



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 15 March 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY



Clear Skies over the western skies this week allowed for great viewing of [Venus & Jupiter](#).
(Photo: J. Curtis)

Snow: [Snow Water-Equivalent](#): River basins in Washington and the Panhandle of Idaho have increased between 5 and 10 percent this week. The Northern Tier States including the Wyoming Mountains are near normal while the Southern Tier States including the Oregon River Basins are significantly below normal. However, some river basins in New Mexico are still faring well (Fig. 1). [7-Day Snow Depth Change](#) ending this morning shows increases over the Cascades and Idaho Ranges. Scattered increases also are noted over the Southern Rockies and isolated increases over the Northern Sierra. Decreases dominated elsewhere (Fig. 1a).

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly showed values generally above normal across the West; especially over the Eastern Slope of the Rockies eastward. Somewhat cooler temperatures influenced the deep Southwest and the coastal region of the Pacific Northwest (Fig. 2). ACIS [7-day average temperature anomalies](#) show the greatest positive temperature departures over Montana and the Northern High Plains (>+15°F) and the greatest negative departures over southern New Mexico and scattered along the West Coast (<-3°F) (Fig. 2a).

Weekly Snowpack and Drought Monitor Update Report

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows wet condition over the Olympics and Northern Sierra (Fig. 3). However, in terms of percent of normal, the Pacific Northwest, northern California, and parts of New Mexico exceeded weekly normals (Fig. 3a). Very dry conditions dominated elsewhere. Since the start of the 2012 Water-Year that began on 1 October 2011, the seasonal moisture has favored northern Wyoming and parts of northern New Mexico. Since early March, the overall wetter/drier pattern has remained intact but the River Basins have fluctuated by a few percentage points (up and down) (Fig. 3b).

National Summary: This U.S. Drought Monitor week saw a number of notable storms. One dumped copious amounts of precipitation in Louisiana leading to a governor-declared state of emergency. Parts of the state saw 15 inches of rain that led to areas of flooding. Another notable storm was a slow-moving system affecting the Hawaiian Islands for nearly a week. This storm dumped over 40 inches of rain on areas of Kauai and almost that much on parts of Oahu. The week of wet weather was topped-off by thunderstorms, hail, and a tornado that formed as a water spout and moved onshore on Oahu on March 9. This was Hawaii's first tornado in four years and one of only 41 recorded for the state since 1950.

The West: A storm moved onshore dumping rain and snow from northern California, up the coast and into Canada. To the south of the storm and into the Southwest, conditions generally degraded. Severe (D2) and Moderate (D1) Drought expanded in eastern California through the Las Vegas area and across most of southern Arizona, where Extreme Drought (D3) was also introduced. 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.

Drought Impacts Definitions

The possible impacts associated with **D4 (S, L)** drought include widespread crop/pasture losses and shortages of water in reservoirs, streams, and wells creating water emergencies. The possible impacts associated with **D3 (S, L)** drought include major crop/pasture losses and widespread water shortages or restrictions. Possible impacts from **D2 (S, L)** drought are focused on water shortages common and water restrictions imposed and crop or pasture losses likely. The possible impacts associated with **D1 (S, L)** drought are focused on water shortages developing in streams, reservoirs, or wells, and some damage to crops and pastures (Figs. 4 through 4c).

Soil Moisture

Soil moisture (Fig. 5), 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](#)).

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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/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://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/

