



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 17 January 2013

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Note: [New 1981-2010 SNOTEL Normals](#) are now being used and in many cases, these values are significantly different than the 1971-2000 Normals.

Temperature: [SNOTEL](#) and ACIS 7-day temperature anomaly ending 16 January shows a mixture of above and below normal temperatures as a result of strong surface inversions. Record maximum temperatures dominated many SNOTEL sites over the Cascades and record minimum temperatures over the Western Slope of the Rockies yesterday (Fig. 1a). [ACIS](#) average temperature anomalies show the greatest positive temperature departures over northeast Montana ($>+1^{\circ}\text{F}$). The greatest negative departures occurred over north-central Nevada ($<-24^{\circ}\text{F}$). The impact of cold air drainage across much of the West has been striking this week (Fig. 1b).

Precipitation: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows generally light amounts where precipitation fell but nearly half of the West failed to receive any significant moisture (Fig. 2a). In terms of percent of normal, high percentages were found scattered across the eastern half of the Western States (Fig. 2b). Precipitation that occurs this time of year is usually light so anything that falls can quickly result in well above the long-term average. SNOTEL [month to date](#) precipitation percent of normal for the first half of January shows insufficient moisture to help sustain snow water equivalent values across most of the West. A continuation of very dry conditions is expected across the West this week (Fig. 2c). For the [2013 Water-Year](#) that began on 1 October 2012, the data continues to favor the Northern Tier States and the Northern Sierra with surpluses. Significant deficits dominate over southeastern Wyoming, all of Colorado, and New Mexico (Fig. 2d). Update Reports by SNOTEL site can be acquired by clicking [here](#).

Snow: [Snow depths](#) for the week revealed that most stations reported gains but the nature of the snow was very dry (i.e., low SWE) (Fig. 3a). As for [snow water-equivalent](#), the largest deficits continue over much of New Mexico, all of Colorado, eastern Wyoming, and the northeastern Great Basin. Significant surpluses exist over the Northern Cascades, Sierra, mountain of Arizona, and Central Snake River Basin. However, since last week, many basins with surpluses continue to lower their SWE by significant percentages. For expected snowfall amounts, click [here](#). A useful basin by basin assessment of SWE to date can be viewed by state at [here](#) and [here](#) (Fig. 3b).

Weather Summary: This U.S. Drought Monitor week saw overall improvements as significant rain fell across portions of the South, Southeast, lower Midwest, and portions of the Mid-Atlantic States. In the West, heavy snow fell over the Wasatch Range in Utah as well as in the Northern Rockies and North Cascades. Conditions continued to deteriorate in parts of the Southeast, Southern Plains, and Colorado. Overall, temperatures continued to be well below normal across the West, while the eastern half of the conterminous U.S. experienced temperatures well above average – especially in the Southeast and portions of the Upper Midwest and New England. In Alaska, temperatures were well above normal throughout most of the state, while precipitation was slightly above normal except in southeastern Alaska, which continued to be drier than

Weekly Snowpack and Drought Monitor Update Report

normal. Temperatures and precipitation in the Hawaiian Islands last week were generally near normal.

The West: During the last seven-day period, the southern half of the West was generally dry. The northern half saw snowfall over the mountains of the eastern Great Basin, Idaho, northwestern Wyoming, southern Oregon, southwestern Colorado, western Montana, Utah, and Washington. Heavy snowfall in excess of twenty inches was observed in the Wasatch Range of Utah and the North Cascades of Washington. Current snowpack conditions show significant deficits in snow water content persisting over the mountains of Colorado, New Mexico, northeastern Nevada, eastern Oregon, eastern Wyoming, southeastern and west-central Idaho, and sections of northern Montana. Conversely, notable surpluses exist over the Cascades of Washington, northwestern Great Basin, Sierras, Sawtooths, Uintas, and the mountains of Arizona. Short-term precipitation accumulations during the last 60 days led to one-category improvements in areas of Abnormally Dry (D0) and Moderate Drought (D1) over the Bay Area, northern portions of the Central Coast, and northern San Joaquin Valley of California. Continued lack of snowfall over Colorado led to expansion of Extreme Drought (D3) over central Colorado as well as deterioration of the Moderate Drought (D1) region over the northern Front Range. Temperatures throughout the West continued to be well below normal, especially over large portions of Arizona, California, Colorado, New Mexico, Utah, and Wyoming. **Author:** [David Simeral, Western Regional Climate Center](#)

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

Drought Impacts Definitions

The possible impacts associated with **D4 (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 4d).

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](#)).

U.S. Historical Streamflow

This map, (Fig. 7) shows the 7-day average streamflow conditions in hydrologic units of the United States and Puerto Rico for the day of year. The colors represent 7-day average streamflow percentiles based on historical streamflow for the day of the year. Thus, the map shows conditions adjusted for this time of the year. Only stations having at least 30 years of record are used. Sub-regions shaded gray indicate that insufficient data were available to

Weekly Snowpack and Drought Monitor Update Report

compute a reliable 7-day average streamflow value. During winter months, this situation frequently arises due to ice effects. The data used to produce this map are provisional and have not been reviewed or edited. They may be subject to significant change.

State Activities

State government drought activities can be tracked at the following URL: <http://drought.unl.edu/mitigate/mitigate.htm>. NRCS SS/WSF State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SS/WSF information - <http://www.wcc.nrcs.usda.gov/cgi-bin/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
Deputy Chief, Soil Science and Resource Assessment

Weekly Snowpack and Drought Monitor Update Report

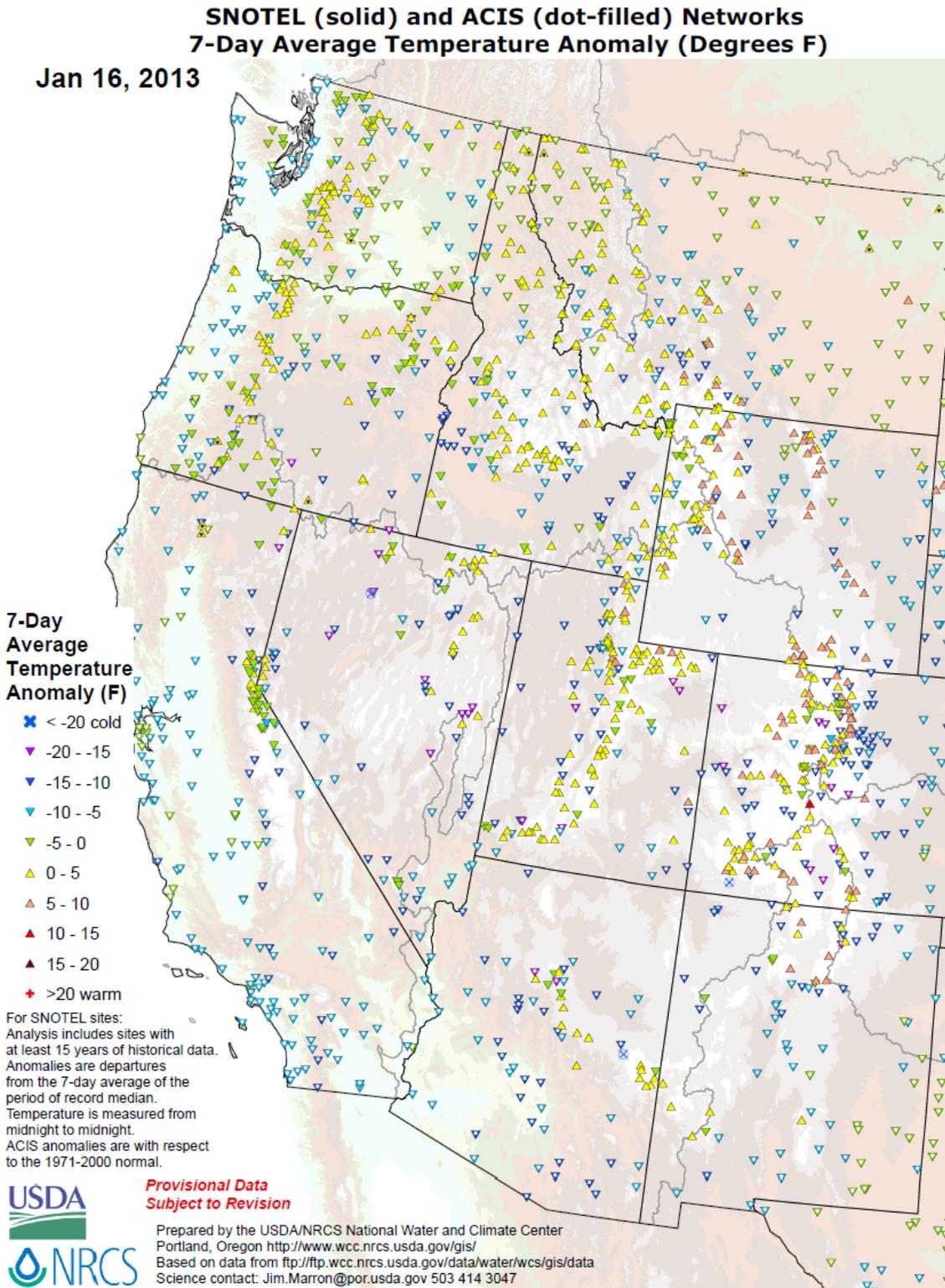
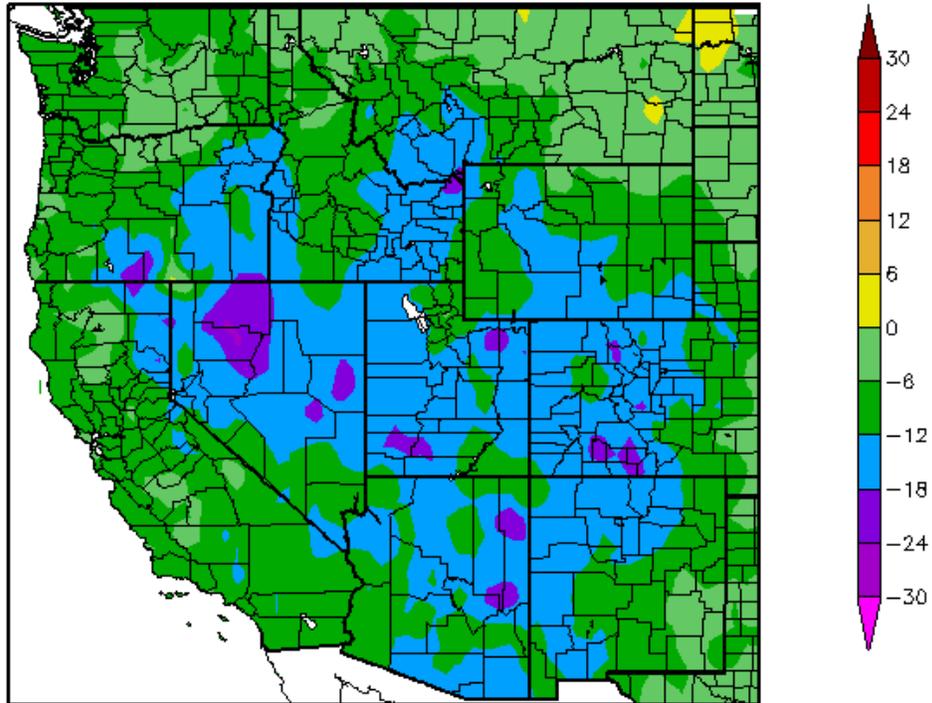


