



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

Weekly Report - Snowpack / Drought (& Flood) Monitor Update

Date: 7 July 2011

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: SNOTEL Snow-Water Equivalent (SWE) “percent” of normal for today shows very high values for several SNOTEL basins since seasonal snowmelt is normally completed by this time of year. SWE values will increase statistically by June if any snow remains but the actual “total” SWE is in reality less than the preceding week(s) (Fig. 1). The 7-day snow depth changes reflect very few SNOTEL sites with snow cover. It should be noted that there are significantly less sites with snow cover than in last week’s report (Fig. 1a). Any possible related snowmelt induced flooding is now found mostly along the Missouri River. For the current map depicting significant flooding conditions, see: <http://www.hpc.ncep.noaa.gov/nationalfloodoutlook/>.

Note: An ExxonMobil pipeline near Laurel, Montana ruptured Friday and *spilled* an estimated 42,000 gallons of crude into the [Yellowstone](#) (*flooding related*).



The [Las Conchas](#) fire, started by a tree falling on power lines, is the largest in New Mexico’s history. Photo: taken by author 10 miles south of Santa Fe (30 miles from fire) near Bandelier National Monument yesterday morning. As of this morning, more than 137,000 acres have burned and the fire is 40% contained. This is just one of 5 active wild fires in the state.

Weekly Snowpack and Drought Monitor Update Report

Temperature: SNOTEL and ACIS 7-day temperature anomaly shows values for the week within $\pm 5^{\circ}\text{F}$ with the coolest departures over the Pacific Northwest (fig. 2). ACIS 7-day average temperature anomalies show the greatest positive temperature departures across northeast New Mexico ($>+8^{\circ}\text{F}$) and the greatest negative departures over portions of the eastern half of Washington ($<-6^{\circ}\text{F}$) (Fig. 2).

Precipitation: ACIS 7-day average precipitation amounts for the period ending yesterday shows the bulk of the heaviest precipitation scattered across the Interior and eastern portions of the West in the form of thunderstorms (Fig. 3). In terms of percent of normal, the precipitation was highest over the Sierra and over an area stretching from southern California to the Central Western High Plain (Fig 3a). The beginning of the 2011 Summer Southwest Monsoon Season is suggested in this week's map. For the 2011 Water-Year that began on 1 October 2010, the greatest deficits are found over the extreme southern reaches of the Southwest. Areas with the highest values are found over the Great Basin, Cascades, Sierra, and parts of Northern and Central Rockies (Fig 3b).

National Summary: With the main storm track over the northern states, strong high pressure in the upper levels of the atmosphere dominated the southern U.S. during this U.S. Drought Monitor (USDM) week. Weak fronts that penetrated into the Southeast stalled out and provided an instability zone for scattered showers and thunderstorms. Convective showers benefited Florida while Tropical Storm Arlene rain brushed Deep South Texas and monsoon showers picked up over parts of the Southwest. Most of the southern Plains continued hot and dry, with much above-normal temperatures spreading across the central half of the country.

The West: Although streamflows were fine, D0 expanded in southeast Utah to reflect precipitation deficits and satellite-observed impacts on vegetation. In Colorado, a spot of D4 was added to Alamosa County where precipitation deficits were most severe, and D0-D1-D2 in Cheyenne County expanded to reflect worsening local impacts. Author: Richard Heim, NOAA/NESDIS/National Climatic Data Center.

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

Drought Impacts Definitions

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. 4 through 4d).

Soil Moisture

Soil moisture (Figs. 5a and 5b), 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/>.

Weekly Snowpack and Drought Monitor Update Report

[Soil Climate Analysis Network \(SCAN\)](#)

Figure 6 provides supplemental data on soil conditions (moisture and temperatures at various depths from 2 inches to 80 inches. For more information about SCAN ([brochure](#)).

[U.S. Historical Streamflow](#)

This map, (Fig. 7) 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/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/> and <http://www.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>. Reports from 2007 are available on-line while ones from 2001-2006 can be acquired upon request.

