



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

Weekly Report - Snowpack / Drought Monitor Update Date: 11 February 2010

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snow: SNOTEL Snow-Water Equivalent percent of normal values for 11 February 2010 shows surpluses over the Southwest and deficits over the Northern Tier States. There were no significant changes since last week (Fig. 1). SNOTEL 7-day snow depth change over the past 7-days reveals small increases over the Sierra, Cascades, Wasatch, Arizona, and Colorado Rockies. Elsewhere depth decreases were small (fig. 1a).

Temperature: SNOTEL and ACIS-day station average weekly temperature were generally up to 5°F above the long-term average across the Pacific Northwest and 5°F below normal elsewhere. Colder departures were noted over the High Plains (Fig.2). ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts of Northern Washington and Montana (>+9°F) and the greatest negative departure occurred over parts of eastern Montana and New Mexico (<-12°F) (Fig. 2a).

Precipitation: ACIS 7-day average precipitation amounts for the period ending 10 February shows the bulk of the heaviest precipitation fell over parts of the Sierra. Areas with significant deficits occurred over the remainder of the high country across the West (Fig. 3). In terms of percent of normal, well above normal amounts dominated the southern half of the West, parts of the Montana Rockies, and the High Plains. The remainder of the West was particularly dry (Fig. 3a). Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2010 Water Year that began on October 1, 2009 shows most of the West at or below normal values. Areas with the greatest percentages remain in the Southwest. There were no significant changes since last week (Fig. 3b).

WESTERN DROUGHT STATUS

The West: A less-than-stellar snowpack has warranted expansion of D0 and D1 in Idaho this week. Below-normal snowfall along with warmer-than-normal temperatures has lowered the spring run-off forecast for Idaho. With decent carryover in reservoirs, the full impact of the dryness will not be felt for a while, but the consensus was to introduce D0 to the entire state, including eastern Oregon, and expand the D1 in the panhandle and southeast portions of the state. Portions of Wyoming and Colorado continue to be dry and are being watched closely for any further degradation. Good precipitation in the Four Corners region has allowed for an improvement to the D1 in that area. D0 was also improved slightly in eastern New Mexico as more precipitation was recorded last week, allowing for some improvements. Improvements to the D0 in southwest New Mexico and southeast Arizona also were made. Lingering long-term hydrological issues continue to plague the western portions of Arizona, with conditions staying the same as last week. Lake Mary in north central Arizona is running at 31 percent of normal, which is unchanged so far this winter. D1 was improved in southern California and into southern Nevada this week. Author: Brian Fuchs, National Drought Mitigation Center.

Weekly Snowpack and Drought Monitor Update Report

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).

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/>.

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/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://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

Weekly Snowpack and Drought Monitor Update Report

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/ NOLLER HERBERT
Director, Conservation Engineering Division

