



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 2 February 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: [Snow Water-Equivalent](#): Most basins saw a few percentage point drop during the past week as high pressure once again reestablishes itself over the Western States (Fig. 1). [7-Day Snow Depth Change](#) ending this morning shows light to moderate decreases across much of the West (a stark contrast to the prior 7-day period) (Fig. 1a).

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly showed a warmer week over the much of the West especially over Northern High Plains (Fig. 2). [ACIS](#) 7-day average temperature anomalies show the greatest positive temperature departures over northeast Montana ($>+15^{\circ}\text{F}$) and the greatest negative departures over west-central New Mexico ($<-6^{\circ}\text{F}$) (Fig. 2a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows a very wet western Washington to north Coastal California (Fig. 3). In terms of percent of normal, a complex pattern of wet/dry dominated the Northern Tier States while dryness prevailed over the Southern Tier States (Fig 3a). Since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has favored northern Wyoming and southern Idaho. Marginal bin category changes are noted this week by colored circles (Fig. 3b).

Summary: Locally heavy rain provided drought relief to the south-central U.S., while dry conditions returned from central California into the Four Corners Region. Unfavorable dryness persisted in the Southeast.

Western U.S.: After last week's much-needed precipitation, dry weather returned from central California into the Four Corners Region. From southern California into southern Nevada and northwestern Arizona, Moderate Drought (D1) was introduced to reflect very low water-year-to-date precipitation (locally below 25 percent of normal) as well as declining snow water percentiles. The new D1 area also corresponds with the latest 3- and 6-month Standardized Precipitation Indices (SPI), which depict D1 conditions or worse in these same locales. Additionally, Abnormal Dryness (D0) was expanded to include much of southern California, where seasonal rainfall has totaled less than 50 percent of normal. Despite beneficial snowfall in the Sierra last week, snow water equivalent remained in the 20th percentile or lower, indicating this region may fall rapidly back into Severe Drought (D2) if additional snow does not fall soon.

In northern portions of the region, another round of moderate to heavy mountain snow (2-10 inches liquid equivalent) maintained favorable spring runoff prospects from the Klamath Mountains northward into the Cascades. However, the core Moderate Drought (D1) area received little if any precipitation, with no change made to this area. Additional snow (0.5-2.5 inches liquid equivalent) boosted snow water equivalents (SWE) in central and northern Idaho above the 40th percentile, although the D0 (Abnormal Dryness) area of southeastern Idaho – where SWE remained in the 20th percentile or lower – was mostly dry. In Montana, D0 was expanded into the southwestern quarter of the state to reflect SWE that ranged from the 10th to

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the 30th percentile. Northwestern Montana – in particular Flathead County – was a candidate for D0 introduction due to SWE locally in the 20th percentile or lower, but much-needed precipitation (1-4 inches liquid equivalent) provided a reprieve. There were no changes made to the drought designation in the central Rockies following last week's introduction of Moderate Drought; this region will be reassessed pending the final result of an approaching storm system. Author: Eric Luebehusen, U.S Department of Agriculture.

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 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/>.

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 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>.

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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

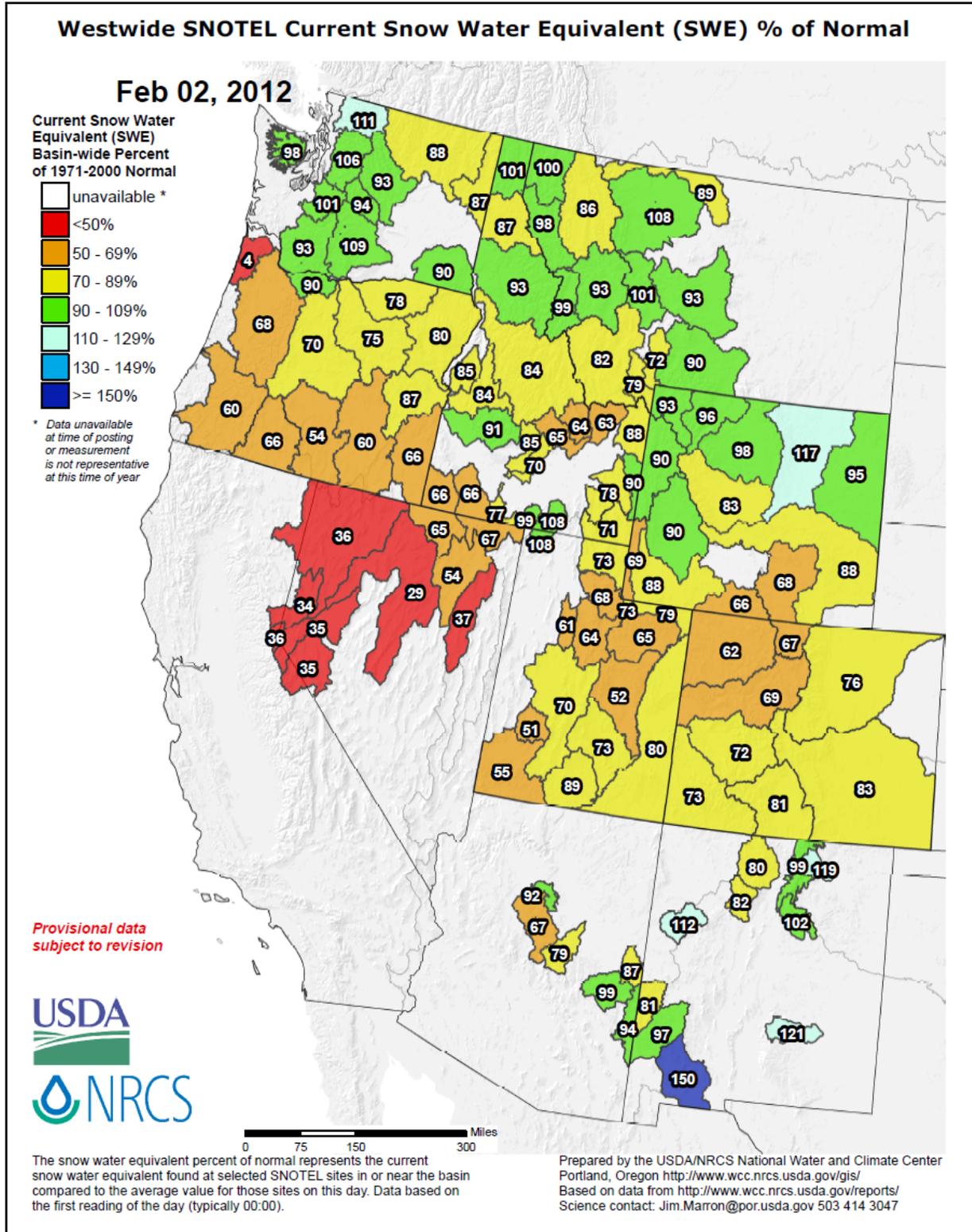


Fig. 1: Snow Water-Equivalent: Most basins saw a few percentage point drop during the past week as high pressure once again reestablishes itself over the Western States.

