day period), abnormal dryness was alleviated in south-central sections of Alaska. Farther north, however, little or no precipitation fell, maintaining D0 in northeastern Alaska. In Hawaii, while leeward sites observed little or no rain, light showers (generally less than 0.25 inches) fell on windward locations, but were not large enough to warrant any improvement, leaving conditions status-quo. In southeastern Puerto Rico, the D0(H) was slightly expanded to better depict the long-term departures of less than 75% of normal rainfall at 6-months and for year-to-date, or deficits of more than 12 and 20 inches, respectively. In addition, USGS stream flows at 7-, 14-, and 28-days also reflect values in the lower 10th percentile in southeastern sections.

Looking Ahead: For September 20-24, a weak surface low off Florida's Atlantic Coast and an upper-air low over the eastern Gulf of Mexico will bring heavy rain to much of Florida, with possible further development of the surface low after it tracks into the eastern Gulf of Mexico. In the West, an upper-air low off southern California's coast will produce cool and unsettled weather in California. The upper-air low will track northeastward over the weekend, bringing precipitation to the Great Basin and northern Rockies, then rain to the northern Plains and upper Midwest early next week. Most of the U.S. will experience near- to above-normal temperatures, except for cooler conditions in the Far West.

For the ensuing 5 days (September 25-29), the odds favor above-normal precipitation from the Northwest eastward to the Great Lakes region, throughout the Mississippi and western Ohio valleys, and the Gulf Coast states. Drier-than-normal conditions are expected in the Southwest and the Atlantic Coast states from northern Georgia northward. Unseasonable warmth is forecast for much of the lower 48 states, from the Rockies eastward.

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 19, 2007