Weekly Snowpack and Drought Monitor Update Report

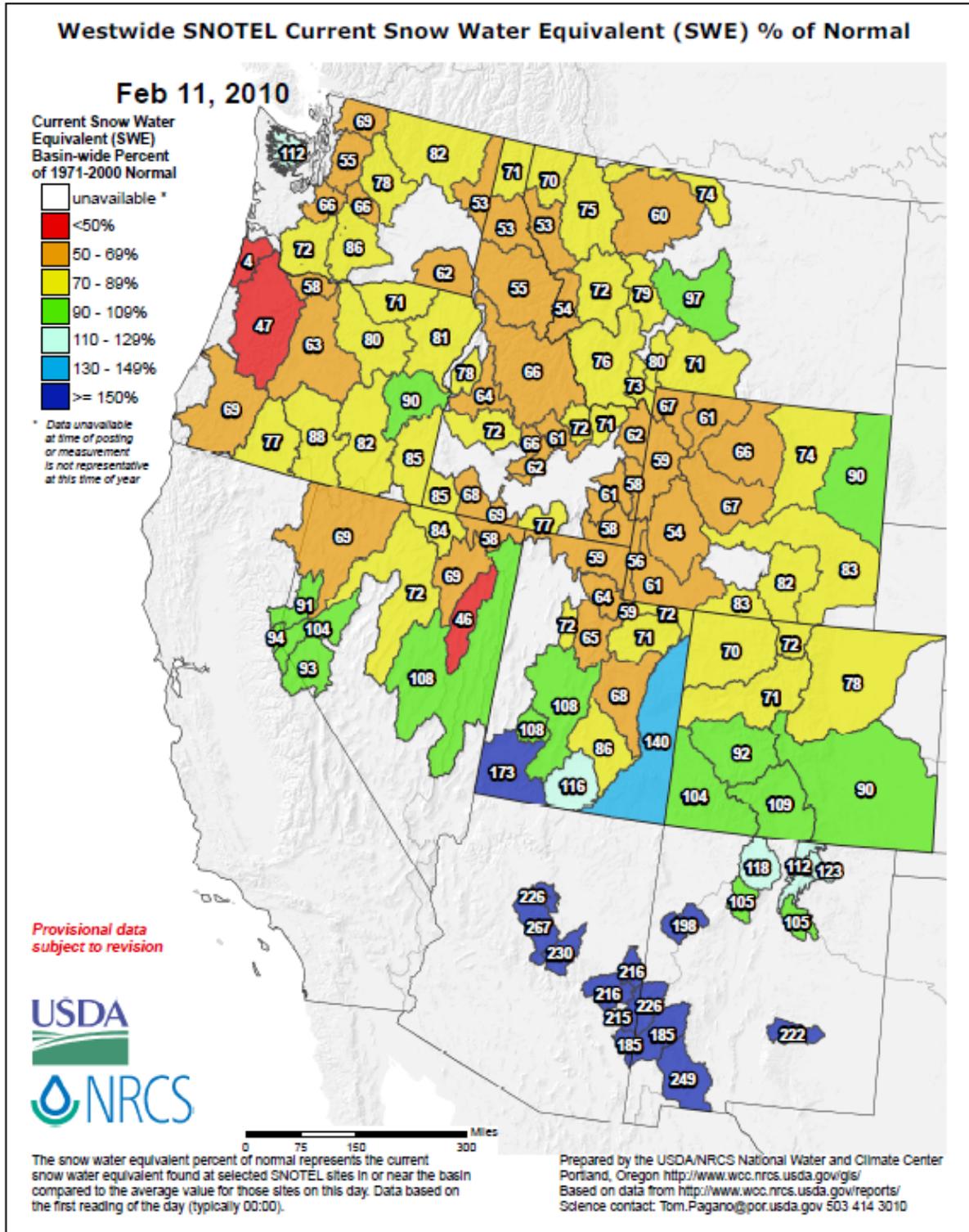


Fig 1. SNOTEL Snow-Water Equivalent percent of normal values for 11 February 2010 shows surpluses over the Southwest and deficits over the Northern Tier States. There were no significant changes since last week.

