



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 22 July 2010

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: SNOTEL 7-day average temperature departures from normal map reveals cooler than average readings over much of the Pacific Northwest and Northern Rockies. Elsewhere, temperatures were above normal, especially over southwestern Utah (Fig. 1). ACIS 7-day average temperature anomalies show that the greatest positive temperature departure was over southern California (>+8°F) and the greatest negative departures occurred over coastal Washington and northern Montana (<-4F) (Fig. 1a).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 21 July shows the bulk of the heaviest precipitation falling over southeast Arizona, southwest New Mexico, and eastern Montana (Fig. 2). In terms of percent of normal, scattered thunderstorms throughout all but the Pacific Northwest resulted in two to four times the normal precipitation this week (Fig. 2a). For the 2010 Water-Year that began on 1 October 2009, Arizona, southern New Mexico, eastern Nevada, southeast & southwest Utah, the Olympic Range (WA), central Montana, and central-eastern Wyoming have the largest surpluses while much of northern Idaho, Upper Snake River, Northern Wasatch (UT), and southern Colorado have the greatest deficits. No significant changes since last week (Fig. 2b).

WESTERN DROUGHT STATUS

The Southwest: Temperatures generally ranged from 4 to 8 degrees F above normal across the region during the past week. With monsoon activity lagging behind (as it did last year), dryness across the Southwest is becoming a more serious problem. In Arizona, an exceptionally dry spring and recent dry period, together with weak monsoon activity, has eroded a lot of the gains made this past winter. Prospects for significant monsoon rainfall appear to be good in the next week. The USDA/NASS reports statewide pasture and range conditions degraded this past week, from 30 percent rated good or excellent, to just 9 percent. In Flagstaff, despite unusually heavy snowfall during the past winter, the spring season was dry. Soon after the snow melted away, the forests became tinder dry very quickly and this has made the area much more vulnerable to wildfire activity. Modifications made to the Arizona drought depiction this week include an expansion of D0 dryness across central and southwestern Arizona, while the D1 area of moderate drought in northern Arizona was expanded westward. In neighboring northwestern New Mexico, the dryness of spring persisted through June into mid-July. D0 and D1 dryness and drought renditions were expanded northward and westward across the counties of Rio Arriba, Sandoval, and San Juan. In northeastern Utah, abnormal dryness was expanded across Duchesne County, based on low stream flows, very little rainfall, and high temperatures. Author: Anthony Artusa, NOAA/NWS/NCEP/CPC.

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

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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 and 3a).

SOIL MOISTURE

Soil moisture (Figs. 4a and 4b), is simulated by the [VIC macroscale hydrologic model](#). The detailed, physically-based VIC model is driven by observed daily precipitation and temperature maxima and minima from approximately 2130 stations, selected for reporting reliably in real-time and for having records of longer than 45 years (and various other criteria). Another good resource can be found at: <http://www.emc.ncep.noaa.gov/mmb/nldas/drought/>.

U.S. HISTORICAL STREAMFLOW

http://water.usgs.gov/cgi-bin/waterwatch?state=us&map_type=dryw&web_type=map.

This map, (Fig. 5) 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.

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/> and <http://drought.gov>.

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/ DOUGLAS LAWRENCE
Deputy Chief, Resource Inventory Division

