



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 26 January 2012

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: [Snow Water-Equivalent](#): Many Basins over the West improved by one bin category this week as a series of winter storms hit the area. The only region that did not see improvement was over the Central Great Basin (Nevada). The Southwest Mountain remained essentially unchanged (Fig. 1). [7-Day Snow Depth Change](#) ending this morning shows abundant snows over much of the West. The Oregon Cascades, Southwest Mountains, and South and Northern Rockies were less fortunate (Fig. 1a).

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly showed a warmer week over the much of the West while the Washington Cascades experienced cooler temperatures (Fig. 2). [ACIS](#) 7-day average temperature anomalies show the greatest positive temperature departures over the Wind River Range of Wyoming ($>+15^{\circ}\text{F}$) and the greatest negative departures over north-central Montana ($<-9^{\circ}\text{F}$) (Fig. 2a).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the greatest amounts over the West Coast States (Fig. 3). In terms of percent of normal, all but the Southwest, Southern and North-Central Rockies benefitted with abundant moisture (Fig 3a). Since the start of the [2012 Water-Year](#) that began on 1 October 2011, the seasonal moisture has favored northern Wyoming. However, as was indicated in Figure 1 above, many river basins have increased by one bin category during the week (Fig. 3b).

Summary: Locally heavy rain provided drought relief in portions of the Southeast, while much-needed, locally heavy snow stabilized some western snowpacks. However, much of the west continued to wrestle with precipitation deficits and below-normal snow-water storage.

Western U.S.: Locally heavy, much-needed precipitation in western and northern portions of the region contrasted with ongoing dryness and increasing drought from the southern Great Basin into the central Rockies. A series of Pacific disturbances generated moderate to heavy rain and mountain snow from central California northward into the Pacific Northwest. Heavy snow was reported in the Sierra Nevada (3-8 inches liquid equivalent, locally more) and from the Klamath Mountains (10 inches or more liquid equivalent) into the Cascade Range. Snow-water equivalent in the Sierra improved, although many stations were still in the 20th percentile or lower. Nevertheless, the precipitation provided a 1-category improvement in drought designation in the Sierra, with D2 (Severe Drought) reduced to D1 (Moderate Drought). This area, however, will need to be closely monitored over the upcoming weeks, with water-year-to-date precipitation still averaging 50 percent of normal or less. The heavy precipitation in the Klamath Mountains likewise resulted in modest improvements to Abnormal Dryness (D0) and Moderate Drought, with water-year-to-date precipitation ranging from 50 percent of normal in the southern portions of the Klamath to near normal closer to the Oregon border. Heavy precipitation in the Cascades boosted snow-water equivalents into the 50th to 75th percentile (locally higher), with drought not a concern in the mountains of the Pacific Northwest at this time. Valley locales east of the Cascades largely missed out on the rain and snow, although a half inch or more in the D1 area from southern Washington into north-central Oregon provided

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beneficial moisture for winter wheat. In northern and central Idaho, moderate to heavy snow (2-6 inches liquid equivalent, locally more) boosted mountain snowpacks and alleviated Abnormal Dryness (D0). By week's end, snow-water equivalents had jumped above the 40th percentile across much of the region, with yet another storm poised to provide additional relief to the southern portions of the state.

Meanwhile Moderate Drought (D1) was expanded from northwestern Nevada eastward across north-central Utah and into portions of northwestern and central Colorado, despite the arrival of some much-needed rain and snow. Even with the precipitation, which totaled a half inch or less at lower elevations to locally more than an inch (liquid equivalent) in the mountains, additional detailed assessment led to a general increase in drought designation. Water-year precipitation is running 50 percent of normal or less from northwestern and central Nevada eastward into Utah and Colorado. In particular, snow-water equivalent percentile rankings range from: 3rd to 15th percentile in east-central Nevada; 10th to 30th percentile in Utah's central Wasatch and less than the 20th percentile in the Uinta Mountains; and 3rd to 30th percentile in northwestern and central Colorado. Further illustrating the dryness are the 3- and 6-month Standardized Precipitation Indices, which both depict D1 (or worse) conditions in the newly-expanded Moderate Drought (D1) region.

Across the southern Rockies and Southwest, no changes were made to the current drought classification. Precipitation in the shorter term (60 to 90 days) has been generally sufficient to prevent drought intensification, with current snow-water equivalent in the 40th percentile or higher over much of Arizona and New Mexico. 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](#)).

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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/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/

Micheal L. Golden

Acting Deputy Chief, Soil Survey and Resource Assessment

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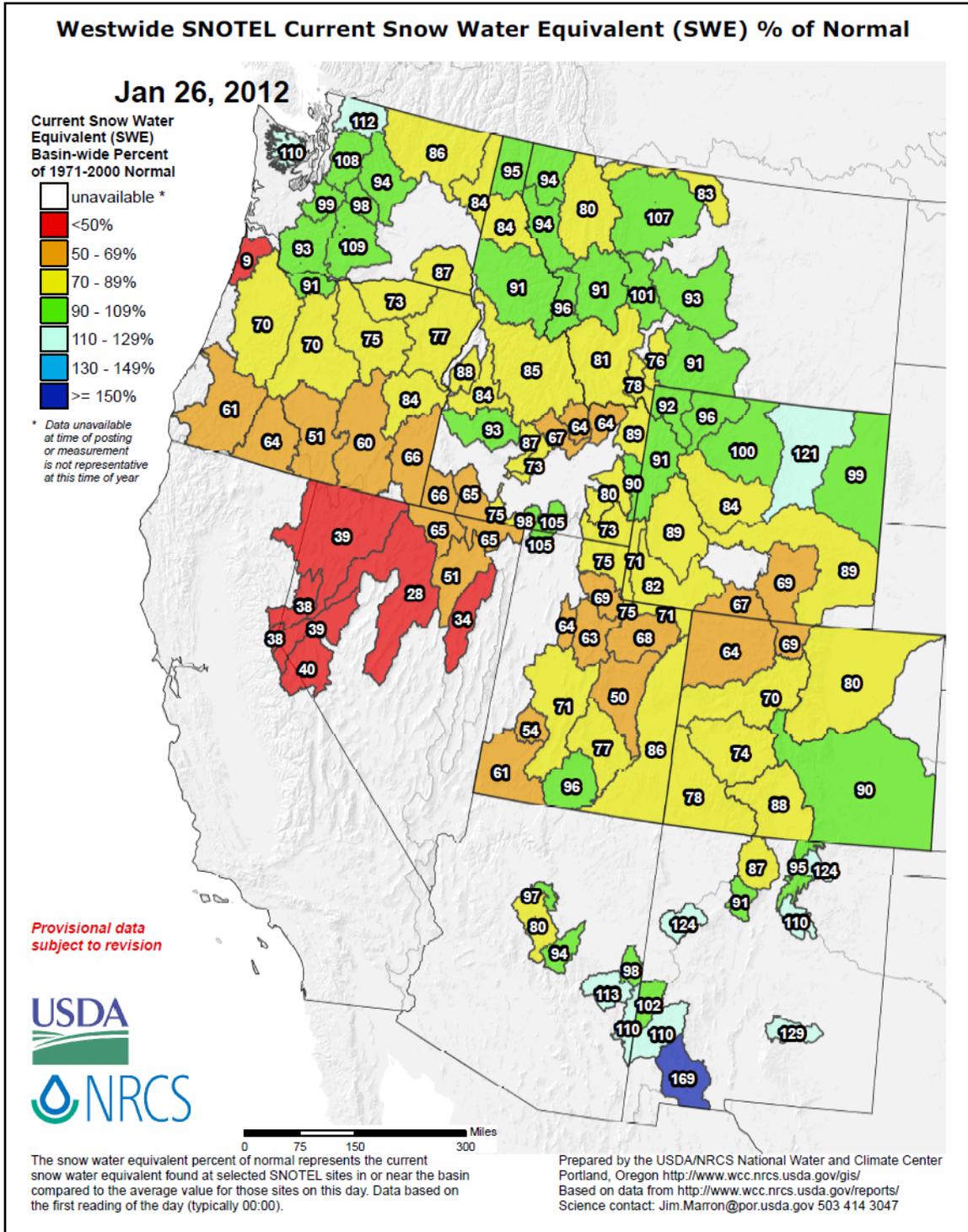