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

/s/

Gregory K. Johnson, Acting Director
Resources Inventory Division

Weekly Snowpack and Drought Monitor Update Report

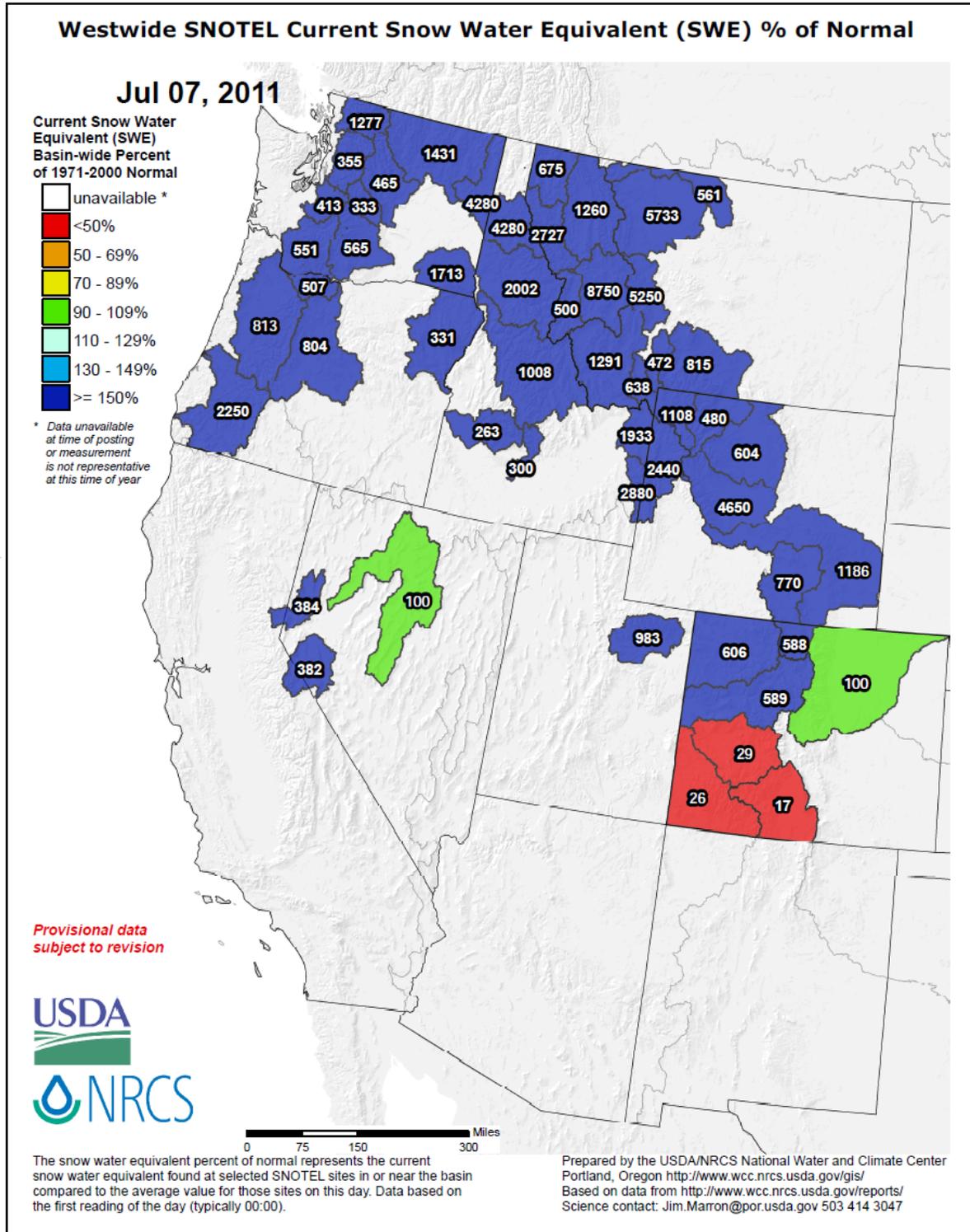


Fig. 1: SNOTEL Snow-Water Equivalent (SWE) “percent” of normal for today shows very high values for several SNOTEL basins since seasonal snowmelt is normally completed by this time of year. SWE values will increase statistically by June if any snow remains but the actual “total” SWE is in reality less than the preceding week(s).

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

Weekly Snowpack and Drought Monitor Update Report

SNOTEL 7-Day Snow Depth Change (Inches)

Jul 06, 2011

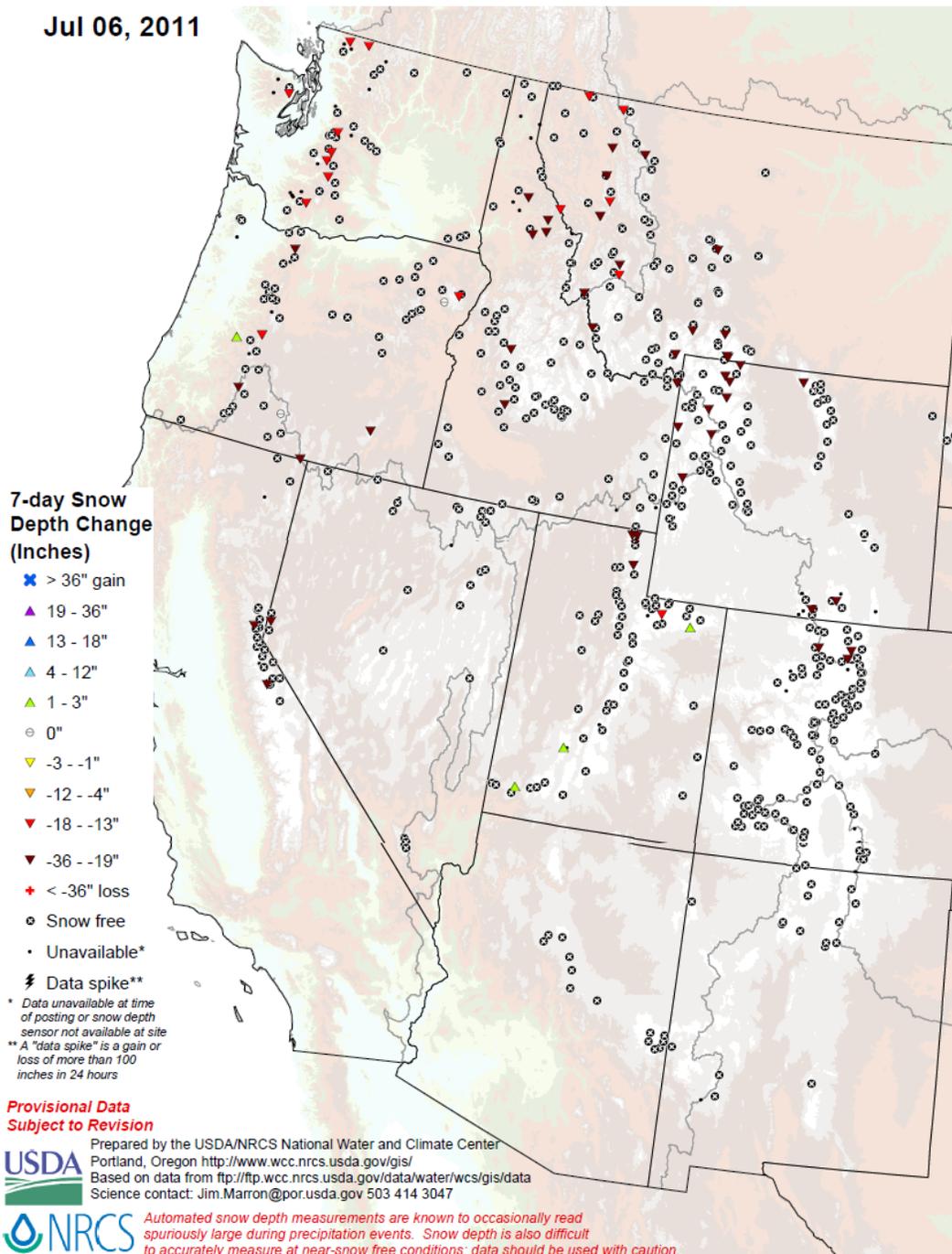


Fig. 1a: 7-Day snow depth changes reflect shows very few SNOTEL sites with snow cover. It should be noted that there are significantly less sites with snow cover than in last week's report.

Any possible related snowmelt induced flooding is now found mostly along the Missouri River. For the current map depicting flooding conditions, see:

<http://www.hpc.ncep.noaa.gov/nationalfloodoutlook/>. **Note:** An ExxonMobil pipeline near Laurel ruptured Friday and spilled an estimated 42,000 gallons of crude into the Yellowstone (flood related). Map ref: http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf.

Weekly Snowpack and Drought Monitor Update Report

SNOTEL (solid) and ACIS (dot-filled) Networks 7-Day Average Temperature Anomaly (Degrees F)