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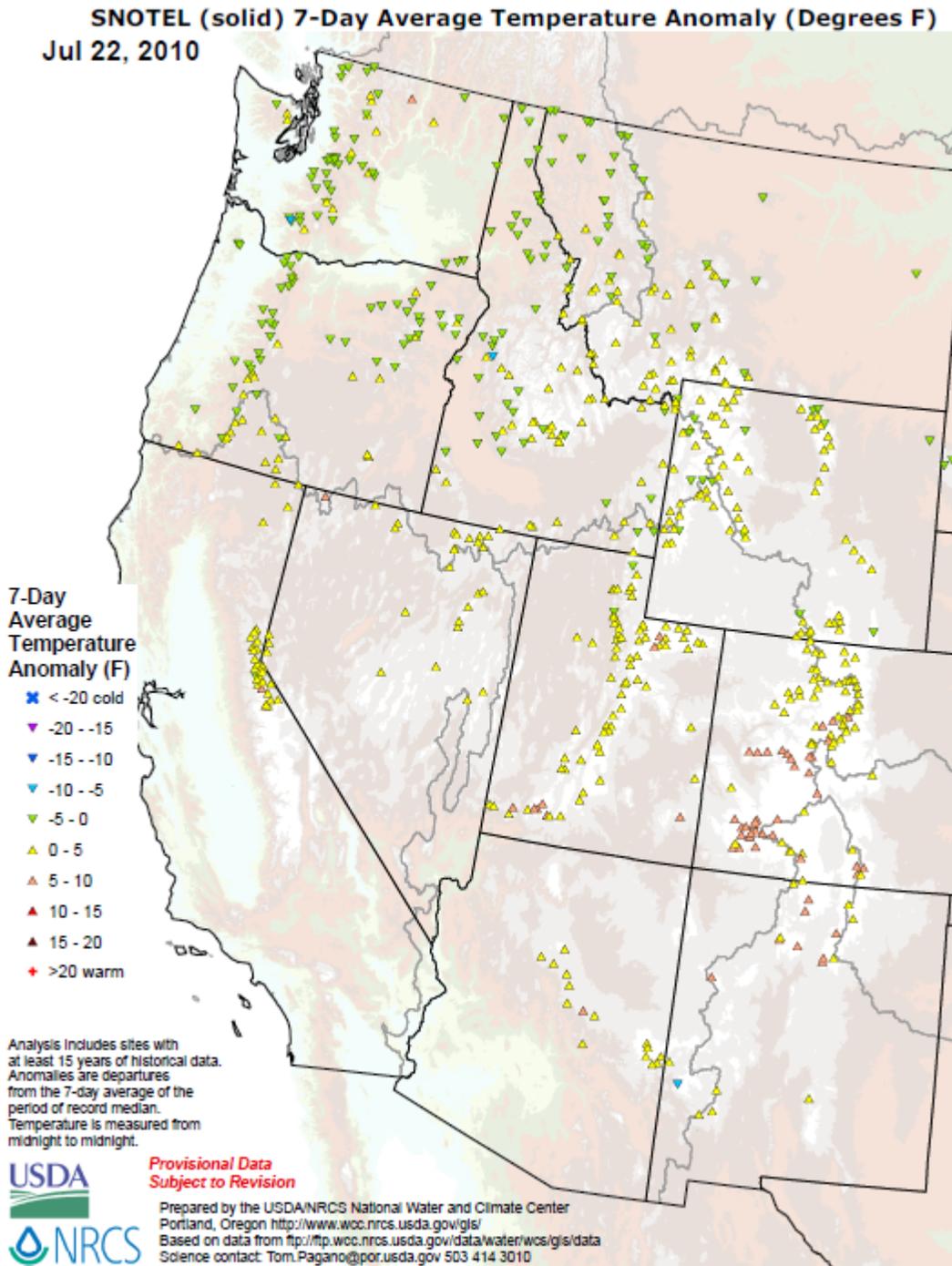
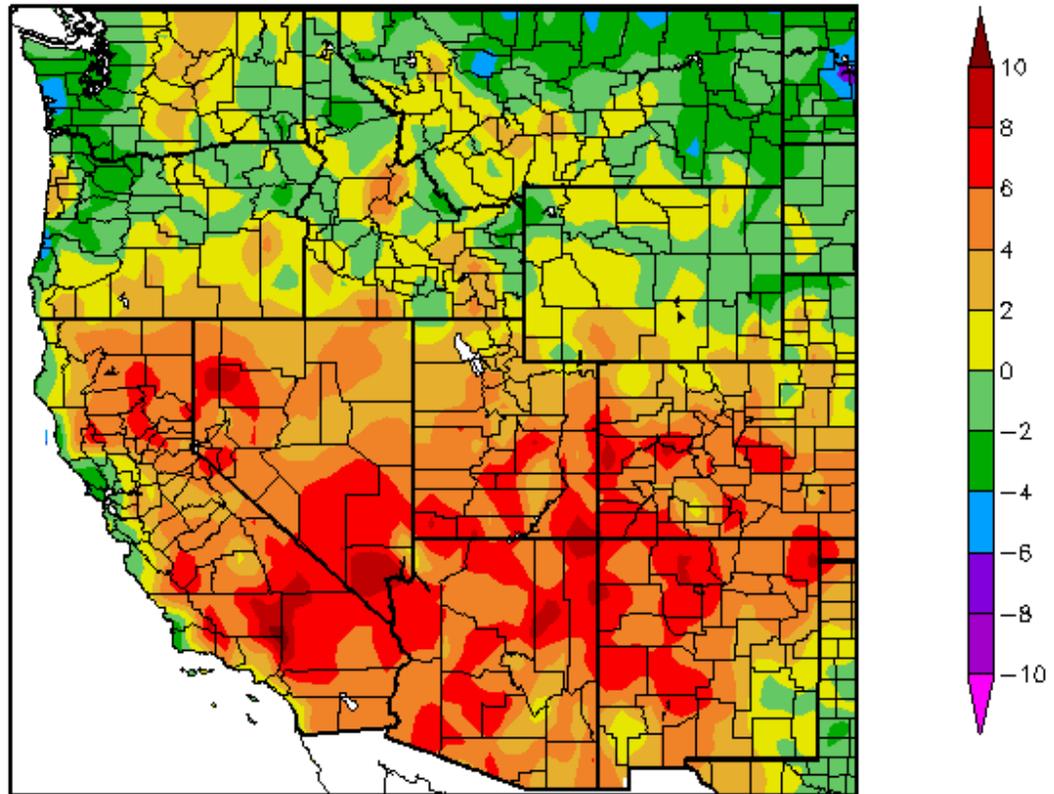


Fig. 1: SNOTEL 7-day average temperature departures from normal map reveals cooler than average readings over much of the Pacific Northwest and Northern Rockies. Elsewhere, temperatures were above normal, especially over southwestern Utah.

