



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

Weekly Report - Snowpack / Drought Monitor Update

Date: 13 January 2011

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: SNOTEL Snow-Water Equivalent percent of normal values for 13 January 2011 shows the highest river basin values have fallen between 10 to 20 percent since last week. A slight increase in SWE is noted over Washington west of the Cascades (Fig. 1). SNOTEL Snow-Water Equivalent percent of Normal peak shows that earlier surpluses in Figure 1 don't necessarily translate to adequate snowpack in late winter. Most SNOTEL sites will need much more snow this season in order to finish with near normal SWE (Fig. 1a). SNOTEL 7-day snow depth changes show considerably gains in accumulation across much of the Northern Cascades and Northern Rockies but down significantly across the Sierra (Fig. 1b).

Temperature: SNOTEL 7-day average temperature departure from normal map shows temperatures were generally cooler than normal over the West (Fig 2). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were scattered over the Northern Tier States (>+3°F) and the greatest negative departures occurred over portions of eastern Nevada, western Utah, and the Uinta Mountains (<-15°F) (Fig. 2a)

Precipitation: ACIS 7-day average precipitation amounts for the period ending 12 January shows the bulk of the heaviest precipitation confined to the Olympic and Cascades Mountains in Washington (Fig. 3). In terms of percent of normal, the precipitation pattern was extremely wet over parts of the Pacific Northwest and eastern-most portions of the West (excluding New Mexico) (Fig. 3a). For the 2011 Water-Year that began on 1 October 2010, precipitation matches the overall SWE pattern in Figure 1 above. Greatest deficits are found over the extreme southern reaches of the Southwest. Areas with the highest values have decreased up to 20 percent since last week (Fig. 3b).

The West: As assessment of conditions in the western United States allowed for the removal of all the remaining D0 in Nevada and California. No lingering impacts were being reported in this region and precipitation values, especially since the start of the water year, allowed for the removal. D0 was also improved slightly in Wyoming while D0/D1 was improved in the Four Corners region. Author: Brian Fuchs, National Drought Mitigation Center.

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

DROUGHT IMPACTS DEFINITIONS (<http://drought.unl.edu/dm/classify.htm>)

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

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SOIL MOISTURE

Soil moisture (Figs. 5a and 5b) is estimated by a one-layer hydrological model ([Huang et al., 1996](#), [van den Dool et al., 2003](#)). The model takes observed precipitation and temperature and calculates soil moisture, evaporation and runoff. The potential evaporation is estimated from observed temperature.

http://www.cpc.ncep.noaa.gov/soilmst/index_jh.html

U.S. HISTORICAL STREAMFLOW

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

This map, (Fig. 6) shows the 7-day average streamflow conditions in hydrologic units of the United States and Puerto Rico for the day of year. The colors represent 7-day average streamflow percentiles based on historical streamflow for the day of the year. Thus, the map shows conditions adjusted for this time of the year. Only stations having at least 30 years of record are used. Sub-regions shaded gray indicate that insufficient data were available to compute a reliable 7-day average streamflow value. During winter months, this situation frequently arises due to ice effects. The data used to produce this map are provisional and have not been reviewed or edited. They may be subject to significant change.

STATE ACTIVITIES

State government drought activities can be tracked at the following URL: <http://drought.unl.edu/mitigate/mitigate.htm>. NRCS SS/WSF State Office personnel are participating in state drought committee meetings and providing the committees and media with appropriate SS/WSF information - <http://www.wcc.nrcs.usda.gov/cqibin/bor.pl>.

Additional information describing the products available from the Drought Monitor can be found at the following URL: <http://drought.unl.edu/dm/> and <http://drought.gov>.

FOR MORE INFORMATION

The National Water and Climate Center Homepage provide the latest available snowpack and water supply information. Please visit us at <http://www.wcc.nrcs.usda.gov>. This document is available from the following location on the NWCC homepage - <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>

This report uses data and products provided by the Interagency Drought Monitor Consortium members and the National Interagency Fire Center.

/s/ JEFF GOEBEL

Acting Director, Resource Inventory Division

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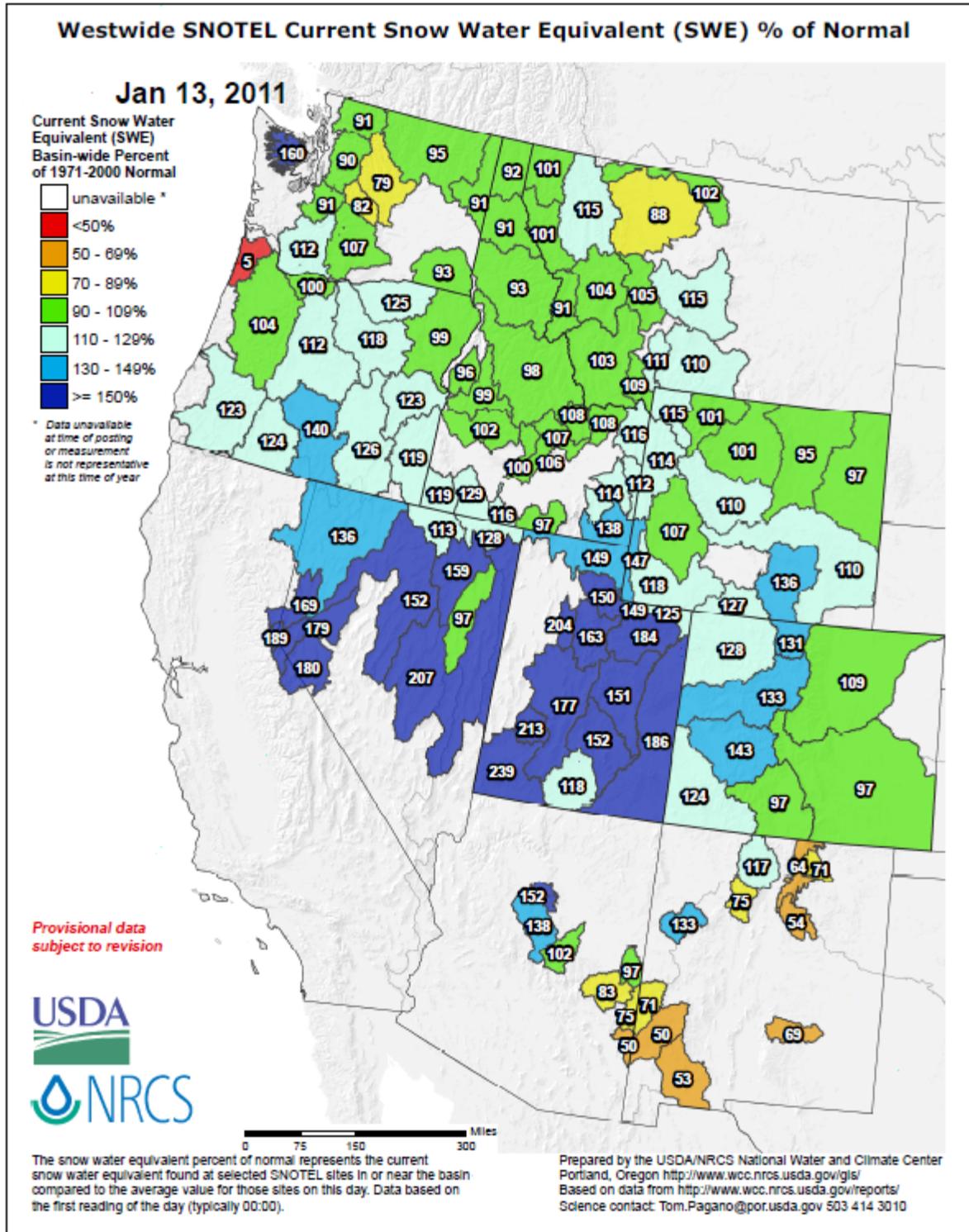