Micheal L. Golden

Acting Deputy Chief, Soil Survey and Resource Assessment

Weekly Snowpack and Drought Monitor Update Report

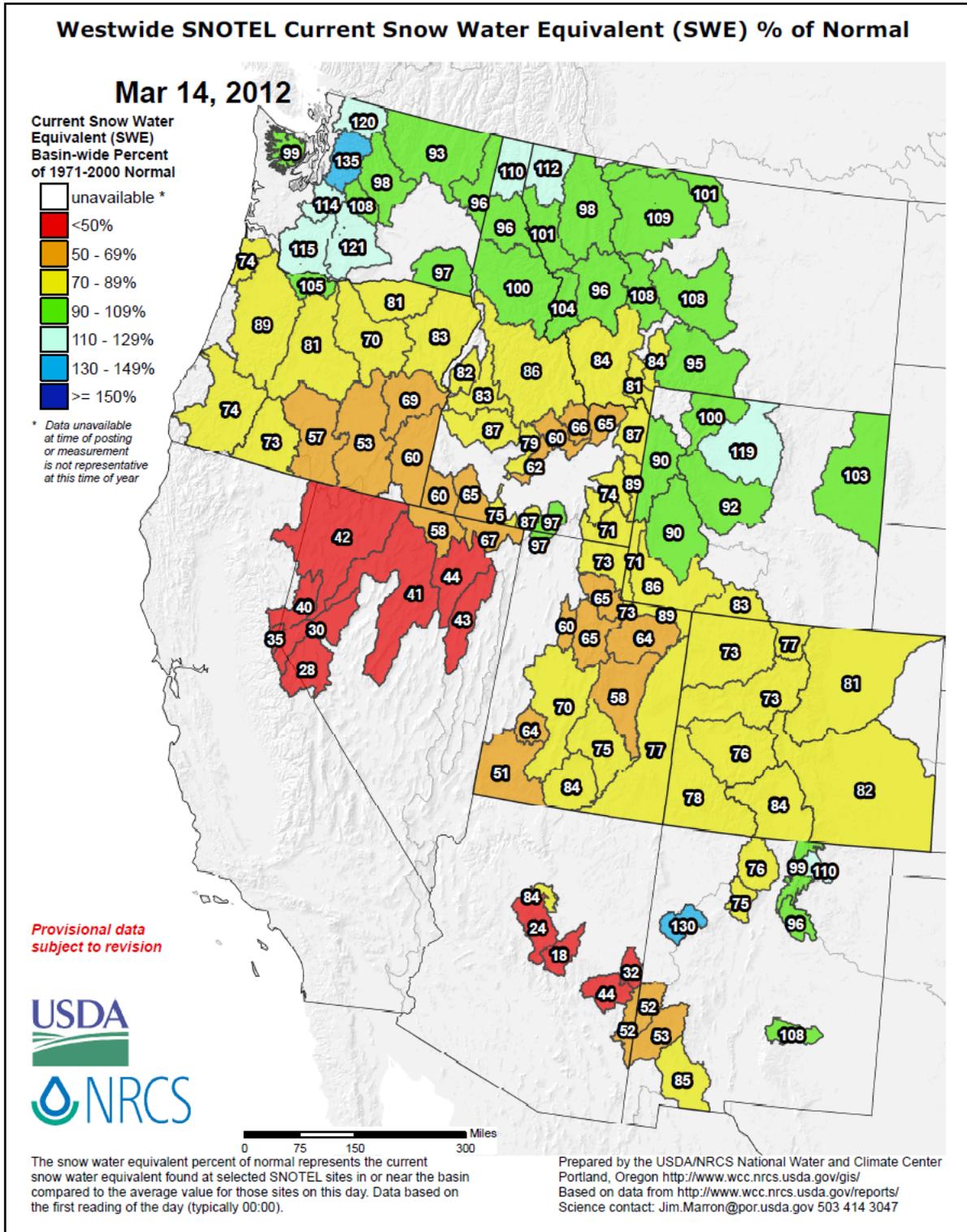


Fig. 1: **Snow Water-Equivalent**: River basins in Washington and the Panhandle of Idaho have increased between 5 and 10 percent this week. The Northern Tier States including the Wyoming Mountains are near normal while the Southern Tier States including the Oregon River Basins are significantly below normal. However, some river basins in New Mexico are still faring well.

Weekly Snowpack and Drought Monitor Update Report

SNOTEL 7-Day Snow Depth Change (Inches)

Mar 15, 2012

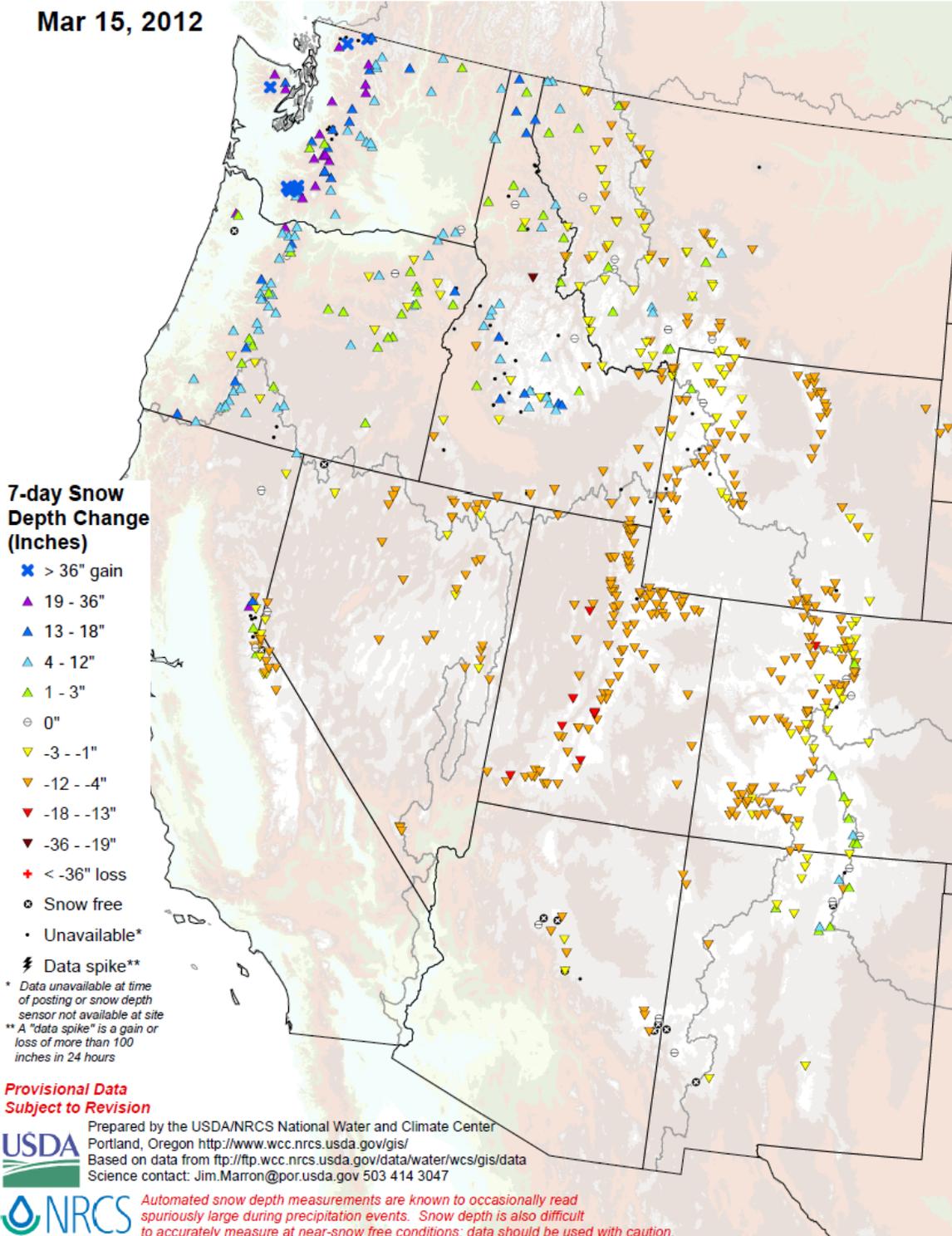


Fig. 1a: [7-Day Snow Depth Change](#) ending this morning shows increases over the Cascades and Idaho Ranges. Scattered increases also are noted over the Southern Rockies and isolated increases over the Northern Sierra. Decreases dominated elsewhere.