Fig. 1: Snow Water-Equivalent: Many Basins over the West improved by one bin category this week as a series of winter storms hit the area. The only region that did not see improvement was over the Central Great Basin (Nevada). The Southwest Mountain remained essentially unchanged.

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SNOTEL 7-Day Snow Depth Change (Inches)

Jan 26, 2012

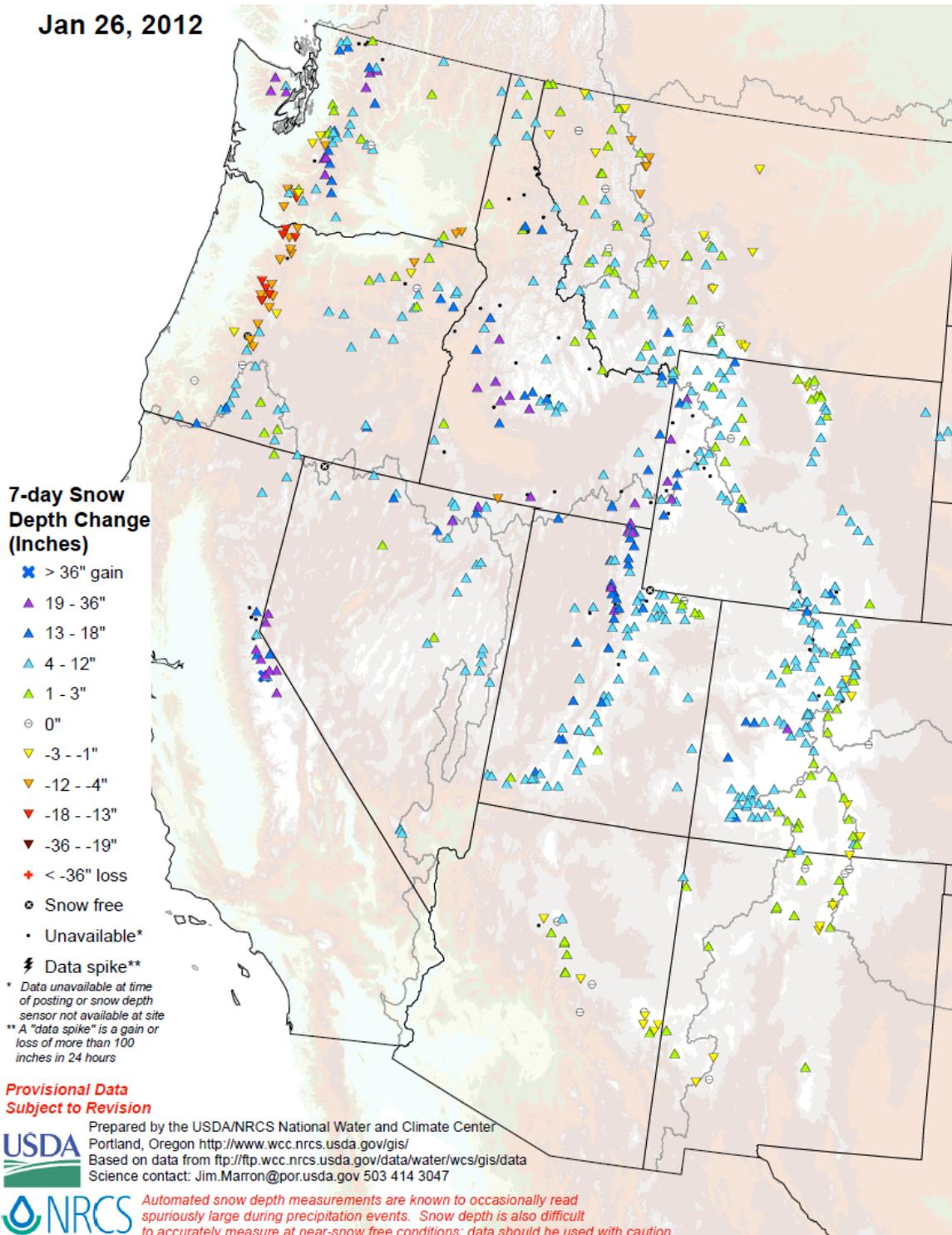


Fig. 1a: 7-Day Snow Depth Change ending this morning shows abundant snows over much of the West. The Oregon Cascades, Southwest Mountains, and South and Northern Rockies were less fortunate.