Fig. 1a: SNOTEL and ACIS 7-day temperature anomaly ending 16 January shows a mixture of above and below normal temperatures as a result of strong surface inversions. Record maximum temperatures dominated many SNOTEL sites over the Cascades and record minimum temperatures over the Western Slope of the Rockies yesterday (see next page).

Weekly Snowpack and Drought Monitor Update Report

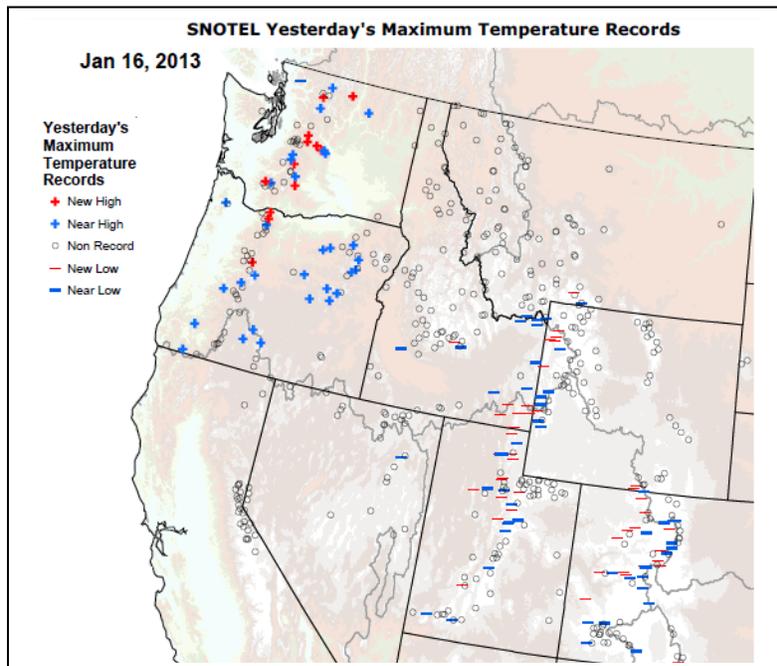
Departure from Normal Temperature (F) 1/10/2013 – 1/16/2013



Generated 1/17/2013 at HPRCC using provisional data.

Regional Climate Centers

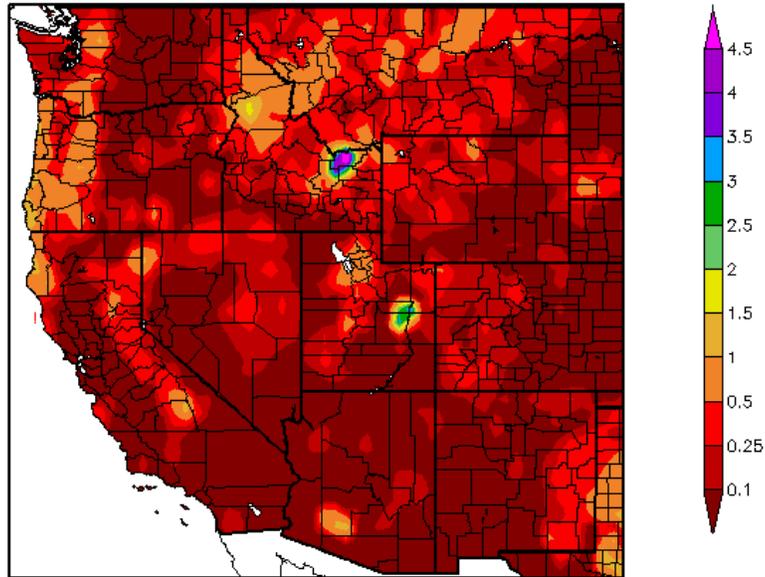
Fig. 1b: ACIS 7-day average temperature anomalies show the greatest positive temperature departures over northeast Montana (>+1°F). The greatest negative departures occurred over north-central Nevada (<-24°F!). The impact of cold air drainage across much of the West has been striking this week. This figure does not include mountain SNOTEL sites which were noticeably warmer in comparison.



Record maximum temperatures occurred over the Cascades while record minimum temperatures occurred over the Upper Snake and Green Rivers and Colorado Rockies. SNOTEL sites with at least 15 years of data are used on this map.

Weekly Snowpack and Drought Monitor Update Report

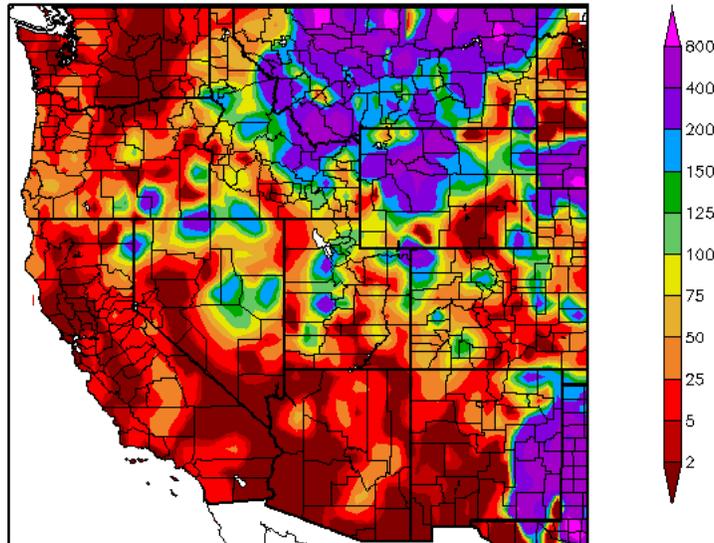
Precipitation (in)
1/10/2013 - 1/16/2013



Generated 1/17/2013 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
1/10/2013 - 1/16/2013



Generated 1/17/2013 at HPRCC using provisional data.

Regional Climate Centers

Fig. 2a and 2b: [ACIS](#) 7-day average precipitation amounts for the period ending yesterday shows generally light amounts where precipitation fell but nearly half of the West failed to receive any significant moisture (Fig. 2a). In terms of percent of normal, high percentages were found scattered across the eastern half of the Western States (Fig. 2b). Precipitation that occurs this time of year is usually light so anything that falls can quickly result in well above the long-term average.