Ref: <http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf>

Departure from Normal Temperature (F)
7/15/2010 – 7/21/2010



Generated 7/22/2010 at HPRCC using provisional data.

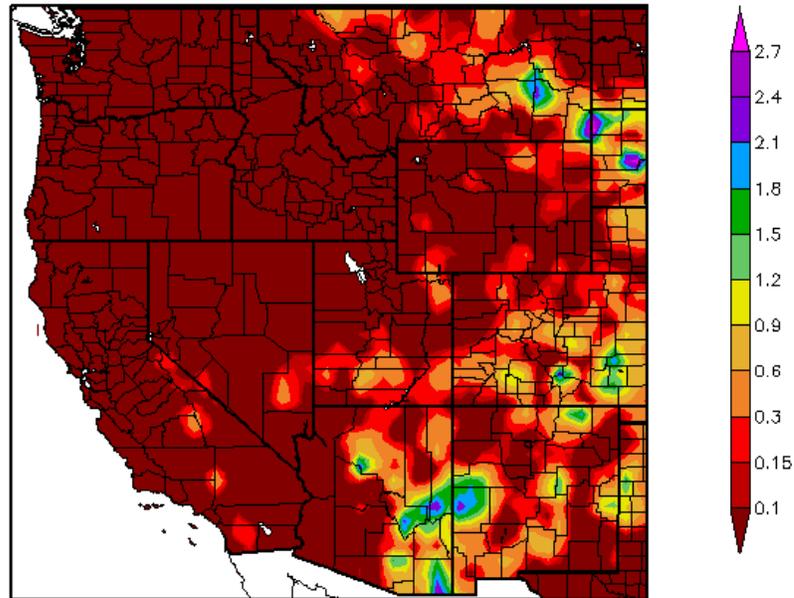
NOAA Regional Climate Centers

Fig. 1a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departure was over southern California (>+8°F) and the greatest negative departures occurred over coastal Washington and northern Montana (<-4F).

Ref: http://www.hprcc.unl.edu/maps/current/index.php?action=update_daterange&daterange=7d

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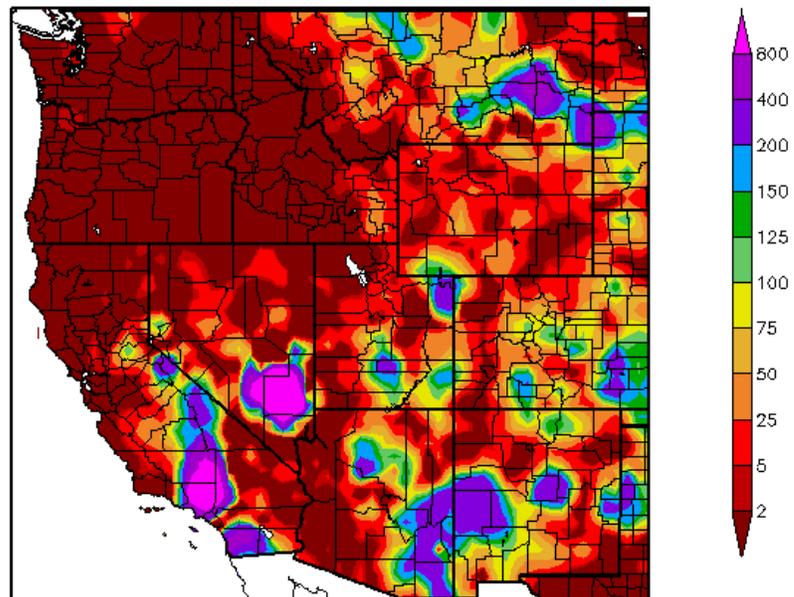
Precipitation (in)
7/15/2010 – 7/21/2010



Generated 7/22/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
7/15/2010 – 7/21/2010



Generated 7/22/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 2 and 2a: ACIS 7-day average precipitation amounts for the period ending 21 July shows the bulk of the heaviest precipitation falling over southeast Arizona, southwest New Mexico, and eastern Montana (Fig. 2). In terms of percent of normal, scattered thunderstorms throughout all but the Pacific Northwest resulted in two to four times the normal precipitation this week (Fig. 2a). Ref: <http://www.hprcc.unl.edu/maps/current/>