Jul 06, 2011

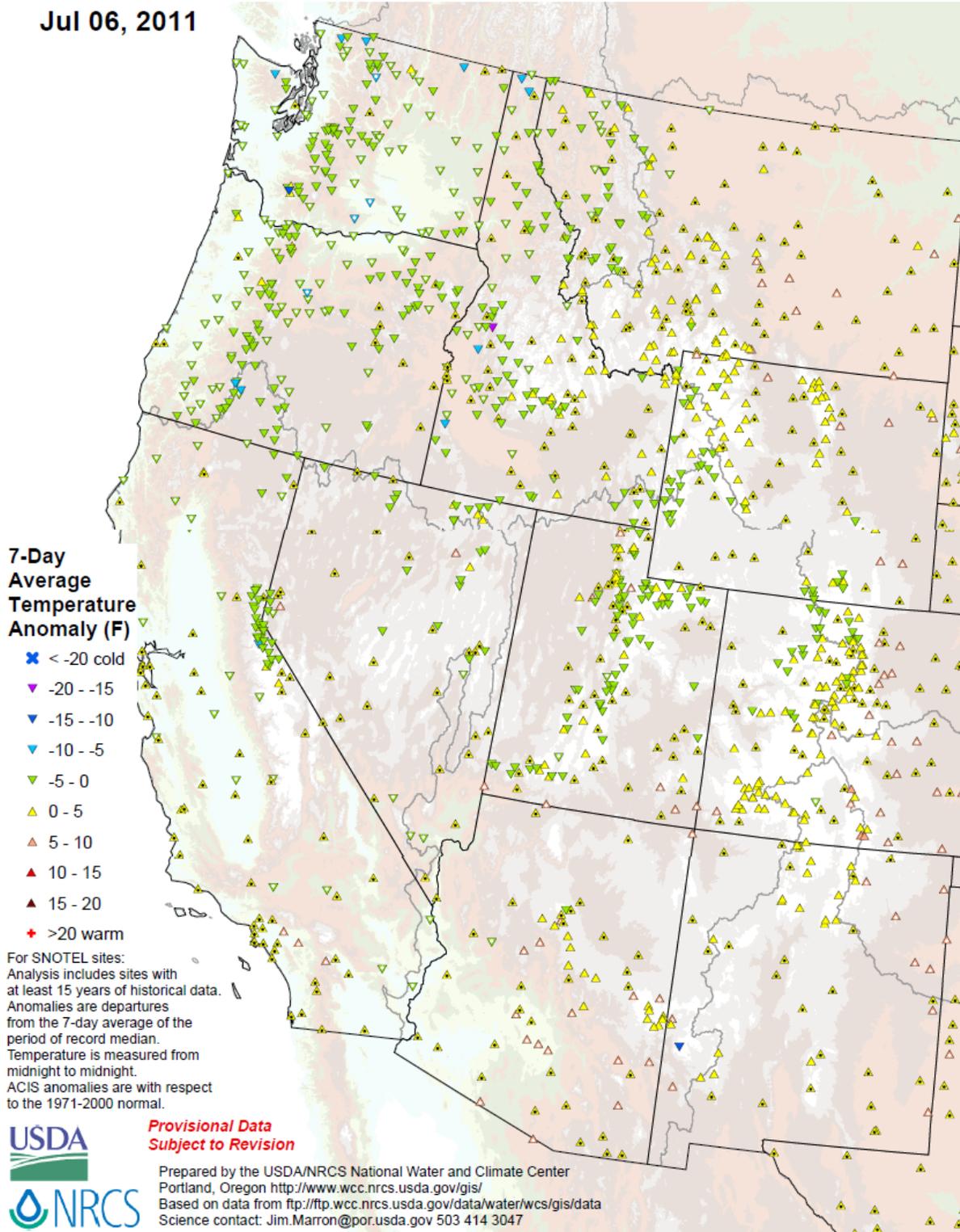
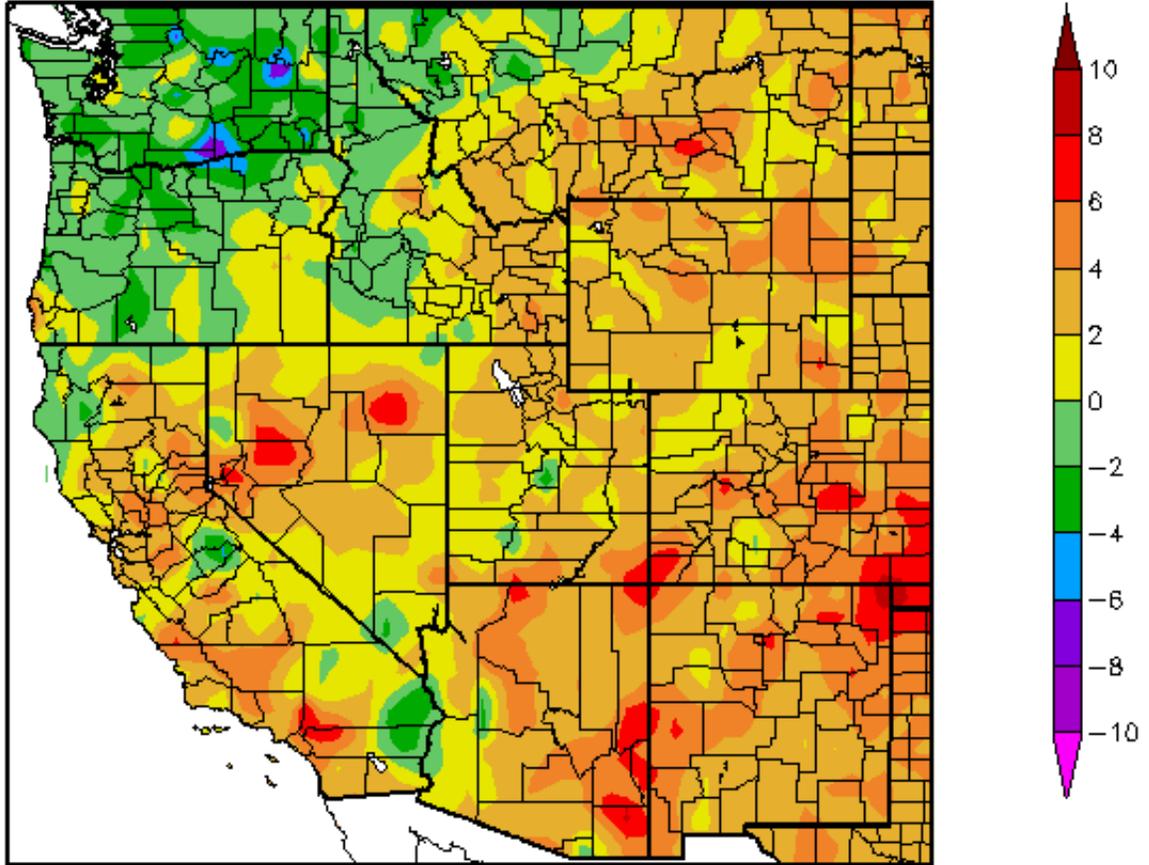


Fig. 2: SNOTEL and ACIS 7-day temperature anomaly shows values for the week within $\pm 5^{\circ}\text{F}$ with the coolest departures over the Pacific Northwest.

Ref: <http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>

Departure from Normal Temperature (F)
6/30/2011 – 7/6/2011



Generated 7/7/2011 at HPRCC using provisional data.

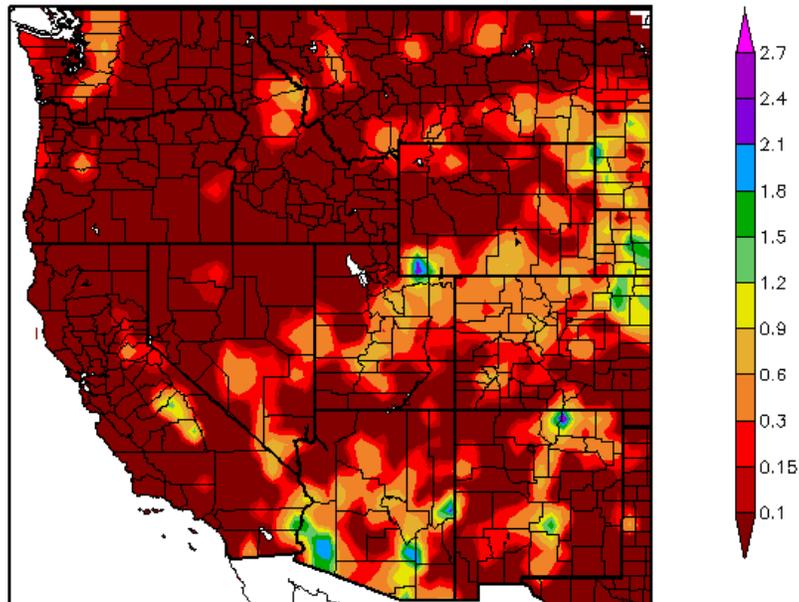
Regional Climate Centers

Fig. 2a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures across northeast New Mexico ($>+8^{\circ}\text{F}$) and the greatest negative departures over portions of the eastern half of Washington ($<-6^{\circ}\text{F}$).

