



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

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

**Date: 14 July 2011**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Snow:** SNOTEL Snow-Water Equivalent (SWE) “percent” of normal for today shows values that are exceptionally unusual (e.g. snow cover is not represented in long-term climatology). In other words, by this time of year, complete melt-out should have occurred by now (Fig. 1). Easy Pass, Washington SNOTEL site has over 12 feet of precipitation since the start of the water-year and still shows nearly 6 feet of snow water equivalent in its snow pack (Fig. 1a). Any possible latent snowmelt induced flooding is now found along the Missouri River. However, recent heavy rains have contributed to this late season flooding (Fig. 1b). For the current map depicting flooding conditions, see: <http://www.hpc.ncep.noaa.gov/nationalfloodoutlook/>.

**Remarks:** Washington State just went through the coldest April-June 3-month period in the historical record. There is still plenty of snow to ski on in mid July: Any possible related snowmelt induced flooding is now found mostly along the Missouri River. See: Montana's wet year a record breaker.

**Temperature:** SNOTEL and ACIS 7-day temperature anomaly shows values for the week within  $\pm 5^{\circ}\text{F}$  with the exception of colder departures over the Pacific Northwest (fig. 2). ACIS (lower elevation station) 7-day average temperature anomalies show the greatest positive temperature departures across northeast New Mexico ( $>+6^{\circ}\text{F}$ ) 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 Central Rockies (Fig. 3). In terms of percent of normal, the precipitation was highest over the Interior West caused by scattered thunderstorms (Fig 3a). The Summer Southwest Monsoon Season is suggested in this week's map. Rare isolated thunderstorms over southern California are depicted as very high percentages (Fig 3a). Click on the hyperlink for the latest information on the Southwest Monsoon. 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. These values are more or less locked in (static) for the remainder of the summer with the possible exception of Arizona and New Mexico due to the possible influence of the Southwest Monsoon (Fig 3b).

**Weekly Weather Summary:** With the main storm track continuing over the northern half of the lower 48 States, high pressure over the southern Plains exacerbated the drought, keeping this area precipitation free and unseasonably hot (highs exceeding 110 deg F). Weak fronts stalled out across the Southeast, generating hit and miss showers and thunderstorms, with some locally heavy. Some Southeastern areas (southeastern Virginia and much of the Carolinas) received substantial rainfall. Heavy, widespread convective thundershowers inundated most of Florida while monsoonal showers continued and intensified over parts of the Southwest. Most of the Nation recorded near to above-normal temperatures, including parts of the West (notably California) which had observed a cold and wet spring and early summer.

## Weekly Snowpack and Drought Monitor Update Report

**The Southwest:** The summer monsoon continued across Arizona, southern Nevada, Utah, and into Colorado, but bypassed New Mexico and western parts of Texas and Oklahoma. 1 to 2 inches of rain fell on southern and central Arizona, extreme southern Nevada, south-central Utah, and across most of Colorado except southeastern sections. The moisture also tempered the heat in this region, with average temperatures only slightly above normal. Accordingly, where an inch or more fell near any drought border, some slight improvement was made. This included parts of the D1 through D4 edges in southern and central Arizona, and elimination of the D0 in parts of western Arizona. Interestingly, Douglas, AZ, received more rain in 9 MINUTES (0.30 inches on July 6 starting at 4:51pm) than in the past 9 MONTHS (only 0.27 inches since October 1, 2010). In Colorado, another wet week, especially in the north-central and eastern sections, called for a 1-category improvement in central portions of the state. Farther south, however, rainfall was much less (0.1 to 0.5 inches), and conditions deteriorated (D3 and D4) in eastern Conejos, western Costilla, and western Rio Grande Counties. Elsewhere, enough rain fell to maintain conditions, but not enough to warrant improvement. Even with the rains, Arizona pasture and range conditions were rated 63 percent poor or very poor, while New Mexico stood at a horrendous 91 percent as of July 11 according to USDA/NASS. Author: David Miskus, NOAA/NWS/NCEP/Climate Prediction 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/>.

### 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 see ([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

## Weekly Snowpack and Drought Monitor Update Report

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

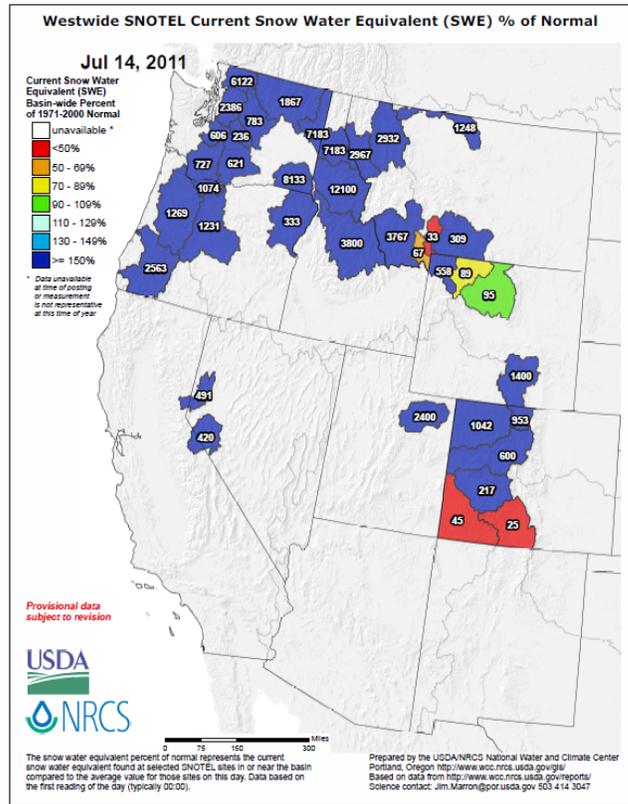
The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>. Reports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

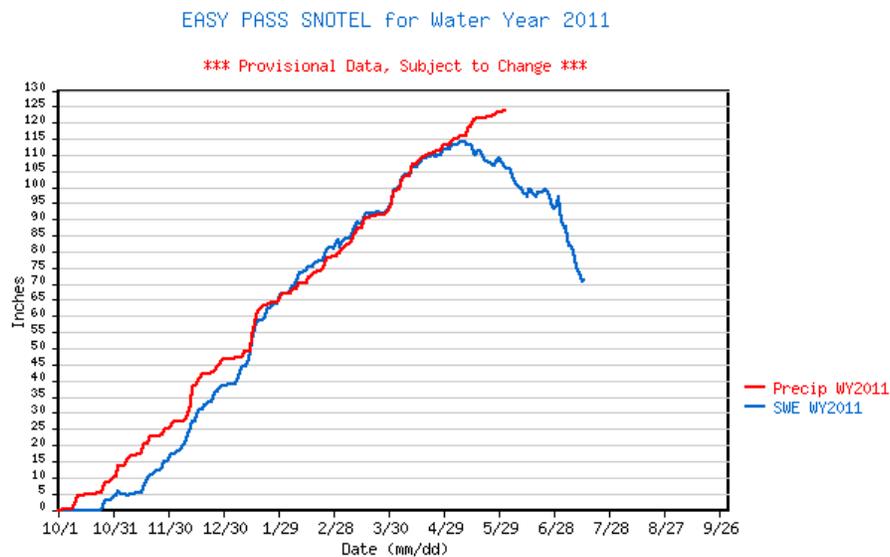
# Weekly Snowpack and Drought Monitor Update Report



**Fig. 1: SNOTEL Snow-Water Equivalent (SWE) “percent” of normal for today shows values that are exceptionally unusual (e.g. snow cover is not represented in long-term climatology). In other words, by this time of year, complete melt-out should have occurred by now.**

Ref: [http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west\\_swepctnormal\\_update.pdf](http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_swepctnormal_update.pdf)

The SNOTEL site with the most SWE in the observation network is shown below:



**Fig. 1a: Easy Pass, Washington SNOTEL site has over 12 feet of precipitation since the start of the water-year and still shows nearly 6 feet of snow water equivalent in its snow pack.**

