



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 28 April 2011

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: SNOTEL Snow-Water Equivalent percent of normal values for 26 April 2011 shows a remarkable late season 1-Category gains (blue circles) over much of the Great Basin, Coast Ranges of Oregon and Washington, and portions of Wyoming. Melt-out is completed over all of the Southwest with the exception of the San Francisco Mountains in Central Arizona (Fig. 1). SNOTEL snow density is approaching maximum density (~50%) before snow melts begins over the West Coast States and northern Wasatch in Utah. Some potential flooding concerns exist with excessive snowpack this season over the Colorado River Basin. As a result, any forecasts for above normal temperatures, especially temperatures that remain above freezing during the night have to be watched carefully (Fig. 1a).

Temperature: SNOTEL 7-day average temperature anomalies show that the greatest positive temperature departures across the Southwest and the greatest negative departures occurred over central Idaho and western Wyoming (Fig. 2). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures across south-central New Mexico (>+6°F) and the greatest negative departures over western Wyoming-eastern Idaho (<-10°F). This pattern is typical of a La Niña although the coldest temperature departures would normally be expected further north. This has helped regions such as the Interior West to continue to accumulate snowpack (Fig. 2).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 27 April shows the bulk of the heaviest precipitation confined to Northern Coastal Ranges, Cascades, central Montana, and the West Slope of the Rockies in Colorado (Fig. 3). In terms of percent of normal, the precipitation was highest over much of the West excluding the deep Southwest, western Montana, and much of Wyoming (Fig. 3a). 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, Oregon, Washington, and parts of Northern and Central Rockies. One-category positive changes are denoted by the blue circles. Red circles reflect a one-category decrease (Fig. 3b).

The West: The West generally continues to benefit from above normal snowpack and beneficial precipitation, with the exception of the Southwest. In Colorado, Severe Drought (D2) expanded westward in the south-central part of the state. An area of Extreme Drought (D3) was introduced in the southeast part of the state, coinciding with deteriorating conditions in the Oklahoma Panhandle, northern Texas, and southwest Kansas. New Mexico saw an expansion of Extreme Drought (D3) through the central part of the state up to the Albuquerque area.
Author: Michael Brewer, National Climatic Data Center, NOAA

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

Weekly Snowpack and Drought Monitor Update Report

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. 4, 4a and 4b).

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/>.

U.S. HISTORICAL STREAMFLOW

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

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/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/ JEFF GOEBEL
Acting Director, Resource Inventory Division