Weekly Snowpack and Drought Monitor Update Report

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

Mar 15, 2012

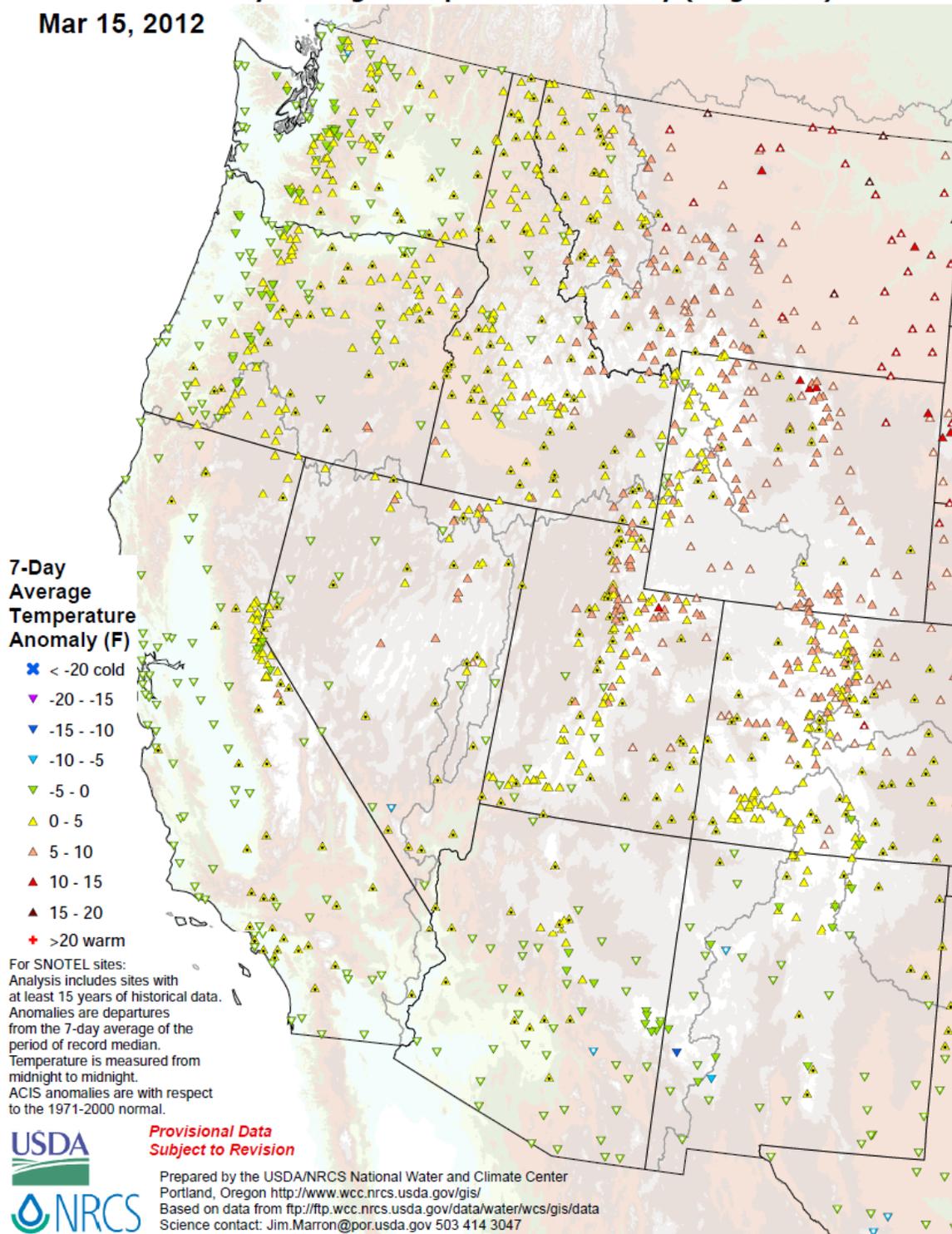
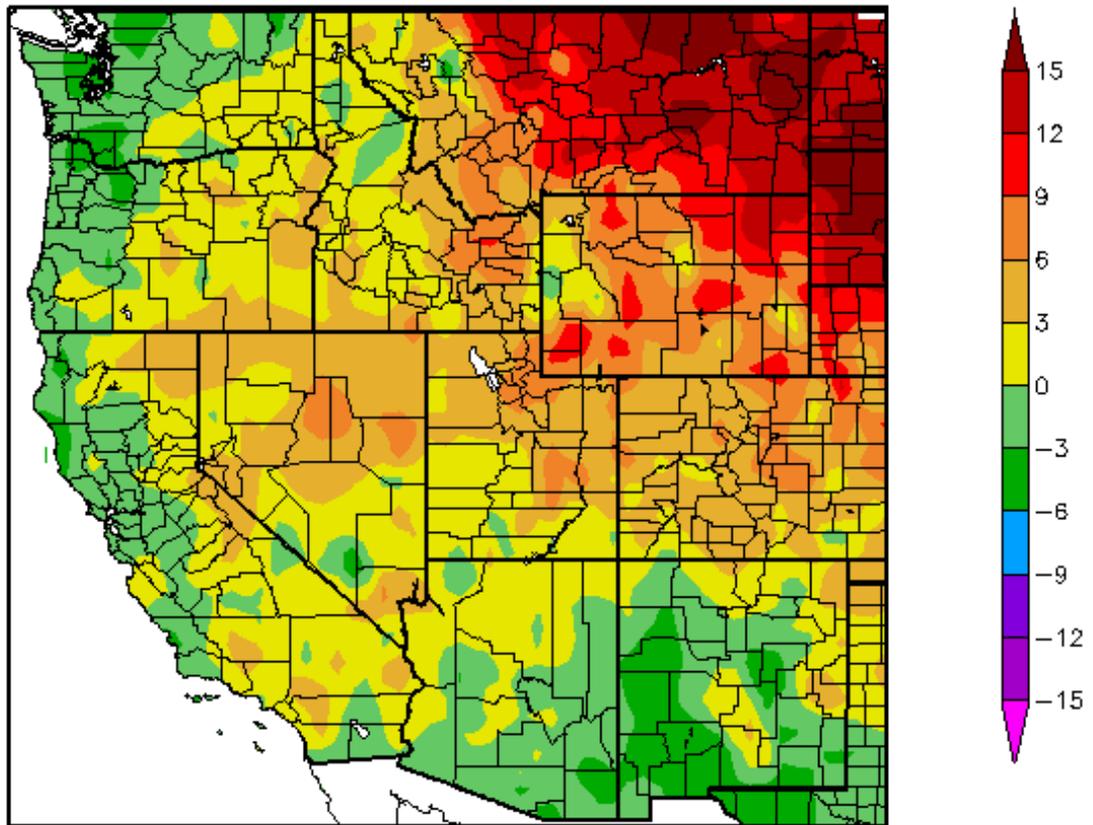


Fig. 2: **SNOTEL** and ACIS 7-day temperature anomaly showed values generally above normal across the West; especially over the Eastern Slope of the Rockies eastward. Somewhat cooler temperatures influenced the deep Southwest and the coastal region of the Pacific Northwest.