**SNOTEL 7-Day Snow Depth Change (Inches)**

Jul 14, 2011

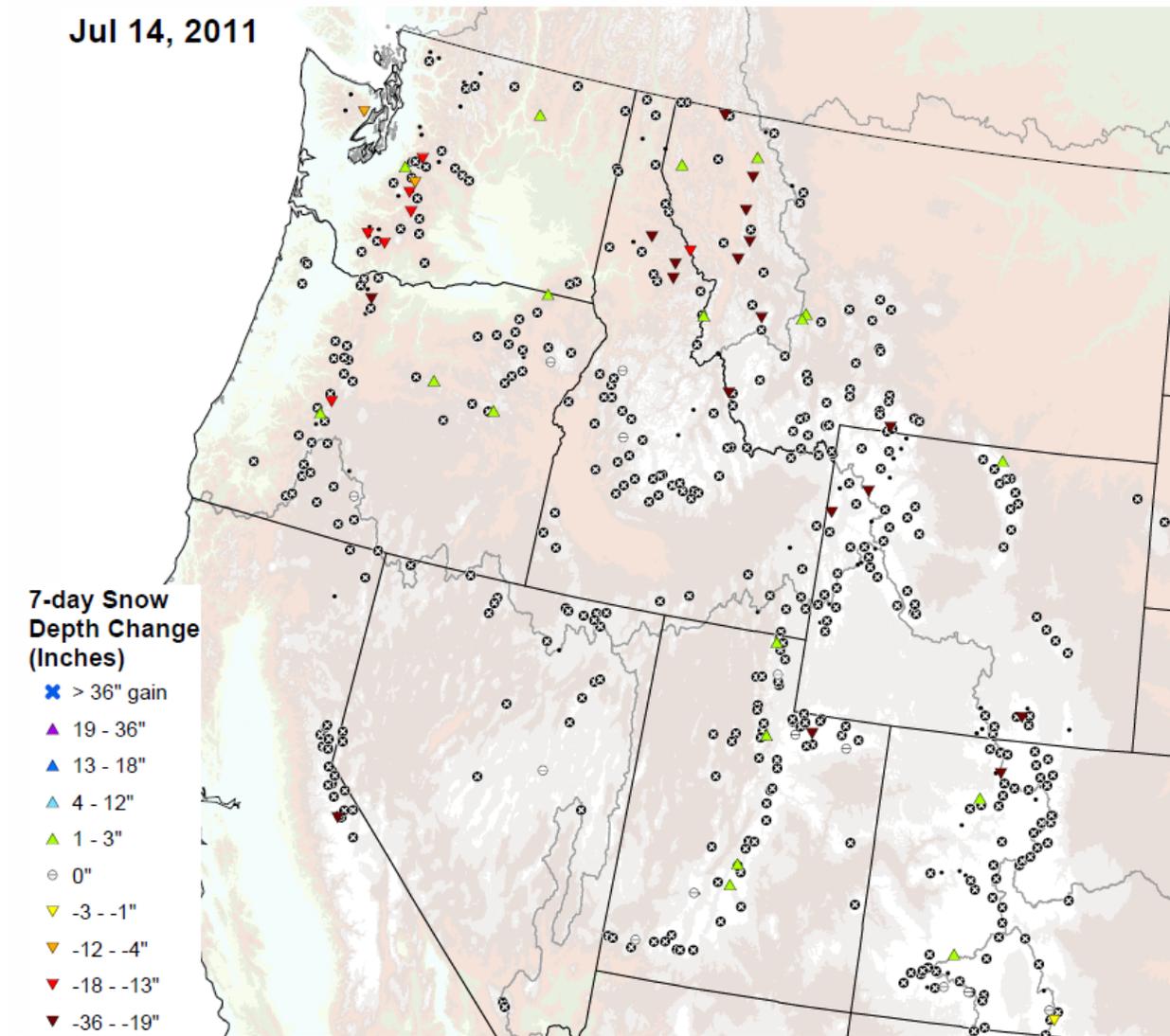
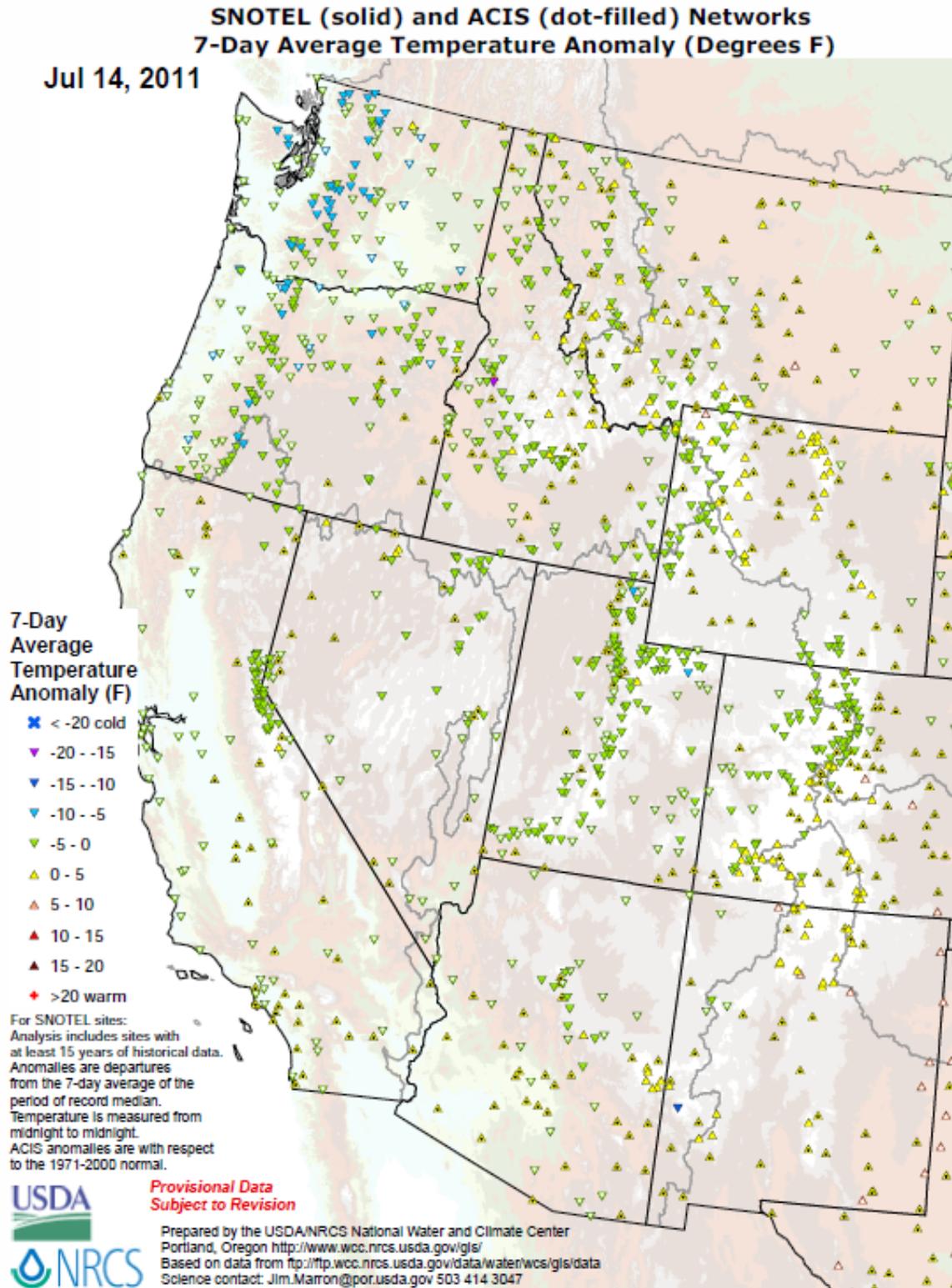


Fig. 1b: 7-Day snow depth changes reflect shows few isolated SNOTEL sites with snow cover. This will be the last map for the season.

Any possible latent snowmelt induced flooding is now found along the Missouri River. However, recent heavy rains have contributed to this late season flooding. For the current map depicting flooding conditions, see: <http://www.hpc.ncep.noaa.gov/nationalfloodoutlook/>.

Ref: [http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west\\_snowdepth\\_7ddelta.pdf](http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf).