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

Jan 26, 2012

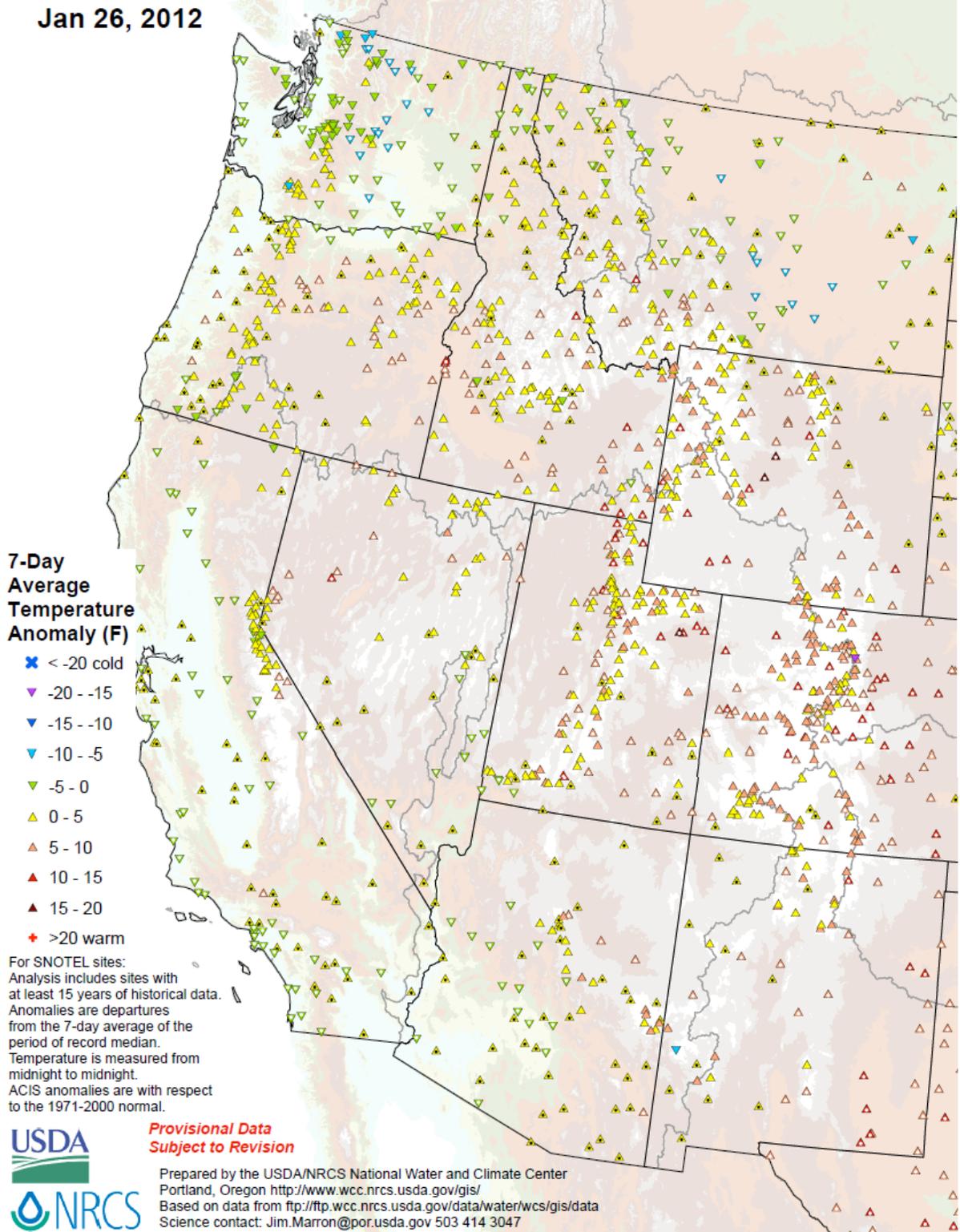
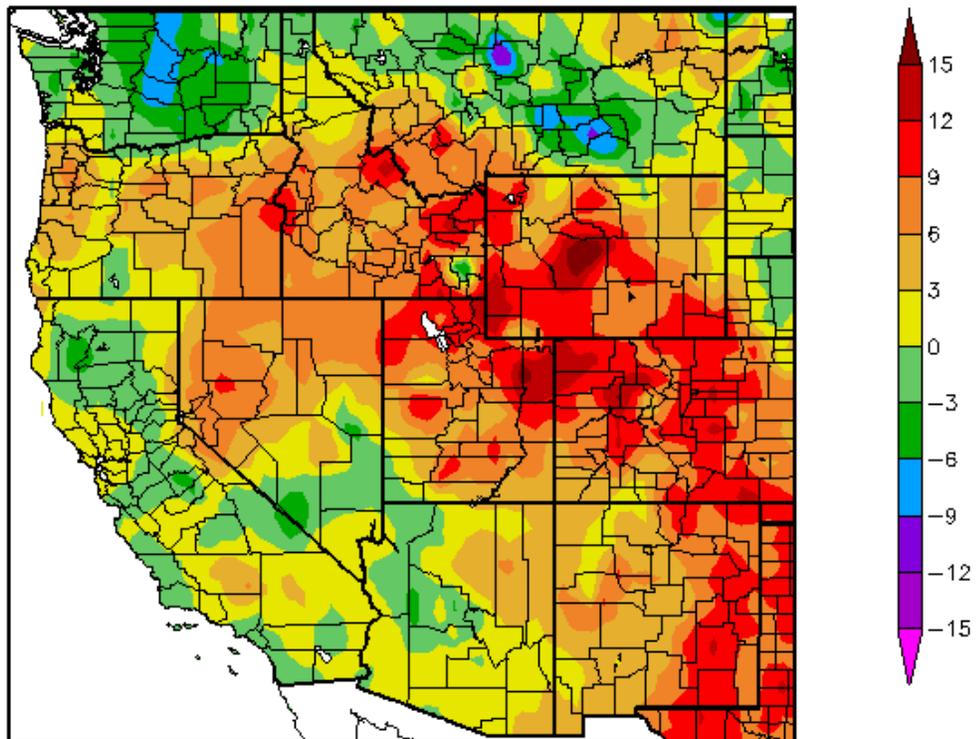


Fig. 2: SNOTEL and ACIS 7-day temperature anomaly showed a warmer week over the much of the West while the Washington Cascades experienced cooler temperatures.

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Departure from Normal Temperature (F)
1/19/2012 - 1/25/2012



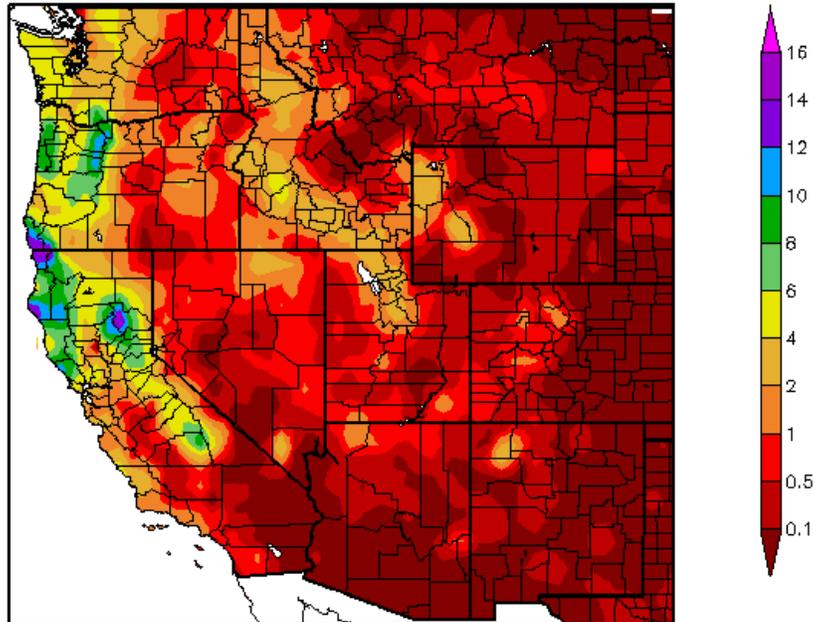
Generated 1/26/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2a: ACIS 7-day average temperature anomalies show the greatest positive temperature departures over the Wind River Range of Wyoming ($>+15^{\circ}\text{F}$) and the greatest negative departures over north-central Montana ($<-9^{\circ}\text{F}$).