Weekly Snowpack and Drought Monitor Update Report

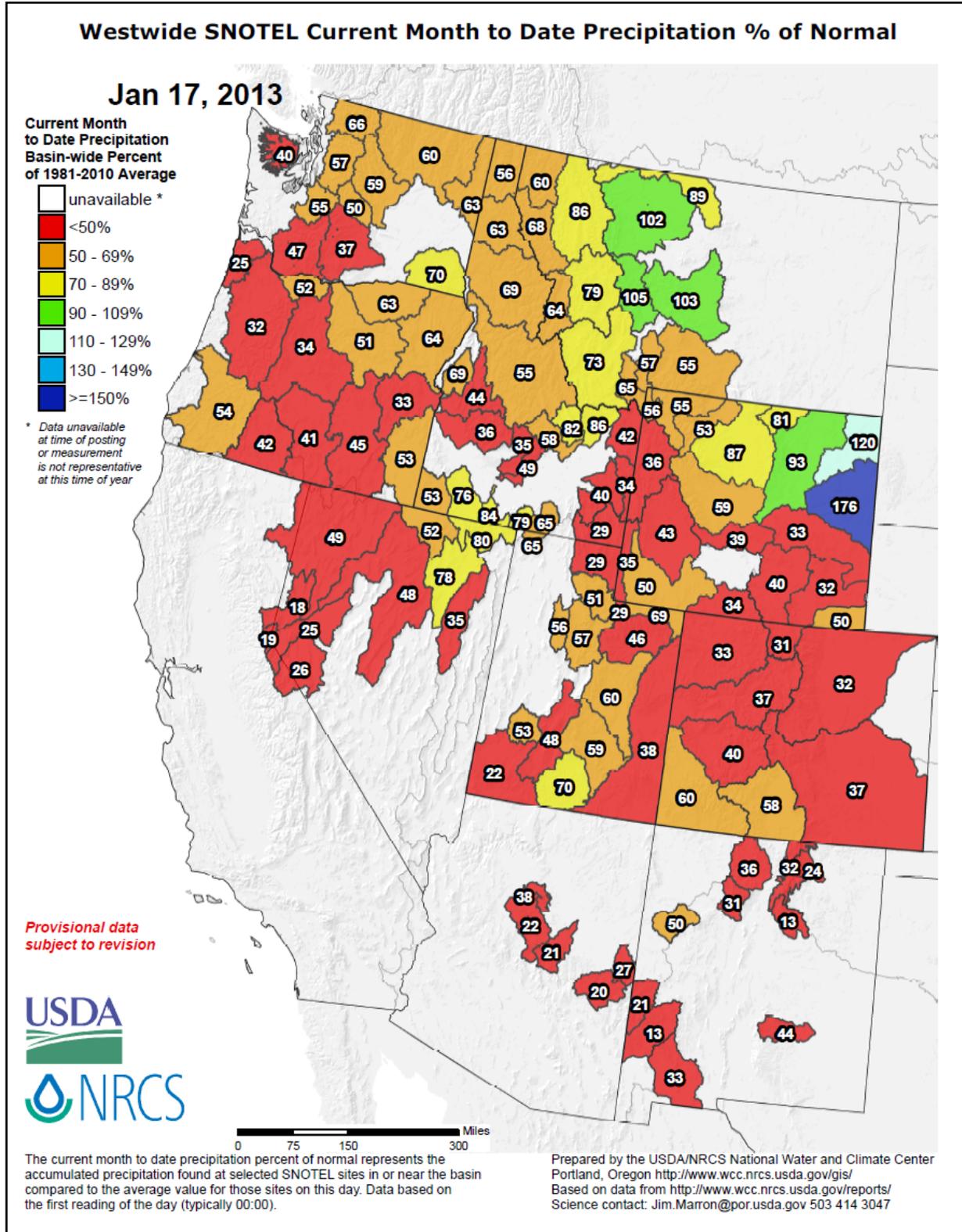


Fig. 2c: SNOTEL month to date precipitation percent of normal for the first half of January shows insufficient moisture to help sustain snow water equivalent values across most of the West. A continuation of very dry conditions is expected across the West this week.

Weekly Snowpack and Drought Monitor Update Report

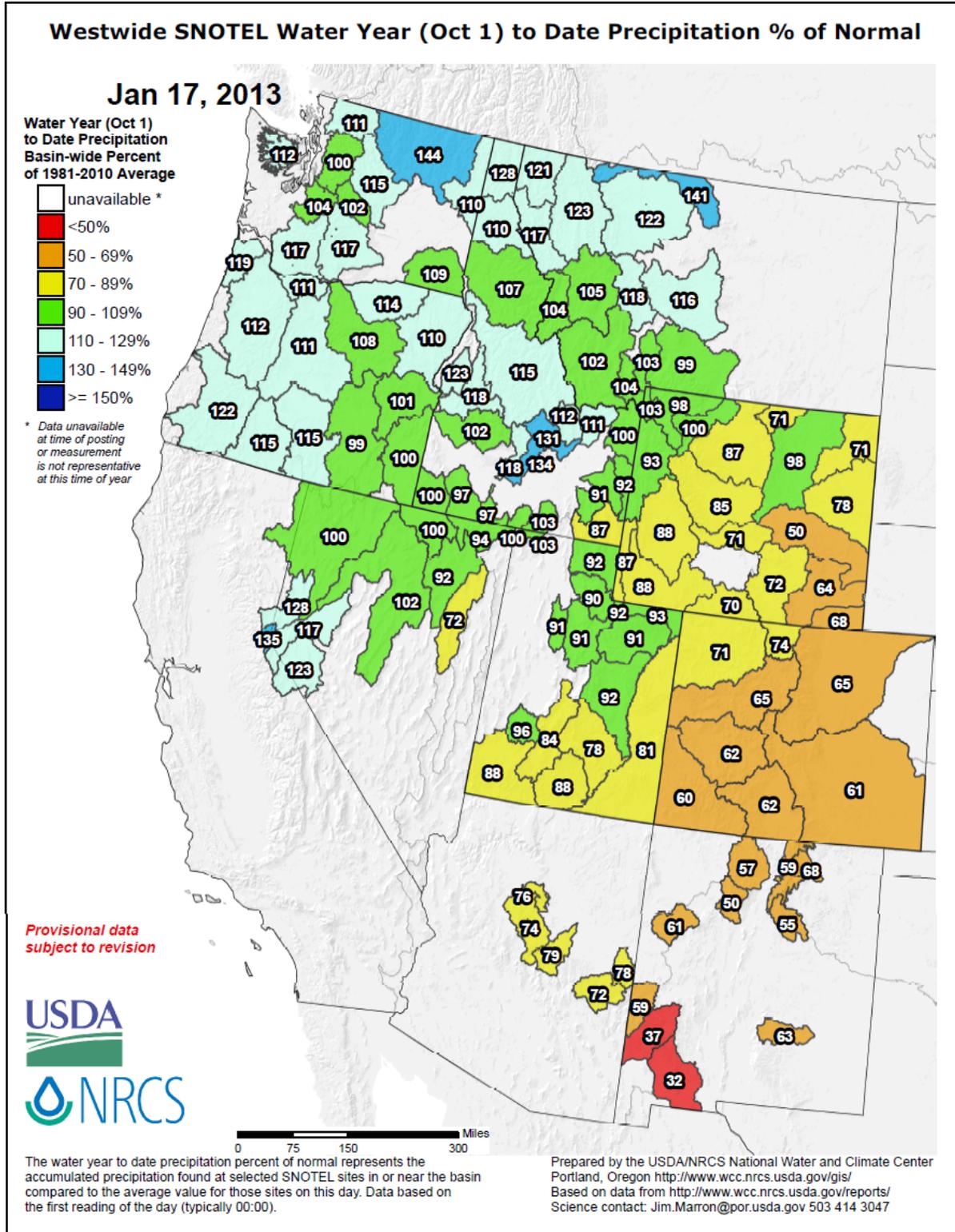


Fig. 2d: For the **2013 Water-Year** that began on 1 October 2012, statistics continue to favor the Northern Tier States and the Northern Sierra with surpluses. Significant deficits dominate over southeastern Wyoming, all of Colorado, and New Mexico. Update Reports by SNOTEL site can be acquired by clicking [here](#).

SNOTEL 7-Day Snow Depth Change (Inches)