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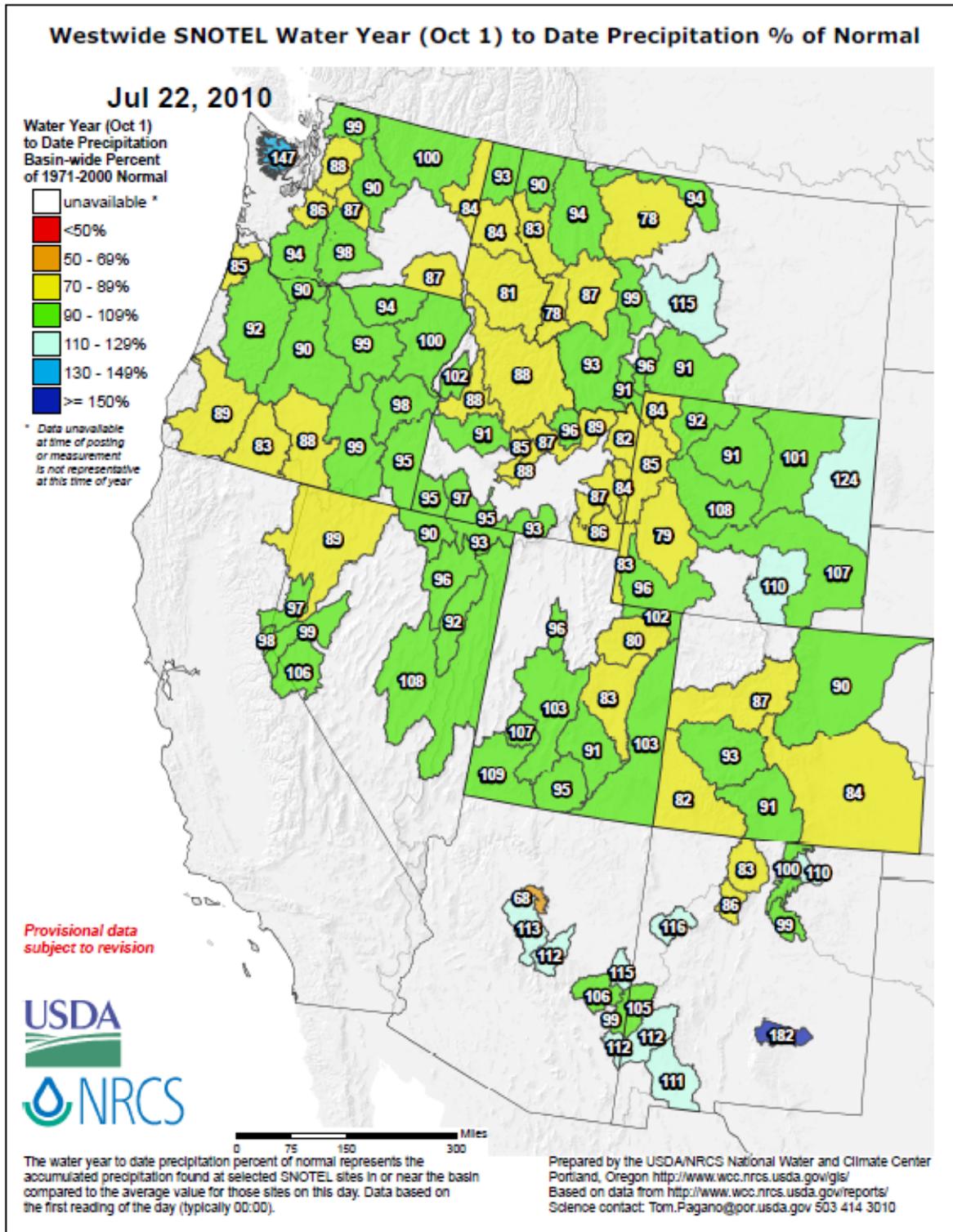


Fig 2b: For the 2010 Water-Year that began on 1 October 2009, Arizona, southern New Mexico, eastern Nevada, southeast & southwest Utah, the Olympic Range (WA), central Montana, and central-eastern Wyoming have the largest surpluses while much of northern Idaho, Upper Snake River, Northern Wasatch (UT), and southern Colorado have the greatest deficits. No significant changes since last week.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf

U.S. Drought Monitor

July 20, 2010
Valid 8 a.m. EDT

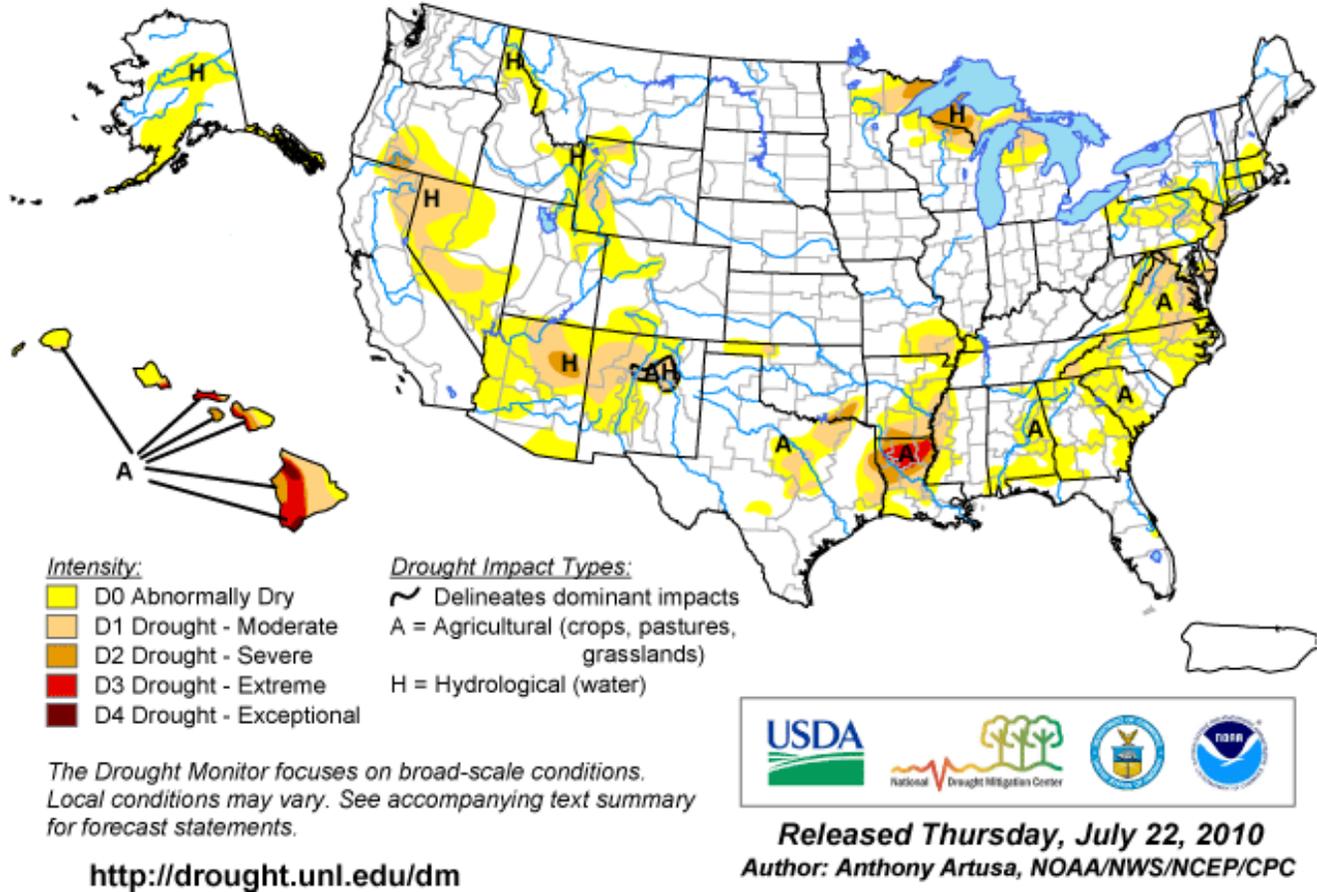


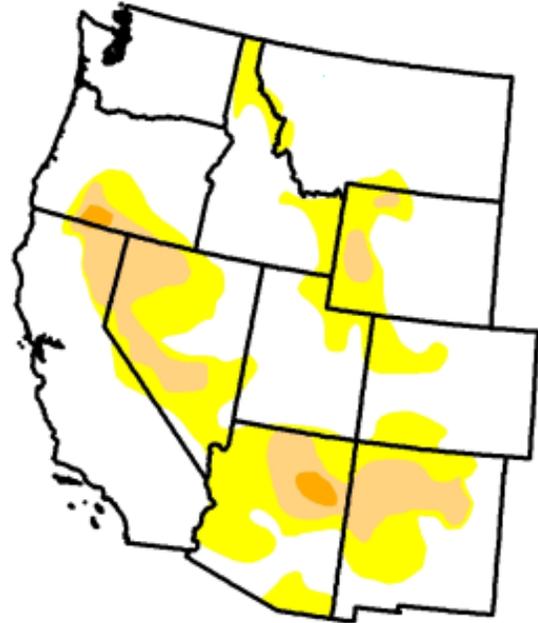
Fig. 3: Current Drought Monitor weekly summary. Hawaii is only state that has a D4 drought level. D3 levels dominate northern Louisiana. Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor West