Fig. 1: SNOTEL Snow-Water Equivalent percent of normal values for 13 January 2011 shows the highest river basin values have fallen between 10 to 20 percent since last week. A slight increase in SWE is noted over Washington west of the Cascades.

Ref: http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_swepctnormal_update.pdf

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SNOTEL Current Snow Water Equivalent (SWE) Percent of Normal Peak

Jan 13, 2011

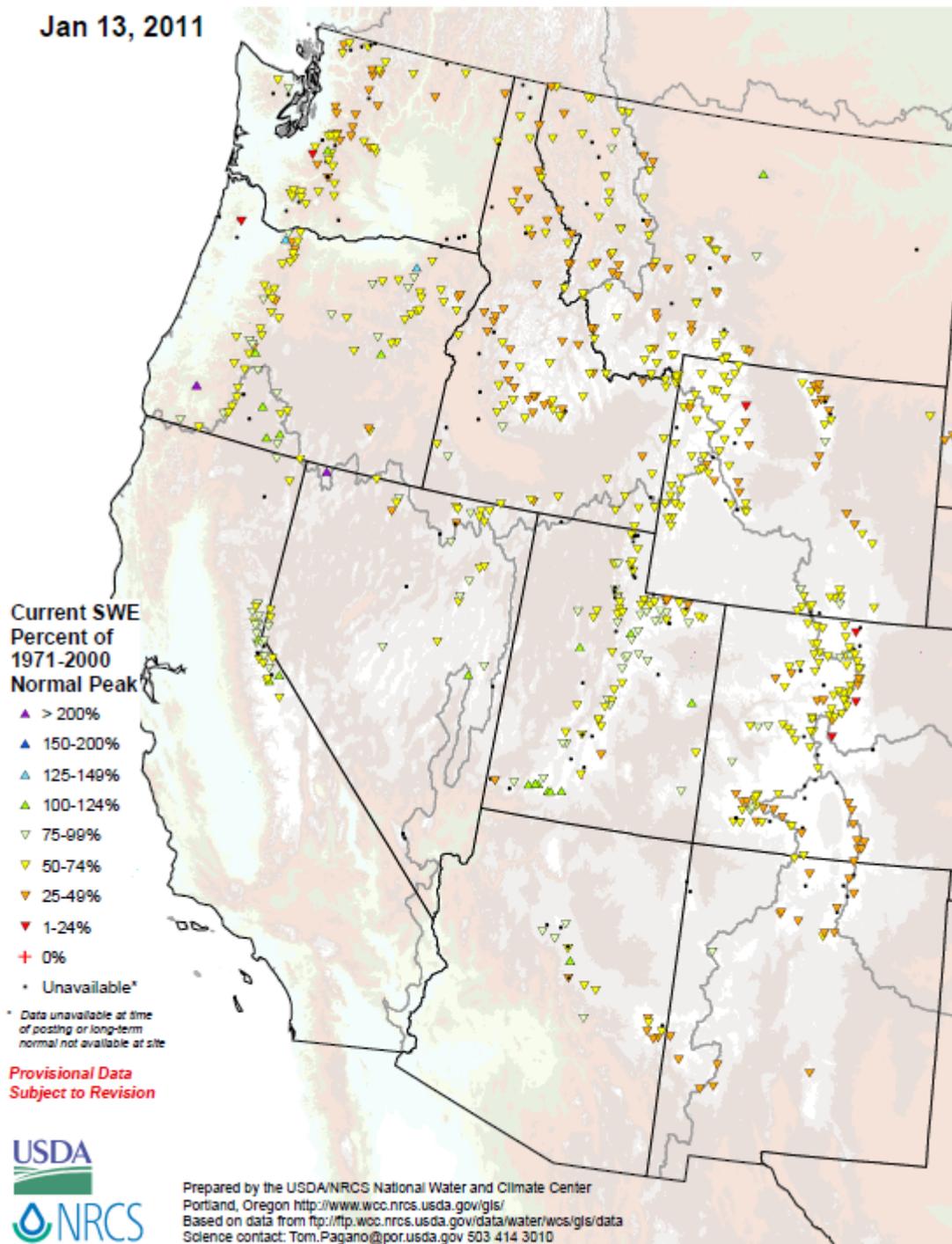


Fig. 1a: SNOTEL Snow-Water Equivalent percent of Normal peak shows that earlier surpluses in Figure 1 don't necessarily translate to adequate snowpack in late winter. Most SNOTEL sites will need much more snow this season in order to finish with near normal SWE. Ref: <http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideSWEPercentPeak.pdf>