SNOTEL 7-Day Snow Depth Change (Inches)

Feb 02, 2012

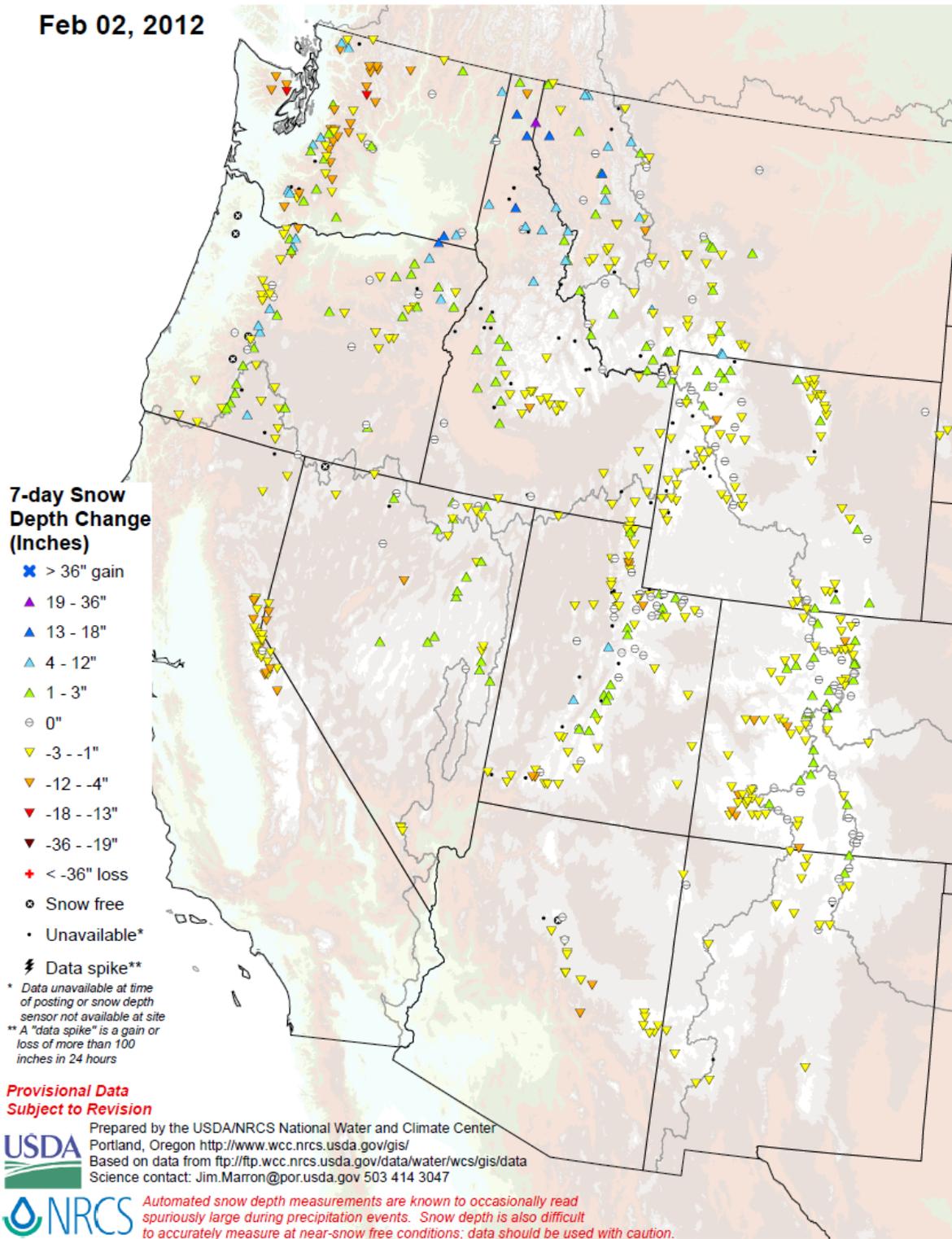


Fig. 1a: 7-Day Snow Depth Change ending this morning shows light to moderate decreases across much of the West (a stark contrast to the prior 7-day period).