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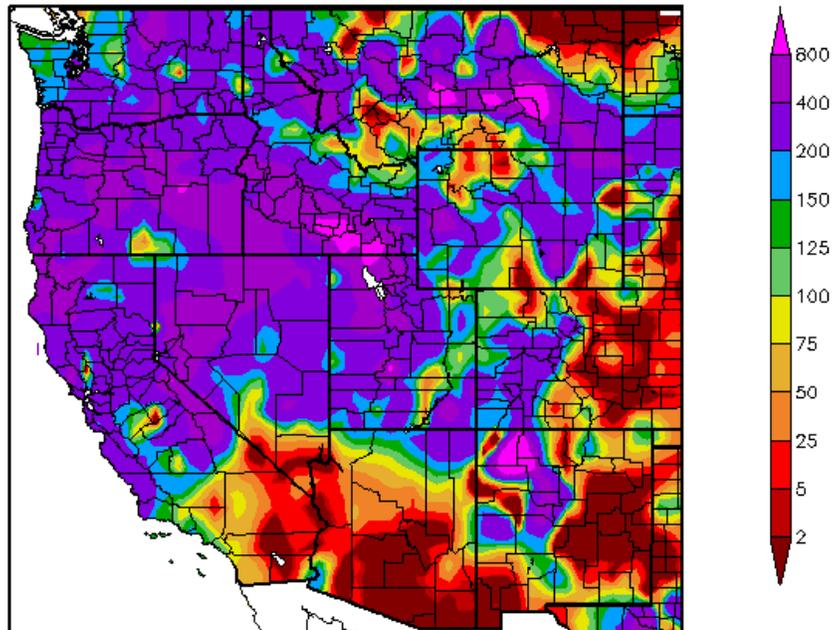
Precipitation (in)
1/19/2012 – 1/25/2012



Generated 1/26/2012 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
1/19/2012 – 1/25/2012



Generated 1/26/2012 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows the greatest amounts over the West Coast States (Fig. 3). In terms of percent of normal, all but the Southwest, Southern and North-Central Rockies benefitted with abundant moisture (Fig 3a).

Weekly Snowpack and Drought Monitor Update Report

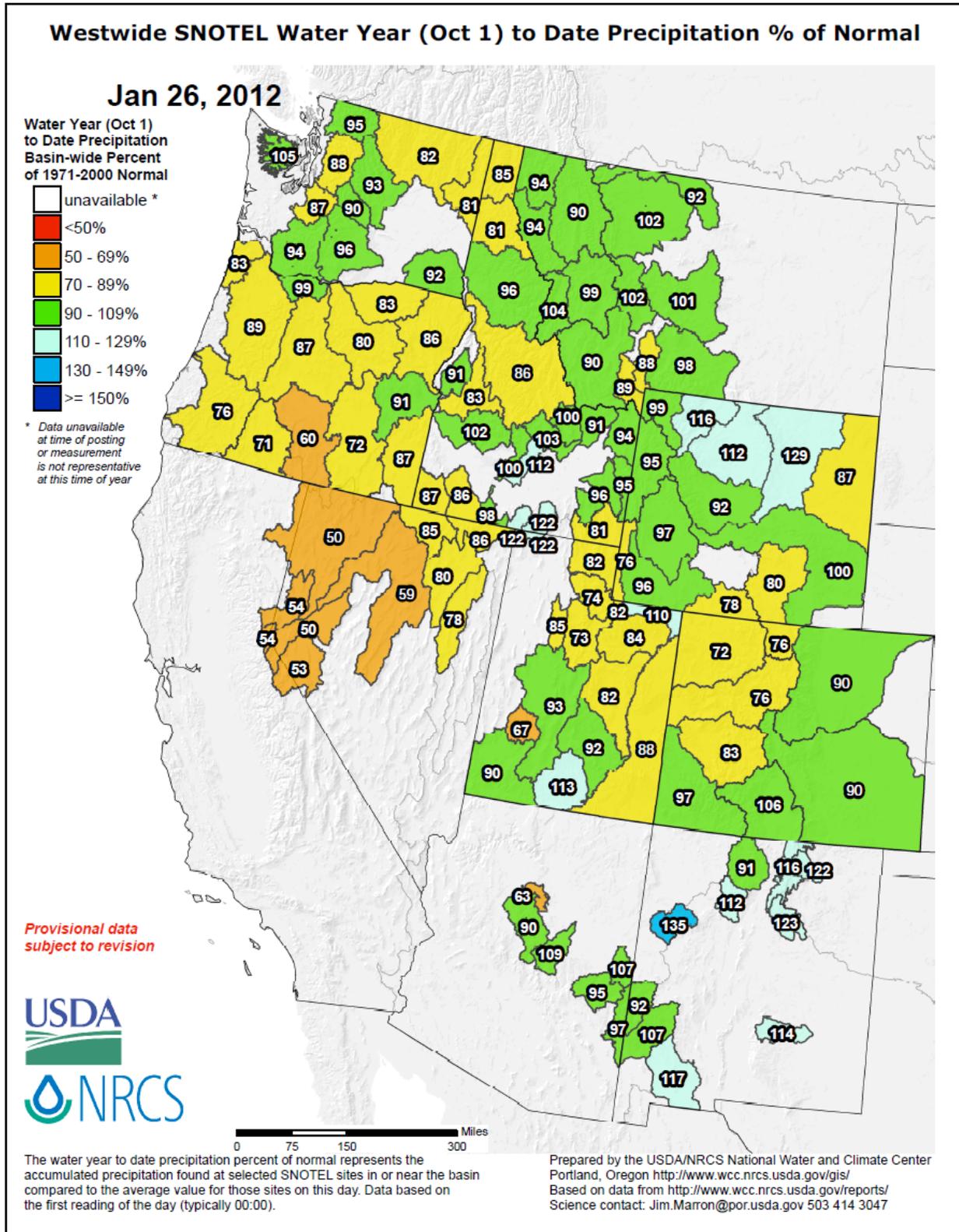


Fig 3b: Since the start of the **2012 Water-Year** that began on 1 October 2011, the seasonal moisture has favored northern Wyoming. However, as was indicated in Figure 1 above, many river basins have increased by one bin category during the week.