Departure from Normal Temperature (F)
3/8/2012 – 3/14/2012



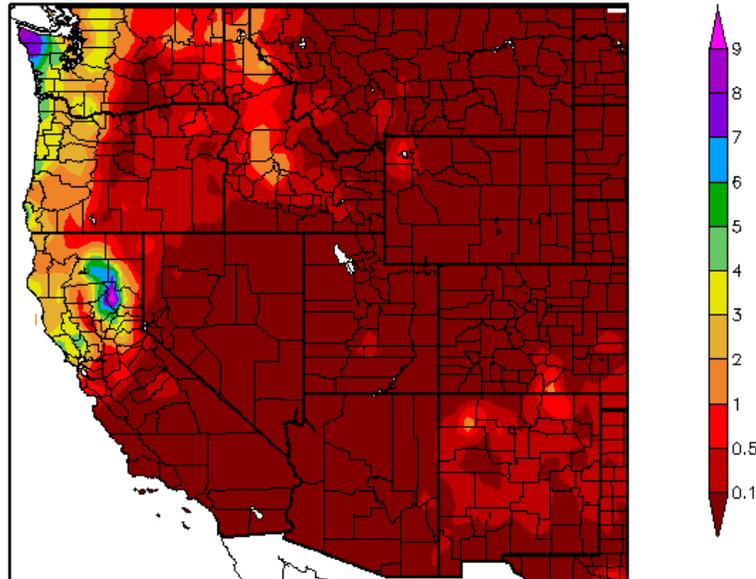
Generated 3/15/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures over Montana and the Northern High Plains (>+15°F) and the greatest negative departures over southern New Mexico and scattered along the West Coast (<-3°F).

Weekly Snowpack and Drought Monitor Update Report

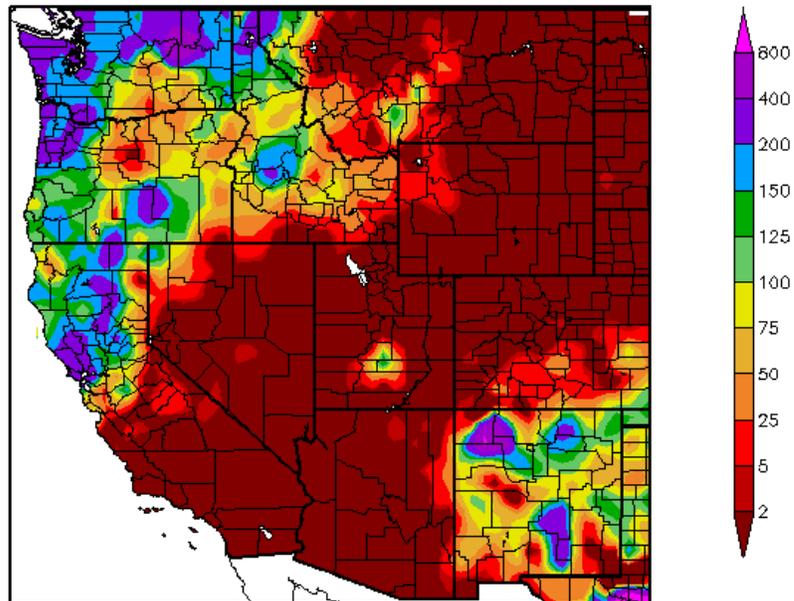
Precipitation (in)
3/8/2012 - 3/14/2012



Generated 3/15/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
3/8/2012 - 3/14/2012



Generated 3/15/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows wet condition over the Olympics and Northern Sierra (top). However, in terms of percent of normal, the Pacific Northwest, northern California, and parts of New Mexico exceeded weekly normals (bottom). Very dry conditions dominated elsewhere.