Jan 17, 2013

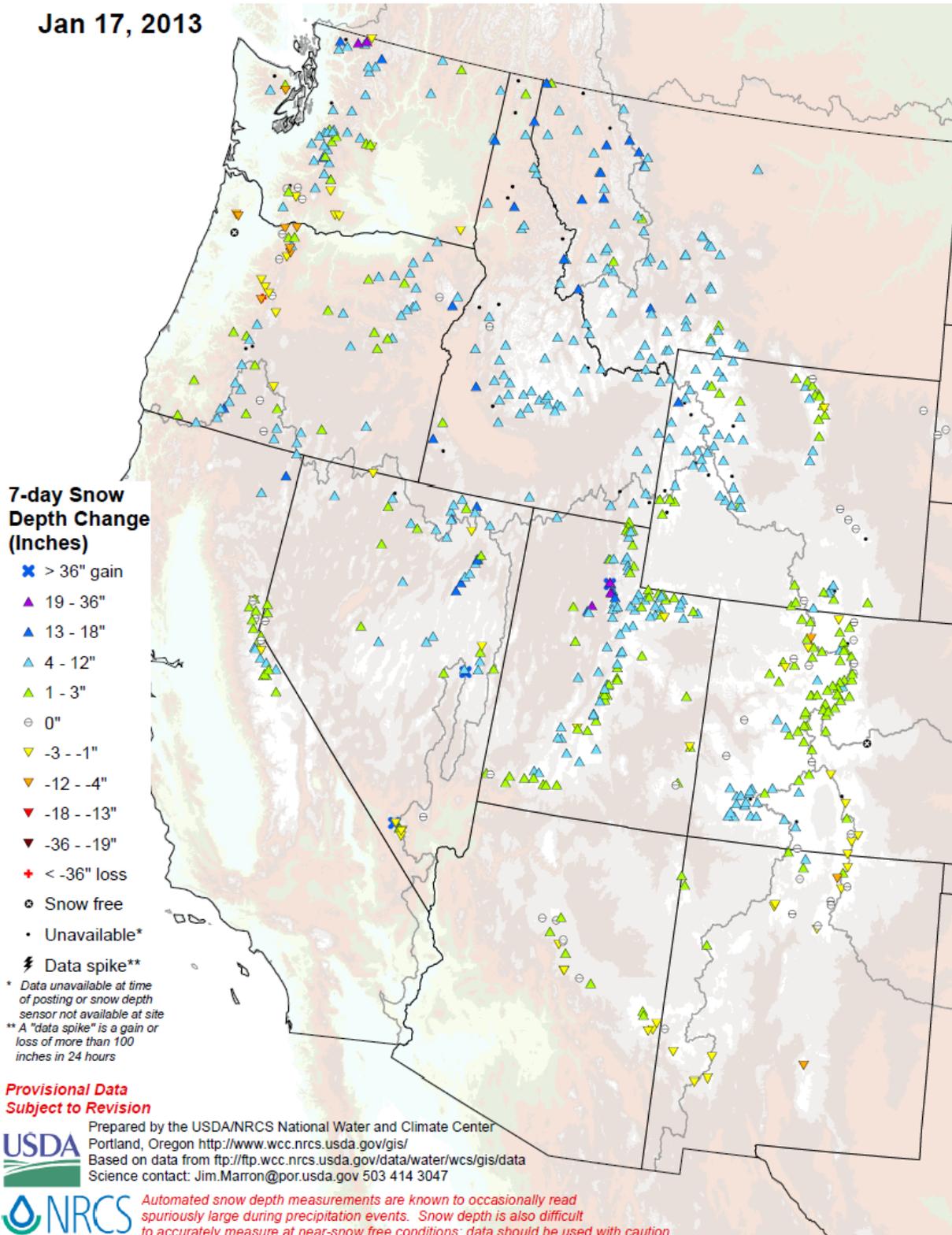


Fig. 3a: **Snow depths** for the week revealed that most stations reported gains but the nature of the snow was very dry (i.e., low SWE).

Weekly Snowpack and Drought Monitor Update Report

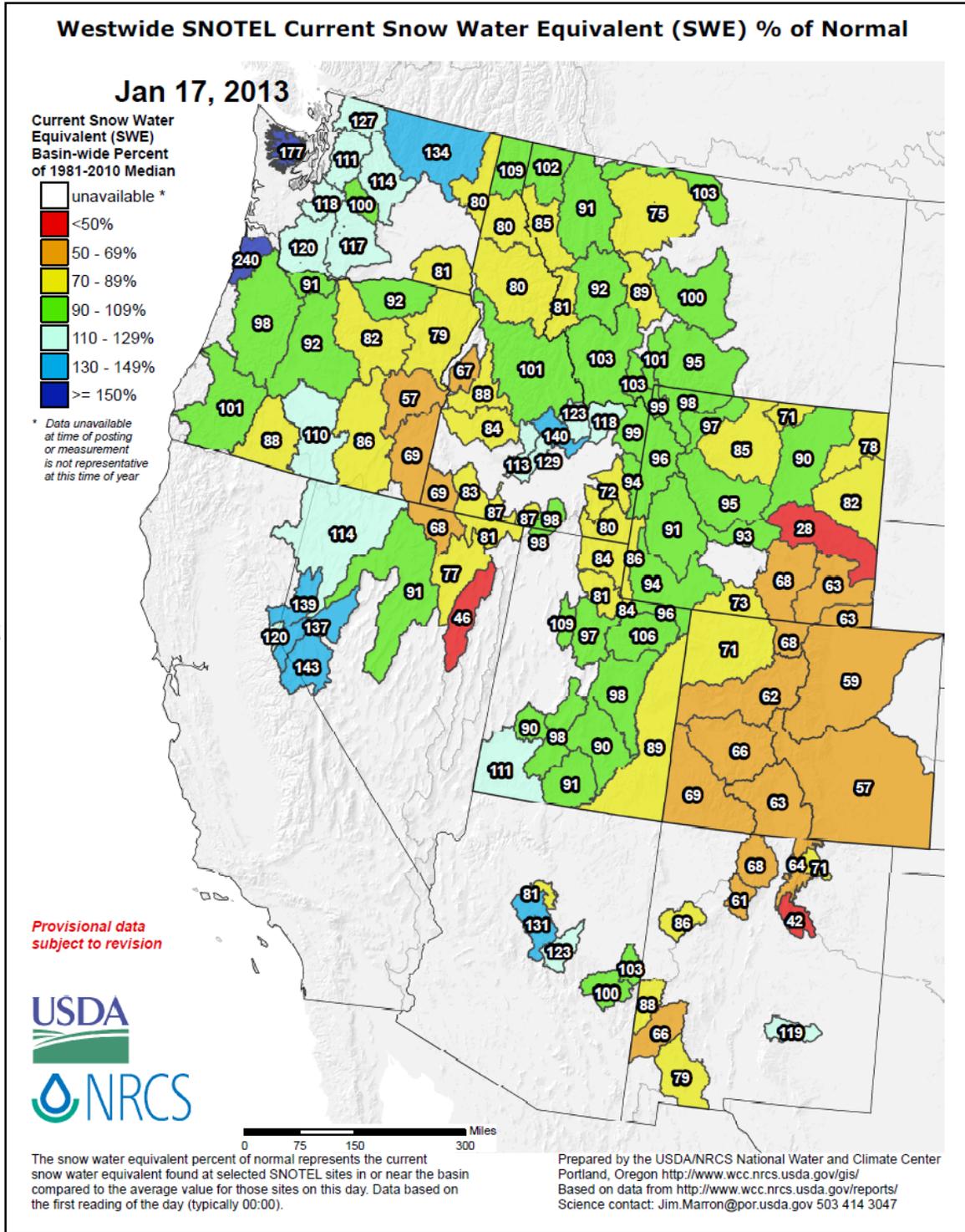


Fig. 3b: Snow Water-Equivalent: Largest deficits continue over much of New Mexico, all of Colorado, eastern Wyoming, and the northeastern Great Basin. Significant surpluses exist over the Northern Cascades, Sierra, mountain of Arizona, and Central Snake River Basin. However, since last week, many basins with surpluses continue to lower their SWE by significant percentages. For expected snowfall amounts, click [here](#). A useful basin by basin assessment of SWE to date can be viewed by state at [here](#) and [here](#).