Weekly Snowpack and Drought Monitor Update Report

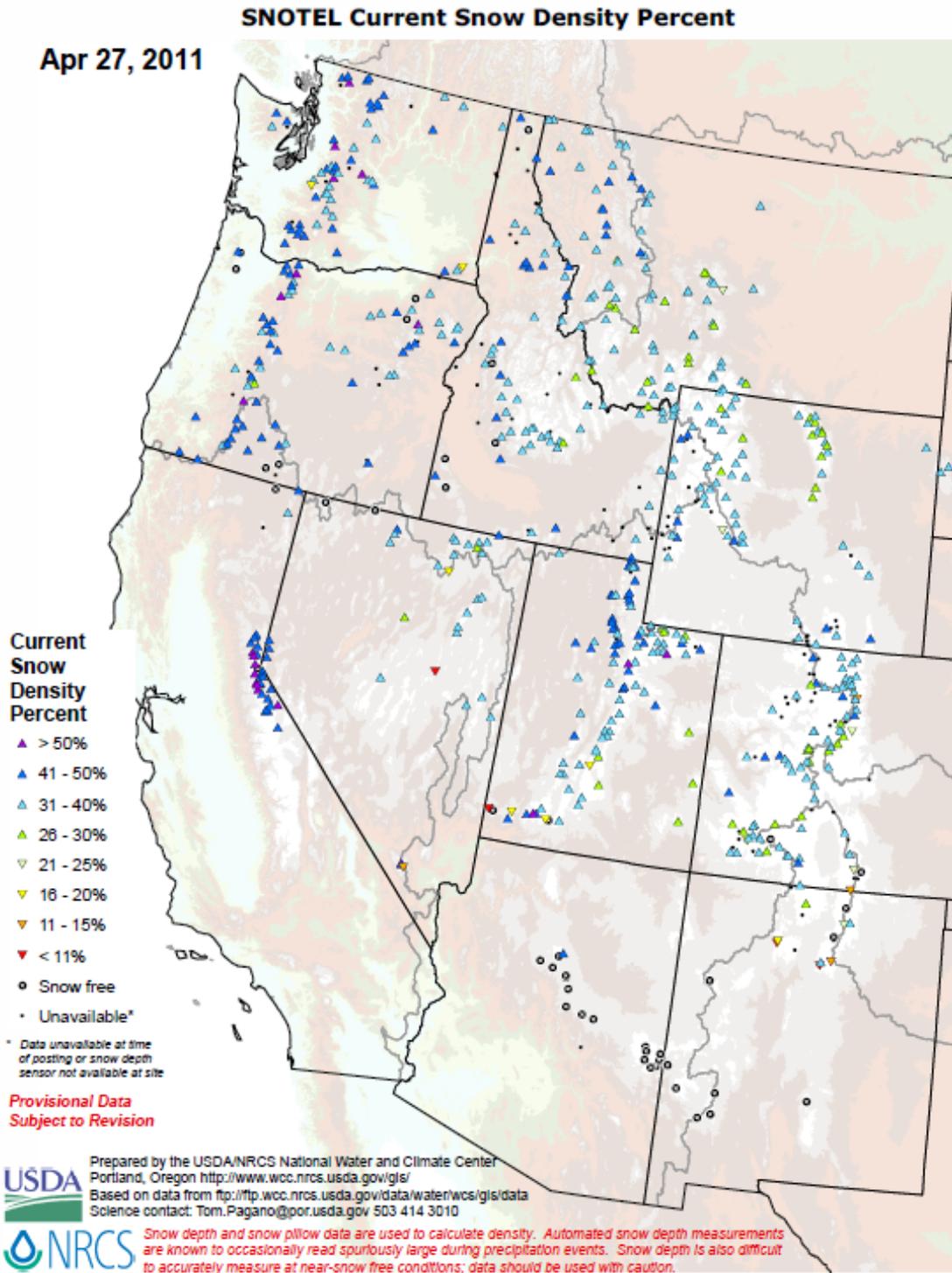


Fig. 1a: SNOTEL snow density is approaching maximum density (~50%) before snow melts begins over the West Coast States and northern Wasatch in Utah. Some potential flooding concerns exist with excessive snowpack this season over the Colorado River Basin. As a result, any forecasts for above normal temperatures, especially temperatures that remain above freezing during the night have to be watched carefully.

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

Weekly Snowpack and Drought Monitor Update Report

SNOTEL (solid) 7-Day Average Temperature Anomaly (Degrees F) Apr 27, 2011

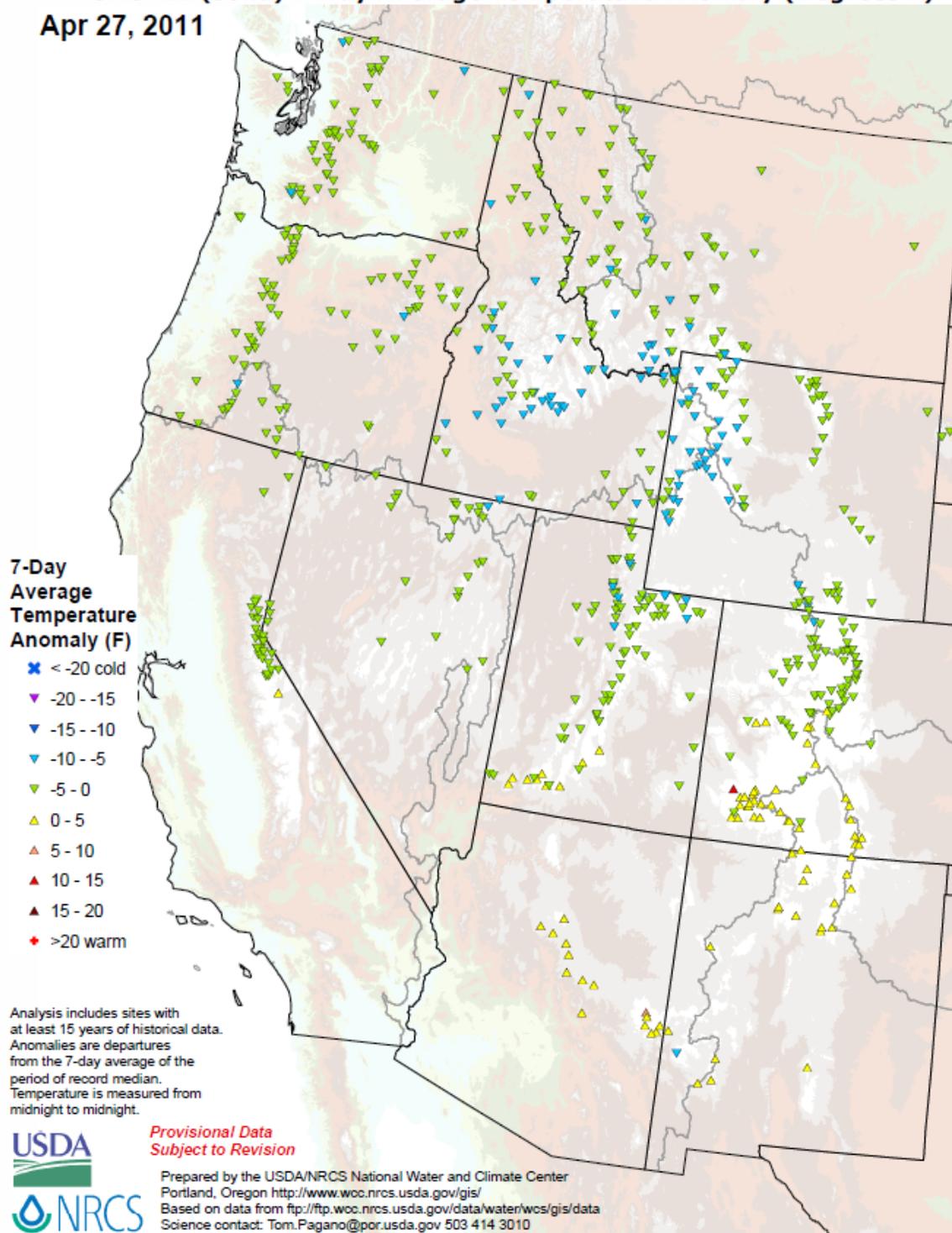
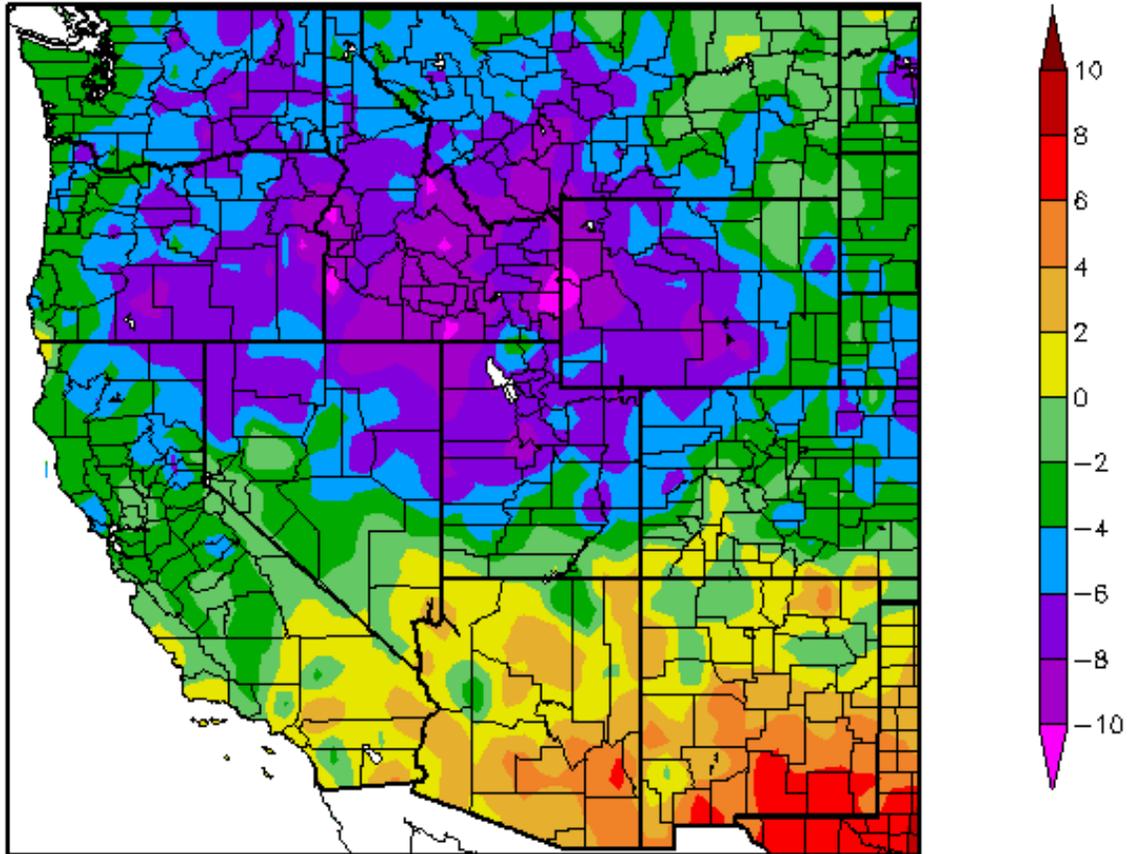