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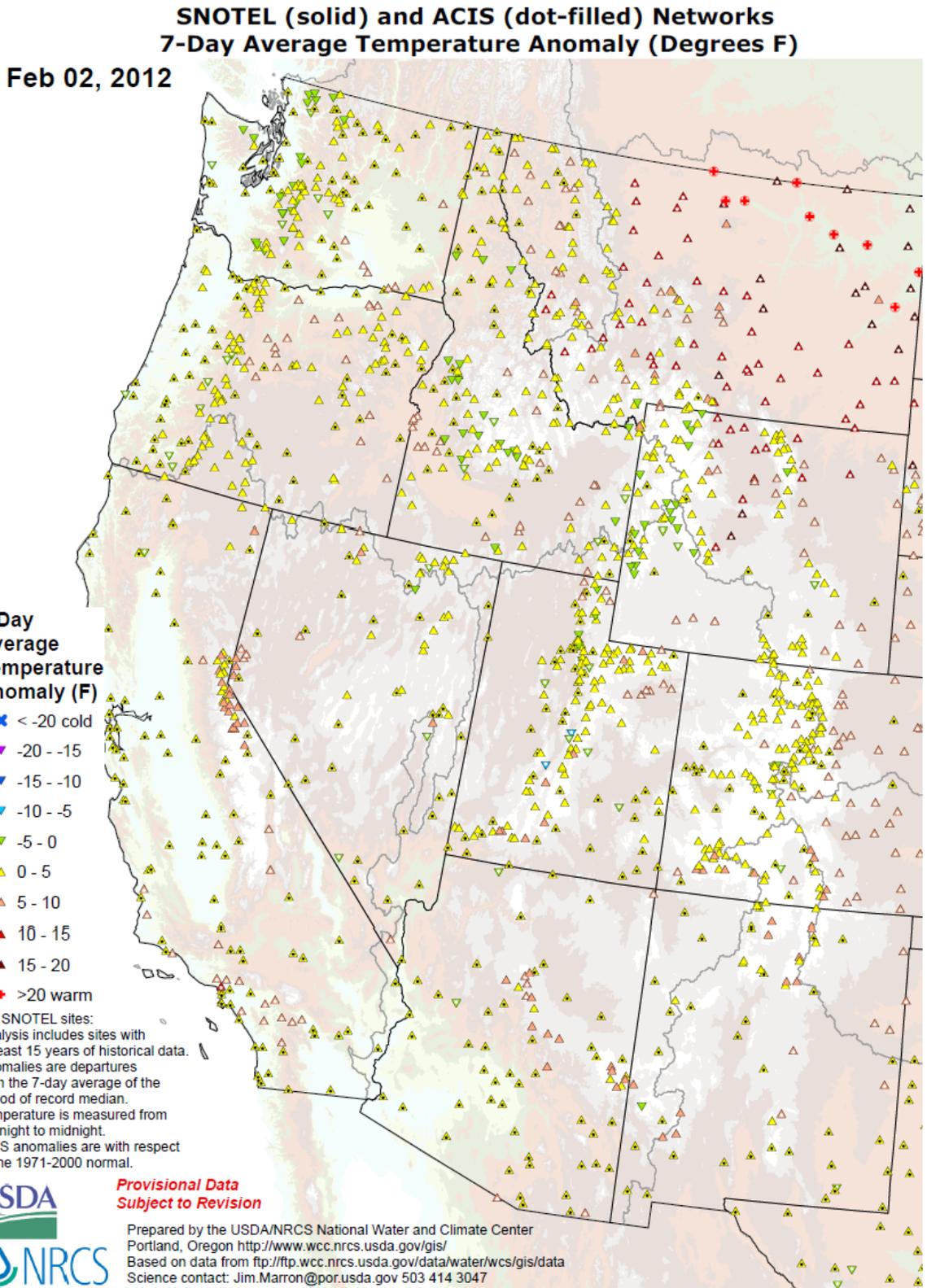
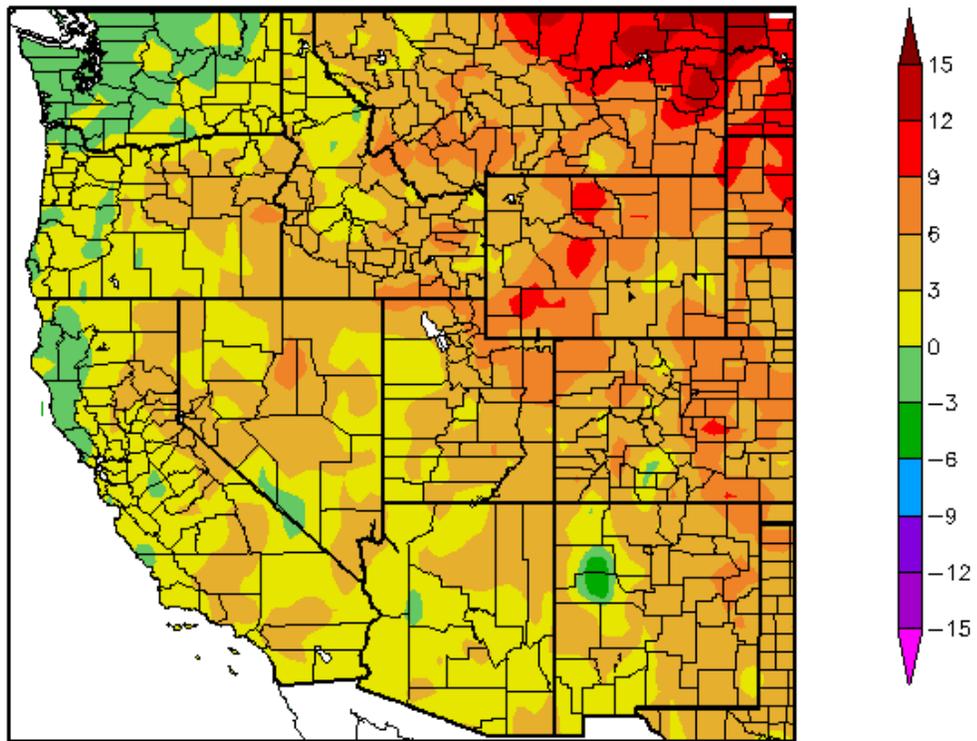


Fig. 2: SNOTEL and ACIS 7-day temperature anomaly showed a warmer week over the much of the West especially over Northern High Plains.

Departure from Normal Temperature (F)
1/3/2012 - 2/1/2012



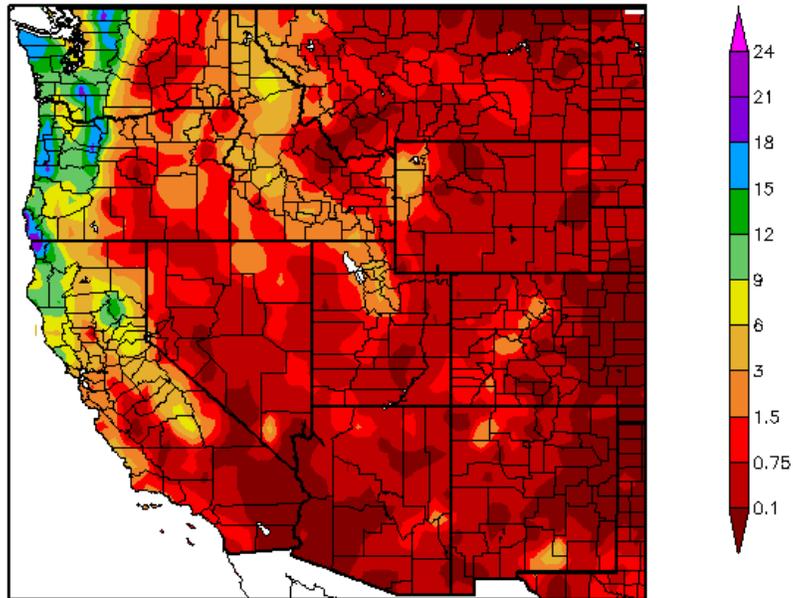
Generated 2/2/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2a: [ACIS](#) 7-day average temperature anomalies show the greatest positive temperature departures over the northeast Montana (>+15°F) and the greatest negative departures over west-central New Mexico (<-6°F).