July 20, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	69.0	31.0	9.6	0.6	0.0	0.0
Last Week (07/13/2010 map)	71.3	28.7	8.4	0.6	0.0	0.0
3 Months Ago (04/27/2010 map)	44.9	55.1	19.4	4.9	0.0	0.0
Start of Calendar Year (01/05/2010 map)	40.1	59.9	30.6	9.9	0.5	0.0
Start of Water Year (10/06/2009 map)	42.1	57.9	25.4	8.5	0.0	0.0
One Year Ago (07/21/2009 map)	54.9	45.1	18.9	7.8	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



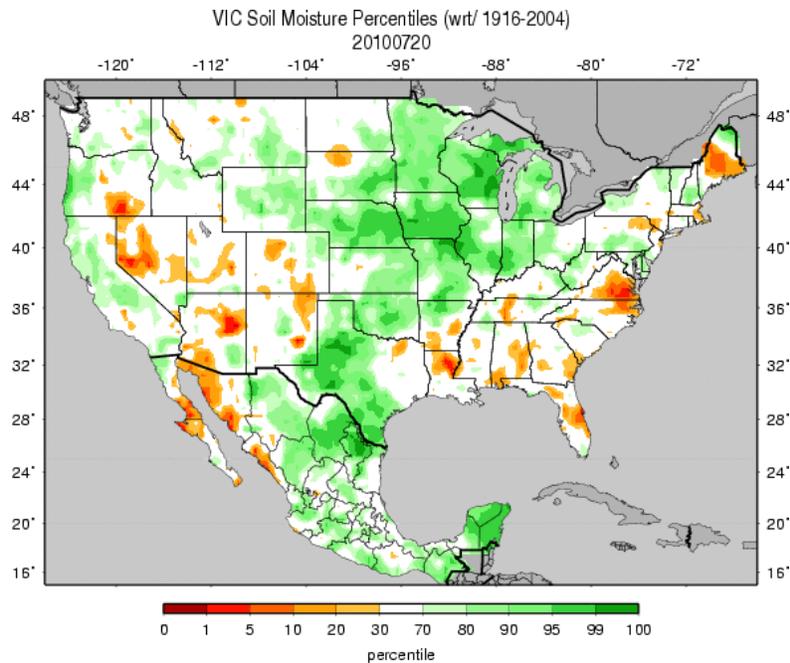
Released Thursday, July 22, 2010
Author: A. Artusa, CPC/NOA.

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

Fig. 3a: Drought Monitor for the Western States with statistics over various time periods. Regionally there were no significant changes since last week.

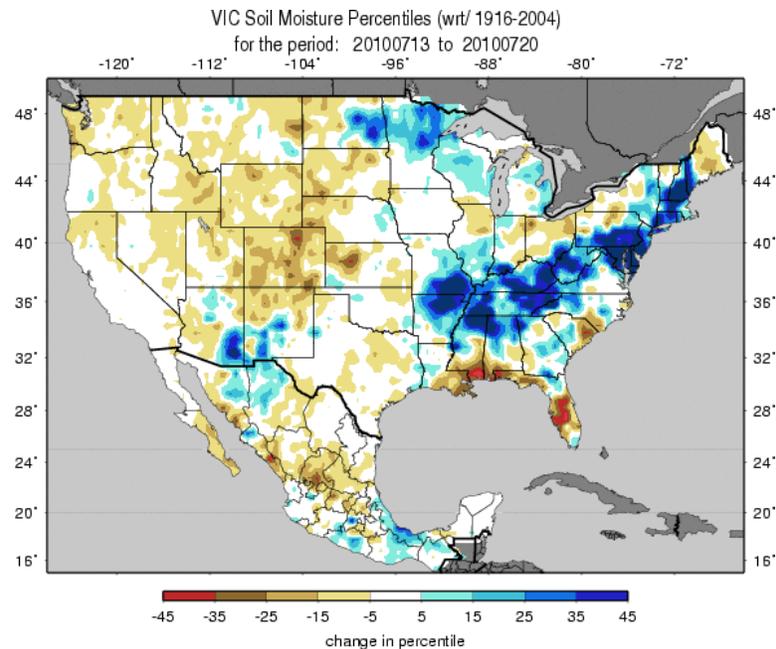
Ref: http://www.drought.unl.edu/dm/DM_west.htm

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Figs. 4a: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 20 July. Excessive moisture dominates over the High Plains and Great Lakes. Dry soils dominate over the Mid-Atlantic, Maine, and Arizona to southern Oregon.