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

Weekly Snowpack and Drought Monitor Update Report

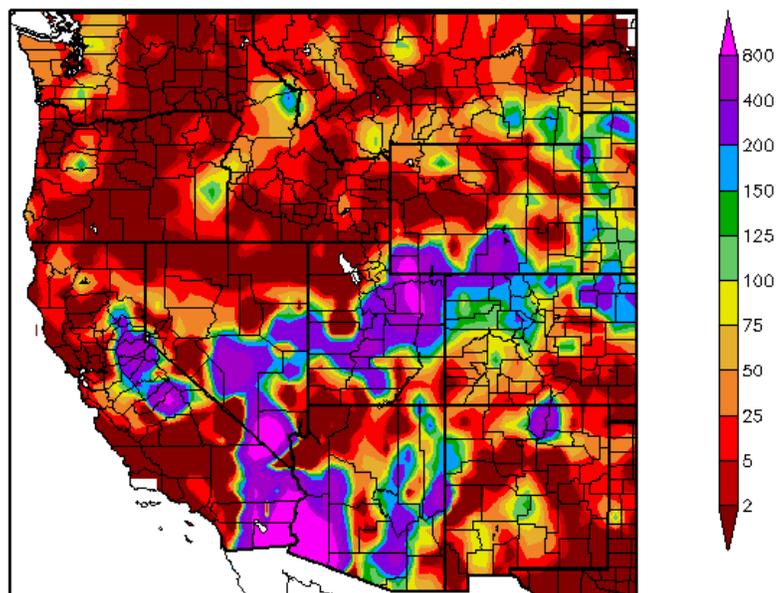
Precipitation (in)
6/30/2011 - 7/6/2011



Generated 7/7/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
6/30/2011 - 7/6/2011



Generated 7/7/2011 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: ACIS 7-day average precipitation amounts for the period ending yesterday shows the bulk of the heaviest precipitation scattered across the Interior and eastern portions of the West in the form of thunderstorms (Fig. 3). In terms of percent of normal, the precipitation was highest over the Sierra and over an area stretching from southern California to the Central Western High Plain (Fig 3a). The beginning of the 2011 Summer Southwest Monsoon Season is suggested in this week's map.

Ref: <http://www.hprcc.unl.edu/maps/current/>.

Weekly Snowpack and Drought Monitor Update Report

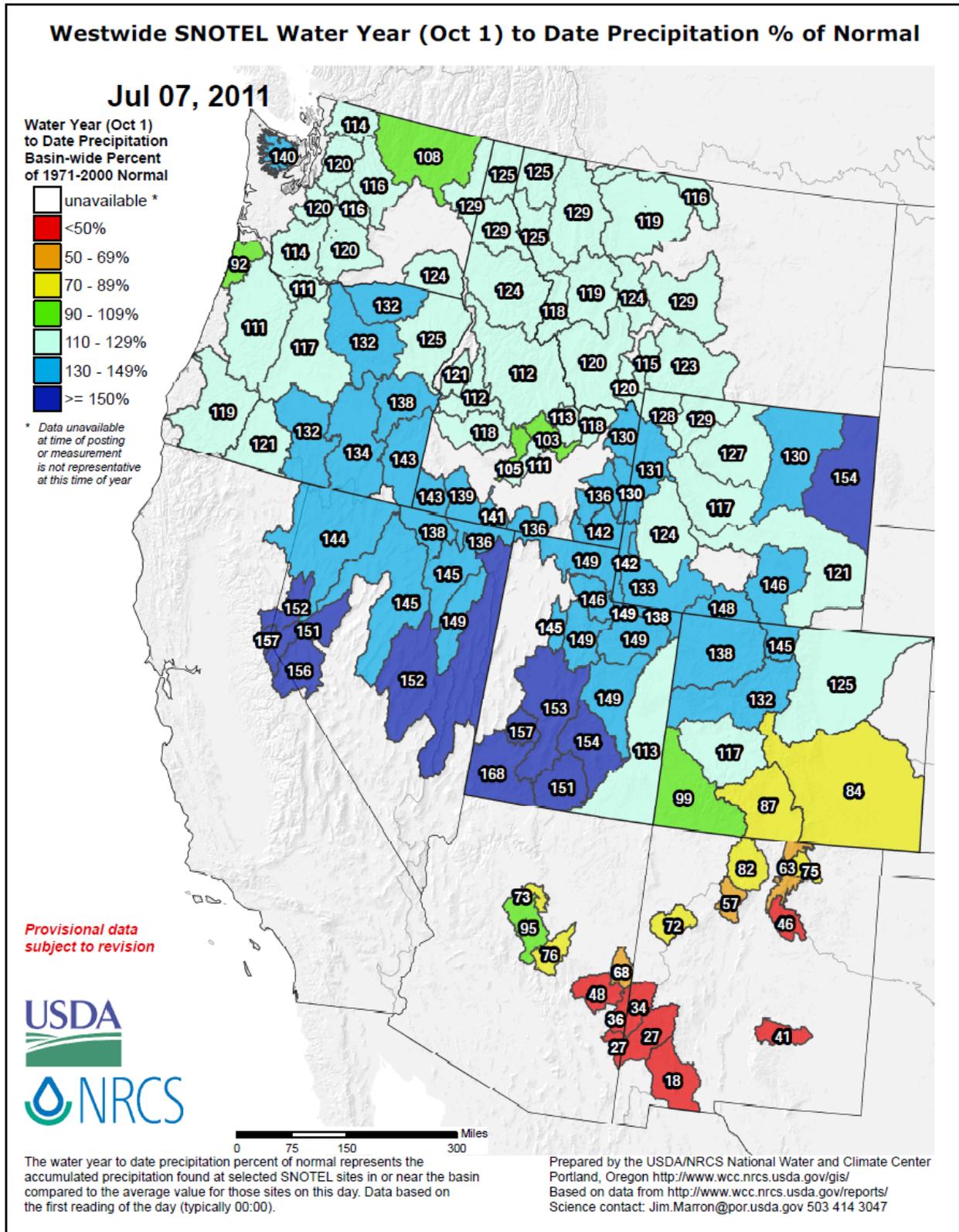


Fig 3b: For the 2011 Water-Year that began on 1 October 2010, the greatest deficits are found over the extreme southern reaches of the Southwest. Areas with the highest values are found over the Great Basin, Cascades, Sierra, and parts of Northern and Central Rockies.