Weekly Snowpack and Drought Monitor Update Report

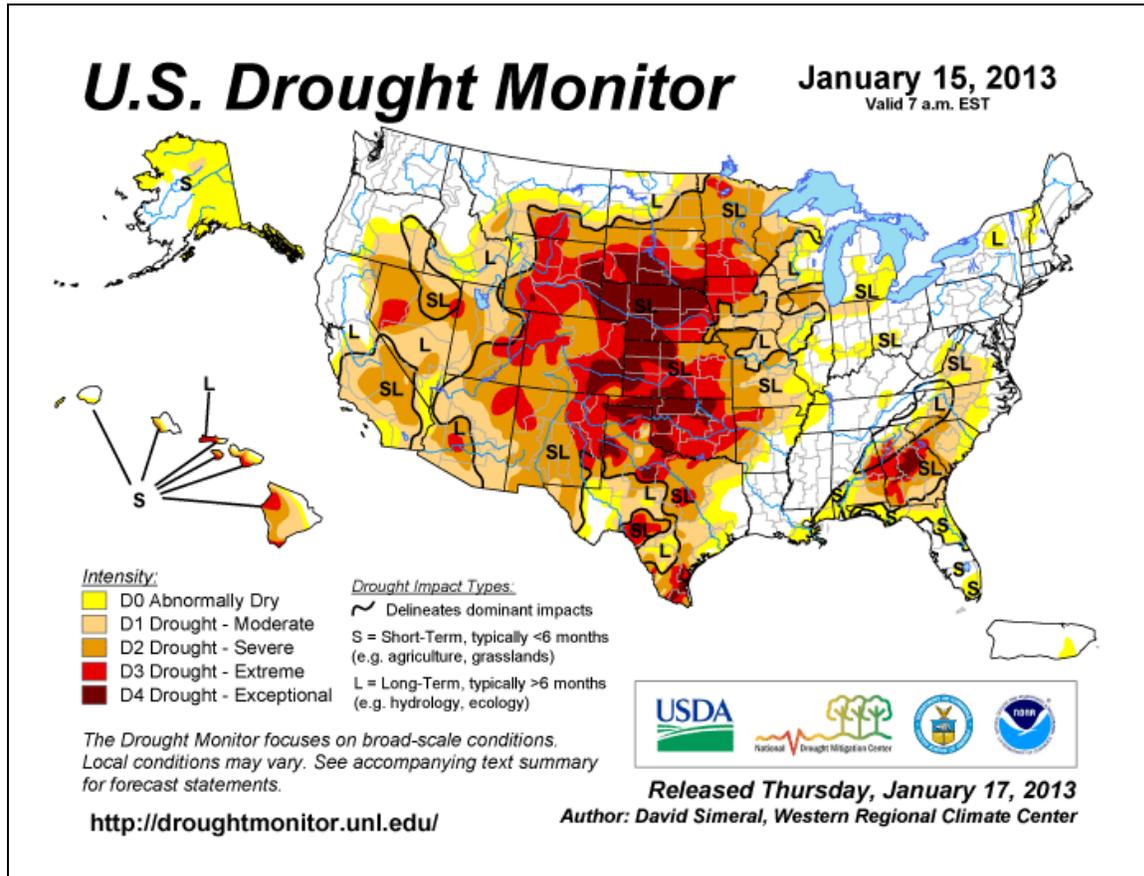


Fig. 4: Current [Drought Monitor](#) weekly summary. The exceptional D4 levels of drought are found over Georgia, and scattered across the western corn belt of the Plains into Colorado, Wyoming, easternmost New Mexico, and southward into Texas. For more drought news, see [Drought Impact Reporter](#). Click for the latest statistics for [California Reservoirs](#). The latest [drought indicator blend and component percentiles](#) spreadsheet is a great resource for climate division drought statistics. See Fig. 8 for the latest [Drought Outlook](#) (forecast).

Agriculture

[Cold snap poses threat to drought-stricken US wheat](#)

Jan 11, **U.S.** Exposed hard red winter wheat in eastern Colorado and western Kansas may suffer damage from the cold temperatures in the forecast. The dry fall and winter leaves the crop desperately in need of moisture and a protective blanket of snow.

[Cropping system strategies to mitigate drought](#)

Jan 9, Advice from a plant scientist at the University of Missouri.

[Drought still grips Corn Belt -- dry winter adds to farmers' fears](#)

Jan 4, **U.S.** Dry conditions in the Corn Belt will likely lead to a fourth straight year of below average corn crop in 2013.

[USDA declares drought disaster in much of Wheat Belt](#)

Jan 9, **U.S.** The U.S. Department of Agriculture declared 597 counties in portions of 14 states as primary natural disaster areas, due to severe drought for at least eight weeks and heat. The primary counties were in Alabama, Arizona, Arkansas, Colorado, Georgia, Hawaii, Kansas, Missouri, New Mexico, Nevada, Oklahoma, South Carolina, Texas and Utah. Indemnities reached \$10.7 billion and are expected to climb to \$20 billion to \$25 billion.

[Wheat Futures Advance as U.S. Drought Threatens Winter Harvest](#) Jan 7, **U.S.** Fears that farmers will abandon more winter wheat than usual has driven wheat futures higher.

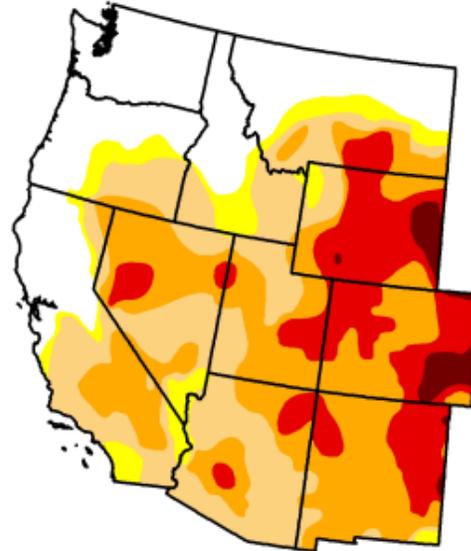
U.S. Drought Monitor

West

January 15, 2013
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	24.75	75.25	68.24	44.51	17.27	2.15
Last Week (01/08/2013 map)	24.51	75.49	68.47	44.13	16.79	2.15
3 Months Ago (10/16/2012 map)	13.22	86.78	76.22	42.63	15.79	1.93
Start of Calendar Year (01/01/2013 map)	24.39	75.61	69.31	45.04	18.01	2.15
Start of Water Year (09/25/2012 map)	15.12	84.88	77.15	43.65	16.85	1.77
One Year Ago (01/10/2012 map)	41.89	58.11	29.50	12.26	2.67	0.77



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 17, 2013
David Simeral, Western Regional Climate Center

<http://droughtmonitor.unl.edu>

Fig. 4a: Drought Monitor for the [Western States](#) with statistics over various time periods. No significant changes occurred this past week (slight bump up in D3). See latest [Western Water Assessment Report](#).

In California, there are cooperative snow survey made up of 35 or so utilities, water agencies, government agencies and the Department of Water Resources. The NRCS is one of the cooperating agencies. Through this cooperative, California has over 200 manual snow surveys and has a similar number of snow pillows. With this data they publish a Bulletin 120 every month from February through May which provides a forecast of April through July runoff. We provide daily snow reports through the California Data Exchange Center (which also posts the Bulletin 120 at <http://cdec.water.ca.gov/snow/bulletin120/index2.html>) through the following links:

- Current PAGE6 report: <http://cdec.water.ca.gov/cgi-progs/snow/PAGE6>
- Current DLYSWEQ report: <http://cdec.water.ca.gov/cgi-progs/snow/DLYSWEQ>
- Current Regional Snowpack Plots: http://cdec.water.ca.gov/cgi-progs/snow/PLOT_SWC

California also hosts a statewide water conditions page at:

http://cdec.water.ca.gov/water_cond.html which has links to precipitation, reservoir storage, snowpack, runoff, and summary reports.

Weekly Snowpack and Drought Monitor Update Report

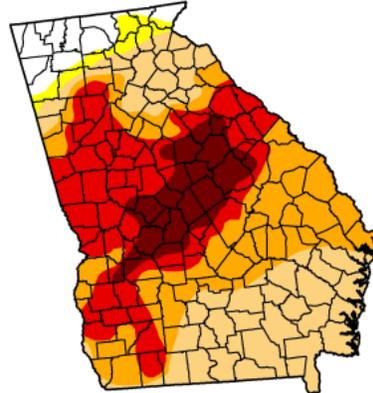
U.S. Drought Monitor
Georgia

January 15, 2013
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.19	93.81	91.24	62.53	35.38	10.64
Last Week (01/08/2013 map)	2.36	97.64	87.21	63.68	36.61	10.25
3 Months Ago (10/16/2012 map)	40.73	59.27	46.56	39.53	22.69	9.93
Start of Calendar Year (01/01/2013 map)	1.63	98.37	89.49	64.87	36.96	10.25
Start of Water Year (09/25/2012 map)	37.30	62.70	52.44	42.66	34.04	17.18
One Year Ago (01/10/2012 map)	12.07	87.93	85.36	81.00	63.92	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, January 17, 2013
David Simeral, Western Regional Climate Center

Fig. 4b: D4 conditions are over Georgia. Note no real improvements in D3 and D4 this past week.

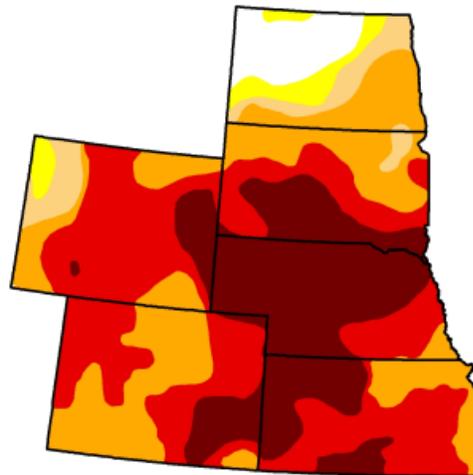
U.S. Drought Monitor
High Plains

January 15, 2013
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	4.79	95.21	92.08	87.25	61.27	26.81
Last Week (01/08/2013 map)	4.78	95.22	92.08	86.20	60.25	26.99
3 Months Ago (10/16/2012 map)	0.00	100.00	99.60	87.42	57.81	27.44
Start of Calendar Year (01/01/2013 map)	1.54	98.46	93.01	86.20	60.25	26.99
Start of Water Year (09/25/2012 map)	0.00	100.00	98.91	83.80	61.28	24.35
One Year Ago (01/10/2012 map)	51.70	48.30	18.52	6.33	2.07	0.04

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, January 17, 2013
David Simeral, Western Regional Climate Center

Fig. 4c: Drought Monitor for the High Plains with statistics over various time periods. Conditions remained essentially unchanged for the week.