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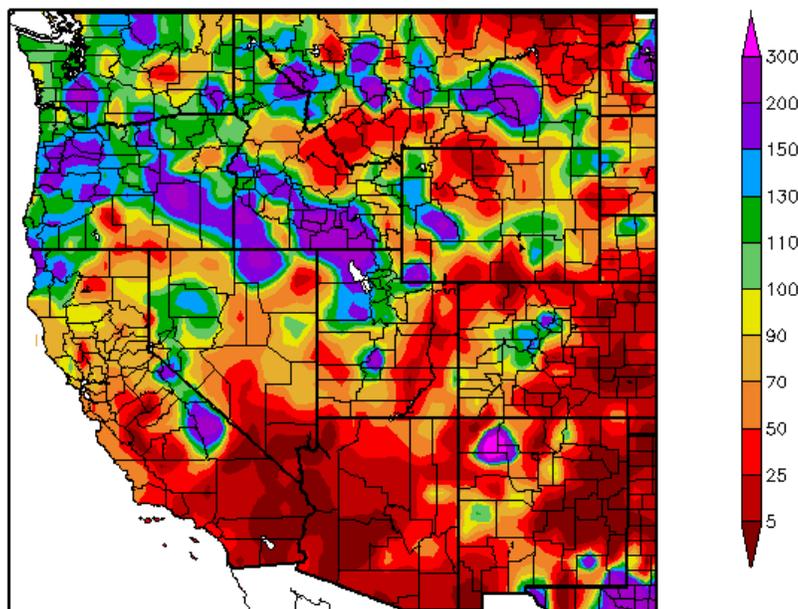
Precipitation (in)
1/3/2012 - 2/1/2012



Generated 2/2/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
1/3/2012 - 2/1/2012



Generated 2/2/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows a very wet western Washington to north Coastal California (Fig. 3). In terms of percent of normal, a complex pattern of wet/dry dominated the Northern Tier States while dryness prevailed over the Southern Tier States (Fig 3a).

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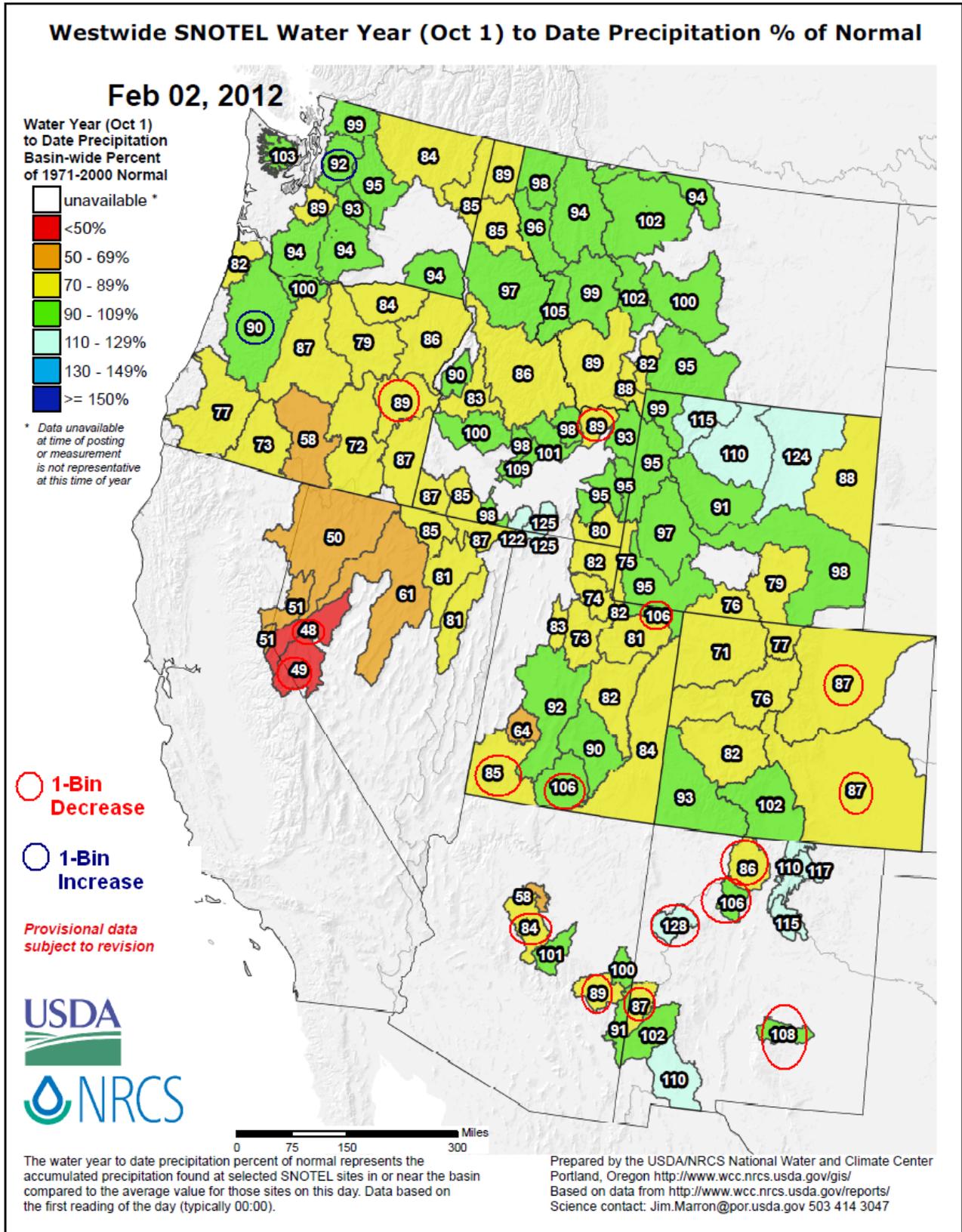


Fig 3b: Since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has favored northern Wyoming and southern Idaho. Marginal bin category changes are noted this week by colored circles.