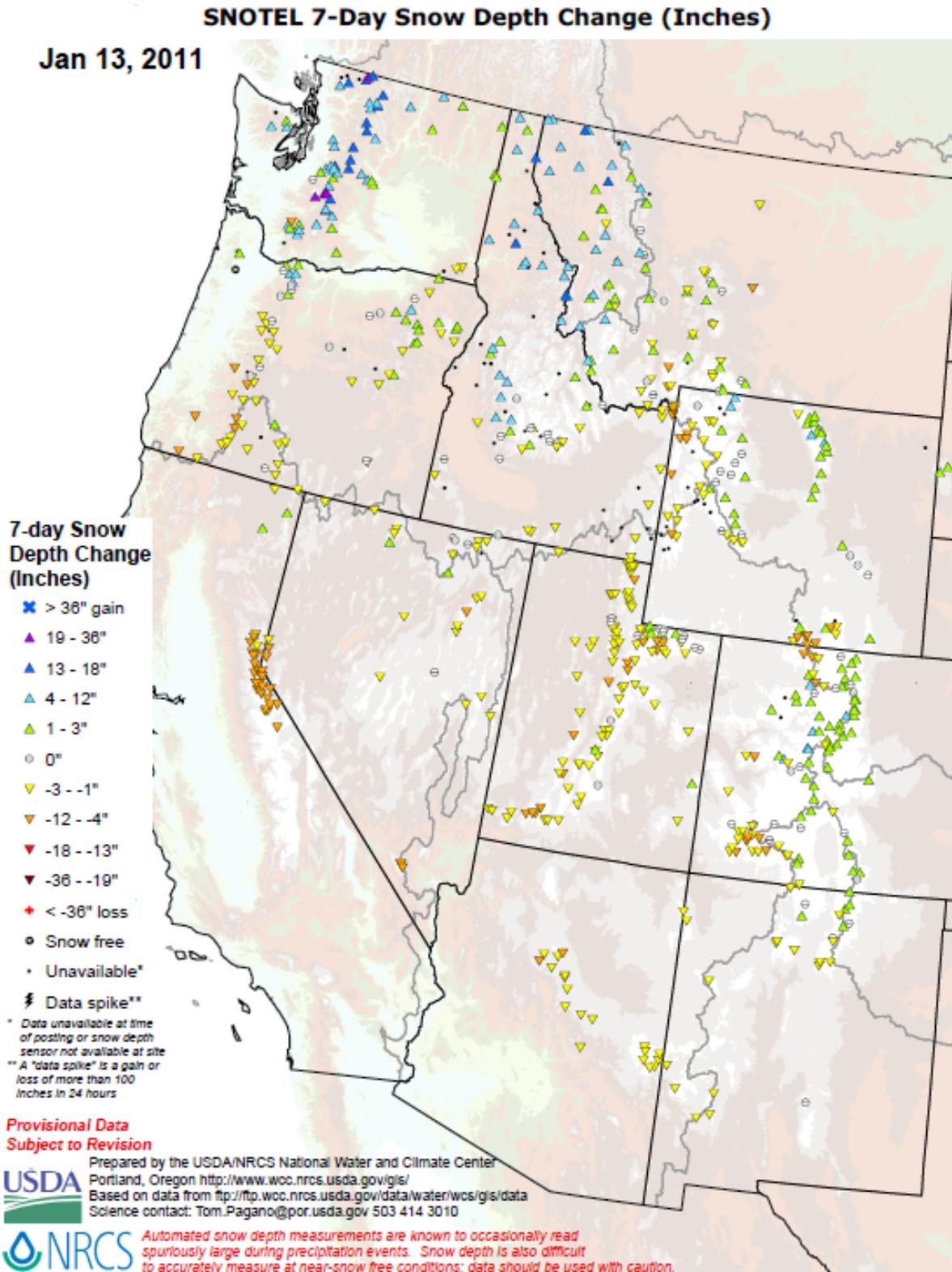


Fig. 1b: SNOTEL 7-day snow depth changes show considerably gains in accumulation across much of the Northern Cascades and Northern Rockies but down significantly across the Sierra.