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

U.S. Drought Monitor

July 5, 2011
Valid 8 a.m. EDT

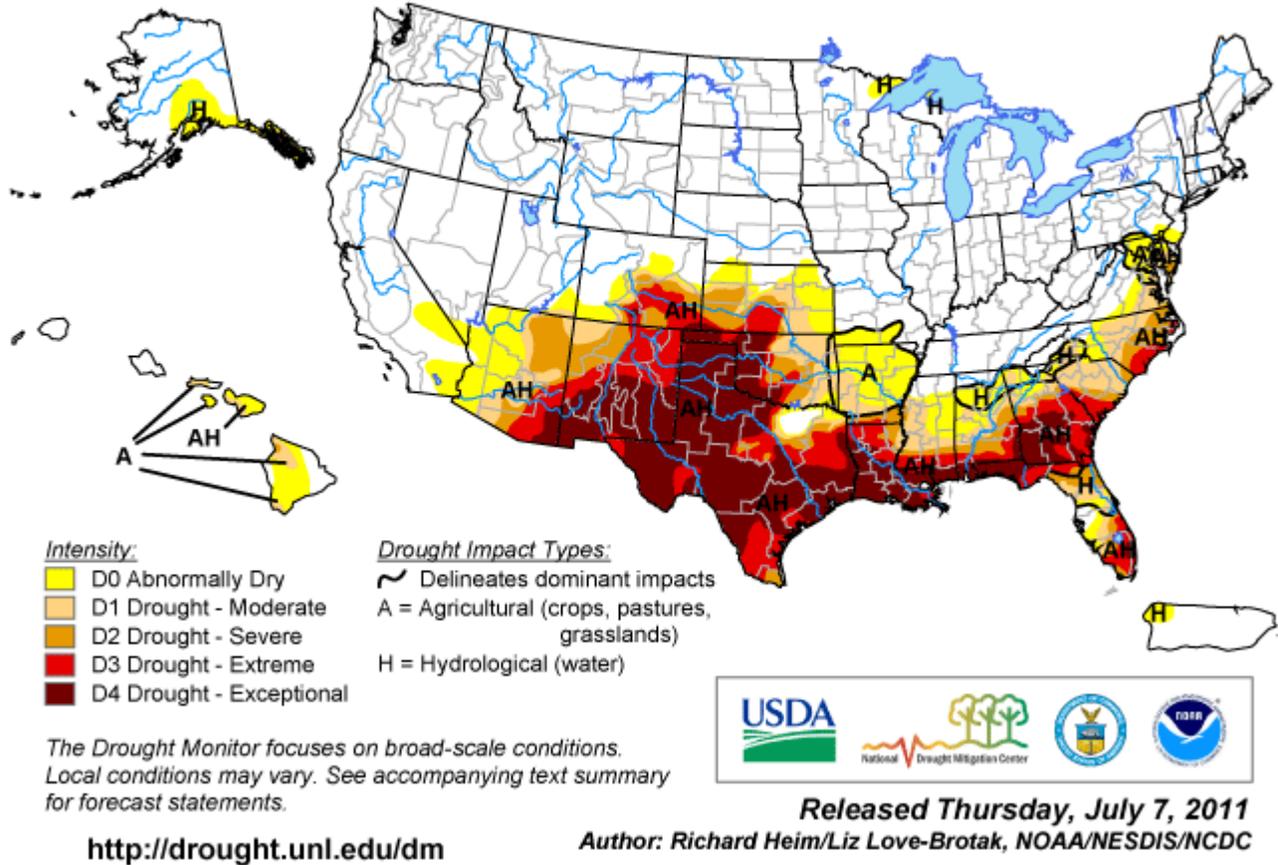


Fig. 4: Current Drought Monitor weekly summary. The exceptional D4 levels of drought are found over New Mexico, extreme southeast Colorado, Texas, Oklahoma, Louisiana, Mississippi, Alabama, Georgia, and Florida. Ref: <http://www.drought.unl.edu/dm/monitor.html>.

For Drought news, see the [Drought Impact Reporter](#).

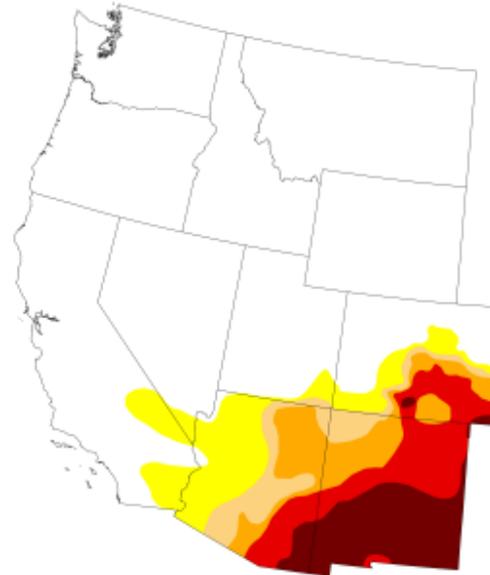
U.S. Drought Monitor

West

July 5, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	73.58	26.42	19.36	16.03	11.35	5.71
Last Week (06/28/2011 map)	73.59	26.41	19.31	16.01	11.35	5.65
3 Months Ago (04/05/2011 map)	76.09	23.91	19.18	13.39	4.16	0.00
Start of Calendar Year (12/28/2010 map)	73.26	26.74	11.98	0.89	0.00	0.00
Start of Water Year (09/28/2010 map)	62.50	37.50	8.14	0.56	0.00	0.00
One Year Ago (06/29/2010 map)	68.62	31.38	11.15	1.03	0.00	0.00



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 7, 2011

Richard Heim, NOAA/NESDIS/National Climatic Data Center

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

Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was no significant change during the past week.

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

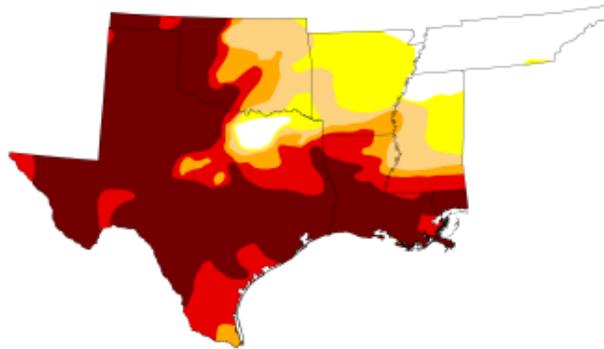
U.S. Drought Monitor

South

July 5, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	11.07	88.93	78.07	68.29	61.76	46.80
Last Week (06/28/2011 map)	25.52	74.48	59.82	53.42	47.27	47.27
3 Months Ago (04/05/2011 map)	10.66	89.34	80.83	63.51	38.29	2.43
Start of Calendar Year (12/28/2010 map)	8.86	91.14	67.65	35.21	10.17	0.00
Start of Water Year (09/28/2010 map)	54.23	45.77	20.04	6.79	0.83	0.00
One Year Ago (06/29/2010 map)	69.00	31.00	14.14	5.24	1.50	0.00