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.gif

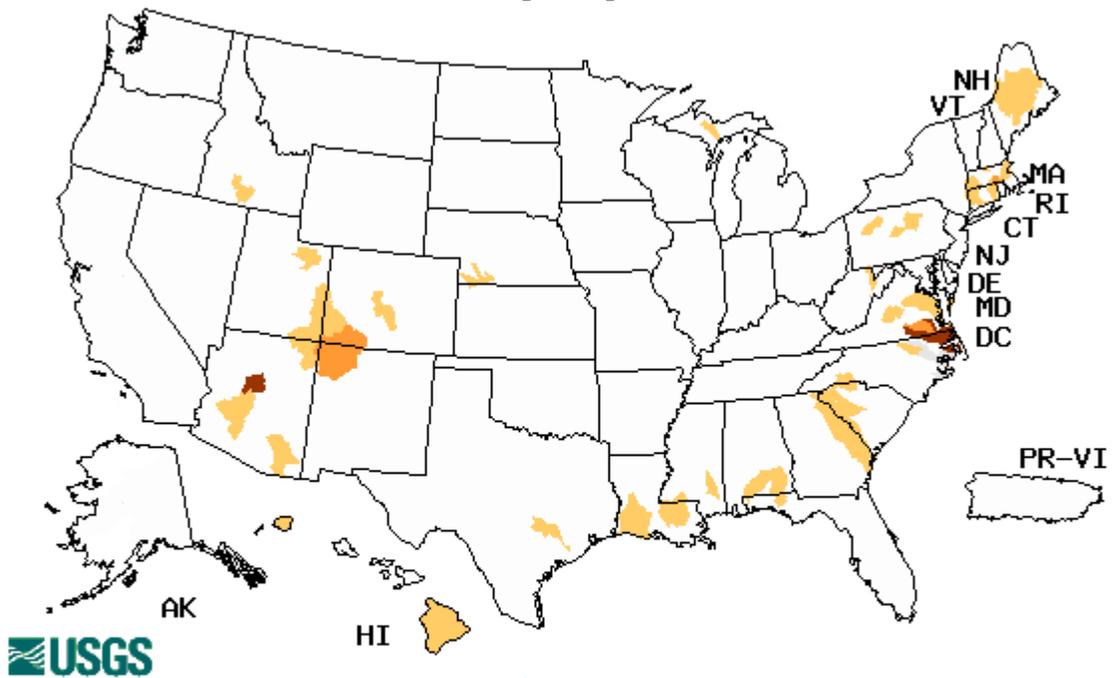


Figs. 4b: Soil Moisture change in percentile based on 1916-2004 climatology for the week shows significant moistening from the mid-Mississippi River Valley to New England and some drying over the Colorado Rockies and High Plains.

Ref: <http://www.emc.ncep.noaa.gov/mmb/nldas/drought/> (very useful resource) and http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.1wk.gif

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Wednesday, July 21, 2010



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. 5: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Very few regions are showing below normal flows. The Mid-Atlantic and central Arizona have the largest stream flow deficits this week.

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

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National Drought Summary -- July 20, 2010

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 Northeast: Heavy rain and thunderstorms affected portions of the mid-Atlantic region, with 2 inches or more within a band stretching from the central Appalachians northeastward across much of southern Pennsylvania, north-central Maryland, and New Jersey. As a result, 1-category improvements were widespread across this region. In Maryland, the small area of severe drought (D2) was removed, and stream flows have improved following last week's rainfall. This area has been impacted by persistent stretches of hot weather, and with dew points frequently over 70F, has resulted in lowered evapotranspiration rates. In Virginia, there is a sharp contrast between southwestern areas that have recently received some rainfall, from northwestern areas which have largely missed out on beneficial precipitation. Southwestern areas of Virginia are experiencing new grass growth, and pastures are beginning to show signs of recovery. From about Staunton, VA northward however, grasses and pastures are mostly brown, corn and soybean growth has been stunted, and there are varying degrees of heat and drought related stress. In New Jersey, 1-category improvements in the drought, from D1 back to D0, have largely resulted from the recent rains of 2 inches or greater. Rainfall totals for this month range from under 0.50 inch to about 8 inches.

In contrast, where the recent rains did not fall, abnormal dryness (D0) was expanded across most of Connecticut and Massachusetts, and into southern portions of New Hampshire. D0 conditions were also expanded northward from northern Pennsylvania into southern New York. For portions of western and central New York, relief from the dryness has been spotty, and many areas have received little if any rain. This has been offset to some degree however, by a wet June which resulted in fairly normal groundwater levels.

The Southeast: Hot, dry weather continued across much of the area during the past week. In South Carolina, showers and thundershowers provided slight improvement, despite the hot weather. Soil moisture levels improved somewhat across the state, and were reported as 11 percent very short and 35 percent short. In Georgia, worsening conditions prompted the expansion of D0 conditions across various portions of the state. Hot weather, with high temperatures ranging from the upper 80s to the middle 90s, undoubtedly contributed to this deterioration. Soil moisture conditions for the state were rated at 4 percent very short and 39 percent short. In Florida, where the rainy season continues, drought has been minimal. However, on the Space Coast in Brevard and northern Indian River counties, rainfall deficits of 9 inches have occurred since May 1st. Melbourne reported its driest May-mid July period on record (3.83 inches), and Titusville experienced its second driest May-mid July period on record (4.58 inches). Well levels are generally good though, recharged from rains received earlier in the spring.