U.S. Drought Monitor

January 31, 2012
Valid 7 a.m. EST

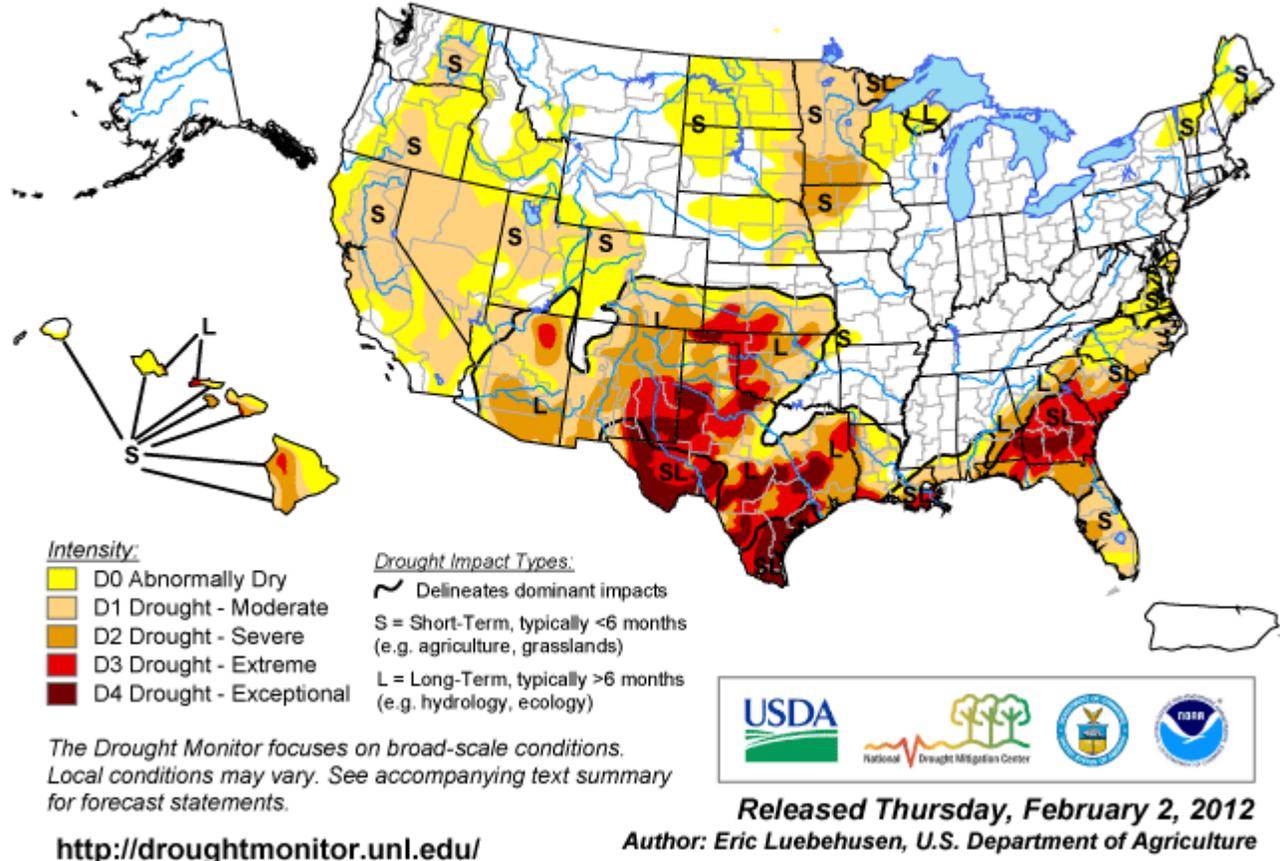


Fig. 4: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over southeastern New Mexico, mostly southern Texas, the Panhandle of Oklahoma, and over southwest Georgia-southeast Alabama. For more drought news, see [Drought Impact Reporter](#).

Agriculture

[Inconsistent weather affects winter crops](#)

Jan 19, Georgia. A number of farmers emptied ponds in an effort to irrigate crops since there was little subsoil moisture, according to the Brooks and Thomas County Extension coordinator. He also said that some people have had to lower their wells as the water table dropped.

[Indemnity payments pass \\$9 billion for first time in history](#)

Jan 27, US. The figure includes damage from drought, flooding, freezes, etc.

[Kansas Farmers Claim \\$1 Billion In Drought Losses](#)

Jan 26, Kansas. The previous high insurance claim was in 2002 when farmers claimed \$446.8 in crop losses.

[Oklahoma Sale Barns Setting Record Prices For Cattle](#)

Jan 23, Oklahoma. Some cattle were selling for 30 percent more per pound than at this time last year, according to a stockyard owner in Tulsa.

[Wheat Prices Up, Drought Threatening Crops](#)

Jan 26, Amarillo, Texas. Some rain would be very helpful in the Texas Panhandle to avoid another failed wheat crop.

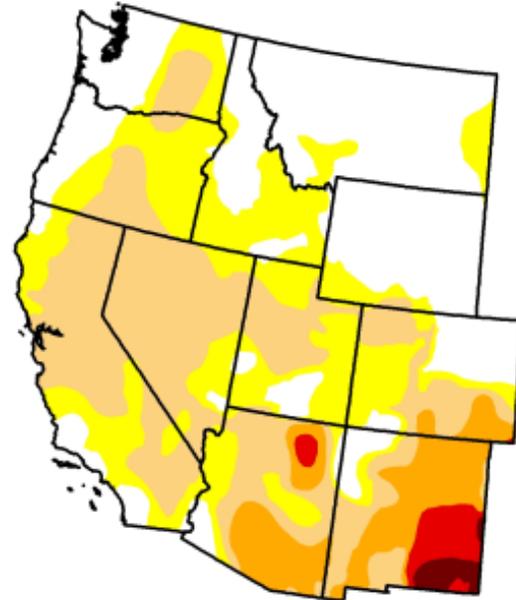
U.S. Drought Monitor

West

January 31, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.02	66.98	40.69	10.98	2.82	0.83
Last Week (01/24/2012 map)	34.41	65.59	35.66	10.98	2.68	0.77
3 Months Ago (11/01/2011 map)	74.16	25.84	18.67	15.19	9.60	2.87
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 (01/25/2011 map)	76.62	23.38	12.70	2.44	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, February 2, 2012
Eric Luebehusen, USDA

<http://droughtmonitor.unl.edu>

Fig. 4a: Drought Monitor for the [Western States](#) with statistics over various time periods. Note a general increase in D1 this week. January issue of [Southwest Climate Summary](#) is now available.

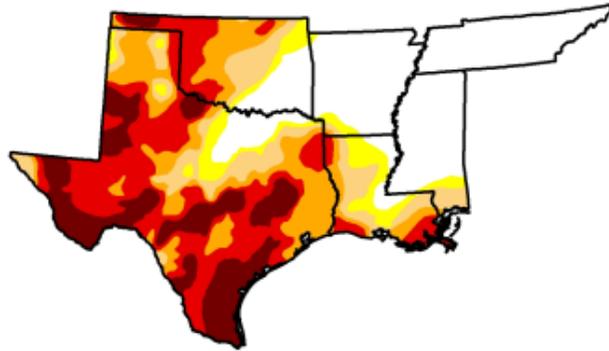
U.S. Drought Monitor

South

January 31, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	32.32	67.68	61.19	50.60	35.37	14.32
Last Week (01/24/2012 map)	28.47	71.53	64.62	52.75	37.37	13.27
3 Months Ago (11/01/2011 map)	11.84	88.16	79.95	69.80	62.33	41.90
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 (01/25/2011 map)	13.45	86.55	59.16	30.84	8.46	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
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The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