Intensity:

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

Fig. 4b: Drought Monitor for the South-Central States with statistics over various time periods. This region has shown significant deterioration in the D3-D4 drought categories over the past week. Ref: http://www.drought.unl.edu/dm/DM_south.htm

Weekly Snowpack and Drought Monitor Update Report

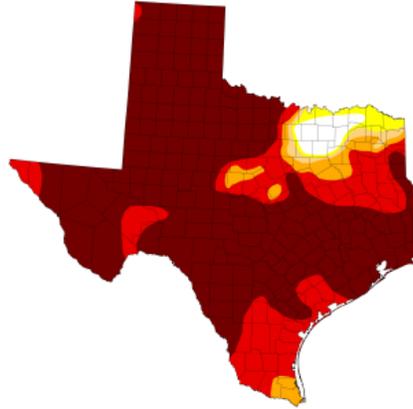
U.S. Drought Monitor Texas

July 5, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	2.41	97.59	95.73	94.39	90.21	71.30
Last Week (06/28/2011 map)	2.68	97.32	95.71	94.52	90.62	72.32
3 Months Ago (04/05/2011 map)	0.00	100.00	97.99	86.50	60.14	4.81
Start of Calendar Year (12/28/2010 map)	7.89	92.11	69.43	37.46	9.59	0.00
Start of Water Year (09/28/2010 map)	75.57	24.43	2.43	0.99	0.00	0.00
One Year Ago (06/29/2010 map)	71.20	28.80	14.01	3.96	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
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<http://drought.unl.edu/dm>



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Fig. 4c: Little change to the drought over the State of Texas this week. This is currently the **3rd worst** drought in Texas history. Ref: http://www.drought.unl.edu/dm/DM_state.htm?TX,S

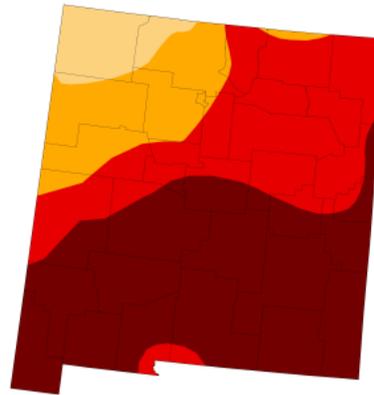
U.S. Drought Monitor New Mexico

July 5, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	93.96	79.34	49.09
Last Week (06/28/2011 map)	0.00	100.00	100.00	93.96	79.34	49.09
3 Months Ago (04/05/2011 map)	0.00	100.00	94.46	74.32	29.47	0.00
Start of Calendar Year (12/28/2010 map)	6.16	93.84	40.40	0.00	0.00	0.00
Start of Water Year (09/28/2010 map)	76.66	23.34	0.00	0.00	0.00	0.00
One Year Ago (06/29/2010 map)	50.23	49.77	17.27	0.00	0.00	0.00

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
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<http://drought.unl.edu/dm>



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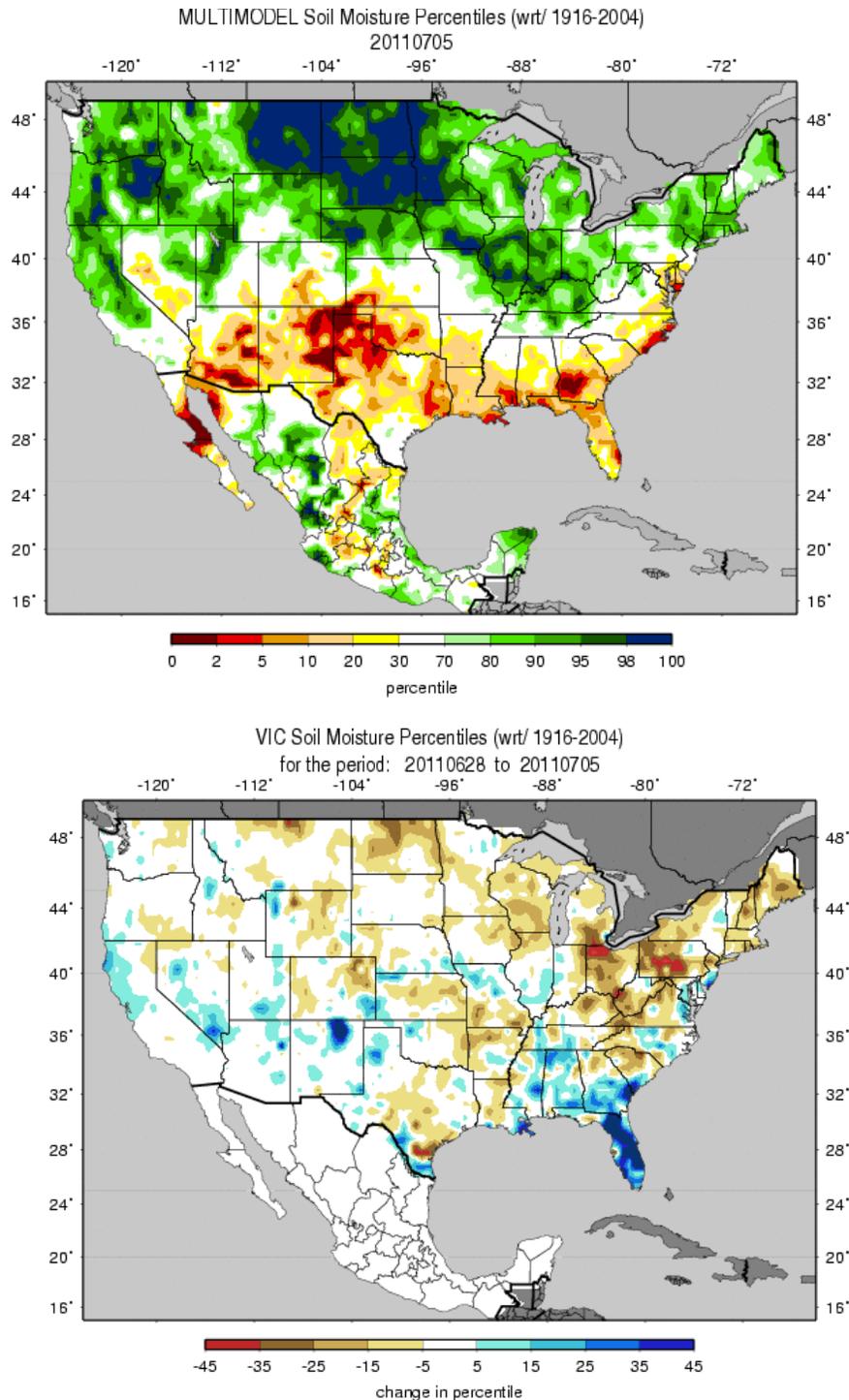
Fig. 4d: Drought Monitor for New Mexico with statistics over various time periods. Conditions remained the same during the past week.