# Weekly Snowpack and Drought Monitor Update Report

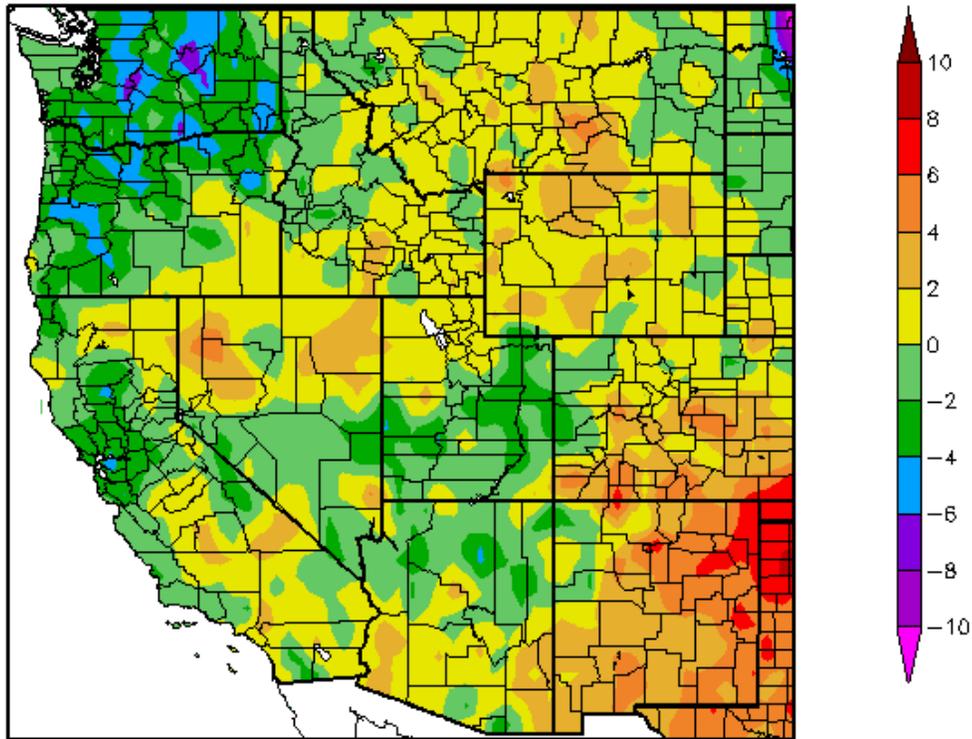


**Fig. 2: SNOTEL and ACIS 7-day temperature anomaly shows values for the week within  $\pm 5^{\circ}\text{F}$  with the exception of colder departures over the Pacific Northwest.**

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

## Weekly Snowpack and Drought Monitor Update Report

Departure from Normal Temperature (F)  
7/7/2011 – 7/13/2011



Generated 7/14/2011 at HPRCC using provisional data.

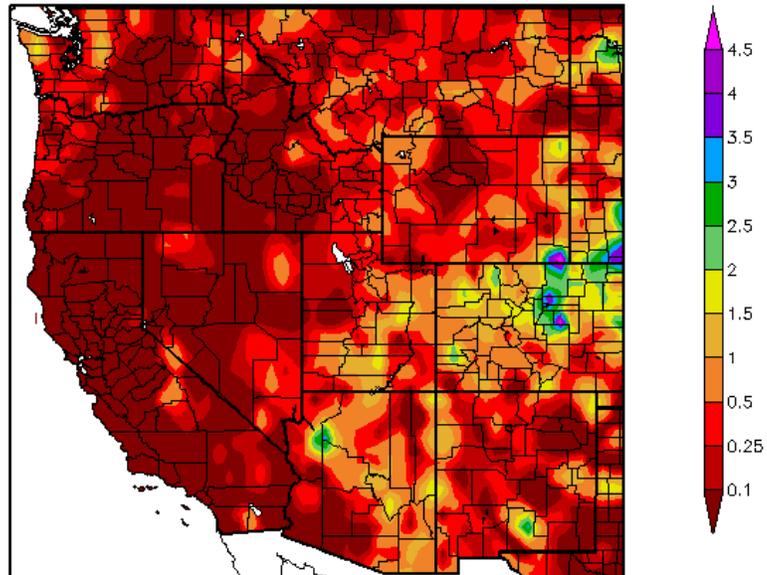
Regional Climate Centers

**Fig. 2a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures across northeast New Mexico ( $>+6^{\circ}\text{F}$ ) 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](http://www.hprcc.unl.edu/maps/current/index.php?action=update_daterange&daterange=7d)

## Weekly Snowpack and Drought Monitor Update Report

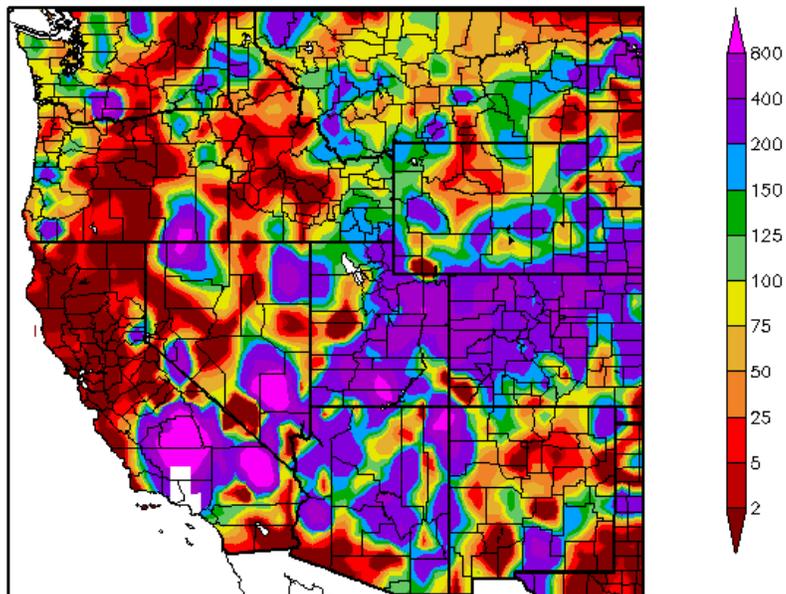
Precipitation (in)  
7/7/2011 - 7/13/2011



Generated 7/14/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)  
7/7/2011 - 7/13/2011



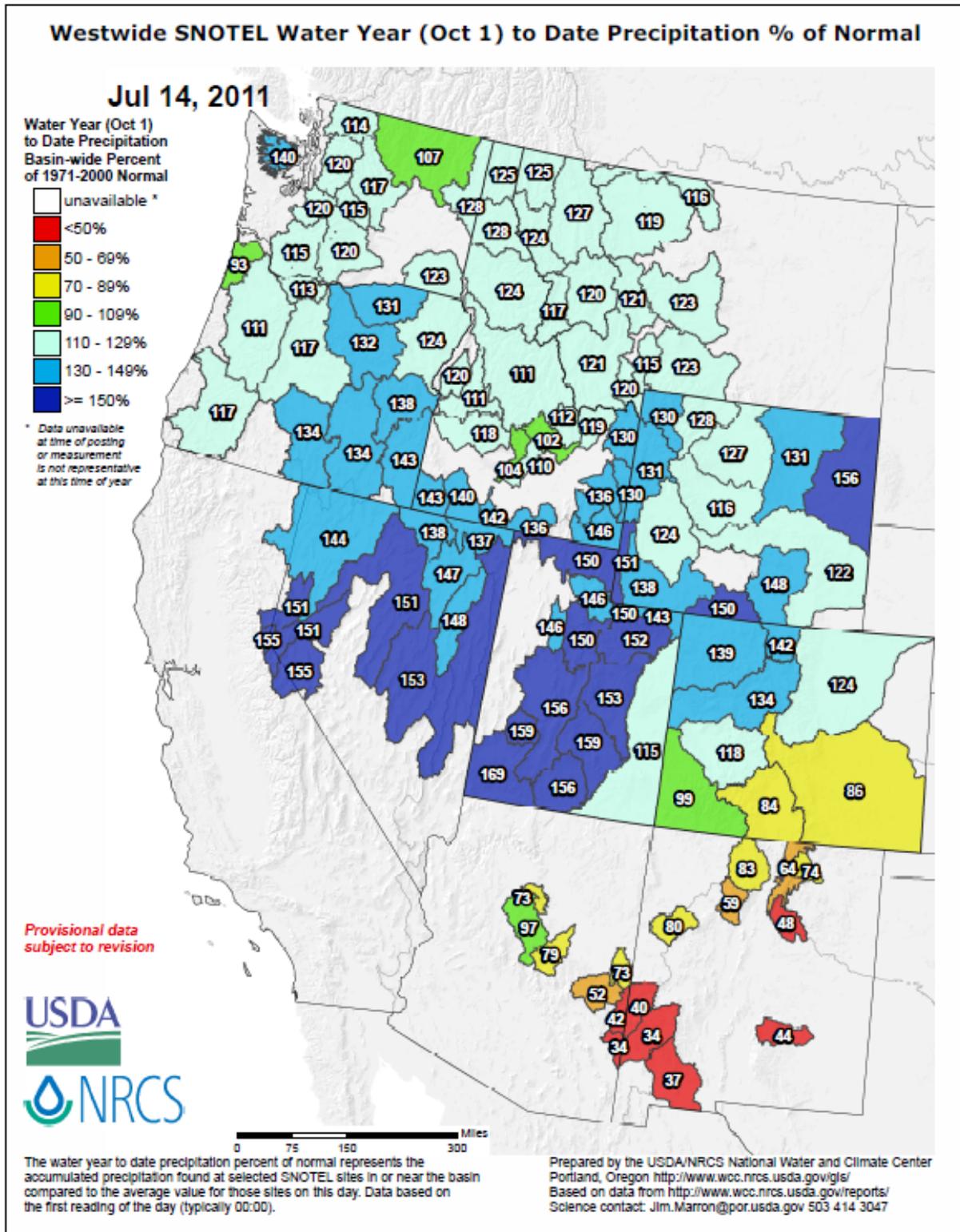
Generated 7/14/2011 at HPRCC using provisional data.