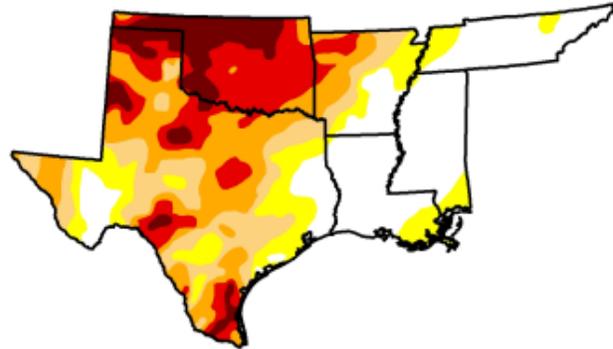
U.S. Drought Monitor

South

January 15, 2013
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	29.64	70.36	56.14	42.31	23.78	8.57
Last Week (01/08/2013 map)	24.31	75.69	61.96	50.73	32.67	10.70
3 Months Ago (10/16/2012 map)	31.50	68.50	55.33	37.17	20.39	5.29
Start of Calendar Year (01/01/2013 map)	21.18	78.82	63.69	50.50	32.80	10.98
Start of Water Year (09/25/2012 map)	24.13	75.87	66.61	51.50	29.86	9.11
One Year Ago (01/10/2012 map)	27.24	72.76	66.99	53.30	37.37	13.27



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.

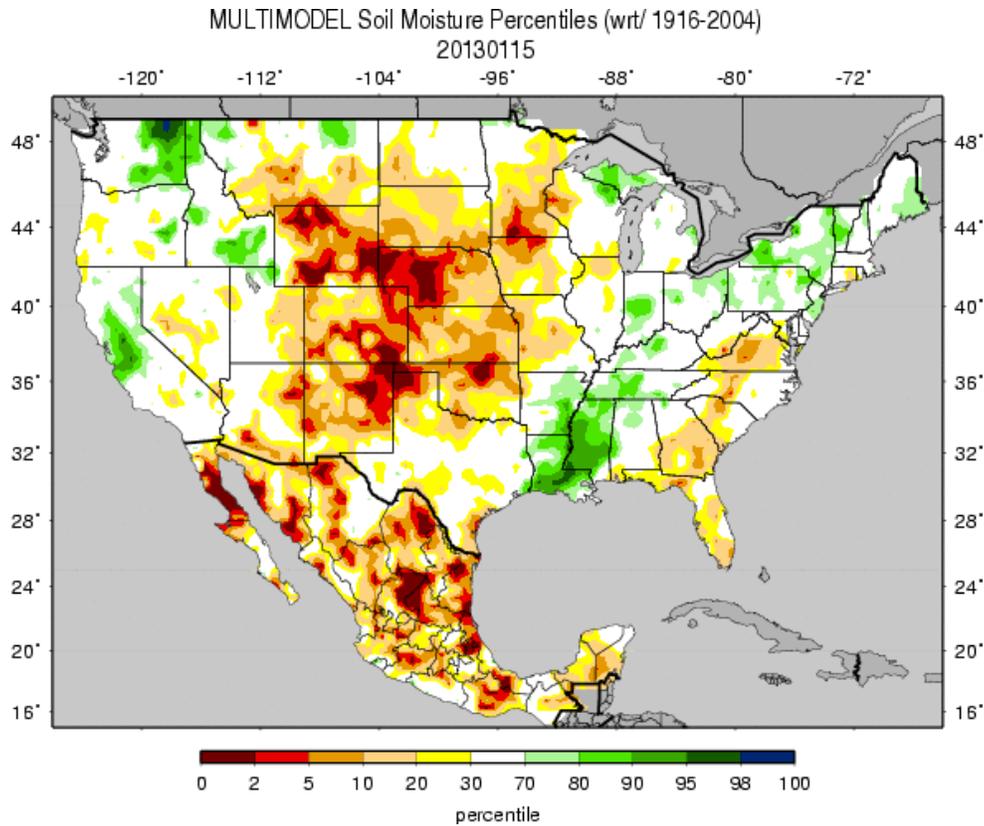
<http://droughtmonitor.unl.edu>



Released Thursday, January 17, 2013
David Simeral, Western Regional Climate Center

Fig. 4d: Drought Monitor for the [South-Central Region](#) with statistics over various time periods. Note significant improvement in all categories over the past 7 days. Check out the [Texas Drought Website](#).

Weekly Snowpack and Drought Monitor Update Report



Figs. 5: Soil Moisture ranking in [percentile](#) as of 15 January shows dryness scattered across Plains, much of the Rockies, and eastern half of the Southwest. Wetness dominates California, eastern Washington, southeastern Idaho, and in Mississippi-Louisiana. Freezing soils will distort actual moisture values, making them less than reliable over the Northern States.

Useful Hydrological Links:

USDA western U.S. mountain snow water content anomaly map.

USGS (U.S. Geological Service) [observed streamflow](#); NOAA Climate Prediction Center (CPC) modeled runoff [anomalies](#) and [percentiles](#); VIC (University of Washington Variable Infiltration Capacity macro scale hydrologic model) [1-](#), [2-](#), [3-](#), and [6-month](#) and [water year-to-date](#) runoff percentiles; NLDAS (North American Land Data Assimilation System) modeled streamflow [anomalies](#) and [percentiles](#); NLDAS model runoff [anomalies](#) and [percentiles](#); USGS groundwater observations ([real-time network](#), [climate response network](#), [total active network](#)); USDA snow water content observations for the West (SNOTEL station [percentiles](#) and [percent of normal](#), SNOTEL basin [percent of normal](#) and [percent of average](#)) and Alaska ([SNOTEL station percent of normal](#), [SNOTEL basin percent of normal](#)); USDA reservoir storage as [percent of capacity](#).

Weekly Snowpack and Drought Monitor Update Report

Soil Climate Analysis Network (SCAN)

Station (2070) MONTH=2012-12-18 (Daily) NRCS National Water and Climate Center - Provisional Data - subject to revision
Thu Jan 17 07:09:53 PST 2013

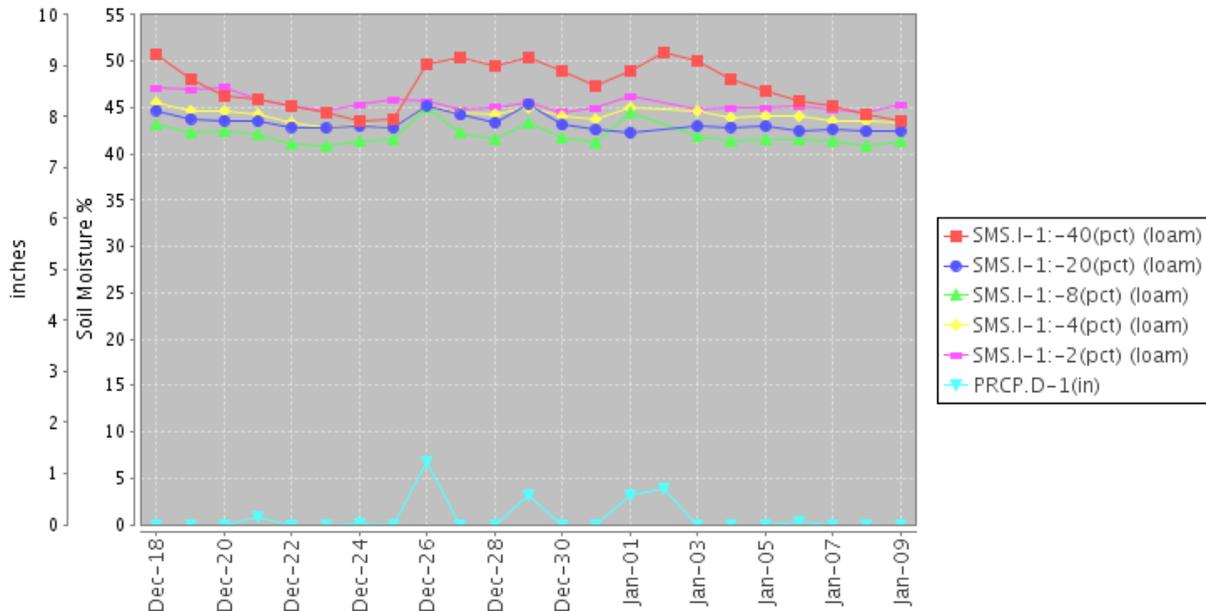


Fig. 6: This NRCS resource shows a site over the [western Mississippi](#) with the completed saturate soils due to abundant rainfall.

Useful Agriculture Links:

USDA (U.S. Department of Agriculture) [observed soil moisture conditions, departures and percentiles](#), and comparison to [5-year average](#) and [10-year average](#); the Palmer [Crop Moisture Index \(CMI\)](#), which intensified during the month in the West and Lower to Mid-Mississippi Valley (weeks [1](#), [2](#), [3](#), [4](#), [5](#)); CPC modeled soil moisture [anomalies](#) and [percentiles](#) for end of May, and [soil moisture anomaly change](#) compared to previous month; CPC's Leaky Bucket model [soil moisture percentiles](#); NLDAS modeled soil moisture percentiles for the [top soil layer](#) and [total soil layer](#); VIC modeled [soil moisture percentiles](#), and [soil moisture percentile change](#) compared to previous month; USDA observed [pasture and rangeland conditions](#); [Vegetation Drought Response Index \(VegDRI\)](#); the NOAA/NESDIS satellite-based [Vegetation Health Index \(VHI\)](#); the USGS agro-hydrologic model ([Soil Water Index](#), [Water Requirement Satisfaction Index](#)); Selected SNOTEL Sites (measured [2"](#), [4"](#), [8"](#), [20"](#), and [40"](#) soil moisture depths); Monthly [SCAN Report](#) from Utah.