Fig. 2: SNOTEL 7-day average temperature anomalies show that the greatest positive temperature departures across Southwest and the greatest negative departures occurred over central Idaho and western Wyoming.

Ref: <http://www.wcc.nrcs.usda.gov/gis/temp.html>

Departure from Normal Temperature (F)
4/21/2011 – 4/27/2011



Generated 4/28/2011 at HPRCC using provisional data.

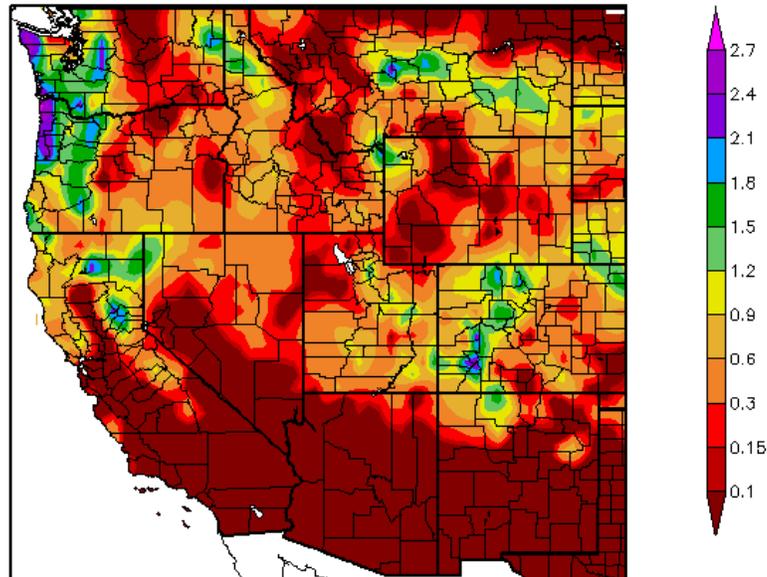
Regional Climate Centers

Fig. 2a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures across south-central New Mexico (>+6°F) and the greatest negative departures over western Wyoming-eastern Idaho (<-10°F). This pattern is typical of a La Niña although the coldest temperature departures would normally be expected further north. This has helped regions such as the Interior West to continue to accumulate snowpack.

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

Weekly Snowpack and Drought Monitor Update Report

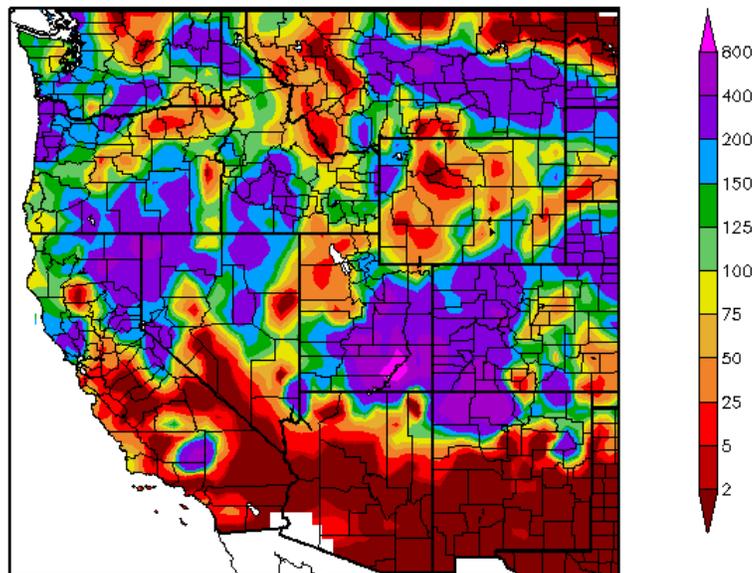
Precipitation (in)
4/21/2011 - 4/27/2011