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 Central Rockies (Fig. 3). In terms of percent of normal, the precipitation was highest over the Interior West in the form of scattered thunderstorms (Fig 3a). The Summer Southwest Monsoon Season is suggested in this week's map. Rare isolated thunderstorms over southern California are depicted as very high percentages.**

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. These values are more or less locked in (static) for the remainder of the summer with the possible exception of Arizona and New Mexico due to the influence of the Southwest Monsoon.

Ref: [http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west\\_wytdprecpcntnormal\\_update.pdf](http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_wytdprecpcntnormal_update.pdf)

# U.S. Drought Monitor

July 12, 2011  
Valid 8 a.m. EDT

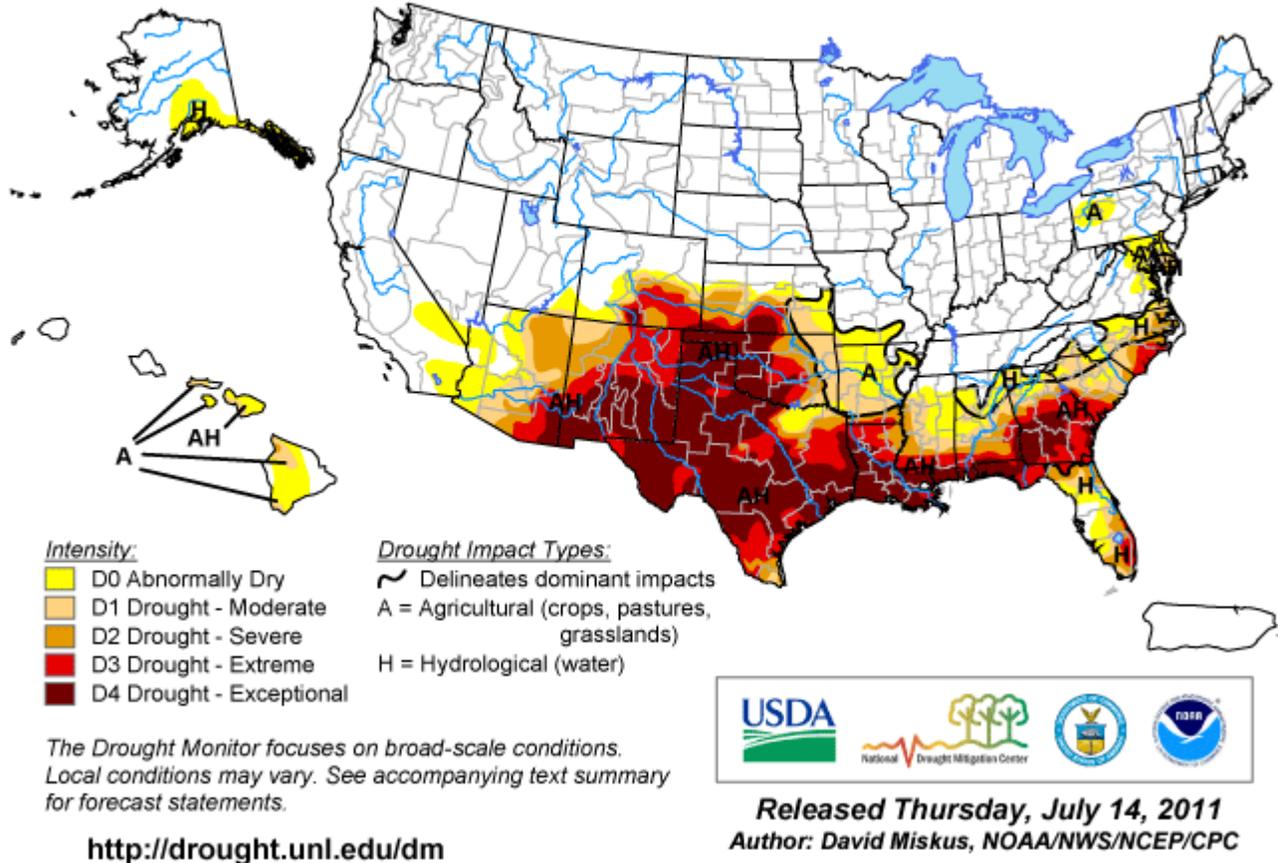


Fig. 4: Current Drought Monitor weekly summary. The exceptional D4 levels of drought are found over New Mexico, extreme southeast Colorado, Texas, Oklahoma, Louisiana, Mississippi, Alabama, Georgia, and the Panhandle of Florida. Ref: <http://www.drought.unl.edu/dm/monitor.html>.

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

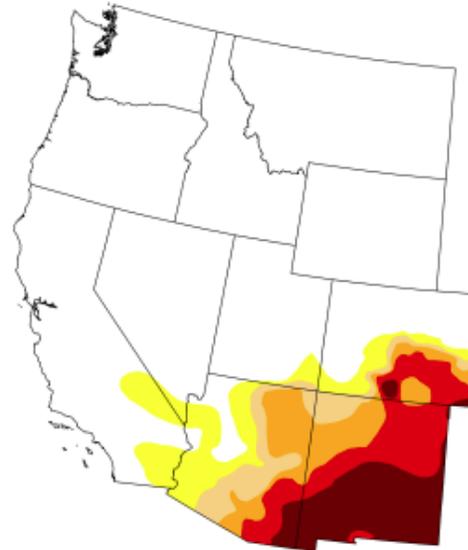
# U.S. Drought Monitor

## West

July 12, 2011  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	75.10	24.90	19.04	15.69	11.02	5.60
Last Week (07/05/2011 map)	73.58	26.42	19.36	16.03	11.35	5.71
3 Months Ago (04/12/2011 map)	75.98	24.02	19.17	13.34	4.15	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 (07/06/2010 map)	71.27	28.73	8.42	0.65	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 14, 2011

David Miskus, NOAA/NWS/NCEP/Climate Prediction Center

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

**Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was slight improvement during the past week helped by the Southwest Monsoon.**

Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)

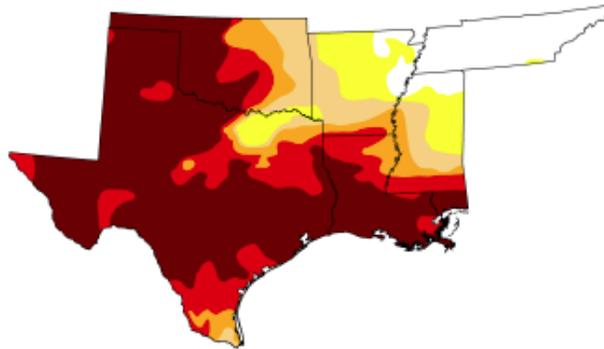
# U.S. Drought Monitor

## South

July 12, 2011  
Valid 7 a.m. EST

*Drought Conditions (Percent Area)*

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	10.69	89.31	80.67	72.07	64.19	48.35
Last Week (07/05/2011 map)	11.07	88.93	78.07	68.29	61.76	46.80
3 Months Ago (04/12/2011 map)	10.71	89.29	79.93	64.18	39.67	5.35
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 (07/06/2010 map)	74.13	25.87	10.63	4.01	1.42	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 14, 2011