Weekly Snowpack and Drought Monitor Update Report

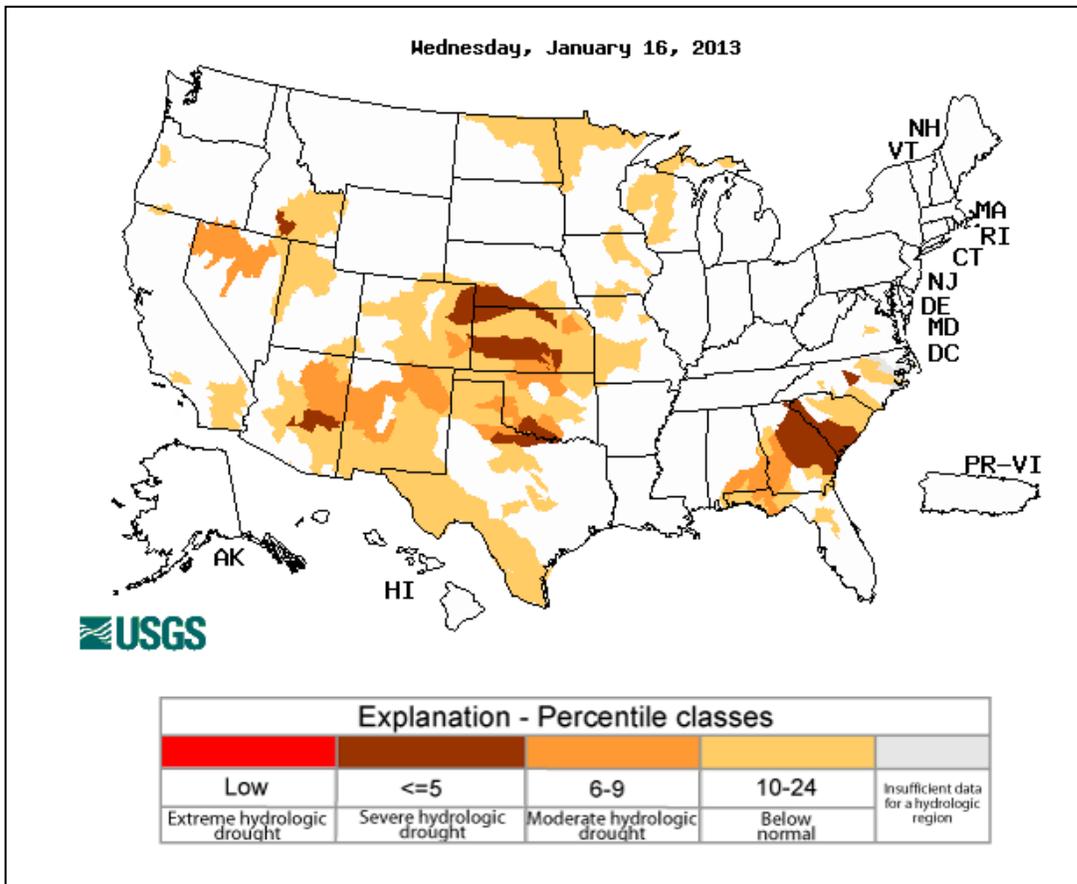


Fig. 7: Map of below normal 7-day average [streamflow](#) compared to historical streamflow for the day of year. **Severe** conditions exist over south-central Arizona, northeast Kansas, northern Texas/southern Oklahoma, southern Idaho, and parts of the Southeast States. As with soil moisture, streamflow data can be severely compromised by prolonged freezing temperatures. See the USGS [National Water Information System Mapper](#).

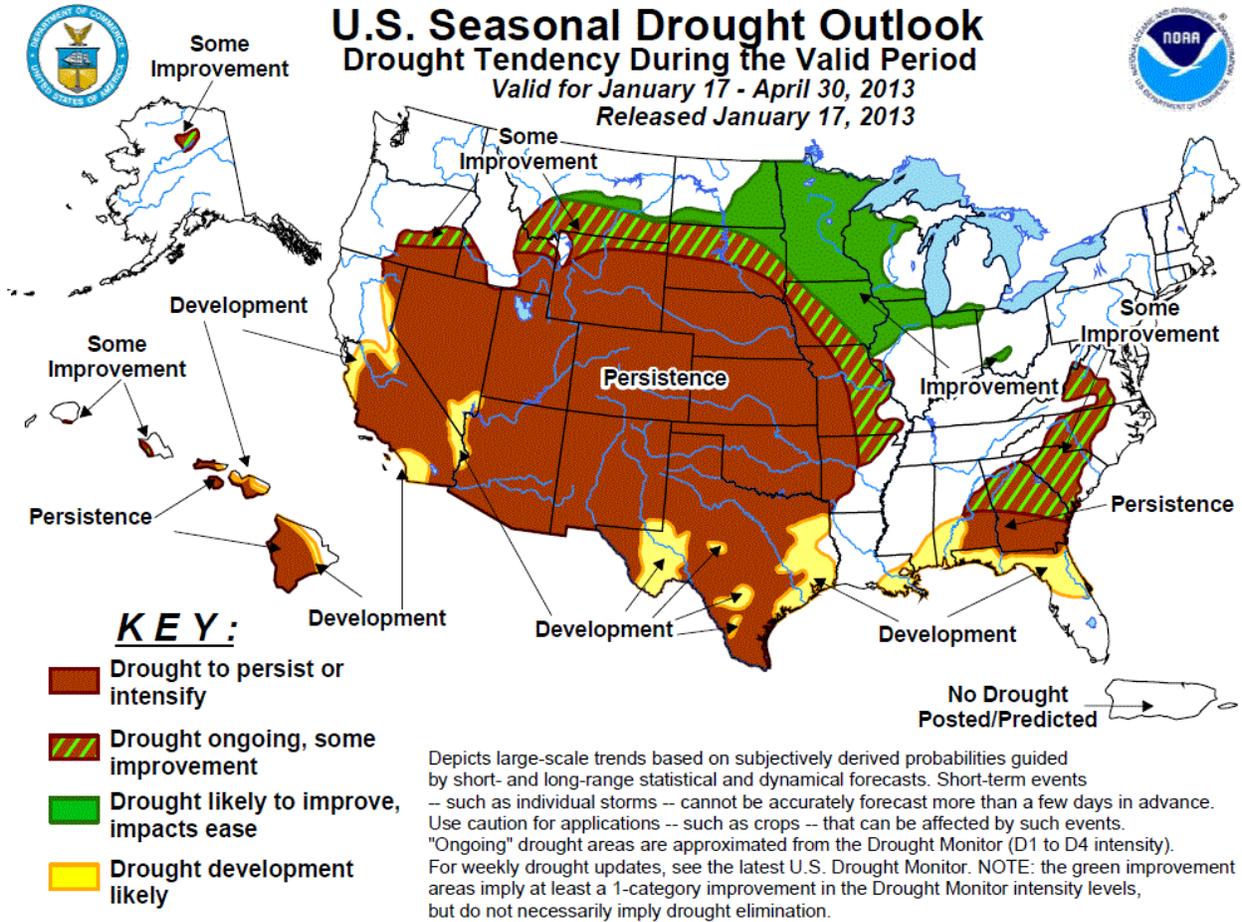


Fig. 8: U.S. seasonal [Drought Outlook](#) released today, 17 January.

See the latest Climate Prediction Center's [Seasonal Outlook](#).

See USDA Drought Assistance [website](#).

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- January 15, 2013

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 overall improvements as significant rain fell across portions of the South, Southeast, lower Midwest, and portions of the Mid-Atlantic states. In the West, heavy snow fell over the Wasatch Range in Utah as well as in the Northern Rockies and North Cascades. Conditions continued to deteriorate in parts of the Southeast, Southern Plains, and Colorado. Overall, temperatures continued to be well below normal across the West, while the eastern half of the conterminous U.S. experienced temperatures well above average – especially in the Southeast and portions of the Upper Midwest and New England. In Alaska, temperatures were well above normal throughout most of the state, while precipitation was slightly above normal except in southeastern Alaska, which continued to be drier than normal. Temperatures and precipitation in the Hawaiian Islands last week were generally near normal.

The Northeast: Overall, the region was dry during the past week, and conditions on the map remain unchanged. Temperatures throughout the region were well above normal, especially in the northern half of New York, northern Vermont, and large portions of Maine during the past seven-day period.

Mid-Atlantic: The Mid-Atlantic region saw minor improvements as rainfall in excess of two inches fell over southwestern and south-central Virginia. Streamflow conditions in these regions saw improvement leading to one-category improvements in areas of Abnormally Dry (D0) and Moderate Drought (D1). Average temperatures in the region were above normal.