Generated 4/28/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
4/21/2011 - 4/27/2011



Generated 4/28/2011 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: ACIS 7-day average precipitation amounts for the period ending 27 April shows the bulk of the heaviest precipitation confined to Northern Coastal Ranges, Cascades, central Montana, and the West Slope of the Rockies in Colorado (Fig. 3). In terms of percent of normal, the precipitation was highest over much of the West excluding the deep Southwest, western Montana, and much of Wyoming (Fig 3a). Ref: <http://www.hprcc.unl.edu/maps/current/>

Weekly Snowpack and Drought Monitor Update Report

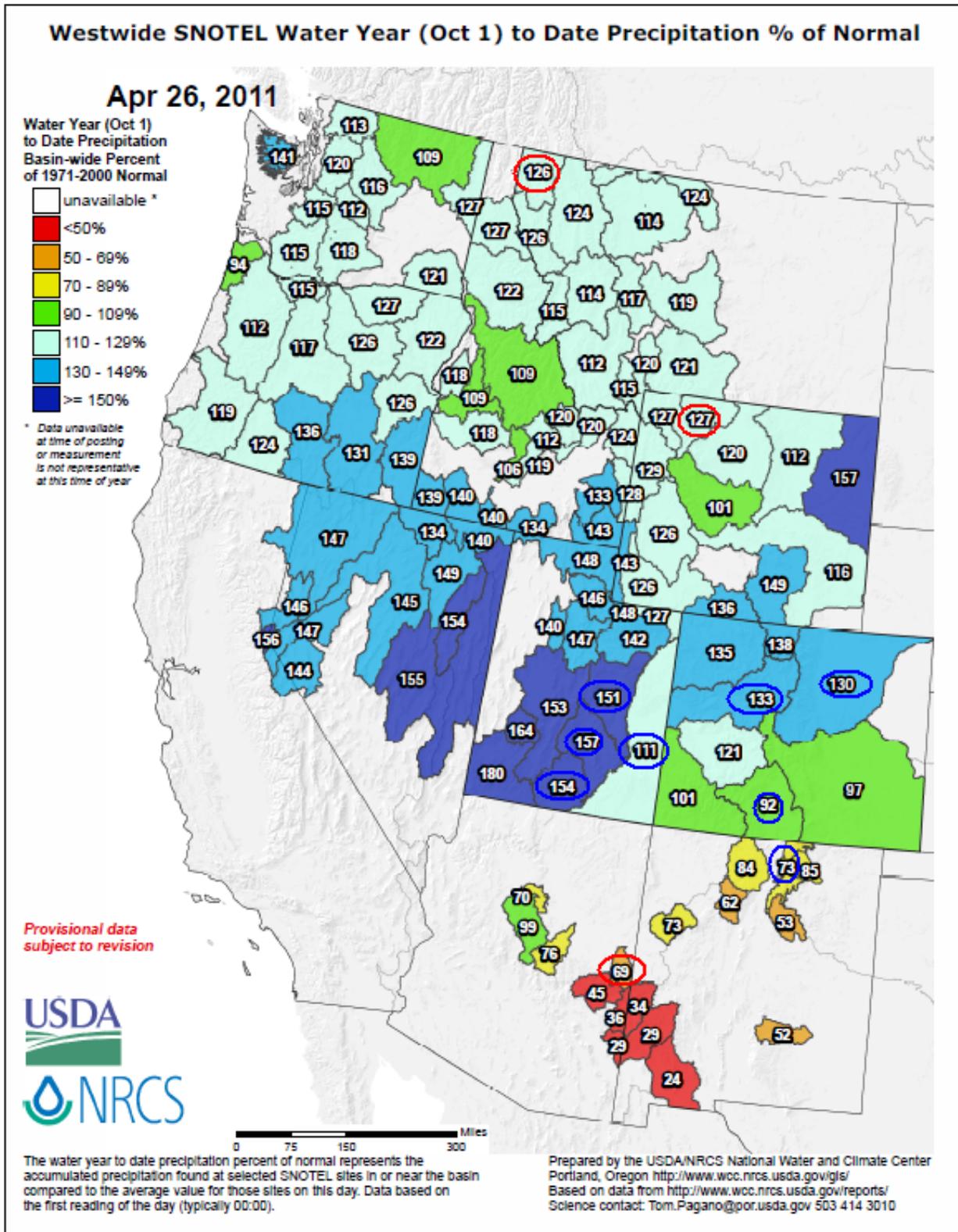
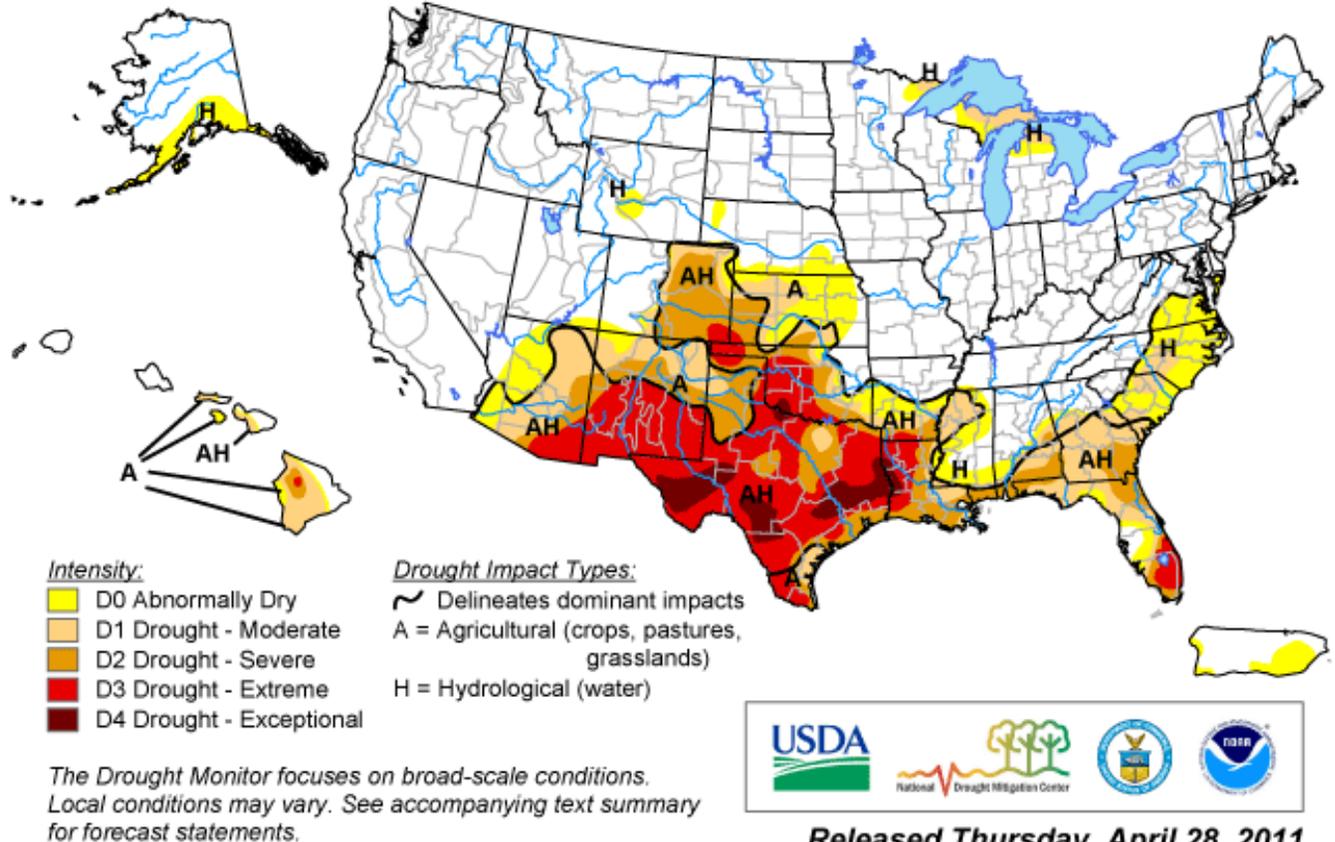