David Miskus, NOAA/NWS/NCEP/Climate Prediction Center

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

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

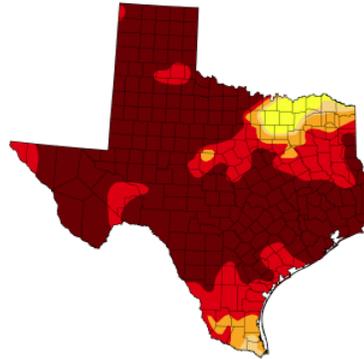
# Weekly Snowpack and Drought Monitor Update Report

## U.S. Drought Monitor

July 12, 2011  
Valid 7 a.m. EST

### Texas

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	97.43	95.78	90.97	71.66
Last Week (07/05/2011 map)	2.41	97.59	95.73	94.39	90.21	71.30
3 Months Ago (04/12/2011 map)	0.00	100.00	97.94	86.43	60.57	10.03
Start of Calendar Year (12/29/2010 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 (07/06/2010 map)	82.85	17.15	7.36	1.67	0.00	0.00



**Intensity:**



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, July 14, 2011

David Miskus, NOAA/NWS/NCEP/Climate Prediction Center

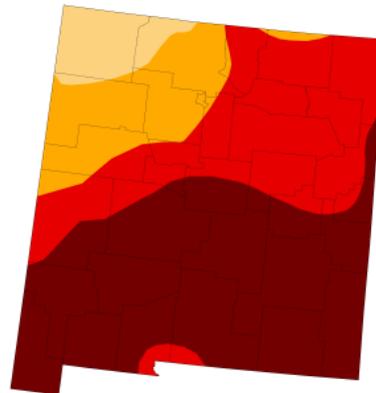
Fig. 4c: Slight worsening to the drought over the State of Texas this week. This is currently the 3rd worst drought in Texas history. Ref: [http://www.drought.unl.edu/dm/DM\\_state.htm?TX,S](http://www.drought.unl.edu/dm/DM_state.htm?TX,S)

## U.S. Drought Monitor

July 5, 2011  
Valid 7 a.m. EST

### New Mexico

	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

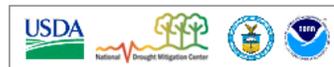


**Intensity:**



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, July 7, 2011

Richard Heim, NOAA/NESDIS/National Climatic Data Center

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](http://www.drought.unl.edu/dm/DM_state.htm?NM,W)

**Note:** Major fires in Arizona and New Mexico: The **Las Conchas** fire, started by a tree falling on power lines, is the largest in New Mexico's history. As of this morning, more than 149,250 acres have burned and the fire is 50% contained. This is just one of 11 active wild fires in the state.

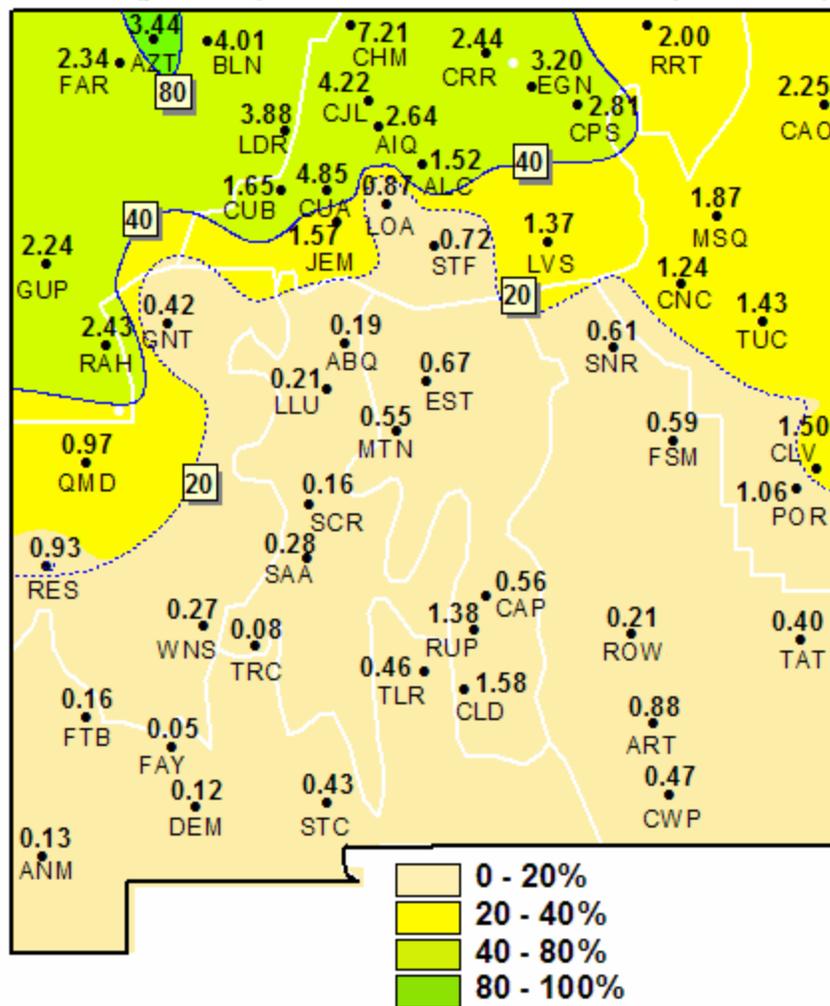
## Weekly Snowpack and Drought Monitor Update Report

### SPECIAL REPORT

#### 2011 - Record Driest Year for New Mexico (so far)

The exceptionally dry conditions of 2011 have resulted in the development of widespread drought conditions across New Mexico, as well as other states across the south. Currently, nearly 80% of the state is classified as Extreme or Exceptional Drought, with Moderate to Severe Drought all other areas of the state. Precipitation for June was also well below normal over most of the state with many locations reporting no precipitation. For the calendar year, more than half of the state has received less than 20% of normal precipitation.

**January - June 2011 Precipitation  
Totals (plotted) and Percent of Normal (contours)**

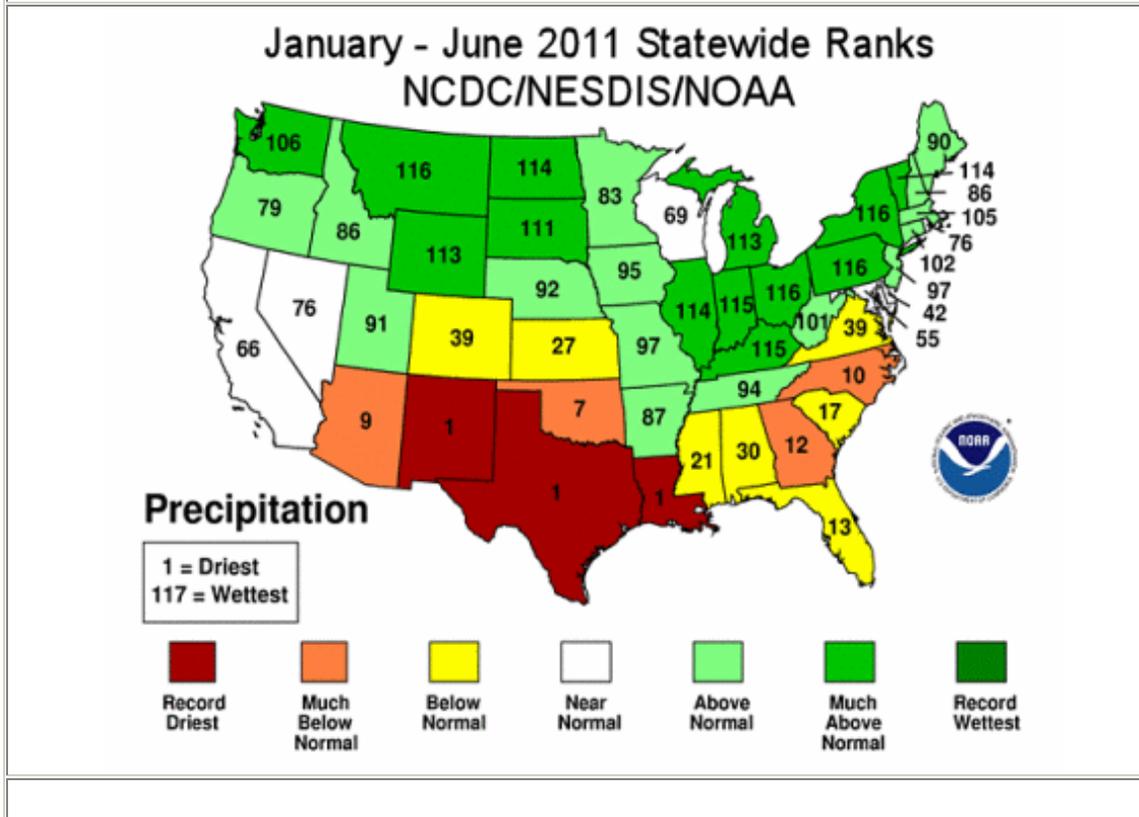


NCDC calculates ranks for both temperature and precipitation. Precipitation ranks for New Mexico for several periods are shown in the table below. Both the calendar year and the water year (starting October 2010) rank as the driest in the 117-year period.