The Southeast: The northwestern half of the Southeast received abundant rainfall during the past week. Areas including the northern two-thirds of Alabama, northwestern Georgia, and western North Carolina saw rainfall totals ranging from two-to-five inches, helping to ease drought conditions. However, Florida, southeastern Alabama, most of Georgia, and South Carolina remained dry. In northwestern Georgia, one-category drought intensity improvements were made in areas of Abnormally Dry (D0), Moderate Drought (D1), Severe Drought (D2), and Extreme Drought (D3). In western North Carolina, moderate precipitation totals in combination with improving reservoir and streamflow conditions led to improvements in areas of Abnormally Dry (D0) and Moderate Drought (D1), while extreme western locations returned to normal conditions. In Florida and southern Georgia, continued short-term precipitation deficits led to the expansion of Moderate Drought (D1) and Abnormally Dry (D0). Portions of southwestern and northwestern Alabama saw areas of Abnormally Dry (D0) removed. Temperatures during the past week were well above normal throughout the region.

The South: Widespread heavy rainfall over Arkansas, Louisiana, Mississippi, and Texas led to improvements throughout the region. Areas of Arkansas, Louisiana, Mississippi, and the eastern half of Texas saw rainfall totals ranging from two inches to more than ten inches in southern Louisiana. In Texas, this week's heavy rains and short-term (30-day) gains led to a

Weekly Snowpack and Drought Monitor Update Report

widespread re-evaluation of drought conditions statewide. In the Panhandle, overall cooler than normal temperatures during the past 30 days in combination with snow on the ground helped to improve soil conditions. Areas of Exceptional Drought (D4) and Extreme Drought (D3) saw categorical improvements in the Hill Country, north-central Texas, the Panhandle, and South Texas. East Texas and southwestern Texas saw areas of Abnormally Dry (D0) return to normal condition while areas of Severe Drought (D2) and Moderate Drought (D1) in the Coastal Plains retreated westward. In Mississippi, four-to-six inches of rain this past week helped northern portions of the state return to normal conditions from Abnormally Dry (D0). The western half of Arkansas saw one-category improvements in areas of Extreme Drought (D3) and Severe Drought (D2), while western Tennessee saw improvements from Moderate Drought (D1) to Abnormally Dry (D0).

Midwest: The southern portions of the Midwest received heavy rainfall during the past seven days. Substantial precipitation was concentrated over southern Illinois, Indiana, western Kentucky, and southeastern Missouri with totals ranging from two to five inches. Improvements were made in southeastern Missouri from Severe Drought (D2) to Moderate Drought (D1) as well as a south and westward retreat of Moderate Drought (D1) in southern Illinois, western Kentucky, and southeastern Missouri. Much of the Upper Midwest – including Iowa, Minnesota, the Upper Peninsula of Michigan, and Wisconsin – remained dry. Temperatures throughout the region were well above normal for the period.

The Plains: The region continued to experience an overall dry pattern during the past seven-day period with the exception of some light-to-moderate rainfall over portions of Oklahoma and southern Kansas. In Oklahoma, conditions in the extreme southeastern region saw improvements from Extreme Drought (D3) to Severe Drought (D2) as two-to-three inches of rain fell. Conversely, in north-central Oklahoma persistent dry conditions and record low reservoir conditions led Payne County to declare a state of emergency as Lone Chimney Lake receded to eleven feet below normal. The reservoir provides water to nearly 16,000 residents in seven counties. In south-central Kansas, recent rains led to a minor reduction in an area of Exceptional Drought (D4), while the rest of the Plains region is unchanged on this week's map. Temperatures were below normal over the western half of the Plains, while the eastern half was above normal for the week.

The West: During the last seven-day period, the southern half of the West was generally dry. The northern half saw snowfall over the mountains of the eastern Great Basin, Idaho, northwestern Wyoming, southern Oregon, southwestern Colorado, western Montana, Utah, and Washington. Heavy snowfall in excess of twenty inches was observed in the Wasatch Range of Utah and the North Cascades of Washington. Current snowpack conditions show significant deficits in snow water content persisting over the mountains of Colorado, New Mexico, northeastern Nevada, eastern Oregon, eastern Wyoming, southeastern and west-central Idaho, and sections of northern Montana. Conversely, notable surpluses exist over the Cascades of Washington, northwestern Great Basin, Sierras, Sawtooths, Uintas, and the mountains of Arizona. Short-term precipitation accumulations during the last 60 days led to one-category improvements in areas of Abnormally Dry (D0) and Moderate Drought (D1) over the Bay Area, northern portions of the Central Coast, and northern San Joaquin Valley of California. Continued lack of snowfall over Colorado led to expansion of Extreme Drought (D3) over central Colorado as well as deterioration of the Moderate Drought (D1) region over the northern Front Range. Temperatures throughout the West continued to be well below normal, especially over large portions of Arizona, California, Colorado, New Mexico, Utah, & Wyoming.

Weekly Snowpack and Drought Monitor Update Report

Hawaii, Alaska, and Puerto Rico: The Hawaiian Islands saw some slight improvements on the island of Kauai as pasture conditions continued to improve with recent rainfalls. On Kauai, one-category improvements were made on the map. On the Big Island, deteriorating pasture conditions on the western side led to the expansion of areas of Severe Drought (D2) and Moderate Drought (D1). In Alaska, temperatures during the past week were well above normal in parts of western Alaska, while the southern portion of Southeast Alaska experienced below-normal temperatures. Precipitation during the last 30 days in Southeast Alaska was well below normal, while western Alaska, the Aleutians, and South-central was above normal. Alaska and Puerto Rico remain status quo on the map this week.

Looking Ahead: The NWS HPC 5-Day Quantitative Precipitation Forecast (QPF) shows moderate precipitation amounts over the Southeast and Mid-Atlantic states, while snowfall is expected over the North Plains, Upper Midwest, and New England. The 6–10 day outlooks call for a high probability of below-normal precipitation across much of the conterminous U.S. with exception of portions of the Upper Great Lakes Region and the southern half of Alaska. Temperatures forecasted on the 6–10 day outlooks call for a high probability of below-normal temperatures in the eastern U.S, particularly in the Midwest and New England, while most of the West has an elevated probability of above-normal temperatures except for the Intermountain regions. Temperatures in Alaska have a high probability of being above normal.

Author: [David Simeral, Western Regional Climate Center](#)

Dryness Categories

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

Drought Intensity Categories

D1 ... Moderate Drought
D2 ... Severe Drought
D3 ... Extreme Drought
D4 ... Exceptional Drought

Drought or Dryness Types

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

Updated January 16, 2013

This utility might have been missed so here it is again

A New Tool for Mapping Water Use and Drought
By Dennis O'Brien

February 7, 2012

Weekly Snowpack and Drought Monitor Update Report

Farmers and water managers may soon have an online tool to help them assess drought and irrigation impacts on water use and crop development, thanks to the work of two U.S. Department of Agriculture (USDA) scientists.

Agricultural Research Service (ARS) scientists Martha Anderson and Bill Kustas have developed an evapotranspiration (ET) and drought modeling system at the ARS Hydrology and Remote Sensing Laboratory < http://www.ars.usda.gov/main/site_main.htm?modecode=12-65-06-00 > in Beltsville, Md. The modeling system also will help forecasters monitor ET and drought conditions across the United States and overseas.

ARS is USDA's principal intramural scientific research agency, and the research supports the USDA priorities of responding to climate change and promoting international food security.

The model, known as ALEXI (Atmosphere-Land Exchange Inverse), uses thermal infrared imagery from satellites and calculates soil and plant temperatures that can be used to create maps of ET rates of plants growing in cultivated areas, forests and natural habitats around the world.

ET consists of the water evaporated from soil and plant surfaces, and the water vapor that escapes, or transpires, through plant leaf pores (stomata) as the plants absorb carbon dioxide through photosynthesis. Generally, evaporation cools surfaces, so a cooler land surface is an indicator of higher ET rates and wetter soils.

Water stress elevates soil and leaf temperatures, which can be detected by satellites. Anderson and Kustas can use satellite temperature data to create ET maps. The maps are capable of detecting rivers, lakes, wetlands, riparian buffers, irrigated cropland and areas under water stress.

The work is funded by the National Oceanic and Atmospheric Administration (NOAA) and the National Aeronautics and Space Administration (NASA). NOAA plans to use the system to generate ET estimates over the continental United States. The system is expected to become particularly relevant as climate change presents challenges for growers and water managers in areas such as the Texas Panhandle, the Florida Everglades and the southwestern United States.

Getting routine ET estimates for individual fields is laborious, but the researchers are streamlining the process. With help from new satellite imagery, they hope to be able to move toward routine mapping at the "field scale" level.

ALEXI has been estimating evapotranspiration (ET) rates since 2000, but the researchers continue to refine the system and plan to make the maps available online soon on the U.S. Drought Portal at www.drought.gov.

Anderson and Kustas, with colleagues, are currently mapping parts of Africa, including the Horn of Africa, where drought has caused famine in Somalia. Local ET data would be particularly helpful in places such as Africa, where networks of weather stations don't exist.

Read more < <http://www.ars.usda.gov/is/AR/archive/feb12/drought0212.htm> > about this research in the February 2012 issue of Agricultural Research magazine.

A direct link to Martha's Evap tool page is <http://hrsl.arsusda.gov/drought/>. You can also see it on the Portal at <http://www.drought.gov/drought/content/products-current-drought-and-monitoring-remote-sensing/evaporative-stress-index> and in the map viewer.