Fig 3b: For the 2011 Water-Year that began on 1 October 2010, the greatest deficits are found over the extreme southern reaches of the Southwest. Areas with the highest values are found over the Great Basin, Oregon, Washington, and parts of Northern and Central Rockies. One-category positive changes are denoted by the blue circles. Red circles reflect a one-category decrease.

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

U.S. Drought Monitor

April 26, 2011
Valid 8 a.m. EDT



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

Released Thursday, April 28, 2011
Author: Michael Brewer/L. Love-Brotak, NOAA/NESDIS/NCDC

Fig. 4: Current Drought Monitor weekly summary. The exceptional D4 levels of drought are found over western, northern, and eastern Texas. Ref: <http://www.drought.unl.edu/dm/monitor.html>

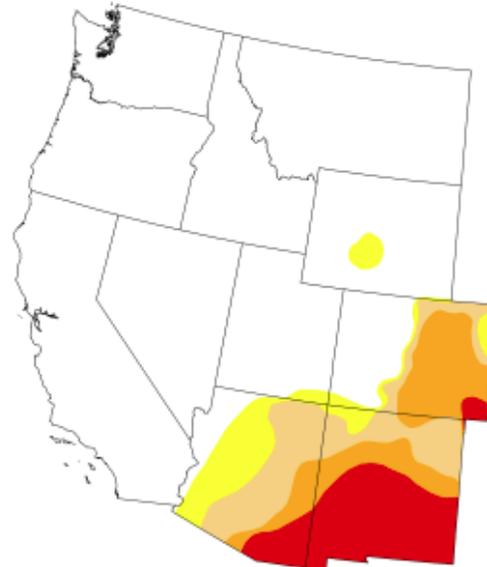
U.S. Drought Monitor

West

April 26, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	75.48	24.52	20.07	13.35	7.09	0.00
Last Week (04/19/2011 map)	76.60	23.40	19.17	13.55	4.57	0.00
3 Months Ago (01/25/2011 map)	76.62	23.38	12.70	2.44	0.00	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 (04/20/2010 map)	44.90	55.10	19.69	4.92	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, April 28, 2011
Michael Brewer, National Climatic Data Center NOAA

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

Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was little change during the past week.

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

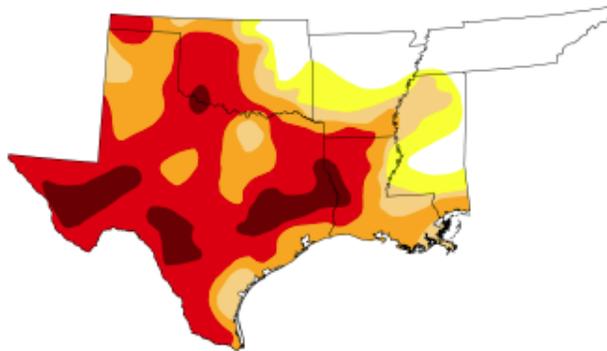
U.S. Drought Monitor

South

April 26, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.47	82.53	74.25	64.80	44.26	9.51
Last Week (04/19/2011 map)	10.72	89.28	80.97	67.61	44.34	8.15
3 Months Ago (01/25/2011 map)	13.45	86.55	59.16	30.84	8.46	0.00
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 (04/20/2010 map)	81.78	18.22	1.26	0.00	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.