Ref: http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf

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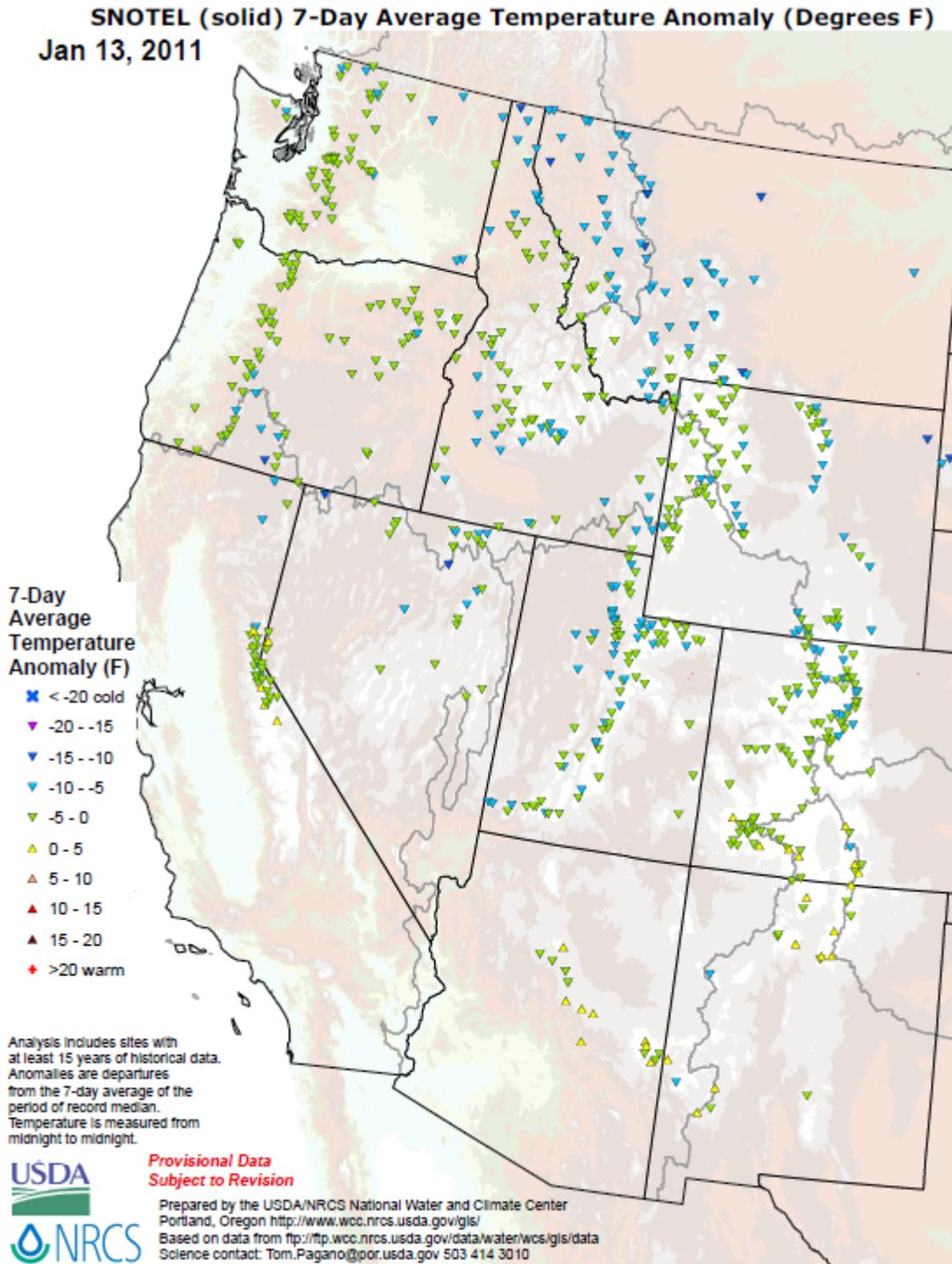
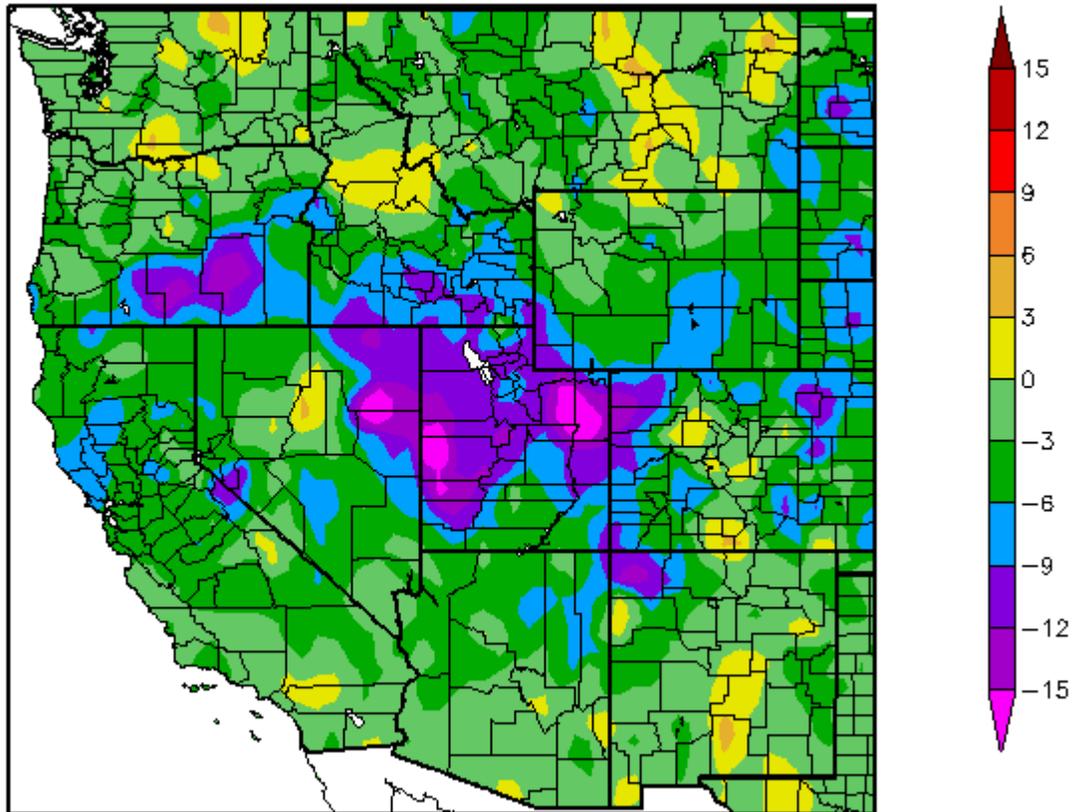


Fig. 2: SNOTEL 7-day average temperature departure from normal map shows temperatures were generally cooler than normal over the West.

Ref: <http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/WestwideTavg7dAnomaly.pdf>

Departure from Normal Temperature (F)
1/6/2011 – 1/12/2011



Generated 1/13/2011 at HPRCC using provisional data.

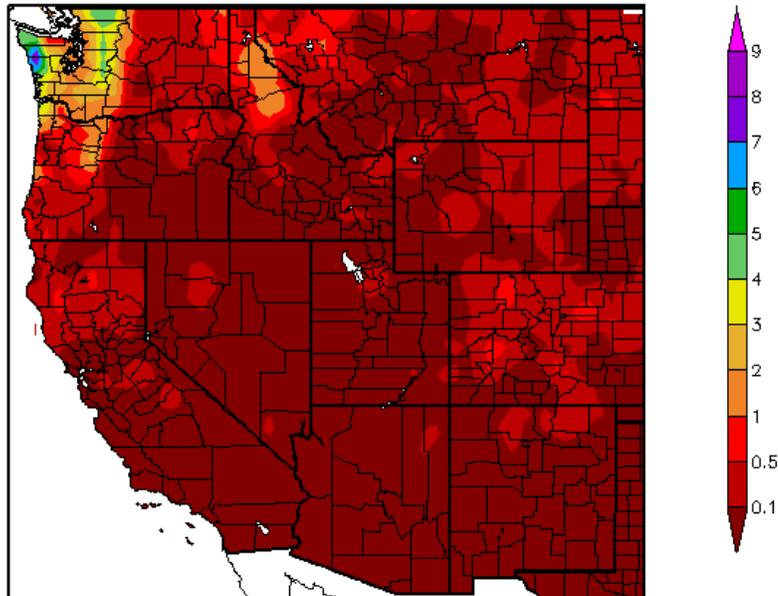
Regional Climate Centers

Fig. 2a: ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were scattered over the Northern Tier States (>+3°F) and the greatest negative departures occurred over portions of eastern Nevada, western Utah, and the Uinta Mountains (<-15°F).