Weekly Snowpack and Drought Monitor Update Report

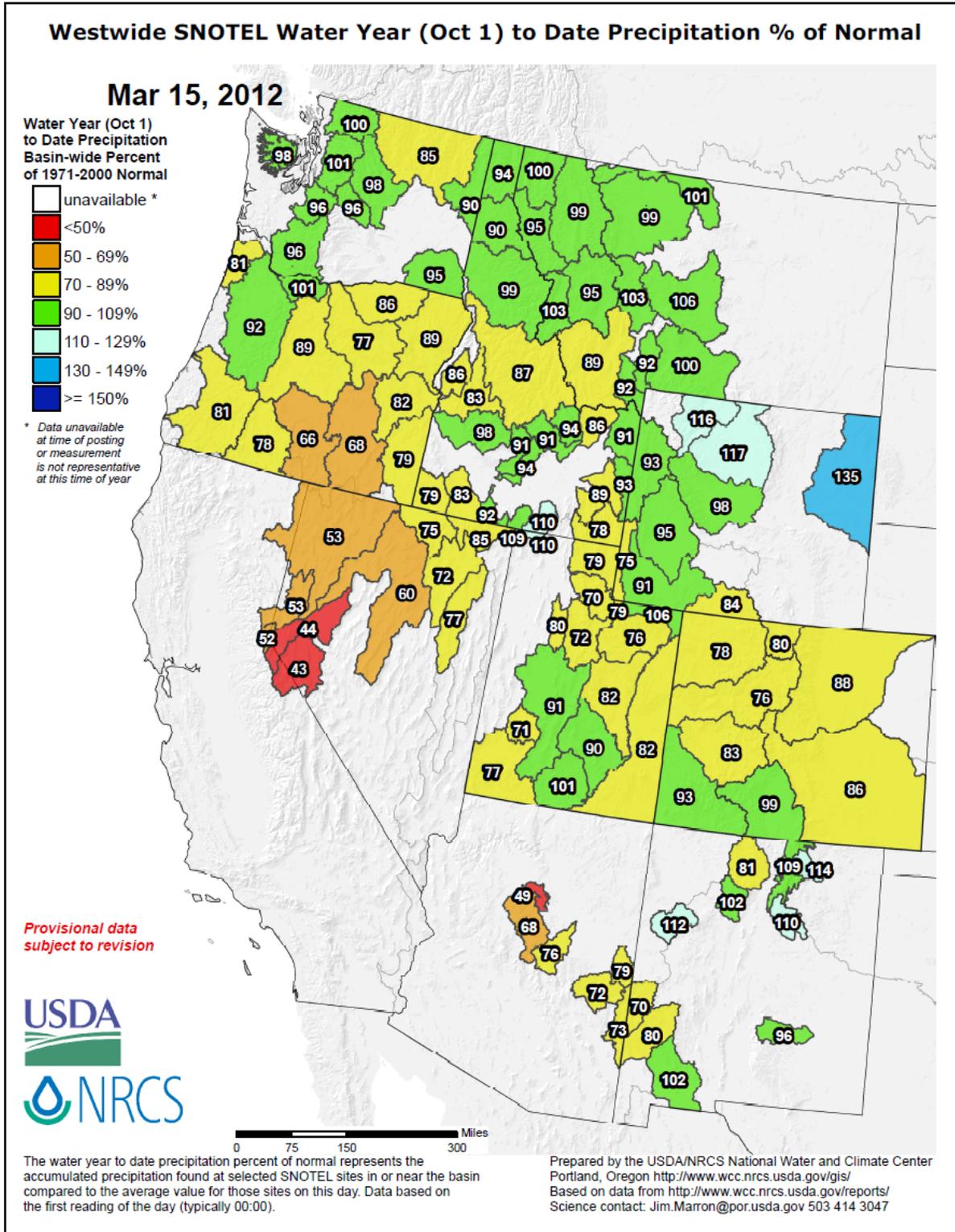


Fig 3b: Since the start of the 2012 Water-Year that began on 1 October 2011, the seasonal moisture has favored northern Wyoming and parts of northern New Mexico. Since early March, the overall wetter/drier pattern has remained intact but the River Basins have fluctuated by a few percentage points (up and down).

U.S. Drought Monitor

March 13, 2012
Valid 7 a.m. EDT

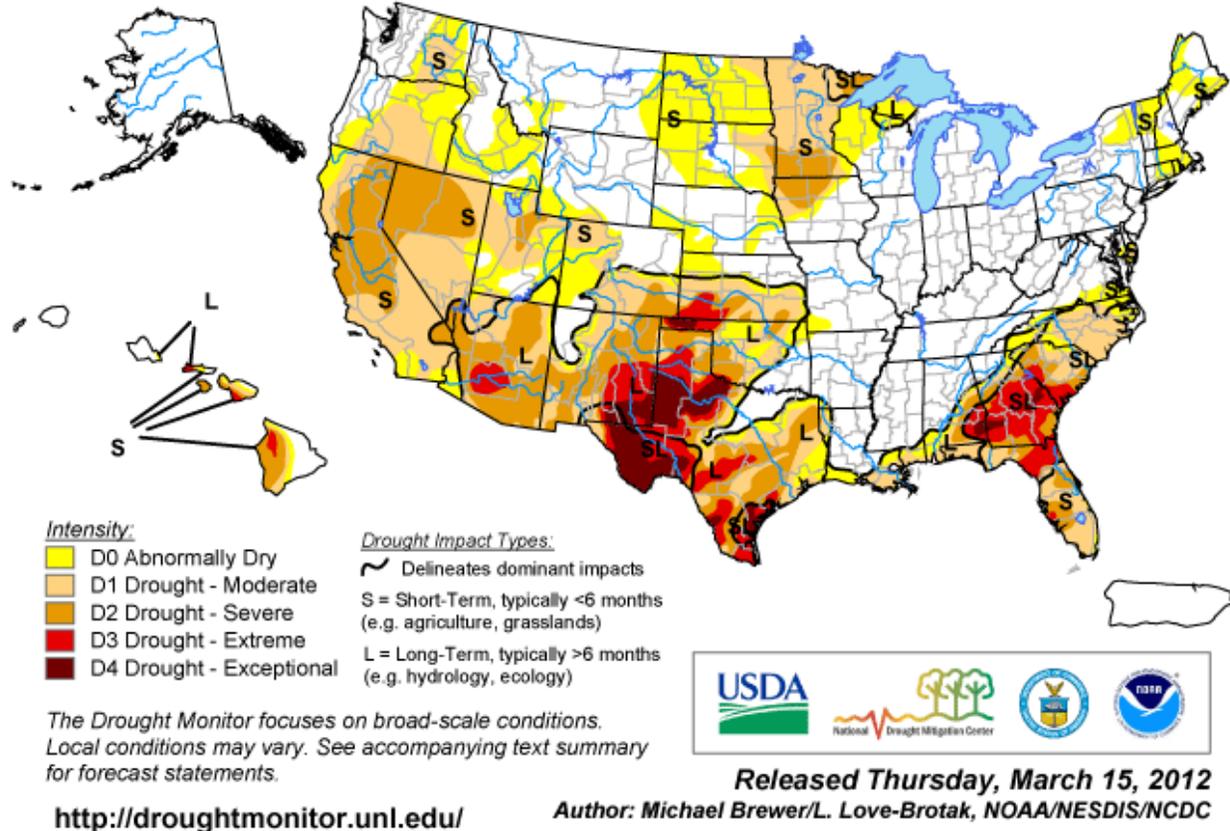


Fig. 4: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over southeastern New Mexico, much of western Texas, the Panhandle of Oklahoma, and to a lesser extent over Georgia and southeast Alabama. For more drought news, see [Drought Impact Reporter](#).

Agriculture

[Cost of sod on the rise, thanks to 2011 drought](#)

March 1, **Vicinity of Houston, Texas.** Drought killed 25 percent of the sod on a sod farm in Crosby in 2011, forcing the owner to purchase sod from elsewhere to meet customer demand. Decreased sod supply and increased demand as people attempt to repair their lawns is likely to drive prices higher.

[Limited water, crop prices shape 2012 cotton acreage](#)

March 8, **Arizona.** Fifteen years or so of drought have left farmers in central Arizona planting less thirsty cotton and planting more alfalfa, which is fetching a good price. Nationwide, the National Cotton Council anticipates 7.5 percent less acreage planted to cotton this year.

[Local farmers fear dry weather could take toll on crops](#)

March 9, **Central California.** Lodi (just south of Sacramento) received 25 percent of average rainfall since December 1, 2011, forcing farmers to begin irrigation in January, rather than in April or May as they usually do. Farmers are anxious and are hoping for a “miracle March” to deliver plentiful rainfall to make up for an otherwise dry winter.