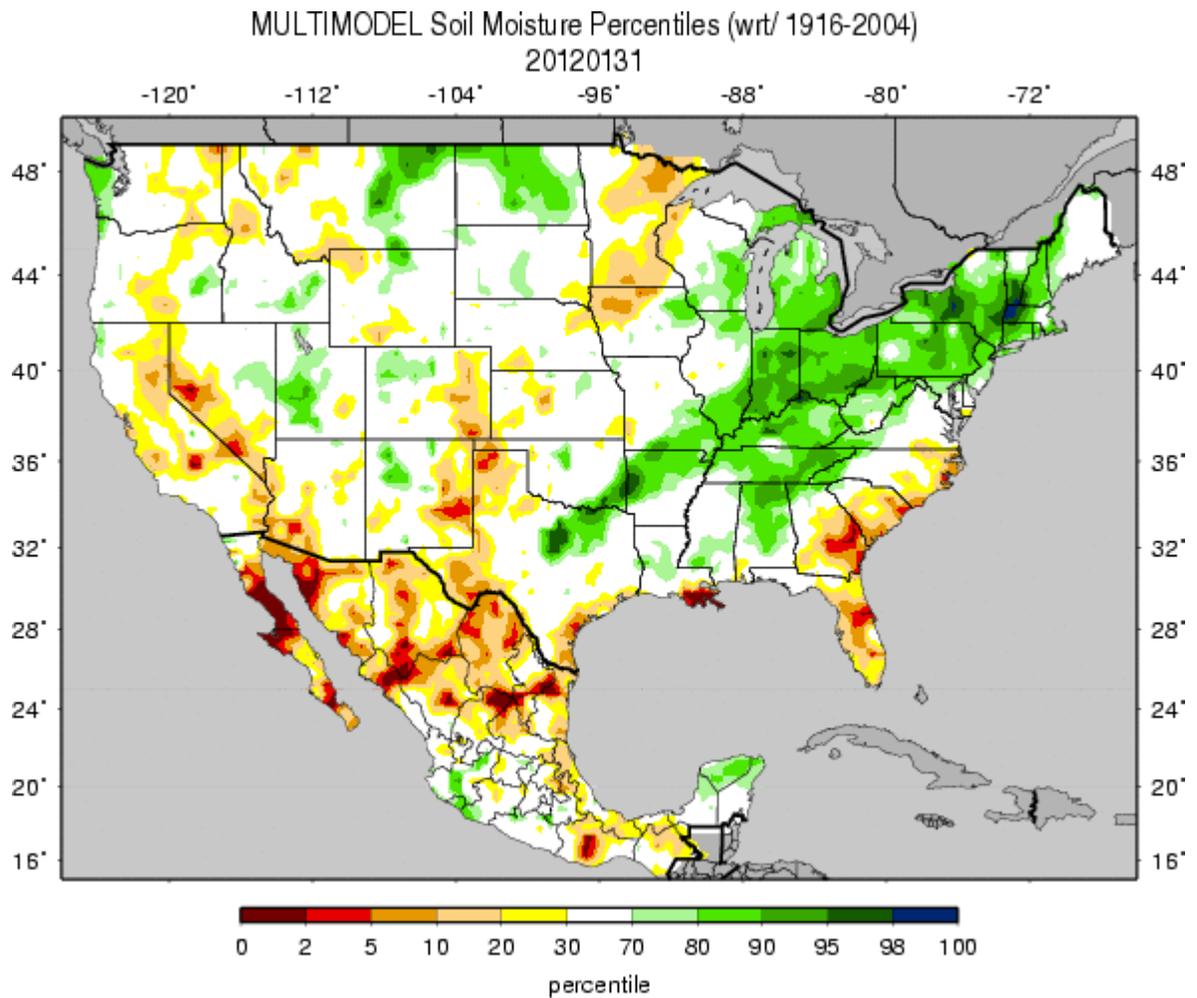


Released Thursday, February 2, 2012
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<http://droughtmonitor.unl.edu>

Fig. 4b: Drought Monitor for the [South-Central States](#) with statistics over various time periods. Note slight improvement this week.

Weekly Snowpack and Drought Monitor Update Report



Figs. 5: Soil Moisture ranking in [percentile](#) as of 31 January shows a wet Ohio Valley to New England pattern re-intensifying. Dryness is noted over the Southeast and western Great Basin.

Weekly Snowpack and Drought Monitor Update Report

Soil Climate Analysis Network (SCAN)

Station (2090) MONTH=2012-01-03 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Feb 02 08:32:09 PST 2012