## Weekly Snowpack and Drought Monitor Update Report

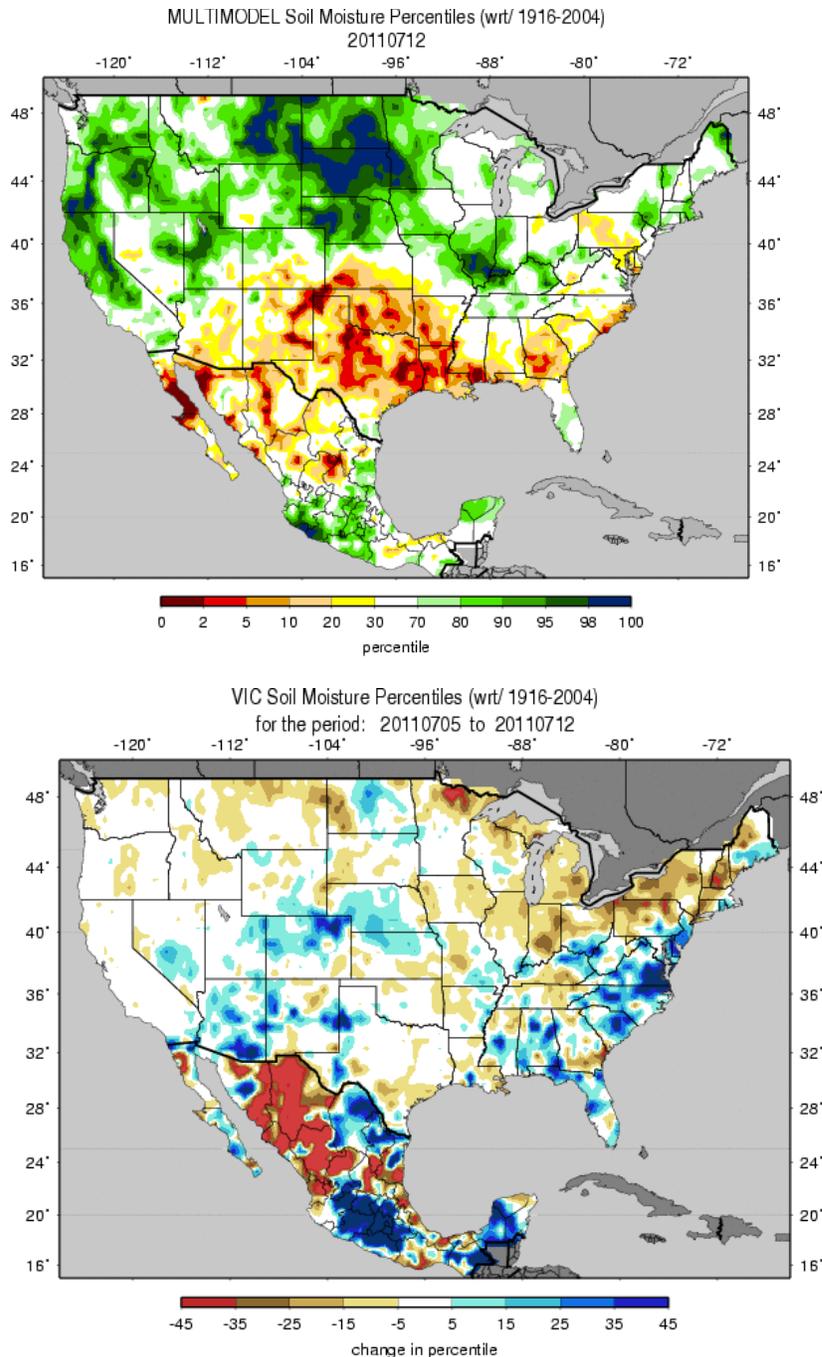
Period	Amount	Long Term Average	Departure	Rank	Record Year
<b>Jun 2011</b> 1-month period	0.16" (4.06 mm)	1.11" (28.19 mm)	-0.95" (-24.13 mm)	<b>1<sup>st</sup> Driest</b> 117 <sup>th</sup> Wettest	Driest: <b>2011</b> Wettest: <b>1903</b>
<b>May - Jun 2011</b> 2-month period	0.42" (10.67 mm)	2.07" (52.58 mm)	-1.65" (-41.91 mm)	<b>2<sup>nd</sup> Driest</b> 116 <sup>th</sup> Wettest	Driest: <b>1998</b> Wettest: <b>1941</b>
<b>Apr - Jun 2011</b> 3-month period	0.71" (18.03 mm)	2.77" (70.36 mm)	-2.06" (-52.33 mm)	<b>1<sup>st</sup> Driest</b> 117 <sup>th</sup> Wettest	Driest: <b>2011</b> Wettest: <b>1941</b>
<b>Mar - Jun 2011</b> 4-month period	0.83" (21.08 mm)	3.44" (87.38 mm)	-2.61" (-66.30 mm)	<b>1<sup>st</sup> Driest</b> 117 <sup>th</sup> Wettest	Driest: <b>2011</b> Wettest: <b>1941</b>
<b>Feb - Jun 2011</b> 5-month period	1.14" (28.96 mm)	4.01" (101.85 mm)	-2.87" (-72.89 mm)	<b>1<sup>st</sup> Driest</b> 117 <sup>th</sup> Wettest	Driest: <b>2011</b> Wettest: <b>1941</b>
<b>Jan - Jun 2011</b> 6-month period	1.19" (30.23 mm)	4.61" (117.09 mm)	-3.42" (-86.86 mm)	<b>1<sup>st</sup> Driest</b> 117 <sup>th</sup> Wettest	Driest: <b>2011</b> Wettest: <b>1941</b>
<b>Oct 2010 - Jun 2011</b> 9-month period	2.87" (72.90 mm)	7.07" (179.58 mm)	-4.20" (-106.68 mm)	<b>1<sup>st</sup> Driest</b> 116 <sup>th</sup> Wettest	Driest: <b>2011</b> Wettest: <b>1941</b>

Statewide precipitation ranks for the first six months of 2011 are shown below. 2011 ranks as the record driest start of the year in New Mexico, and also in Texas and Louisiana.



Report is courtesy of NWS ABQ Office. Ref: [http://www.srh.noaa.gov/news/display\\_cmsstory.php?wfo=abq&storyid=70557&source=0](http://www.srh.noaa.gov/news/display_cmsstory.php?wfo=abq&storyid=70557&source=0)

## Weekly Snowpack and Drought Monitor Update Report



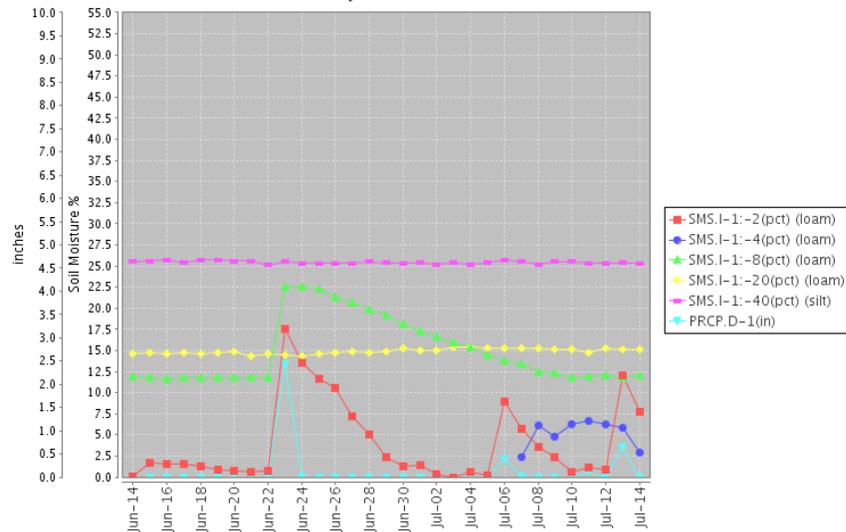
**Figs. 5a and 5b:** Soil Moisture ranking in percentile as of 12 July (top) shows moist conditions over much of the Northern Tier States with dryness over the Southern Tier States and into the Mid-Atlantic Seaboard (classic La Niña pattern). There was no significant change since the previous week's report. The moisture deteriorated this week over much of the eastern half Northern Tier States; especially over parts of the Pennsylvania, New Hampshire, and Minnesota, but improved over the Mid-Atlantic States and Southwest (bottom).