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

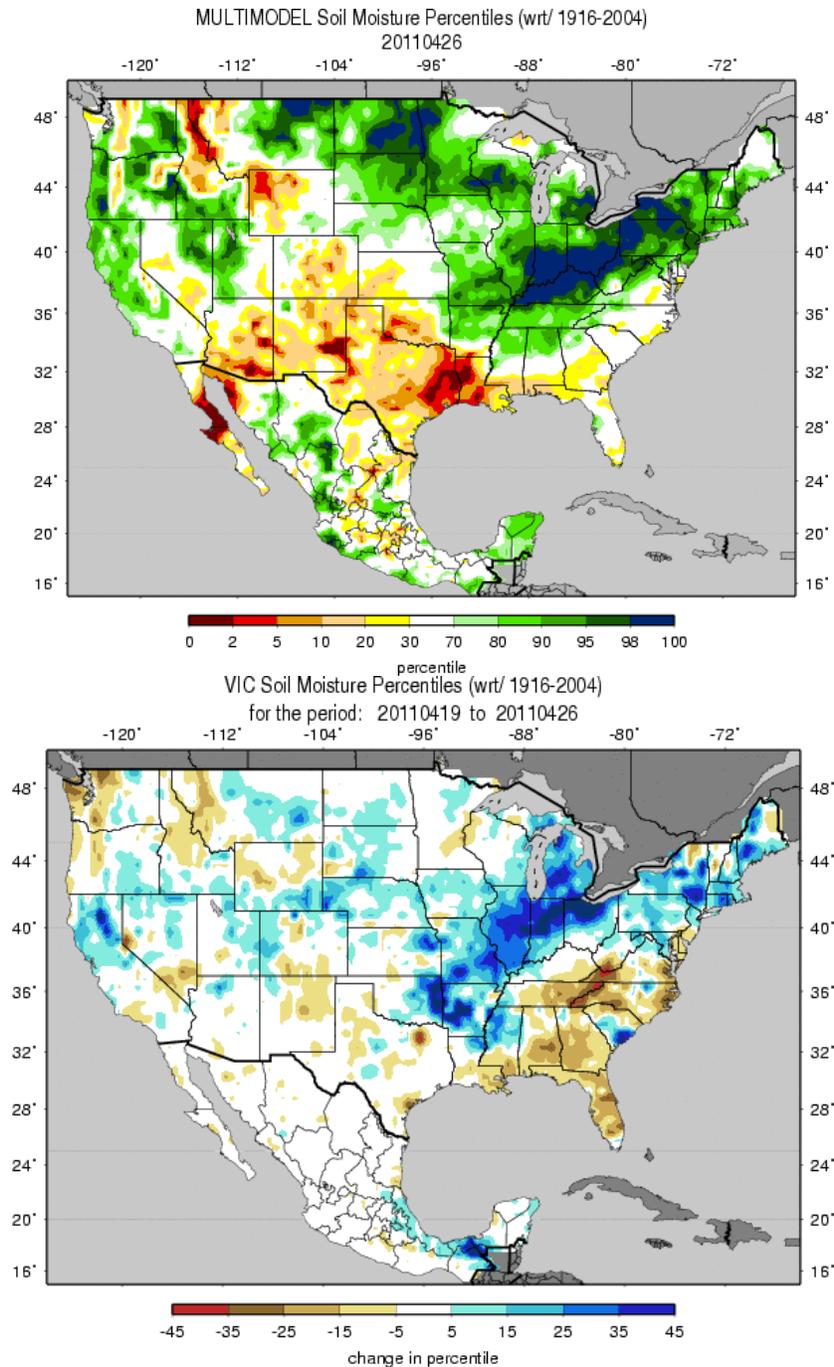


Released Thursday, April 28, 2011
Michael Brewer, National Climatic Data Center NOAA

Fig. 4b: Drought Monitor for the South-Central States with statistics over various time periods. This region has shown some increases in all drought categories over the past week.

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

Weekly Snowpack and Drought Monitor Update Report



Figs. 5a and 5b: Soil Moisture ranking in percentile as of 26 April (top) shows moist conditions over much of the Northern Tier States (with the exception of western Montana) and the Appalachians with dryness over Arizona and across much of the Lower Mississippi River (top). For the past week, the region from the Midwest to New England has experienced significant increases in soil moisture while the Southeast has dried out. Readings over the Northwest are suspect due to potential frozen ground.