U.S. Drought Monitor

January 24, 2012
Valid 7 a.m. EST

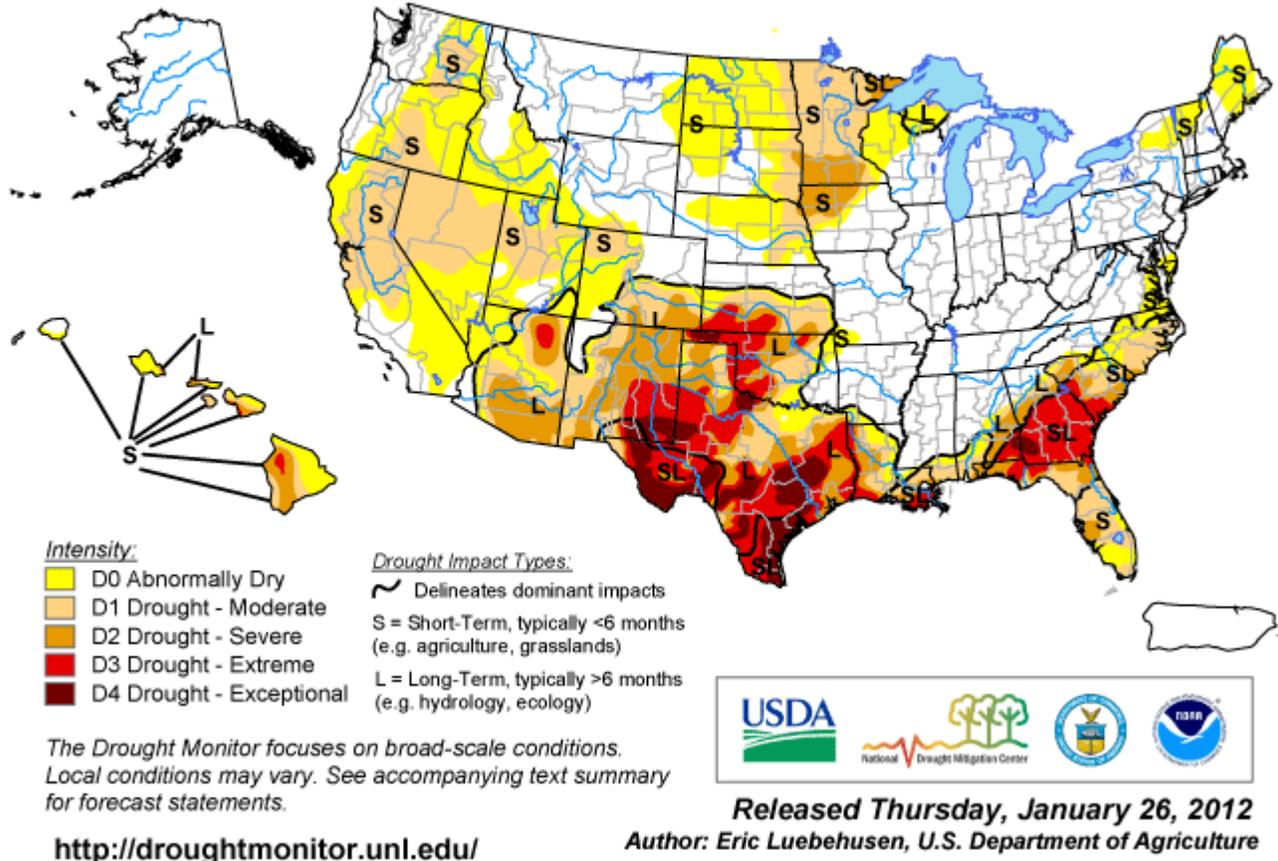


Fig. 4: Current **Drought Monitor** weekly summary. The exceptional D4 levels of drought are found over southeastern New Mexico, mostly southern Texas, the Panhandle of Oklahoma, and over southwest Georgia-southeast Alabama. For more drought news, see [Drought Impact Reporter](#).

Agriculture

[After winter plantings rise, wheat prices fall](#)

Jan 15, Kansas, Oklahoma and Texas. On the heels of a dry 2011 that devastated the hard red winter wheat, farmers planted more acres of the crop during the fall, resulting in lower prices for wheat.

[Fallout from Valley dry spell could affect beef prices](#)

Jan 18, Vicinity of Fresno, California. A lack of rain for the past two months has farmers and ranchers worried as they watch their crops and cattle long for rain to moisten nut and fruit orchards and encourage some grass growth for grazing. "The Sanger-based Kings River Water District has been providing water to its farmers over the last three weeks. The district normally starts its water deliveries at the end of March," but started deliveries early because farmers have requested it.

[Forecast holds little promise for New Mexico](#)

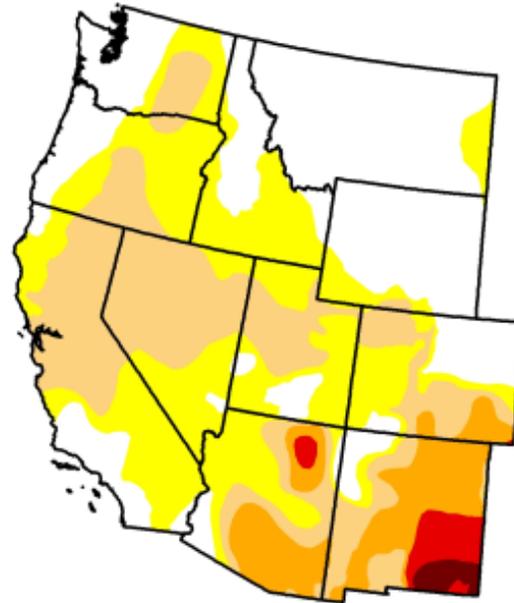
Jan 20, New Mexico. "Preliminary figures show New Mexico is on track to have its lowest beef cattle inventory in 26 years."

U.S. Drought Monitor

West

January 24, 2012
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	34.41	65.59	35.66	10.98	2.68	0.77
Last Week (01/17/2012 map)	36.17	63.83	29.46	11.40	2.68	0.77
3 Months Ago (10/25/2011 map)	74.12	25.88	18.32	14.67	8.48	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 (01/18/2011 map)	76.96	23.04	11.88	0.89	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, January 26, 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.