The Great Lakes region: Temperatures during the past week ranged from 2 to 6 degrees F above normal across the region. Heavy rain (2.0 to 3.5 inches) provided a much needed boost in Wisconsin. The D1 area was upgraded to D0 in Rusk County, with a significant 1-category improvement (from D0 to D-nothing) across northwestern sections of the state. There was also minor improvement across northern portions of Lower Michigan, near Saginaw Bay, where Iosco and eastern Ogemaw counties

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were upgraded from D0 to D-nothing based on rainfall between 2.5 and 3.0 inches received during the week. Unfortunately, the heavier precipitation continues to miss the core drought area, which is currently located over western Upper Michigan.

The Southern Plains: Very hot weather and little if any rainfall has prompted the introduction of abnormal dryness in northwestern Oklahoma. D0 (Texas and Beaver counties) and D1 designations (nearby Harper county) fit more realistically with 90-day (and beyond) rainfall deficits. There are a substantial number of reports of ponds going dry in this region, and most of the recent storm activity seems to have passed either to the west or to the south of the Oklahoma Panhandle. Over the southeast part of the state, a 1-category degradation (from D1 to D2) was made to Pushmataha, Choctaw, and Bryan counties, whereas nearby counties in Texas were actually upgraded 1-category from severe to moderate drought due to increased rainfall during the past 30 days. This general area of moderate to severe drought near the Red River is also supported by the NLDAS Soil Moisture models.

Nearby, in southwestern Arkansas, hot temperatures, little rainfall, and mounting precipitation deficits warrant a 1-category degradation for Columbia and most of Union counties.

The Southwest: Temperatures generally ranged from 4 to 8 degrees F above normal across the region during the past week. With monsoon activity lagging behind (as it did last year), dryness across the Southwest is becoming a more serious problem. In Arizona, an exceptionally dry spring and recent dry period, together with weak monsoon activity, has eroded a lot of the gains made this past winter. Prospects for significant monsoon rainfall appear to be good in the next week. The USDA/NASS reports statewide pasture and range conditions degraded this past week, from 30 percent rated good or excellent, to just 9 percent. In Flagstaff, despite unusually heavy snowfall during the past winter, the spring season was dry. Soon after the snow melted away, the forests became tinder dry very quickly and this has made the area much more vulnerable to wildfire activity. Modifications made to the Arizona drought depiction this week include an expansion of D0 dryness across central and southwestern Arizona, while the D1 area of moderate drought in northern Arizona was expanded westward. In neighboring northwestern New Mexico, the dryness of spring persisted through June into mid-July. D0 and D1 dryness and drought renditions were expanded northward and westward across the counties of Rio Arriba, Sandoval, and San Juan. In northeastern Utah, abnormal dryness was expanded across Duchesne County, based on low stream flows, very little rainfall, and high temperatures.

Hawaii: The western (lee) side of the Big Island has seen some improvements in the drought situation across the middle elevations, which contain prime coffee orchards. Extreme drought (D3) was upgraded to severe drought (D2) in this area. However, the USDA has recently declared all Hawaiian counties *farm disaster areas*, due to the economic losses incurred from the statewide drought.

Alaska: Relatively light to moderate precipitation (under 0.75 inch) fell across the dryness regions in central and southwestern Alaska, with scattered locations receiving heavier amounts. In the Panhandle, most locations reported under an inch. This results in only a modest reduction in 90-day shortfalls to this climatologically wet region, thus D0 conditions remained unchanged.

Looking Ahead: During the next 5 days (July 22-26), a band of heavy rain (2-3 inches) is expected not far south of the drought areas in the Great Lakes region, though the eastern extent of this band may reach into New York state and southern New England, helping to offset any dryness there. Generally light amounts of rain (0.50 inch or less) may fall across the Mid-Atlantic States and Southeast, with more significant amounts possible for the Space Coast of Florida. In the Southwest, an expected surge in monsoonal showers and thunderstorms will be welcome, with rainfall totals across much of New

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Mexico, eastern and central Arizona, predicted to be between 0.50 inch and 2.0 inches. Little if any relief is anticipated for southeastern Oklahoma and adjacent portions of northeastern Texas.

For the ensuing 5 days (July 27-31), the odds favor above-median rainfall over much of the Southeast, the Southwest, Rockies, northern Plains, and Upper Mississippi Valley, as well as along the southern coast of Alaska.

Author: [Anthony Artusa, NOAA/NWS/NCEP/CPC](#)

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 July 21, 2010