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

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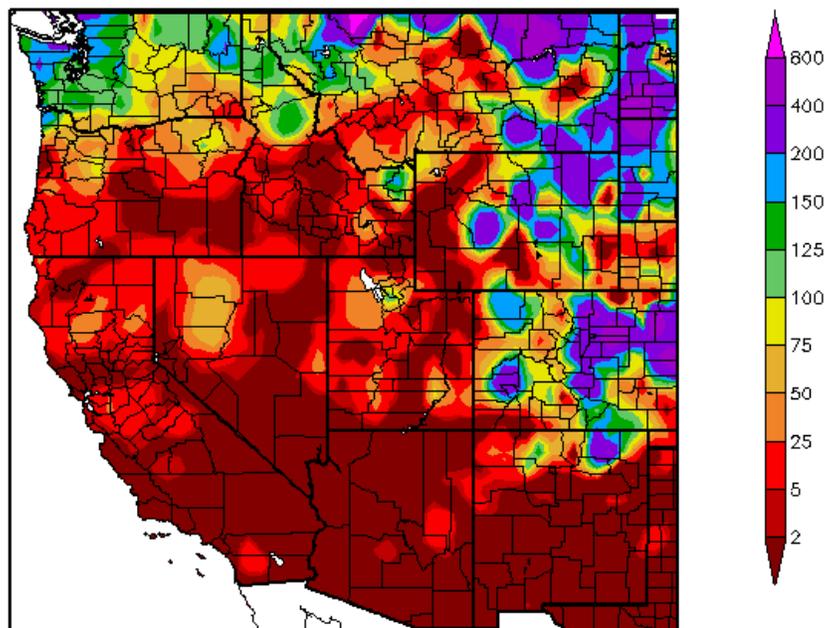
Precipitation (in)
1/6/2011 - 1/12/2011



Generated 1/13/2011 at HPRCC using provisional data.

Regional Climate Centers

Percent of Normal Precipitation (%)
1/6/2011 - 1/12/2011



Generated 1/13/2011 at HPRCC using provisional data.

Regional Climate Centers

Fig. 3 and 3a: ACIS 7-day average precipitation amounts for the period ending 12 January shows the bulk of the heaviest precipitation confined to the Olympic and Cascades Mountains in Washington (Fig. 3). In terms of percent of normal, the precipitation pattern was extremely wet over parts of the Pacific Northwest and eastern-most portions of the West (excluding New Mexico) (Fig. 3a). Ref: <http://www.hprcc.unl.edu/maps/current/>

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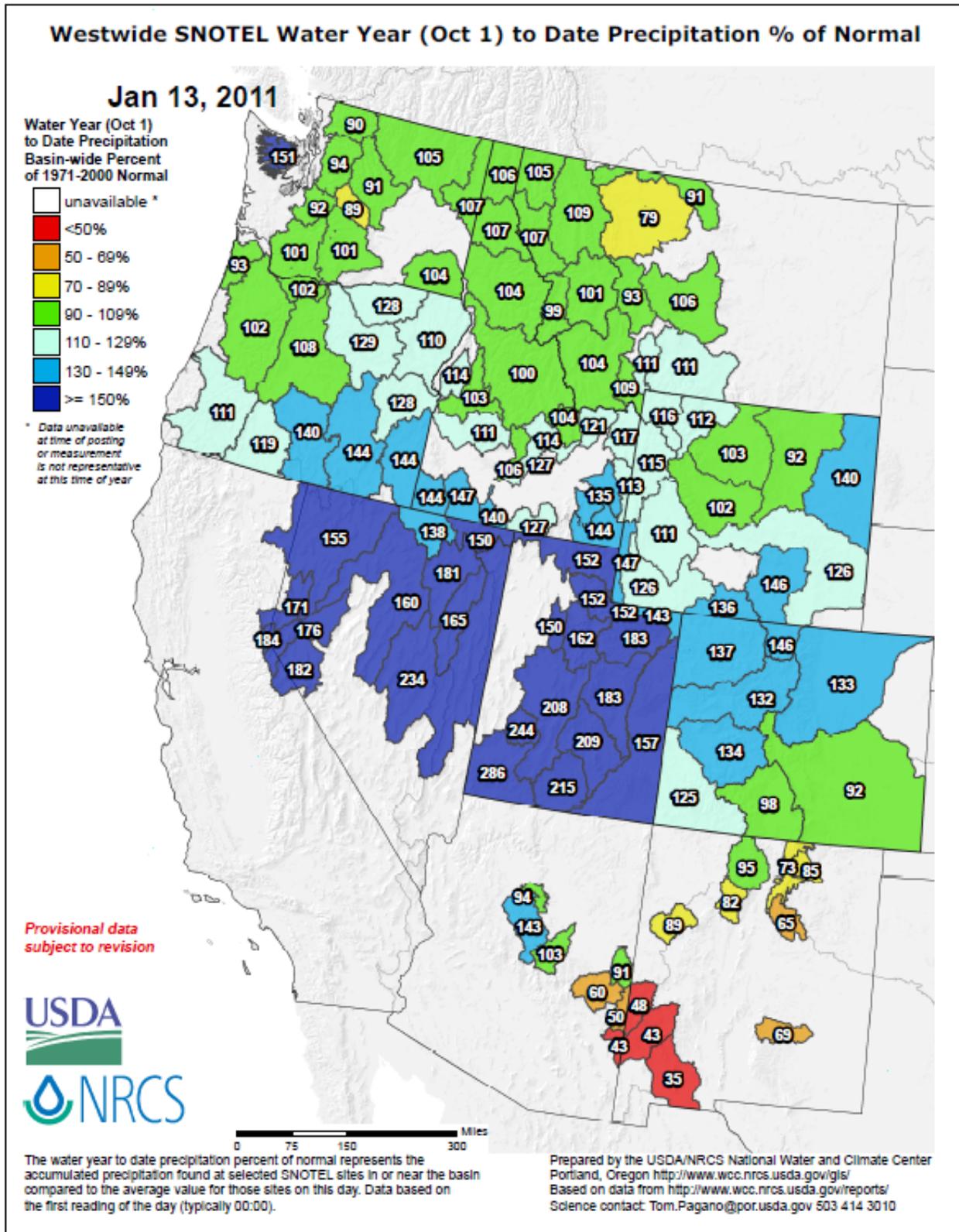


Fig 3b: For the 2011 Water-Year that began on 1 October 2010, precipitation matches the overall SWE pattern in Figure 1 above. Greatest deficits are found over the extreme southern reaches of the Southwest. Areas with the highest values have decreased up to 20 percent since last week. Ref: http://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_wytdprecpcnormal_update.pdf