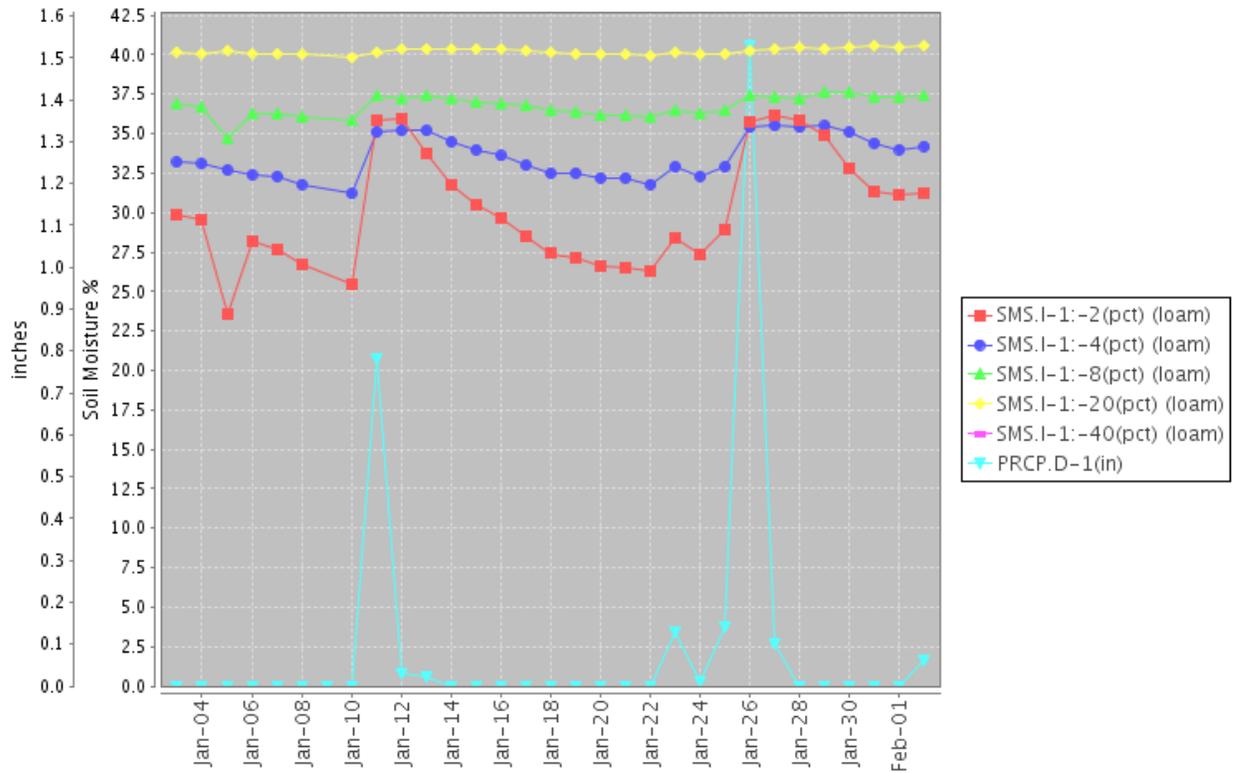
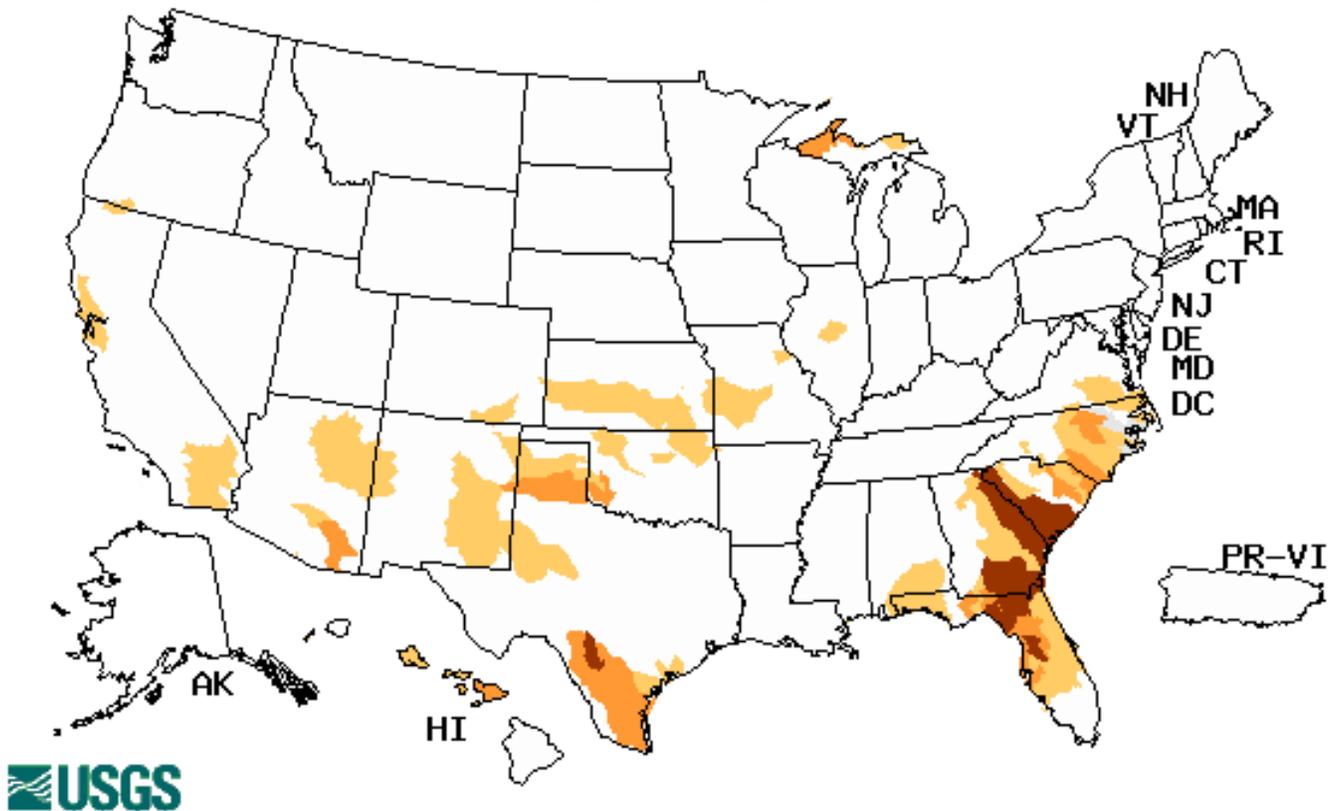


Fig. 6: This NRCS resource shows a site over [north-central Arkansas](#) moist conditions responding to a recent precipitation event.

Weekly Snowpack and Drought Monitor Update Report

Wednesday, February 01, 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. Severe conditions exist over the Southeast and south-central Texas.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- January 31, 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/>.

Summary: Locally heavy rain provided drought relief to the south-central U.S., while dry conditions returned from central California into the Four Corners Region. Unfavorable dryness persisted in the Southeast.

Mid-Atlantic and Northeast: Light to moderate rain and snow (locally more than 1 inch liquid equivalent) from western Pennsylvania into central New England contrasted with increasingly dry conditions on the lower Delmarva. Locally heavy lake-effect snow showers eased D0 (Abnormal Dryness) downwind of Lake Ontario. However, precipitation has totaled locally less than 50 percent of normal over the past 90 days from northern New York into western and northern Maine, where the D0 designation was expanded. Meanwhile, unfavorable dryness continued to cause declining streamflows on the lower Delmarva Peninsula, where the updated 3-month Standardized Precipitation Index (SPI) likewise supported the introduction of Moderate Drought (D1). In addition, a 60-day precipitation shortfall (50-70 percent of normal) along with streamflows in the lowest 30th percentile in southern Virginia resulted in a northward expansion of D0 in this locale.

Southeast: Dry, warmer-than-normal weather prevailed, resulting in an increase in drought designation from central and eastern portions of North Carolina into southern Georgia as well as southern Florida. Moderate (D1) to Extreme (D3) Drought was expanded northeastward over the Coastal Plain of North and South Carolina, with ongoing dryness (50 percent of normal or less over the past 90 days) causing a further decline in streamflows (gauges closest to the coast are in the lowest 10th percentile) and soil moisture. Abnormal Dryness (D0) was also introduced to central and northern North Carolina to reflect developing precipitation deficits (60-day rainfall averaging 50-75 percent of normal). In Georgia, the sharp contrast between northern drought-free areas and southern Exceptional Drought (D4) further intensified. In northern Georgia, additional showers – albeit light (amounts generally less than an inch) - kept soils favorable moist. Meanwhile, little if any rain fell across southern Georgia, where Exceptional Drought was expanded to correspond with the greatest 6-month rainfall departures (locally less than 50 percent of normal) and the lowest streamflows (5th percentile or lower). In Florida, light showers (0.25 to 0.5 inch) were reported across the panhandle. Dry weather prevailed across the remainder of the state, which led to declining streamflows, elevated fire danger, and increasing short-term precipitation deficits. Severe Drought (D2) was expanded southward across Gainesville to the northeastern Gulf Coast, with soil moisture and streamflows in the 10th percentile or lower. Farther south, Moderate Drought (D1) was expanded from Fort Meyers east to West Palm Beach, with the 3-month Standardized Precipitation Index (SPI) and Soil Moisture percentile rankings supporting the increase. Much of central and northern Florida remains a strong candidate for additional drought expansion over the upcoming weeks if rain does not soon materialize.