[http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.multimodel.sm\\_gnt.gif](http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.multimodel.sm_gnt.gif)  
[http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm\\_gnt.1wk.gif](http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_gnt.1wk.gif)

# Weekly Snowpack and Drought Monitor Update Report

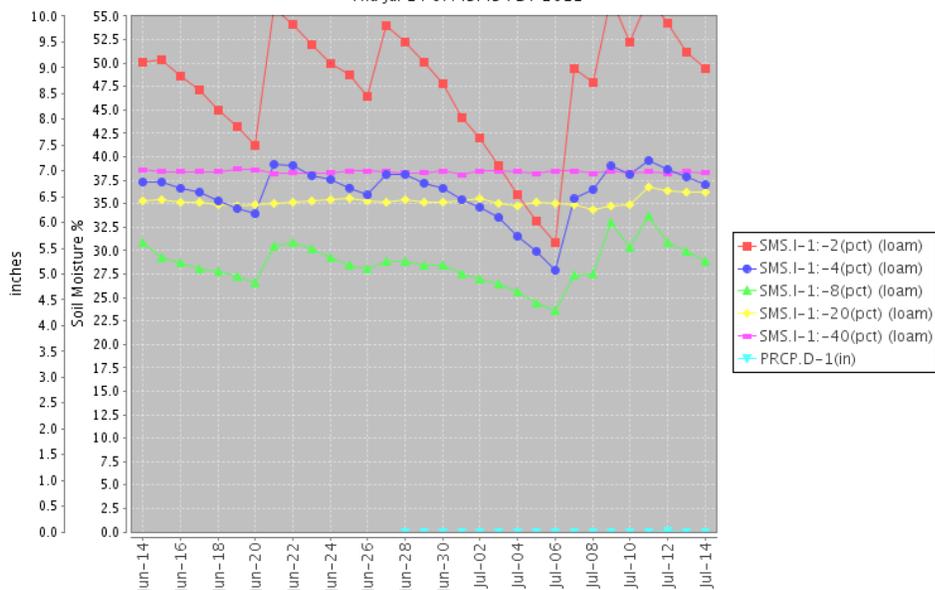
## Soil Climate Analysis Network (SCAN)

Station (2016) MONTH=2011-06-14 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision  
Thu Jul 14 07:51:33 PDT 2011



**Fig. 6a:** This NRCS resource shows a site in eastern Texas with very low soil moisture from 2 to 8 inch depths. This region is in D4 “Exceptional” Drought. Precipitation, the bottom-most line shows how the soil moisture temporarily responds only above the 20 inch depths on 23 June.

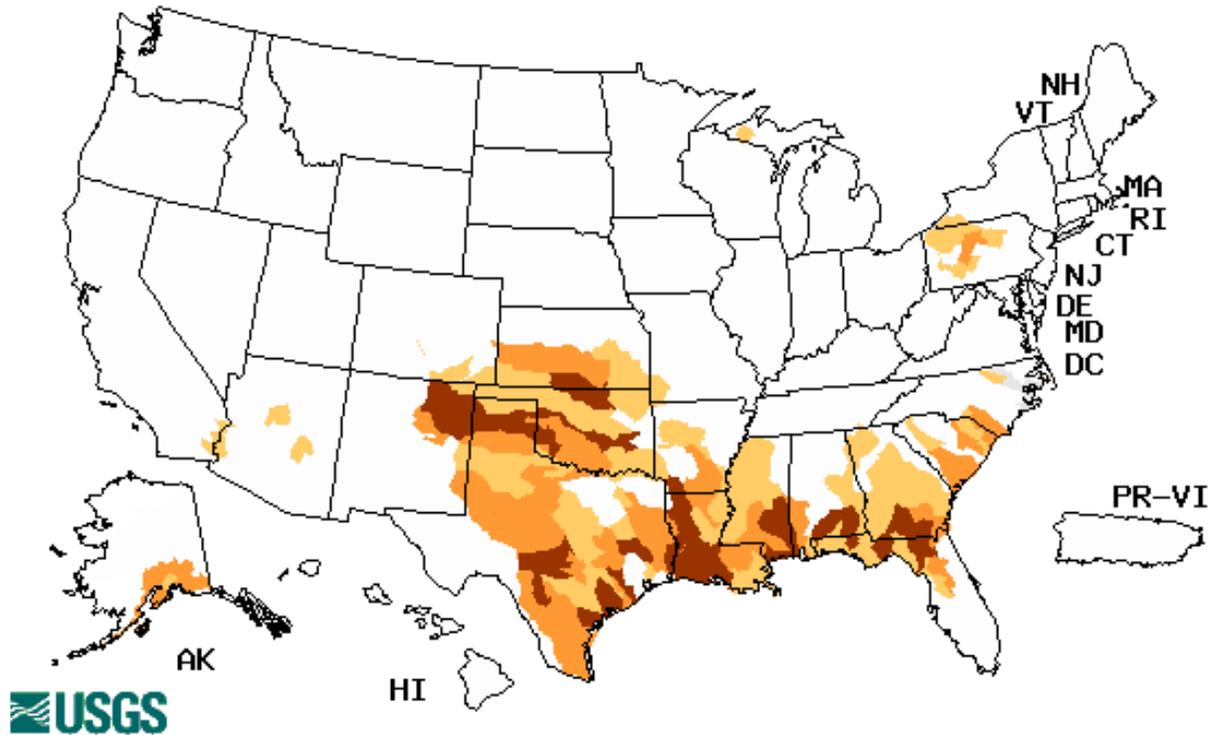
Station (2020) MONTH=2011-06-14 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision  
Thu Jul 14 07:49:49 PDT 2011



**Fig. 6b:** This SCAN station is located in central North Dakota (south of the recent Minot flooding). Note the high soil moisture content compared to the 30 day chart above (depths from 2 to 40 inches).

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Wednesday, July 13, 2011



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. 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 12, 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/>.

**Weekly Weather Summary:** With the main storm track continuing over the northern half of the lower 48 States, high pressure over the southern Plains exacerbated the drought, keeping this area precipitation free and unseasonably hot (highs exceeding 110 deg F). Weak fronts stalled out across the Southeast, generating hit and miss showers and thunderstorms, with some locally heavy. Some Southeastern areas (southeastern Virginia and much of the Carolinas) received substantial rainfall. Heavy, widespread convective thundershowers inundated most of Florida while monsoonal showers continued and intensified over parts of the Southwest. Most of the Nation recorded near to above-normal temperatures, including parts of the West (notably California) which had observed a cold and wet spring and early summer.

**The Upper Midwest, Northeast, and Mid-Atlantic:** A series of frontal passages sparked showers and thunderstorms that dropped moderate to heavy rains (more than 2 inches) across southern Pennsylvania, New Jersey, the Delmarva Peninsula, and southern Virginia. 3 to 4 inches of rain soaked parts of southern New Jersey, while 4 to 8 inches inundated southeastern Virginia. Accordingly, a 1-category improvement was made where the greatest totals occurred, with D0 removed from southern New Jersey and south-central Virginia, D1 trimmed to D0 in the Delmarva Peninsula, and the D2 in the Delmarva Peninsula diminished. D2(AH) was kept where long-term deficits remained (90-days: 5-10 inches; 6-Months: 8-12 inches; 12-Months: 12-16 inches), even with this week's beneficial rains. A 2-category improvement was made in southeastern Virginia (D1 to nothing) due to the excessive rainfall, and similar conditions extended southward into northern North Carolina (see Southeast text). The dam at Lake Chesdin which supplies water for the southwest suburbs of Richmond, VA, reached full capacity with water spilling over the top, effectively ending all water restrictions there.

In contrast, lesser amounts (0.5 to 1.5 inches) were recorded in Maryland and northern Virginia, maintaining conditions there. Farther north, short-term precipitation deficiencies (2 to 4 inches) have accumulated in northwestern Pennsylvania the past 30 days as only 25 to 50 percent of normal rain has fallen. With average 1-, 7-, and 14-day USGS stream flow levels in this region dropping into the lower tenth percentile, D0 was added.