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

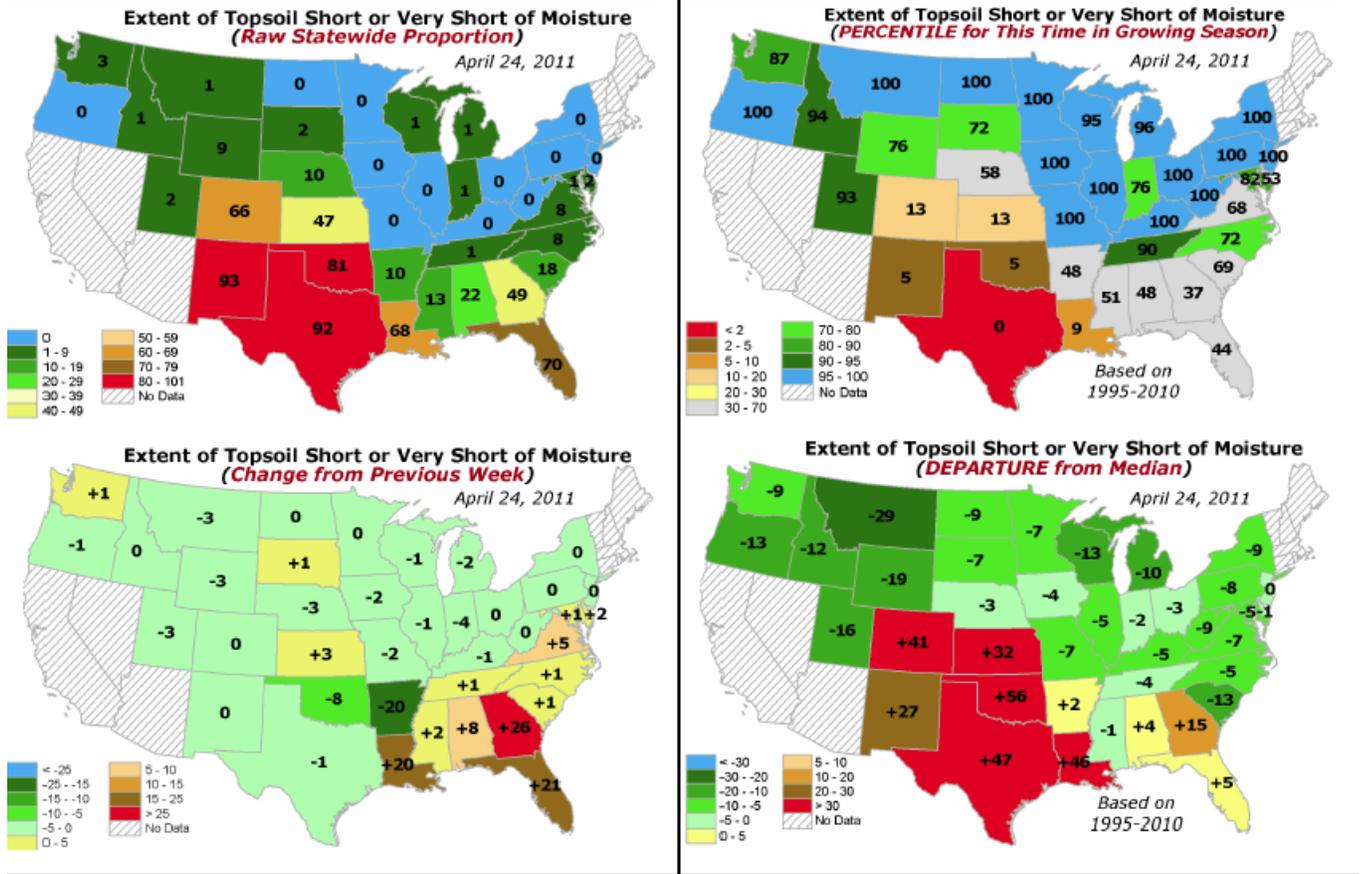
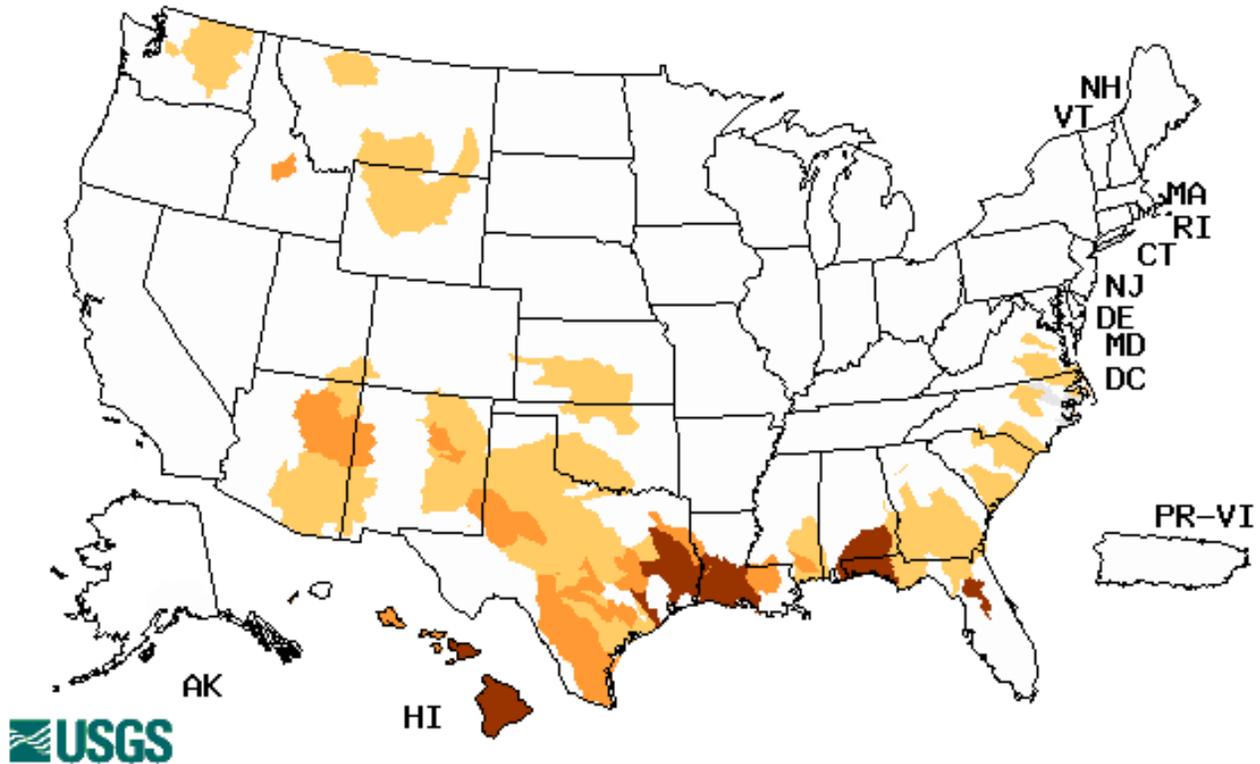


Fig. 6: Top soil moisture shows severe dryness over the South-Central States and surplus moisture over the Northern Tier States. The greatest improvements last week occurred over Utah, Colorado, and Montana (lower left panel).