Ref: http://www.drought.unl.edu/dm/DM_state.htm?NM,W

Note: Major fires in Arizona and New Mexico:

http://gacc.nifc.gov/swcc/predictive/intelligence/admin/maps/wf/swa_fire_combined.htm

Weekly Snowpack and Drought Monitor Update Report



Figs. 5a and 5b: Soil Moisture ranking in percentile as of 5 July (top) shows moist conditions over much of the Northern Tier States with dryness over the Southern Tier States and into the Mid-Atlantic Seaboard (classic La Niña pattern). The moisture deteriorated this week over much of the Northern Tier States; especially over Pennsylvania and Ohio, but improved over Florida (bottom).

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

http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.1wk.gif

Weekly Snowpack and Drought Monitor Update Report

Soil Climate Analysis Network (SCAN)

Station (2107) MONTH=2011-06-06 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Wed Jul 06 09:24:05 PDT 2011

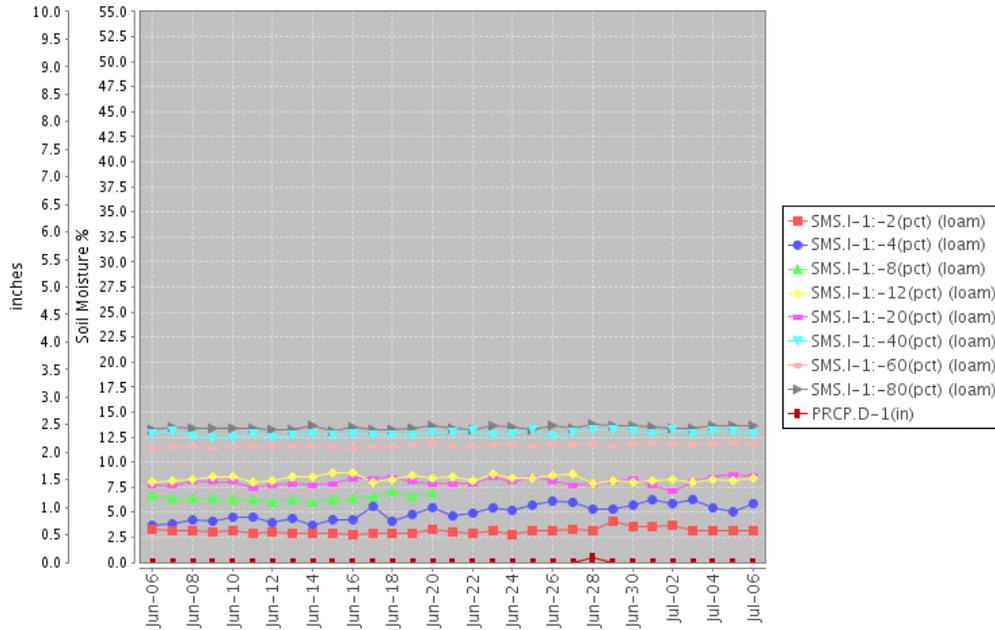


Fig. 6a: This NRCS resource shows a site in southeast New Mexico with very low soil moisture from 2 to 80 inch depths. This region is in D4 “Exceptional” Drought. Precipitation is the bottom-most line.

Station (2072) MONTH=2011-06-06 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Wed Jul 06 09:54:17 PDT 2011

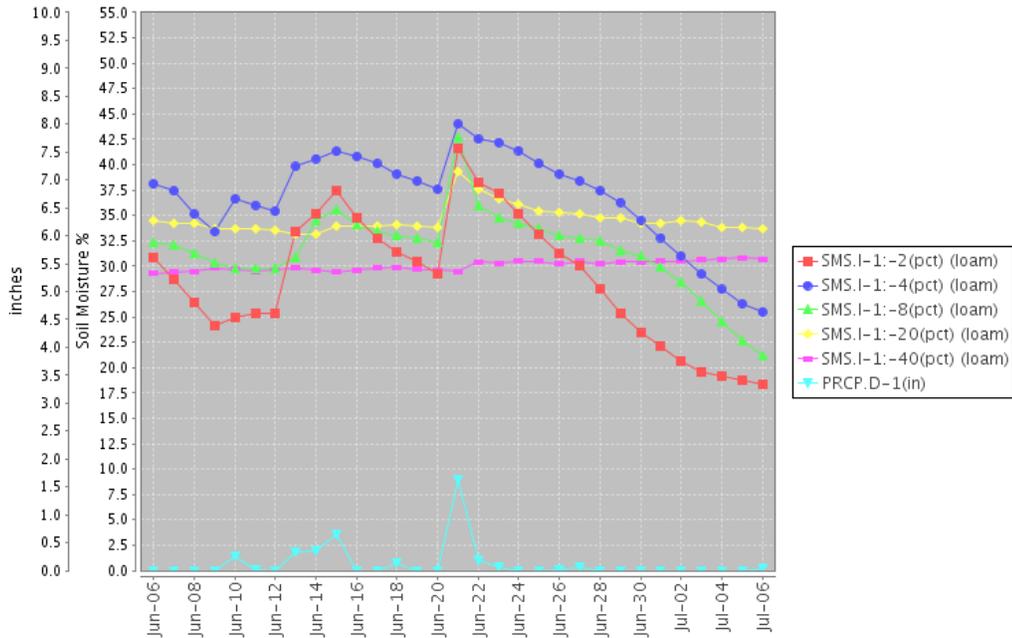


Fig. 6b: This SCAN station is located in easternmost South Dakota. Note the high soil moisture content compared to the 30 day chart above (depths from 2 to 40 inches). Also note how the soil moisture responds to the impact of heavy precipitation on 21 June (down to 20 inches).