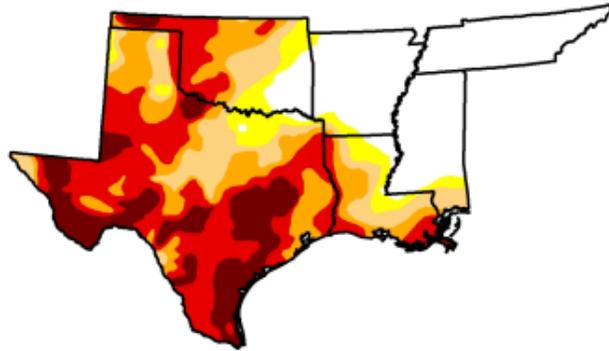
U.S. Drought Monitor

South

January 24, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	28.47	71.53	64.62	52.75	37.37	13.27
Last Week (01/17/2012 map)	28.56	71.44	65.03	52.77	37.37	13.27
3 Months Ago (10/25/2011 map)	13.04	86.96	77.92	70.89	62.67	45.84
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 (01/18/2011 map)	15.38	84.62	58.49	27.99	8.45	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
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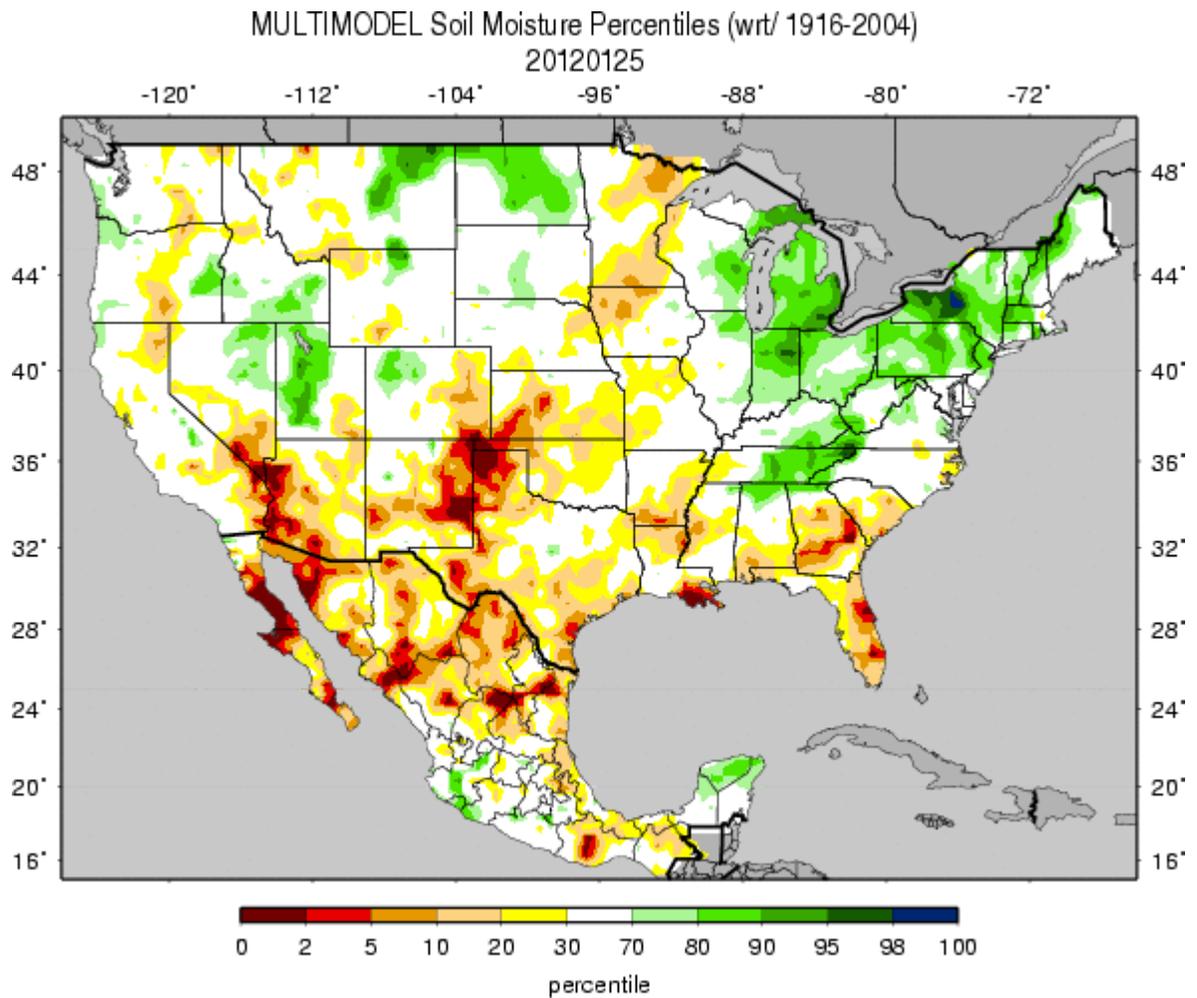


Released Thursday, January 26, 2012
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<http://droughtmonitor.unl.edu>

Fig. 4b: Drought Monitor for the [South-Central States](#) with statistics over various time periods. Note no change this week.

Weekly Snowpack and Drought Monitor Update Report



Figs. 5: Soil Moisture ranking in percentile as of 25 January (top) shows a wet Ohio Valley to New England pattern diminishing. Dryness is noted over the Southern Tier States.

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Soil Climate Analysis Network (SCAN)

Station (2115) MONTH=2011-12-27 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Jan 26 14:22:33 PST 2012