Weekly Snowpack and Drought Monitor Update Report

Wednesday, April 27, 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 eastern Texas, Louisiana, Arkansas, and the Panhandle and central Florida are indicating severe conditions. Note: northern-most gauges are less accurate as rivers and streams are probably frozen.

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

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- April 26, 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/>.

Severe storms ripped through the country again this week. Tornadoes killed eight or more people in Arkansas and struck the St Louis airport, halting flights in and out. Flooding along the Black River in southeastern Missouri has broken levees leading to flooding around the Butler County area. Emergencies due to the flooding have been declared in Missouri, Illinois, and Kentucky. Meanwhile, drought in the South continues unabated at near-record levels in some places.

The Southeast: Storms passed through northern Mississippi, Alabama, and Georgia again this week while the southern parts of these states and the Panhandle of Florida saw little in the way of precipitation. Severe (D2) and Moderate (D1) Drought expanded in Louisiana, as did Abnormal Dryness (D0). Recent beneficial precipitation helped alleviate Moderate Drought (D1) in central South Carolina. Sporadic thunderstorm activity was experienced over much of southern Florida where drought conditions remained steady. In western and central Kentucky, another week of above-normal precipitation, with estimates in some areas over 5 inches, resulted in flood watches and warnings. An estimated seven plus inches of rain fell in an already wet area leading to more concern over flooding than drought.

The Northeast and Mid-Atlantic: Ample rains fell again this week through the western part of the Mid-Atlantic and Northeast. Eastern parts of this area were drier this week but longer-term deficits are almost non-existent. Continued improvement in Abnormal Dryness (D0) in Virginia was experienced due to the impacts of the recent storms.

The South: Severe weather and impacted select areas of the South. Heavy rain accompanied tornadoes in some areas, such as Arkansas. In Oklahoma, rains in the central and eastern part of the state, alleviated some Extreme (D3) Severe (D2), and Moderate (D1) drought conditions, especially in areas that saw over 7 inches. Mild improvement from this same system was felt in north-central Texas and across most of Arkansas. Over much of the remaining region, however, drought conditions maintained status quo or intensified. An area of Exceptional (D4) Drought was introduced along the Texas-Oklahoma border. Exceptional Drought (D4) also intensified in western and southern Texas. Areas of Extreme Drought (D3) also expanded in central and southern Texas. Severe drought (D2) expanded in northern Texas. Across Texas, short-term impacts, especially on agriculture, are being felt. High temperatures combined with no precipitation and high winds continue to drive widespread wildfires and have led to massive crop losses. Unless precipitation comes in to the area soon, longer-term impacts will begin to be felt and conditions will likely degrade to Exceptional Drought (D4).

Weekly Snowpack and Drought Monitor Update Report

The Plains and Midwest: Another week with beneficial rains in Nebraska alleviated Abnormal Dryness (D0) in the western and central parts of the state. In eastern Nebraska and Iowa, Abnormal Dryness (D0) was eradicated.

The West: The West generally continues to benefit from above normal snowpack and beneficial precipitation, with the exception of the Southwest. In Colorado, Severe Drought (D2) expanded westward in the south-central part of the state. An area of Extreme Drought (D3) was introduced in the southeast part of the state, coinciding with deteriorating conditions in the Oklahoma Panhandle, northern Texas, and southwest Kansas. New Mexico saw an expansion of Extreme Drought (D3) through the central part of the state up to the Albuquerque area.

Hawaii, Alaska and Puerto Rico: Drought conditions remained unchanged across these areas this week. Some improvement in southeast Puerto Rico could be warranted in coming weeks, if they continue to receive precipitation at the above normal rate experienced this week.

Looking Ahead: During the April 28 – May 2, 2011 time period, there is an enhanced probability of precipitation extending across the northern tier of the country. Later in the period, this precipitation is expected to move into the Midwest and Southeast. Temperatures are generally forecast to be normal to above normal from the central US into the East Coast the highest probabilities moving eastward throughout the period. Below-normal temperatures are generally expected migrate from the Pacific Northwest early in the period to the central US later in the period.

For the ensuing 5 days (May 3 – 7, 2011), the odds favor normal to cooler-than-normal conditions over much of the northern part of the lower-48 states, from the High Plains to the Northwest. Warmer-than-normal conditions are expected across the Southwest and the South and into the Southeast, along the Gulf Coast. The odds of above-normal precipitation are greatest across the northern tier of the country, in the South, and up through the Ohio Valley and into southern New England. Odds favor below-normal precipitation in the Southeast in the Southwest, extending into the lower Plains. In Alaska, the odds favor normal to below-normal temperatures across the state. Below-normal precipitation is also expected across the state with the exception of the coastal area around Glacier Bay and Juneau, where the odds favor above-normal precipitation. **Author:** [Michael Brewer, National Climatic Data Center, NOAA](#)

Dryness Categories

D0 ... Abnormally Dry ... used for areas showing dryness but not yet in drought, or for areas recovering from drought.

Drought Intensity Categories

D1 ... Moderate Drought

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

Drought or Dryness Types

A ... Agricultural

H ... Hydrological

Updated April 27, 2011