Weekly Snowpack and Drought Monitor Update Report

Wednesday, July 06, 2011

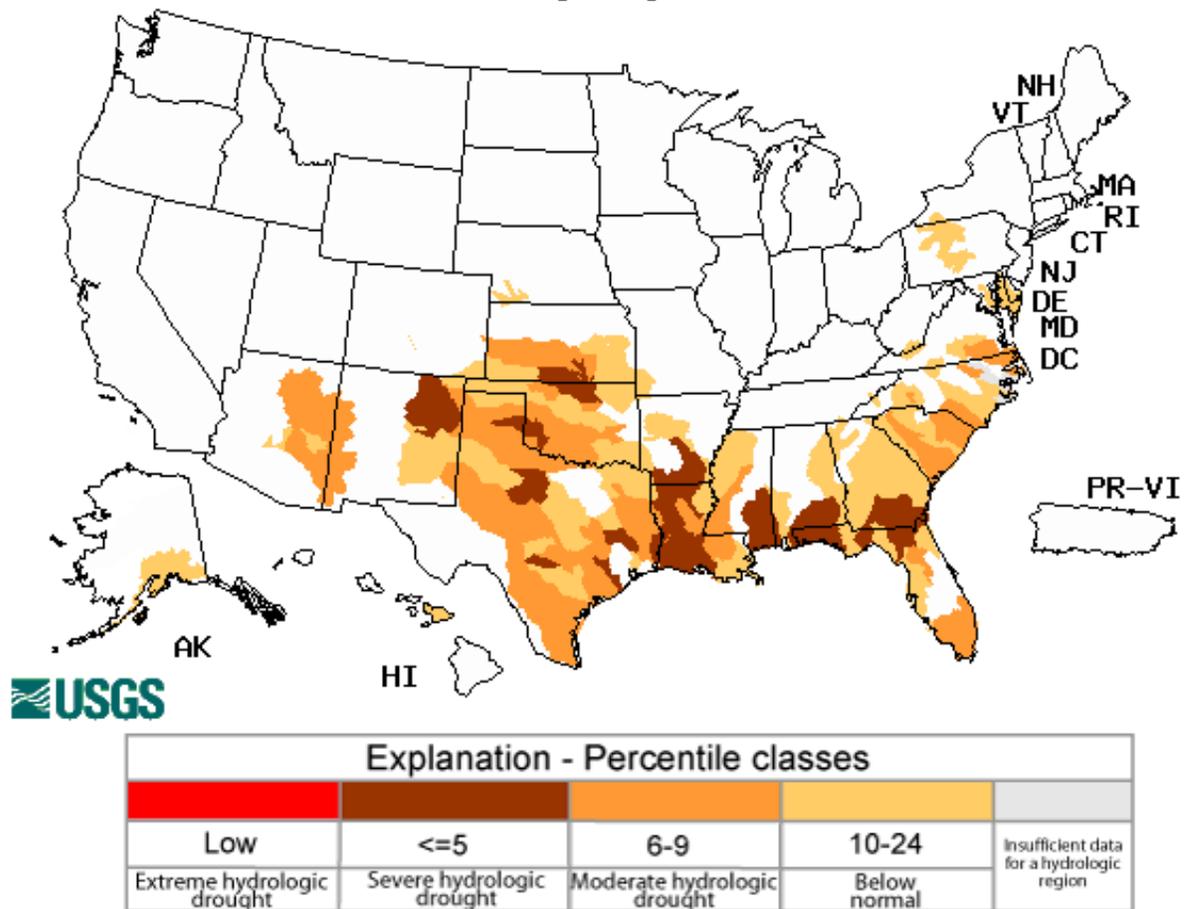


Fig. 7: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Portions of the Gulf Coast States, New Mexico, the Southern and Central Plains are indicating severe conditions. Ref: <http://waterwatch.usgs.gov/?m=dryw&r>.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- July 5, 2011

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/>.

With the main storm track over the northern states, strong high pressure in the upper levels of the atmosphere dominated the southern U.S. during this U.S. Drought Monitor (USDM) week. Weak fronts that penetrated into the Southeast stalled out and provided an instability zone for scattered showers and thunderstorms. Convective showers benefited Florida while Tropical Storm Arlene rain brushed Deep South Texas and monsoon showers picked up over parts of the Southwest. Most of the southern Plains continued hot and dry, with much above-normal temperatures spreading across the central half of the country.

The Upper Midwest, Northeast, and Mid-Atlantic: The last 30 days have been drier than normal for much of western New York, western Pennsylvania, and central Maryland to Delaware and southern New Jersey. But the dryness over the Maryland-Delaware area extended further back in time, so D0 expanded in central Maryland, northern Virginia, and adjoining south central Pennsylvania, and a spot of D2 was added to Maryland's southeastern shore to reflect the greatest precipitation deficits and low groundwater. An A impacts designation was placed over the Maryland D0 with AH impacts over the DelMarVa D1-D2 and the rest of Virginia, leaving the southern New Jersey D0 area free of an impacts designator.

Southeast: Beneficial (1 to 4+ inch) rains prompted the contraction of D0 in northwest Alabama, the pullback of D3 over southeast Alabama and D4 over southeast Georgia, and improvement of D3 in northern Florida and D1-D2-D3-D4 in coastal central to southern Florida. But conditions deteriorated over the Carolinas, where D3 was added along the North Carolina coastal plain and D2-D3 expanded from southern coastal North Carolina and parts of coastal South Carolina. D1 expanded across most of South Carolina and into the Catawba Basin of western North Carolina, with minor expansion of D0 in western North Carolina. The H impacts area from northern Alabama to North Carolina was reconfigured to accommodate expanded AH impacts in North Carolina.

The Plains: Improvement of the D3 and D4 areas occurred over southern Texas where a month's worth of rain fell this week, especially in the Brownsville area. D0 and D2 were pulled back in the Wise and Upshur county areas, respectively, where locally beneficial rains fell. But conditions deteriorated elsewhere in Texas with D4 expanding to cover all of the panhandle as well as expanding in Harrison and Bosque counties, and D3 expanding in central Texas. In Oklahoma, the D0 hole was filled in over Garfield County, D1 expanded across eastern Oklahoma and adjoining southwest Arkansas, and D2-D3 expanded in south central to Southeast Oklahoma. D0 expanded in southeast Kansas where rainfall has been below normal and temperatures above normal for the last 1 to 4 weeks.

The West: Although streamflows were fine, D0 expanded in southeast Utah to reflect precipitation deficits and satellite-observed impacts on vegetation. In Colorado, a spot of D4

Weekly Snowpack and Drought Monitor Update Report

was added to Alamosa County where precipitation deficits were most severe, and D0-D1-D2 in Cheyenne County expanded to reflect worsening local impacts.

Hawaii, Alaska and Puerto Rico: Above-normal precipitation at many time scales and above-normal streamflow prompted the pullback of D0 in central Alaska. Northwest Puerto Rico has been dry for the last 7 to 30 days, but wet at longer periods. However, low streamflows coupled with the below-normal precipitation prompted the addition of D0H to that area. No changes were made to the Hawaiian depiction this week.

Looking Ahead: The weather pattern of the last few weeks will continue for the next two weeks, with an upper-level ridge over the south and the storm track keeping to the northern states. Cool fronts will weaken as they try to penetrate the southern high pressure, providing instability zones for showers. Monsoon rain is expected for the Southwest and summertime convection should bring rain to Florida. For the next 5 days (July 6-11), an inch or more of rain is expected in a band from the central Rockies to central Plains, across parts of the Southeast to Mid-Atlantic coast, and over much of the Florida peninsula. Monsoon showers may drop up to half an inch of rain in parts of the Southwest, with other parts of the Southeast drought areas possibly receiving a quarter inch to an inch of rain. The northern Plains to western Great Lakes could see half an inch of rain, while the southern Plains should remain mostly rain-free. Temperatures are expected to be above normal for much of the country.

The CPC 6-10 day outlook and 8-14 day outlook indicate above-normal precipitation will fall over the Rockies, central and northern Great Plains, southern Great Lakes, and Florida peninsula into the Southeast, while dry weather should dominate across parts of the Southwest, Mid-Atlantic, and much of the southern Plains. Below-normal temperatures are expected along the west coast while warmer-than-normal temperatures should dominate across most of the country east of the Rockies. Northern Alaska is expected to be dry and southern Alaska cool and wet.

Author: [Richard Heim, NOAA/NESDIS/National Climatic Data 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

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

Drought or Dryness Types

A ... Agricultural

H ... Hydrological

Updated July 6, 2011