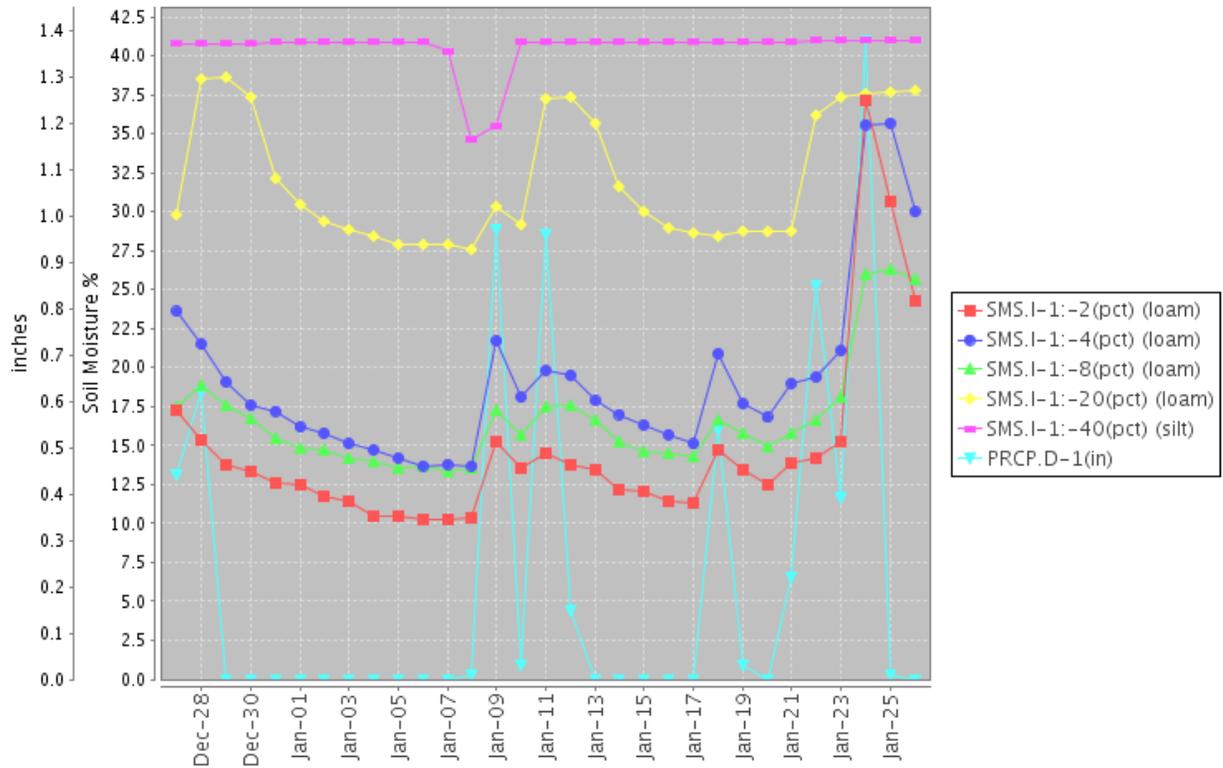
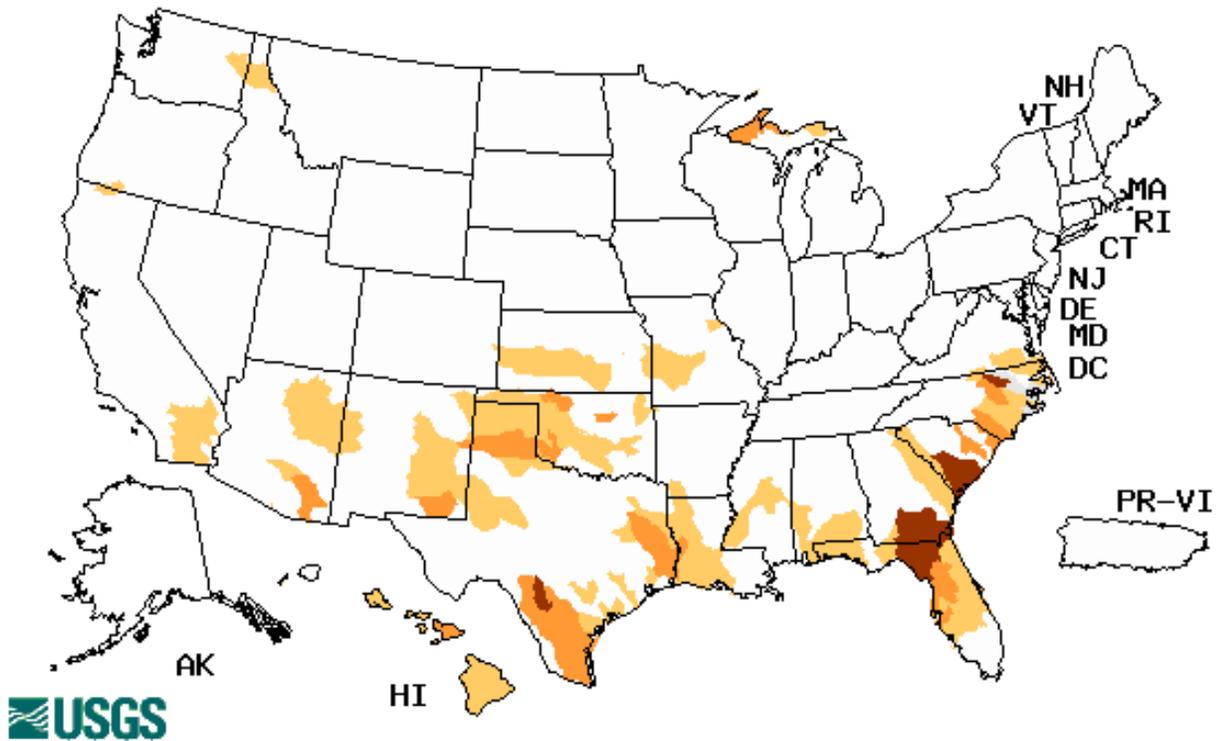


Fig. 6: This NRCS resource shows a site over [eastern Alabama](#) moist conditions responding to recent precipitation events.

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Wednesday, January 25, 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, Northern California, and south-central Texas.

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National Drought Summary -- January 24, 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 in portions of the Southeast, while much-needed, locally heavy snow stabilized some western snowpacks. However, much of the west continued to wrestle with precipitation deficits and below-normal snow-water storage.

Mid-Atlantic and Northeast: The region's first widespread winter storm dropped a mix of snow, ice, and rain. Liquid total precipitation equivalent was generally less than an inch, but was enough to stave off any expansion of Abnormal Dryness (D0) in New England and the lower Delmarva. Over the past 90 days, precipitation has tallied less than 70 percent of normal in southeastern Virginia and southern portions of the Maryland and Virginia Eastern Shore; rain or snow will be needed to prevent degradation into Moderate Drought (D1) over the upcoming weeks.

Southeast: Locally heavy rain in northern and western portions of the region contrasted with increasingly dry conditions farther south and east. A storm and its attendant cold front dropped 2 to 4 inches of rain across Alabama and northern and western portions of Georgia, resulting in some 1-category improvements in the latest drought designation. However, the rain largely bypassed the core Extreme (D3) to Exceptional (D4) Drought areas of Georgia, resulting in little if any improvements across central and southern portions of the state. In Florida, light to moderate showers (0.25 to 2.0 inches) were reported from the panhandle toward Ocala. Dry weather prevailed across the remainder of the state, which coupled with declining streamflows, elevated fire danger, and increasing short-term precipitation deficits resulted in expansion of Moderate Drought (D1) across Lake Okeechobee toward West Palm Beach. In northeastern Florida, Severe Drought (D2) was expanded southward toward Gainesville to reflect streamflows in the 5th percentile (or lower) and 90-day precipitation deficits of 6 inches or greater. Farther north, no change was made to the Carolinas, with many areas receiving a half inch or more of rain; however, the southern and eastern portions of North and South Carolina continue to teeter toward drought intensification, with short- and long-term Standardized Precipitation Indices (SPI) indicating varying degrees of Drought.