U.S. Drought Monitor

January 11, 2011
Valid 7 a.m. EST

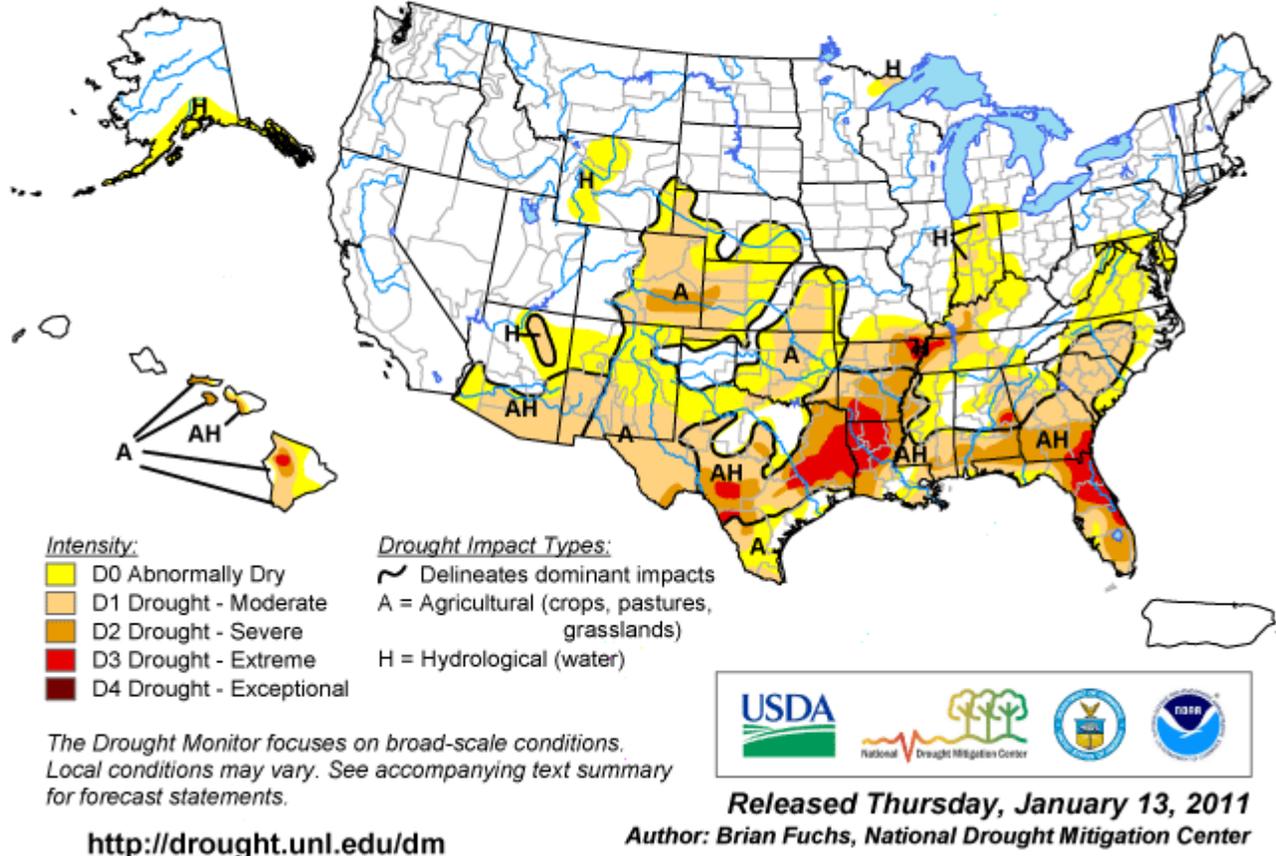


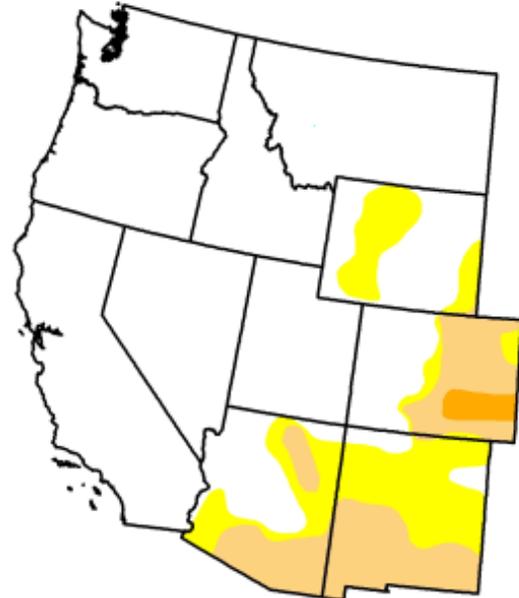
Fig. 4: Current Drought Monitor weekly summary. The severest D3 levels of drought dominate Hawaii, and is scattered across Texas to Florida. The region map for the West is unavailable this week.
Ref: <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor

West

January 11, 2011
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	76.92	23.08	11.88	0.89	0.00	0.00
Last Week (01/04/2011 map)	74.72	25.28	11.69	0.89	0.00	0.00
3 Months Ago (10/12/2010 map)	62.55	37.45	5.50	0.56	0.00	0.00
Start of Calendar Year (12/28/2010 map)	73.26	26.74	11.98	0.89	0.00	0.00
Start of Water Year (09/28/2010 map)	62.50	37.50	8.14	0.56	0.00	0.00
One Year Ago (01/05/2010 map)	40.12	59.88	30.56	9.86	0.49	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

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



Released Thursday, January 13, 2011
B. Fuchs, National Drought Mitigation Center

Fig. 4a: Drought Monitor for the Western States with statistics over various time periods. Regionally there was no significant change during the past week.