Water Supply & Quality

[MMWD adjusts for dry season, pumps water](#)

[Round Rock plans new water rate structure to curb excess use](#)

[Water-supply forecast looks bleak](#)

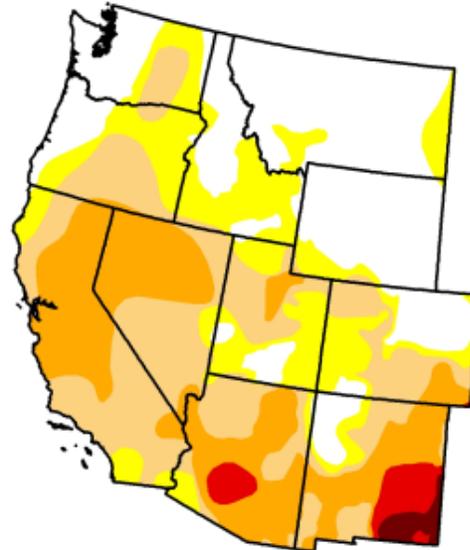
U.S. Drought Monitor

West

March 13, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.09	68.91	49.48	24.29	3.39	0.94
Last Week (03/06/2012 map)	31.74	68.26	46.48	18.37	2.57	0.94
3 Months Ago (12/13/2011 map)	66.66	33.34	18.06	14.36	6.96	1.85
Start of Calendar Year (12/27/2011 map)	48.49	51.51	20.05	12.22	2.67	0.78
Start of Water Year (09/27/2011 map)	66.72	33.28	19.04	14.99	9.30	3.81
One Year Ago (03/08/2011 map)	74.46	25.54	14.96	7.72	0.56	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://droughtmonitor.unl.edu>



Released Thursday, March 15, 2012
Michael Brewer, National Climatic Data Center, NOAA

Fig. 4a: Drought Monitor for the [Western States](#) with statistics over various time periods. Note some deterioration in D1 to D3 categories this week. For more info about conditions over Arizona and New Mexico, see [La Nina Tracker](#).

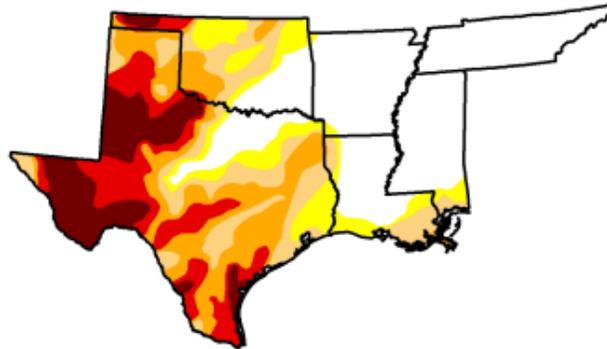
U.S. Drought Monitor

South

March 13, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	38.44	61.56	51.60	37.36	22.23	10.79
Last Week (03/06/2012 map)	36.89	63.11	55.89	41.95	23.80	10.93
3 Months Ago (12/13/2011 map)	22.72	77.28	71.33	58.38	45.85	21.86
Start of Calendar Year (12/27/2011 map)	26.47	73.53	69.01	54.81	39.11	17.15
Start of Water Year (09/27/2011 map)	18.34	81.66	76.26	70.61	63.67	53.77
One Year Ago (03/08/2011 map)	8.53	91.47	78.54	41.52	11.48	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.



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<http://droughtmonitor.unl.edu>

Fig. 4b: Drought Monitor for the [South-Central States](#) with statistics over various time periods. Improvements are noted in D0 to D2 this week.

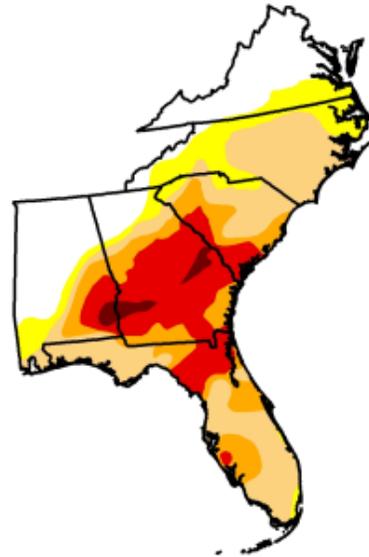
U.S. Drought Monitor

Southeast

March 13, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.99	75.01	61.33	33.00	19.04	1.62
Last Week (03/06/2012 map)	26.24	73.76	59.02	32.47	19.04	1.62
3 Months Ago (12/13/2011 map)	42.09	57.91	42.28	30.20	18.08	0.00
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (03/08/2011 map)	10.94	89.06	68.98	22.79	4.81	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.