Delta: Scattered showers, some heavy, were reported across southern and eastern portions of the region. The heaviest rain, which tallied 2 to 3 inches in central Louisiana and southern Mississippi, brought some minor improvements to D0 (Abnormally Dry) and D1 (Moderate Drought) in these locales. The rest of the region remained unchanged.

South-Central U.S.: Despite dry, warmer-than-normal weather (temperatures averaging up to 14°F above normal), little if any change was made to the drought designation from Texas northward into southern Kansas. In fact, locally heavy rain has been falling over the region since the data cutoff time (12z Tuesday, January 24) for this week's drought depiction; impacts

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from the rain will be addressed in next week's U.S. Drought Monitor. A small increase in D0 (Abnormally Dry) was made in northeastern Oklahoma to reflect 60-day precipitation deficits up to 3 inches (locally more).

Central and Northern Plains: Seasonably cold conditions prevailed, with some snow falling from the northern High Plains eastward across northern South Dakota toward Sioux Falls. To the south of this area of snow, D0 (Abnormally Dry) conditions were expanded to include much of northern Nebraska. Precipitation in this area has totaled locally less than 50 percent of normal over the past 60 to 90 days, with the 3-month Standardized Precipitation Index (SPI) highlighting this same area as being unfavorably dry.

Midwest: Drought areas of the Midwest - which extend from northwestern Iowa into Minnesota and eastern-most portions of the Dakotas - reported mostly dry weather and seasonable temperatures (averaging within 2 to 4°F of normal) during the past week. Changes to drought designation were generally minor, and included expansion of Moderate Drought (D1) across northwestern Minnesota and northeastern North Dakota. Standardized Precipitation Indices (SPI) out to 6 months indicated increasingly dry conditions in this region. Likewise, 90-day precipitation totals are running 25 percent of normal or less north of Grand Forks, and soil moisture percentile rankings are in the 10th percentile or lower across much of northern Minnesota. On the other hand, drought impacts at this time of year are generally negligible and difficult to ascertain due to the cold; should drier-than-normal conditions continue, this area will have to be closely monitored as we ease into spring.

Western U.S.: Locally heavy, much-needed precipitation in western and northern portions of the region contrasted with ongoing dryness and increasing drought from the southern Great Basin into the central Rockies. A series of Pacific disturbances generated moderate to heavy rain and mountain snow from central California northward into the Pacific Northwest. Heavy snow was reported in the Sierra Nevada (3-8 inches liquid equivalent, locally more) and from the Klamath Mountains (10 inches or more liquid equivalent) into the Cascade Range. Snow-water equivalent in the Sierra improved, although many stations were still in the 20th percentile or lower. Nevertheless, the precipitation provided a 1-category improvement in drought designation in the Sierra, with D2 (Severe Drought) reduced to D1 (Moderate Drought). This area, however, will need to be closely monitored over the upcoming weeks, with water-year-to-date precipitation still averaging 50 percent of normal or less. The heavy precipitation in the Klamath Mountains likewise resulted in modest improvements to Abnormal Dryness (D0) and Moderate Drought, with water-year-to-date precipitation ranging from 50 percent of normal in the southern portions of the Klamath to near normal closer to the Oregon border. Heavy precipitation in the Cascades boosted snow-water equivalents into the 50th to 75th percentile (locally higher), with drought not a concern in the mountains of the Pacific Northwest at this time. Valley locales east of the Cascades largely missed out on the rain and snow, although a half inch or more in the D1 area from southern Washington into north-central Oregon provided beneficial moisture for winter wheat. In northern and central Idaho, moderate to heavy snow (2-6 inches liquid equivalent, locally more) boosted mountain snowpacks and alleviated Abnormal Dryness (D0). By week's end, snow-water equivalents had jumped above the 40th percentile across much of the region, with yet another storm poised to provide additional relief to the southern portions of the state.

Meanwhile Moderate Drought (D1) was expanded from northwestern Nevada eastward across north-central Utah and into portions of northwestern and central Colorado, despite the arrival of some much-needed rain and snow. Even with the precipitation, which totaled a half inch or

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less at lower elevations to locally more than an inch (liquid equivalent) in the mountains, additional detailed assessment led to a general increase in drought designation. Water-year precipitation is running 50 percent of normal or less from northwestern and central Nevada eastward into Utah and Colorado. In particular, snow-water equivalent percentile rankings range from: 3rd to 15th percentile in east-central Nevada; 10th to 30th percentile in Utah's central Wasatch and less than the 20th percentile in the Uinta Mountains; and 3rd to 30th percentile in northwestern and central Colorado. Further illustrating the dryness are the 3- and 6-month Standardized Precipitation Indices, which both depict D1 (or worse) conditions in the newly-expanded Moderate Drought (D1) region.

Across the southern Rockies and Southwest, no changes were made to the current drought classification. Precipitation in the shorter term (60 to 90 days) has been generally sufficient to prevent drought intensification, with current snow-water equivalent in the 40th percentile or higher over much of Arizona and New Mexico.

Alaska, Hawaii, and Puerto Rico: In Alaska, bitterly cold conditions continued, with temperatures averaging more than 20°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 was dry, although rain was reported on Kauai. With the ongoing dryness and reports of pastures in very poor condition, Extreme Drought (D3) was expanded northward on the Big Island, while Abnormal Dryness (D0) was expanded to encompass all areas from Oahu to the Big Island. On Puerto Rico, light to moderate showers (1-2 inches, locally more) fell across the northeastern quarter of the island, with no drought concerns at this time.

Looking Ahead: A moisture-laden storm system will provide widespread, locally heavy rain from central and eastern Texas into the Delta and Southeast, although rain is expected to diminish as a trailing cold front sweeps across Florida. Rain will also fall in the Mid-Atlantic and Northeast, with snow likely in northern New England. Meanwhile, the last in a rapid succession of Pacific storms will bring additional rain and mountain snow to the Northwest as well as the central and northern Rockies. Generally dry weather is expected to return to California and the Southwest. The NWS 6- to 10-day outlook for January 31 – February 4 calls for above-normal temperatures over much of the contiguous U.S., with cooler than normal conditions confined to southern Florida. Drier-than-normal weather is expected from the central and southern Rockies into California and from the southern Delta into the southern Atlantic Coast. Meanwhile, above-normal precipitation is anticipated from the central Corn Belt into the Great Lakes Region.

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

D2 ... Severe Drought

D3 ... Extreme Drought

D4 ... Exceptional Drought

Drought or Dryness Types

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S ... Short-Term, typically <6 months (e.g. agricultural, grasslands)
L ... Long-Term, typically >6 months (e.g. hydrology, ecology)

Updated January 25, 2012