**Southeast:** Scattered showers and thunderstorms pelted the Southeast, with substantial rains (more than 2 inches) falling on parts of the Carolinas, southern Georgia, most of Florida, and on portions of southeastern Louisiana and southern sections of Mississippi and Alabama. In contrast, dry and warm weather aggravated conditions in the lower Mississippi Valley (northern Louisiana, southern Arkansas, western Mississippi), slightly expanding the D0-D3 there. In North Carolina, 2 to 4 inches of rain pushed the western D0 edge eastward, while the western D1 border in northern North Carolina was edged eastward. Similarly, the western D2 boundary in eastern North Carolina was pushed eastward, while the D3 was removed from Dare County where 3 to 5 inches of rain fell. Additional rains will be needed, however, to further improve

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drought as any future prolonged periods of summer dryness and warmth could quickly deteriorate conditions. In southeastern North Carolina, however, D3 remained where totals were inadequate (less than an inch). In South Carolina, heavy rains (2 to 4 inches) in the west and east-central improved D0 and D1 conditions, but elsewhere the rains were too scattered in nature for improvement. In Georgia, 1-category relief was limited to extreme southern portions where 2.5 to 3.5 inches trimmed away the southern D4 edge. In Florida, widespread, heavy summer rains brought large improvements to the state, especially in the southern half. In Florida's Big Bend, East-Central, and South, widespread 10 plus inches of rain the past 30 days (3 to 6 inch surpluses), and over 8 inch excesses the past 60 days, have greatly eased drought conditions, including river flows. D4(H) conditions in southern Florida were limited to metro Broward County as long-term indicators, including the very low Lake Okeechobee levels, well levels in Palm Beach and Broward counties, and substantial precipitation deficits since January 1, 2011, and October 1, 2010. Farther west, some slight improvements were made in southern Alabama and Mississippi along the D2 border where more than 2 inches of rain fell, and in north-central Alabama where D0 was alleviated. In northern and eastern Arkansas, 1.5 to 2.5 inches of rain erased D0; however, farther south, little or no rain and highs topping 100 deg F expanded D0 to D2 into western Mississippi and southern Arkansas. The Impact Type line was modified to H-only across the northern drought border as recent rains have eased or erased short-term deficits from northern Alabama to northern North Carolina.

**The Southern and Central Plains:** Widespread heavy showers and thunderstorms dumped heavy rains (2 to 5 inches) on the northern and central Plains, but completely missed the southern third of the Plains (from southern Kansas southward to the Texas-Mexico border). To make matters worse, excessive heat accompanied the dryness as highs hit triple-digits. Maximums even topped 110 deg F in southern Kansas, central Oklahoma, and north-central Texas, and weekly temperatures averaged 7 to 10 deg F above normal there. In Texas, based upon the updated SPI blends at 12 GMT July 12, conditions deteriorated a category in northeastern Texas, while adjustments for additional slight improvements were made in extreme southern Texas (due to rains from Tropical Storm Arlene 2 weeks ago). Across the state, huge deficits have accumulated. In Beaumont, TX, 2011 rainfall has been 8.80 inches versus a normal of 30.93 inches (26 percent of normal). This total (8.80 inches) is closer to what Midland, TX, normal receives. Unfortunately, Midland is in an arid climate regime, and Beaumont is not. From October to June, many locations have recorded one of the driest such periods on record (e.g. San Antonio, Del Rio, Austin), and this dryness has been accompanied by near-record warmth this summer. In contrast, a deluge late in the week in north-central Texas (Hall, Childress, Briscoe, and Motley counties) brought this area back into D3. Farther north, however, no rain and plenty of heat quickly deteriorated conditions in western and central Oklahoma and south-central Kansas, and the D2-D4 area expanded eastward and northward by a category. From the USDA/NASS, percent of pasture and range lands rated poor or very poor were: Texas 86; Oklahoma 69; Kansas 40. Similarly, summer crops have taken a beating. 78 and 58 percent of cotton was rated poor or very poor in Oklahoma and Texas, while the sorghum crop in New Mexico, Texas, and Oklahoma was rated 50, 51, and 44 percent poor or very poor. 62 percent of the Texas corn was categorized poor or very poor.

In sharp contrast, heavy rains across the north-central Plains alleviated abnormal dryness in southern Nebraska, and improved conditions by a category across the northern half of Kansas (and into central Colorado, see Southwest text). There was a sharp cut off from the ample rains to no rain across central Kansas, which also marked the northern extent of this week's triple digit heat.

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**The Southwest:** The summer monsoon continued across Arizona, southern Nevada, Utah, and into Colorado, but bypassed New Mexico and western parts of Texas and Oklahoma. 1 to 2 inches of rain fell on southern and central Arizona, extreme southern Nevada, south-central Utah, and across most of Colorado except southeastern sections. The moisture also tempered the heat in this region, with average temperatures only slightly above normal. Accordingly, where an inch or more fell near any drought border, some slight improvement was made. This included parts of the D1 through D4 edges in southern and central Arizona, and elimination of the D0 in parts of western Arizona. Interestingly, Douglas, AZ, received more rain in 9 MINUTES (0.30 inches on July 6 starting at 4:51pm) than in the past 9 MONTHS (only 0.27 inches since October 1, 2010). In Colorado, another wet week, especially in the north-central and eastern sections, called for a 1-category improvement in central portions of the state. Farther south, however, rainfall was much less (0.1 to 0.5 inches), and conditions deteriorated (D3 and D4) in eastern Conejos, western Costilla, and western Rio Grande Counties. Elsewhere, enough rain fell to maintain conditions, but not enough to warrant improvement. Even with the rains, Arizona pasture and range conditions were rated 63 percent poor or very poor, while New Mexico stood at a horrendous 91 percent as of July 11 according to USDA/NASS.

**Puerto Rico, Hawaii, and Alaska:** In Puerto Rico, the newly added D0 area in the northwest was quickly eradicated as 3 to 4 inches of rain fell this week, effectively raising average stream flow levels to near-normal flows the past 1-, 7-, 14-, and 28-days. Reports from the island indicate all vegetation is green and lush as above-normal spring and summer rains have fallen on much of the island.

In Hawaii, light to moderate showers fell on Kauai and Oahu, and on the windward sides of Maui and the Big Island. The effects of surplus spring rainfall produced improvements over leeward portions of the Big Island and Maui, but this trend is expected to end as drier and warmer conditions take hold during the summer dry season. No changes were made this week, but if the drying trend continues next week on parts of the leeward Big Island, some degradation may occur.

In south-central Alaska, light precipitation (0.5 inches or less) fell while the southeastern Panhandle received 0.5 to 1.5 inches. The greatest rains fell on the non-drought regions of southwestern (1.5 to 2.5 inches), western (0.5 to 1.5 inches), and eastern (0.5 to 1 inch) Alaska, while temperatures statewide averaged close to normal. Accordingly, conditions were left unchanged; however, with USGS average stream flow percentiles running low in the Kenai Peninsula, this area will be watched closely.

**Looking Ahead:** For the ensuing 5 days (July 14-18), a swath of heavy rain (more than 2 inches) is expected in the Southeast, from eastern Louisiana to South Carolina, over areas with D2 to D4 conditions. Moderate to heavy rains should also fall from the northern Rockies to the upper Midwest. Unfortunately, the southwest monsoon is forecast to diminish across the Four Corners Region, and the southern Plains will remain dry. Showers should continue in Florida, although the heaviest rains should be in the north, with lower totals in the south. Temperatures are expected to average below normal in the West, above normal from the Rockies to the Appalachians, and seasonable along the East Coast.

The CPC 6-10 day outlook (July 19-23) indicates above-normal monsoon rainfall in Arizona and Utah, but continued subnormal precipitation to the east (eastern New Mexico, western Texas, and into the central Plains and lower Missouri Valley). Above normal rainfall should occur in the

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upper Midwest southeastward into the Carolinas and southward to the Gulf Coast. New England should also experience subnormal precipitation, as should southwestern Alaska. Abnormal warmth should encompass most of the Nation, especially the Great Lakes region and Midwest, and southwestern Alaska, while subnormal temperatures will be limited to the Far West, southern Florida, and eastern Alaska.

**Author:** [David Miskus, NOAA/NWS/NCEP/Climate Prediction 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 13, 2011