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Delta: Heavy rain further eased drought in southern and western portions of the Delta. The precipitation - which tallied 2 to 4 inches (locally more) - resulted in widespread drought reduction in central Louisiana and southern Mississippi. Coastal locations remained largely unchanged, with rainfall totals significantly less (mostly less than an inch). The same held true for northern Louisiana and southwestern Arkansas, where rain amounts were generally an inch or less. Long-term precipitation deficits are still reflected in the 9- and 12-month Standardized Precipitation Indices (SPI), which continue to depict D1 (Moderate Drought) to D4 (Exceptional Drought) in southern and western portions of Louisiana.

South-Central U.S.: Locally heavy rain across central and eastern drought areas contrasted with unfavorably dry, warm weather elsewhere. A soaking rain (2-4 inches, locally more) fell from San Angelo northeastward across Dallas-Fort Worth into southeastern Oklahoma and northwestern Arkansas. A second, smaller but locally heavier band of rain (1-6 inches) was observed from San Antonio and Austin eastward across Houston into Beaumont-Port Arthur. Consequently, widespread reductions in drought were made - in some case up to 2 categories - as a result of the heavy rain. However, reservoirs remained unfavorably low across the northeastern quarter of Texas; consequently, despite 2 to 3 inches of rain, relatively small improvements were made to D0 (Abnormal Dryness) to D2 (Severe Drought) in these locales. Meanwhile, above-normal temperatures (4-10°F above normal) and increasing dryness led to drought intensification across southern and western portions of Texas as well as neighboring portions of eastern New Mexico. Precipitation over the past 60 to 90 days has trended well below normal, especially from the Rio Grande Valley northward into southeastern New Mexico and west-central Texas.

Central and Northern Plains: Unseasonably warm, dry conditions returned, melting much of the region's protective snow cover and offering areas under Abnormal Dryness (D0) little if any relief. The 3-month Standardized Precipitation Index (SPI) continued to exhibit varying degrees of dryness (D0-D3) from Nebraska northward into the Dakotas and eastern Montana, although shorter-term (30-60 days) precipitation has tallied near to above normal across the northern Great Plains. Dryness is most protracted in northeastern North Dakota (where Moderate Drought - D1 - was expanded) and from southeastern portions of South Dakota into north-central Nebraska. Drought areas of southern Kansas and southeastern Colorado were likewise dry and warm (10°F or more above normal), although an approaching storm offered some hope for relief over the next several days.

Midwest: Drought areas of the Midwest - which extend from northwestern Iowa into Minnesota and Wisconsin - reported dry weather and unseasonable warmth (temperatures 9 to 18°F above normal) during the past week. There were no changes to drought designation, with cold-season impacts still relatively minor. This area will have to be closely monitored over the upcoming weeks, with the potential for rapid drought intensification if precipitation does not materialize soon.

Western U.S.: After last week's much-needed precipitation, dry weather returned from central California into the Four Corners Region. From southern California into southern Nevada and northwestern Arizona, Moderate Drought (D1) was introduced to reflect very low water-year-to-date precipitation (locally below 25 percent of normal) as well as declining snow water percentiles. The new D1 area also corresponds with the latest 3- and 6-month Standardized Precipitation Indices (SPI), which depict D1 conditions or worse in these same locales. Additionally, Abnormal Dryness (D0) was expanded to include much of southern California, where seasonal rainfall has totaled less than 50 percent of normal. Despite beneficial snowfall

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in the Sierra last week, snow water equivalent remained in the 20th percentile or lower, indicating this region may fall rapidly back into Severe Drought (D2) if additional snow does not fall soon.

In northern portions of the region, another round of moderate to heavy mountain snow (2-10 inches liquid equivalent) maintained favorable spring runoff prospects from the Klamath Mountains northward into the Cascades. However, the core Moderate Drought (D1) area received little if any precipitation, with no change made to this area. Additional snow (0.5-2.5 inches liquid equivalent) boosted snow water equivalents (SWE) in central and northern Idaho above the 40th percentile, although the D0 (Abnormal Dryness) area of southeastern Idaho – where SWE remained in the 20th percentile or lower – was mostly dry. In Montana, D0 was expanded into the southwestern quarter of the state to reflect SWE that ranged from the 10th to the 30th percentile. Northwestern Montana – in particular Flathead County – was a candidate for D0 introduction due to SWE locally in the 20th percentile or lower, but much-needed precipitation (1-4 inches liquid equivalent) provided a reprieve. There were no changes made to the drought designation in the central Rockies following last week's introduction of Moderate Drought; this region will be reassessed pending the final result of an approaching storm system.

Alaska, Hawaii, and Puerto Rico: In Alaska, bitterly cold conditions continued, with temperatures averaging 15 to 25°F below normal. Snow continued to fall across the southern half of the state, with no concerns for drought. In Hawaii, much of the state remained dry. Additional assessment for Molokai indicated pastures are in very poor condition, resulting in a degradation to D3 (Extreme Drought) over the western third of the island. Likewise, dry conditions and additional assessment led to the introduction of Severe Drought (D2) on Lanai. There were no concerns for drought on Puerto Rico.

Looking Ahead: A disturbance will race across the southeastern quarter of the nation, producing light to moderate rain over the central and southern Atlantic Coast States. However, rain is expected to rapidly diminish as it approaches the drought areas of southern Georgia and Florida. Meanwhile, an upper-air disturbance will trigger light to moderate snow across the central and northern Rockies. As this feature reaches the Plains, a storm will rapidly develop and intensify, generating increasingly heavy rain and snow from the central Plains into the Corn Belt, while a trailing cold front triggers showers and thunderstorms from central Texas into the Delta and interior Southeast. Little if any precipitation is expected in Florida and from California into the southern Rockies. Likewise, drought areas of the Upper Midwest will also remain dry. The CPC 6-10 day forecast for February 7-11 calls for drier-than-normal conditions from the Pacific Coast States eastward into the mid-Mississippi River Valley and Southeast, with wetter-than-normal conditions confined to southern Texas and the eastern Great Lakes. Warmer-than-normal weather from the central and northern Plains to the Pacific Coast will contrast with below-normal temperatures in the Gulf and southern Atlantic Coast States.

Author: [Eric Luebehusen, U.S Department of Agriculture](#)

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

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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 February 1, 2012