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

Drought Monitor Classification Changes for Selected Time Periods

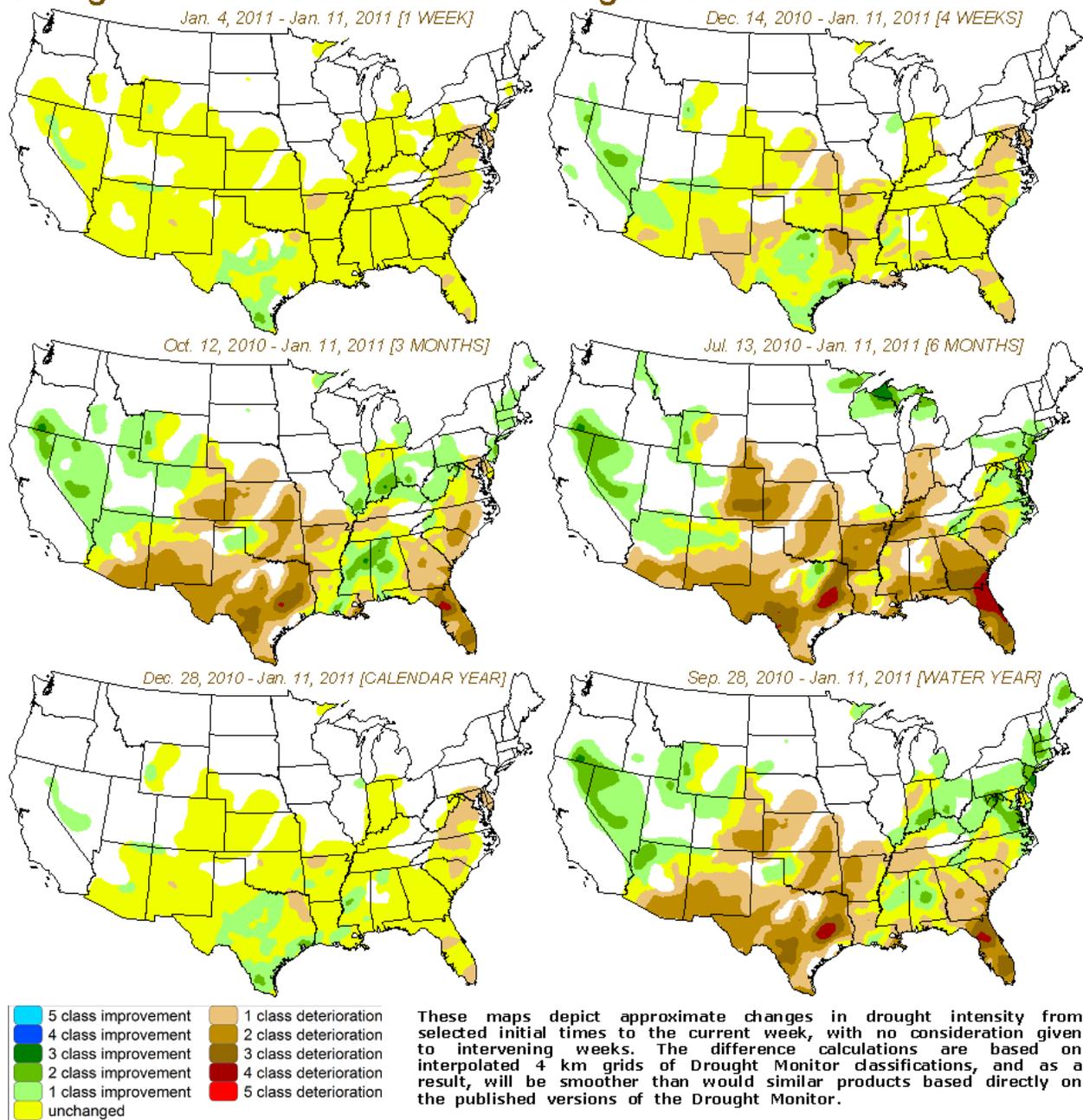
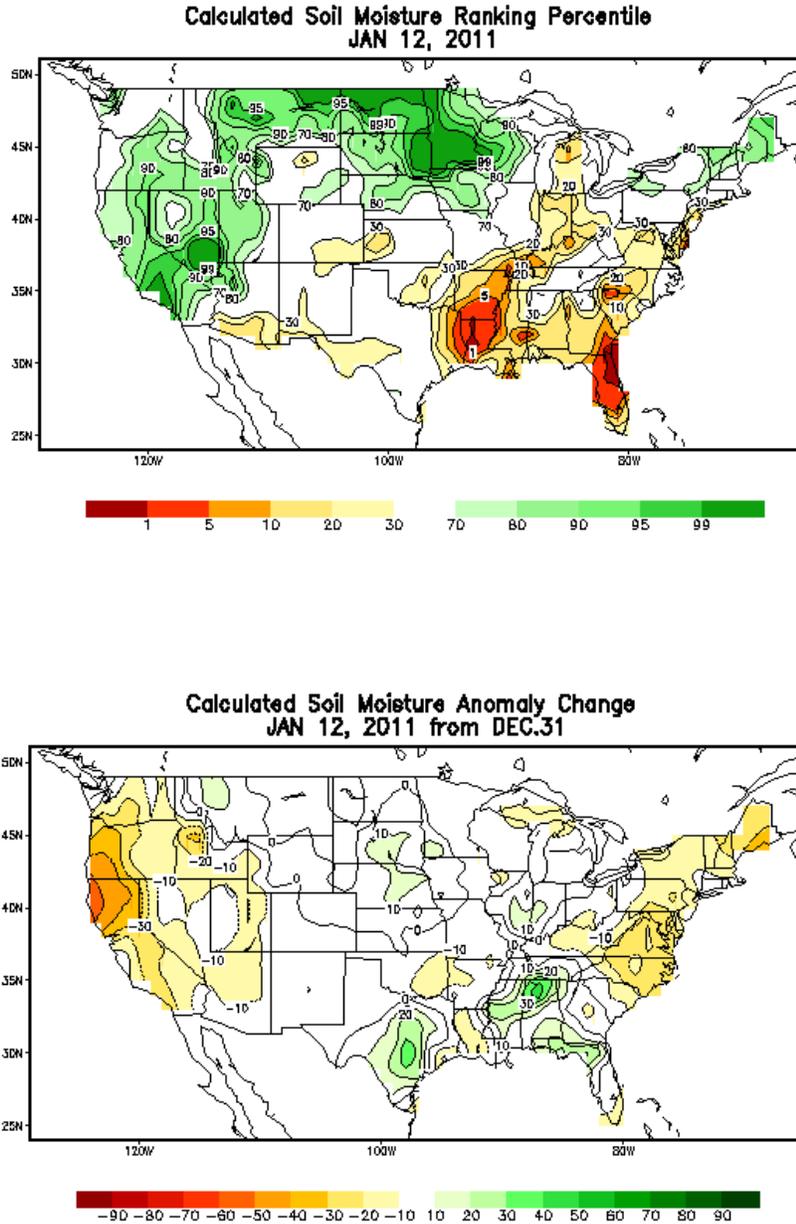


Fig. 4b: Drought Monitor Classification Changes for Selected Time Periods.