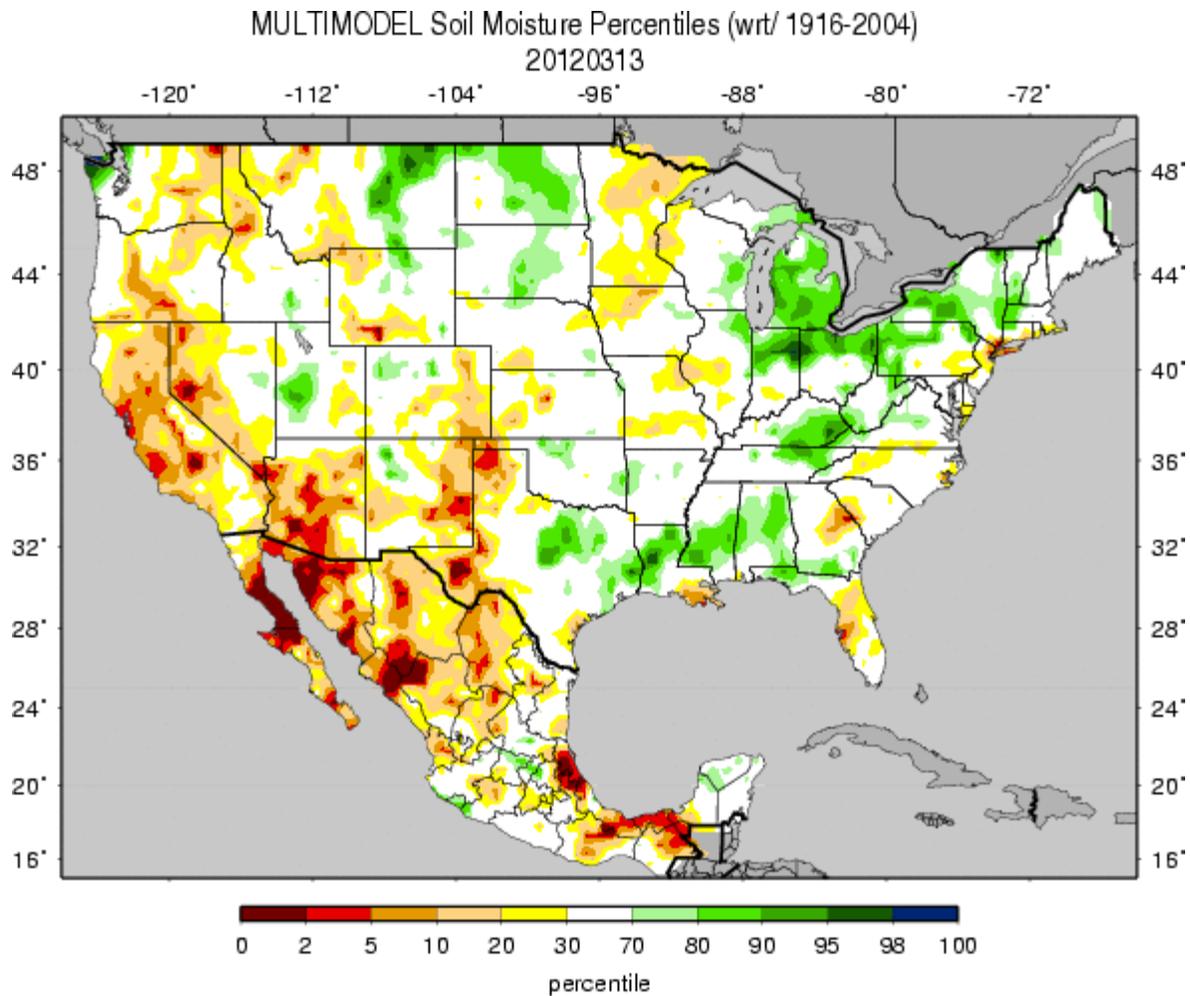
<http://droughtmonitor.unl.edu>



Released Thursday, March 15, 2012
Michael Brewer, National Climatic Data Center, NOAA

Fig. 4c: Drought Monitor for the [Southeastern States](#) with statistics over various time periods. Note slight deterioration in D0 to D2 this week.

Weekly Snowpack and Drought Monitor Update Report



Figs. 5: Soil Moisture ranking in [percentile](#) as of 13 March shows conditions about the same as last week with the exception of some improvement over the Southeast. Note: Soil moisture this time of year is often unreliable due to frozen ground over the Northern Tier States. For example, conditions over the Washington Cascades and Panhandle of Idaho no doubt improved this week due to recent snowfall.

Weekly Snowpack and Drought Monitor Update Report

Soil Climate Analysis Network (SCAN)

Station (2073) MONTH=2012-02-14 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Mar 15 07:11:51 PDT 2012

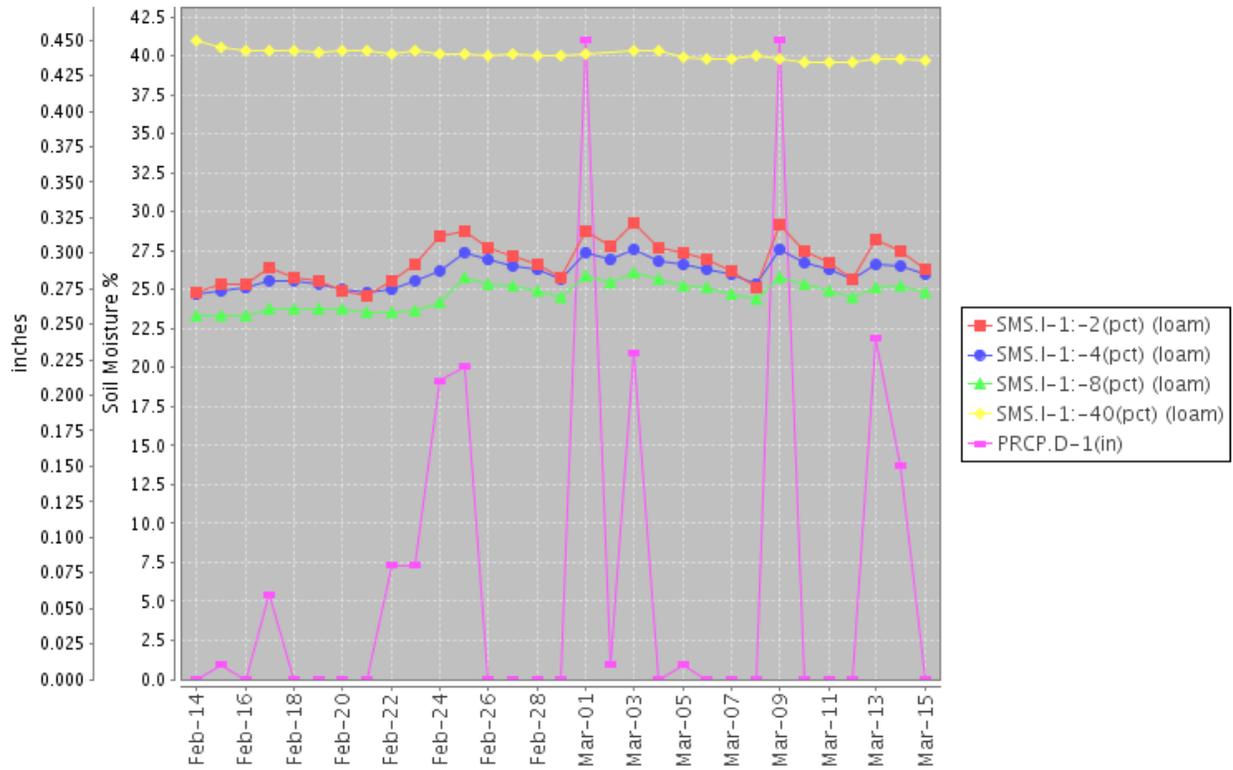
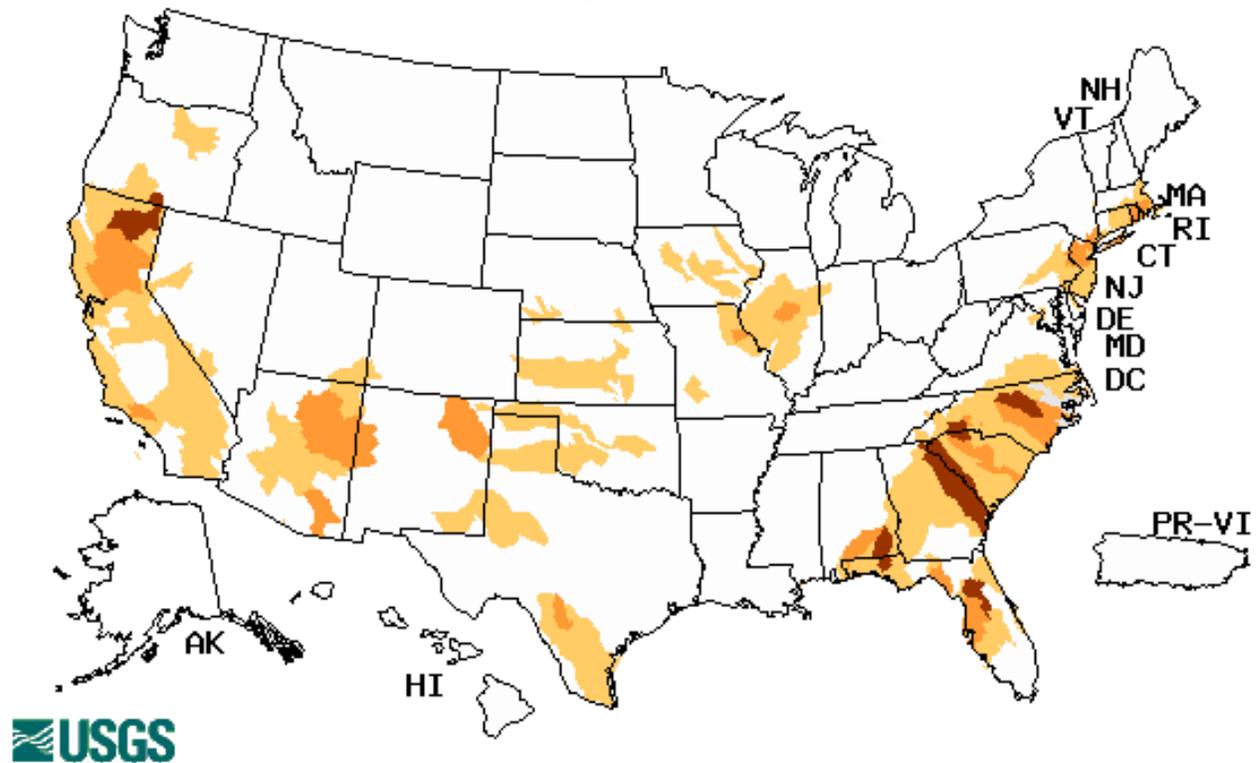