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-6maps.png>

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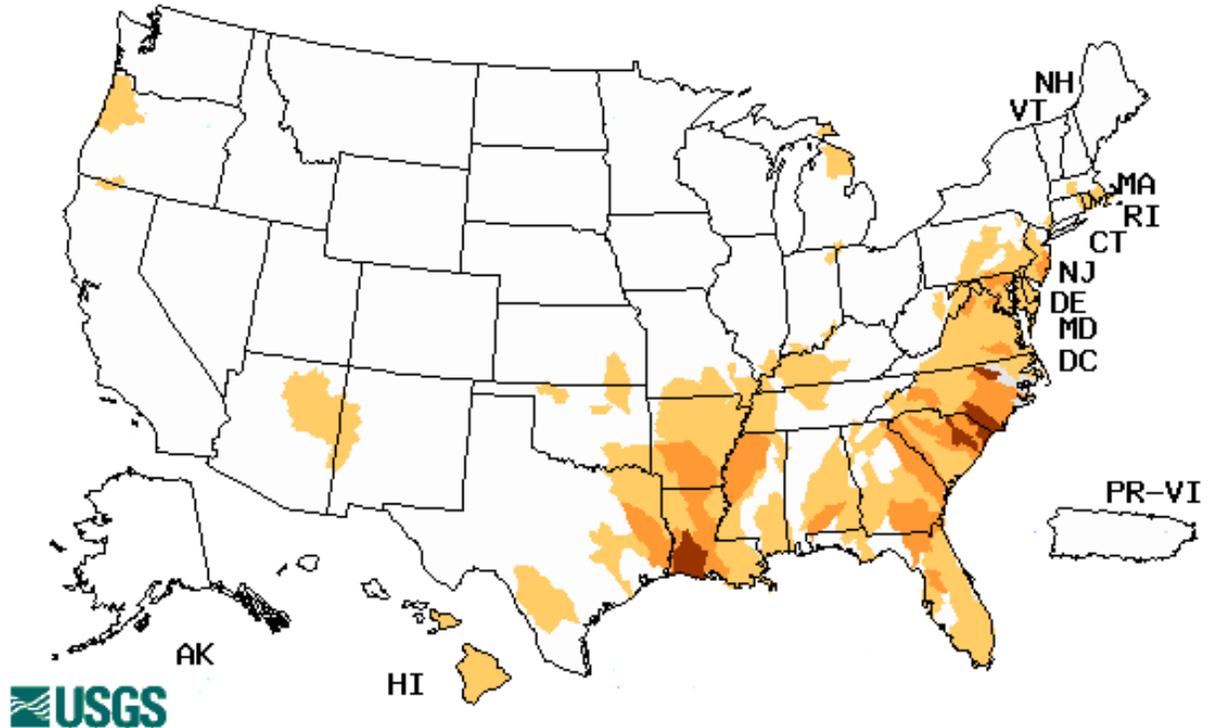


Figs. 5a and 5b: Soil Moisture ranking in percentile as of 12 January (Fig. 5a) shows wet conditions over the Western and Northern areas of the West. Since the end of December, much of the Western half of the West is drying out (Fig. 5b).

Ref: http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml#

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Wednesday, January 12, 2011



Choose a data retrieval option and select a state on the map

State DroughtWatch, State map

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. 6: Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Clearly, portions of the Gulf States and Southeastern Tier States are reflecting La Niña conditions of dryness. Note: northern site gauges are less accurate as rivers and streams freeze. Ref: <http://waterwatch.usgs.gov/?m=dryw&r>

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National Drought Summary -- January 11, 2011

The discussion in the Looking Ahead section is simply a description of what the official national guidance from the National Weather Service (NWS) National Centers for Environmental Prediction is depicting for current areas of dryness and drought. The NWS forecast products utilized include the HPC 5-day QPF and 5-day Mean Temperature progs, the 6-10 Day Outlooks of Temperature and Precipitation Probability, and the 8-14 Day Outlooks of Temperature and Precipitation Probability, valid as of late Wednesday afternoon of the USDM release week. The NWS forecast web page used for this section is: <http://www.cpc.ncep.noaa.gov/products/forecasts/>.

The Northeast and Mid Atlantic: Short-term dryness in the region is widespread. A few areas have received significant snow events along the eastern seaboard in recent months, but most have not. Being in the middle of winter, impacts are going to be minimal, but an area of D0 was expanded into southern Pennsylvania, Maryland, Delaware and Virginia this week.

Southeast: A significant winter storm impacted the region, bringing with it cold air and record-breaking snow amounts throughout the region. Florence, Alabama, recorded 11.0 inches of snow and Killen, Alabama, had 10.5 inches of snow while northern Georgia had several reports of 10+ inches of snow. Much of the area was left unchanged this week, with an expansion of D0 and D1 in the Carolinas and an expansion of D2 in northern Florida and D1/D2 expansion in southern Florida as the only changes this week.

Southern Plains and Gulf Coast: The same winter storm that impacted the Southeast brought rain and snows to many areas in the southern Plains and Gulf Coast. Significant improvements were made in Texas as the short-term dryness that was impacting the area was diminished with widespread heavy rain. Areas that did not record as much precipitation and had both short- and long-term dryness did see a bit of degradation as D2 was expanded in northeast Texas and D1 was brought into northwest Arkansas.

The West: As assessment of conditions in the western United States allowed for the removal of all the remaining D0 in Nevada and California. No lingering impacts were being reported in this region and precipitation values, especially since the start of the water year, allowed for the removal. D0 was also improved slightly in Wyoming while D0/D1 was improved in the Four Corners region.

Hawaii, Alaska and Puerto Rico: No changes were made this week for Alaska and Puerto Rico. Hawaii had some decent rains over Maui and the Big Island during the last week, but improvements were minimal. Some minimal improvements were made on Maui in the Upcountry regions, improving the D0/D1. The dry slopes on Maui are starting to green up, but are still short on moisture. On the Big Island, the D0 in the Kona district was removed and the D2 in the South Kahala District was improved to D1. No changes to the D3 on the west slopes of Mauna Kea as ranchers in the area are still hauling water. D0 was expanded on the northeast side of the island as December rainfall totals were 50 percent of normal.

Looking Ahead: Over the next 5 days (January 12-16), temperatures over the eastern half of the United States look to be well below normal, with the upper Midwest 6-9 degrees Fahrenheit below normal. The western U.S. will be above normal, with temperatures 6-9 degrees Fahrenheit above normal from Colorado to Washington. Precipitation is projected to be

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widespread from the Great Lakes down to the Ohio River Valley and into the Gulf Coast, with the greatest amounts over the Great Lakes and the Ark-La-Tex region. A strong system will come onshore in the Pacific Northwest, bringing heavy precipitation along with it from Washington and Oregon and into northern Idaho and Montana.

The CPC 6-10 day forecast (January 17-21) shows a broad area of cold air over the eastern half of the United States, with below normal temperatures over the entire region down to the Gulf Coast. The best chances for above normal temperatures are projected over the desert Southwest and the Alaskan coast. Above normal precipitation is projected over the Southeast and below normal precipitation chances are best over the south from Texas to southern California.

Author: [Brian Fuchs, National Drought Mitigation 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

A ... Agricultural

H ... Hydrological

Updated January 14, 2011