Fig. 6: This NRCS resource shows a site over [northern Ohio](#) with soil moisture responding to recent rains near the surface.

Weekly Snowpack and Drought Monitor Update Report

Wednesday, March 14, 2012



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. The Southeast States showed severe conditions this week. The area of severe flows over northern California is expected to improve with recent precipitation.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- March 13, 2012

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/>.

This U.S. Drought Monitor week saw a number of notable storms. One dumped copious amounts of precipitation in Louisiana leading to a governor-declared state of emergency. Parts of the state saw 15 inches of rain that led to areas of flooding. Another notable storm was a slow-moving system affecting the Hawaiian Islands for nearly a week. This storm dumped over 40 inches of rain on areas of Kauai and almost that much on parts of Oahu. The week of wet weather was topped-off by thunderstorms, hail, and a tornado that formed as a water spout and moved onshore on Oahu on March 9. This was Hawaii's first tornado in four years and one of only 41 recorded for the state since 1950.

The Southeast: Rains in the Southeast this week generally fell outside of existing drought areas with the exception of South Florida, where rain staved off mounting deficits south and southwest of Lake Okeechobee. Mounting deficits through North Carolina led to the expansion of Moderate Drought (D1) and Abnormal Dryness (D0) there. Likewise, conditions deteriorated slightly in southern Alabama.

The Northeast and Mid-Atlantic: Mounting deficits led to expansion of Abnormal Dryness (D0) from upstate New York east and south to coastal Connecticut and Rhode Island, where rain has been sparse.

The South and Southern Plains: Another week of above normal precipitation from Oklahoma through central and eastern Texas and into Louisiana alleviated drought there. In Louisiana, up to 15 inches of rain fell on March 12-13, mainly in areas unaffected by drought. Flooding plagued large areas and a state of emergency was declared by the governor. Severe (D2) and Moderate (D1) Drought and Abnormal Dryness (D0) were alleviated in the western and southern part of the state. In Texas, areas of Severe (D2) and Moderate (D1) Drought and Abnormal Dryness (D0) were alleviated in the central and eastern part of the state while Extreme Drought (D3) expanded slightly in the south. In Oklahoma, widespread rains led to considerable improvements in most areas, with the exception of the western Panhandle. Across Oklahoma Exceptional (D4), Extreme (D3), Severe (D2), and Moderate (D1) Drought all decreased. In certain areas, this left behind lingering Abnormal Dryness (D0). In Kansas, areas of Moderate Drought (D1) and Abnormal Dryness (D0) expanded in the north and west.

The Central and Northern Plains and Midwest: Conditions improved slightly in northern North Dakota as a result of a multi-day rain event. In Nebraska, Abnormal Dryness (D0) expanded over a large portion of the western part of the state based upon mounting long-term deficits beginning to be felt as agriculture ramps up for the year.

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The West: A storm moved onshore dumping rain and snow from northern California, up the coast and into Canada. To the south of the storm and into the Southwest, conditions generally degraded. Severe (D2) and Moderate (D1) Drought expanded in eastern California through the Las Vegas area and across most of southern Arizona, where Extreme Drought (D3) was also introduced.

Hawaii, Alaska and Puerto Rico: Drought conditions remained unchanged in Alaska and Puerto Rico this week. In Hawaii, Torrential rains slammed the state, according to the National Weather Service. Forty-plus inches of rain fell on parts of Kauai while parts of Oahu received nearly the same amount. Overall, the rain led to improvements in Exceptional (D4), Extreme (D3), Severe (D2), and Moderate (D1) Drought and Abnormal Dryness (D0) on Molokai, Maui, and Oahu.

Looking Ahead: During the March 15-19, 2012 time period, there is an enhanced probability of precipitation in the Pacific Northwest throughout the period and in the central part of the country late in the period. Temperatures are expected to be above normal east of the Rockies.

For the ensuing 5 days (March 20-24, 2012), the odds favor normal to warmer than normal conditions over the entire US, east of the Rockies. West of that, normal to below-normal temperatures are expected. Precipitation is expected to be below-normal along the East Coast and in the Southwest. Above-normal precipitation is expected in the Northwest and from the Southern Plains through the Midwest. In Alaska, both temperatures and precipitation are expected to be normal to below-normal.

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

S ... Short-Term, typically <6 months (e.g. agricultural, grasslands)

L ... Long-Term, typically >6 months (e.g. hydrology, ecology)

Updated March 14, 2012