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

Weekly Snowpack and Drought Monitor Update Report

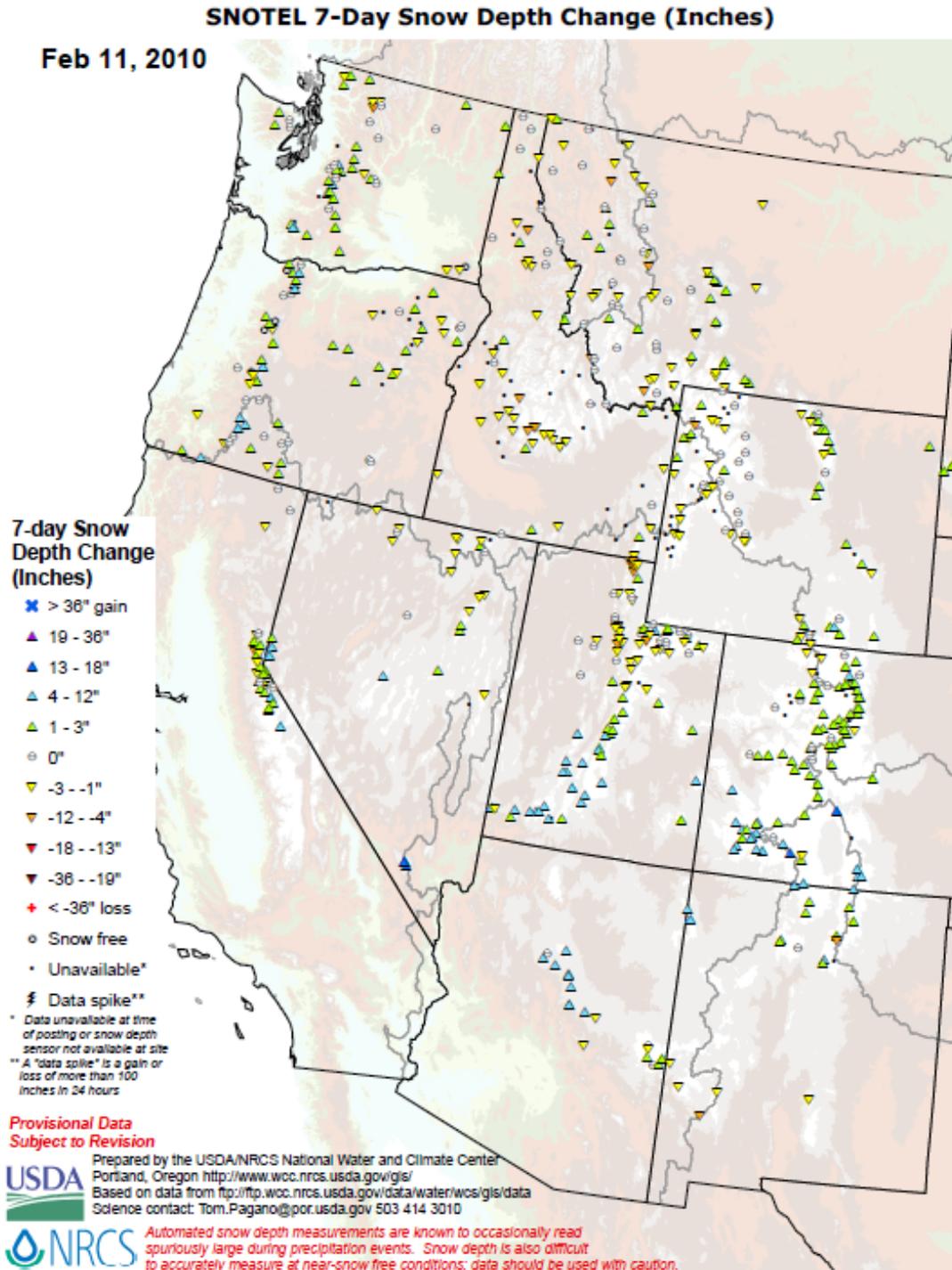


Fig. 1a. SNOTEL 7-day snow depth change over the past 7-days reveals small increases over the Sierra, Cascades, Wasatch, Arizona, and Colorado Rockies. Elsewhere depth decreases were small.

Ref: ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/west_snowdepth_7ddelta.pdf

Weekly Snowpack and Drought Monitor Update Report

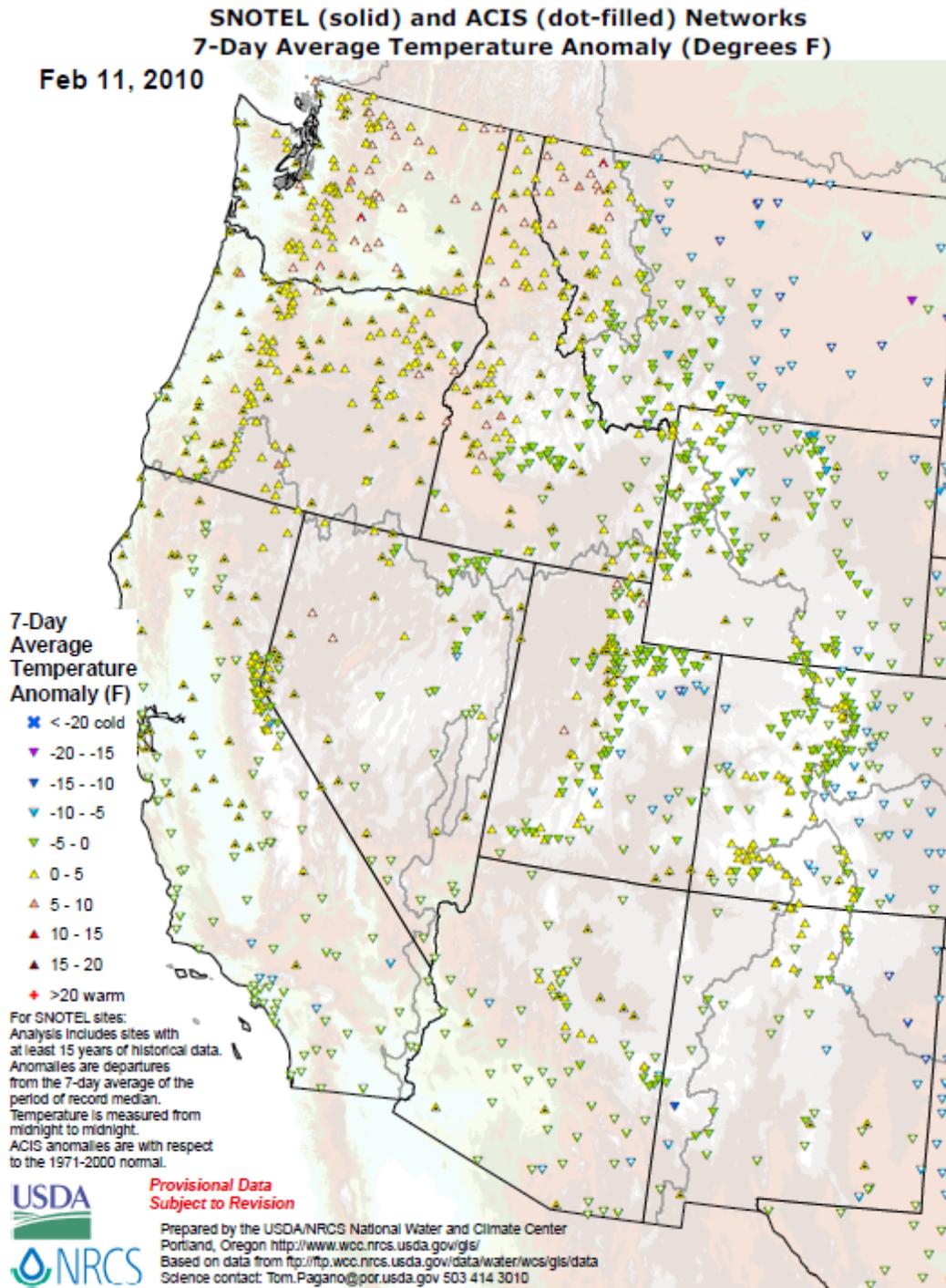
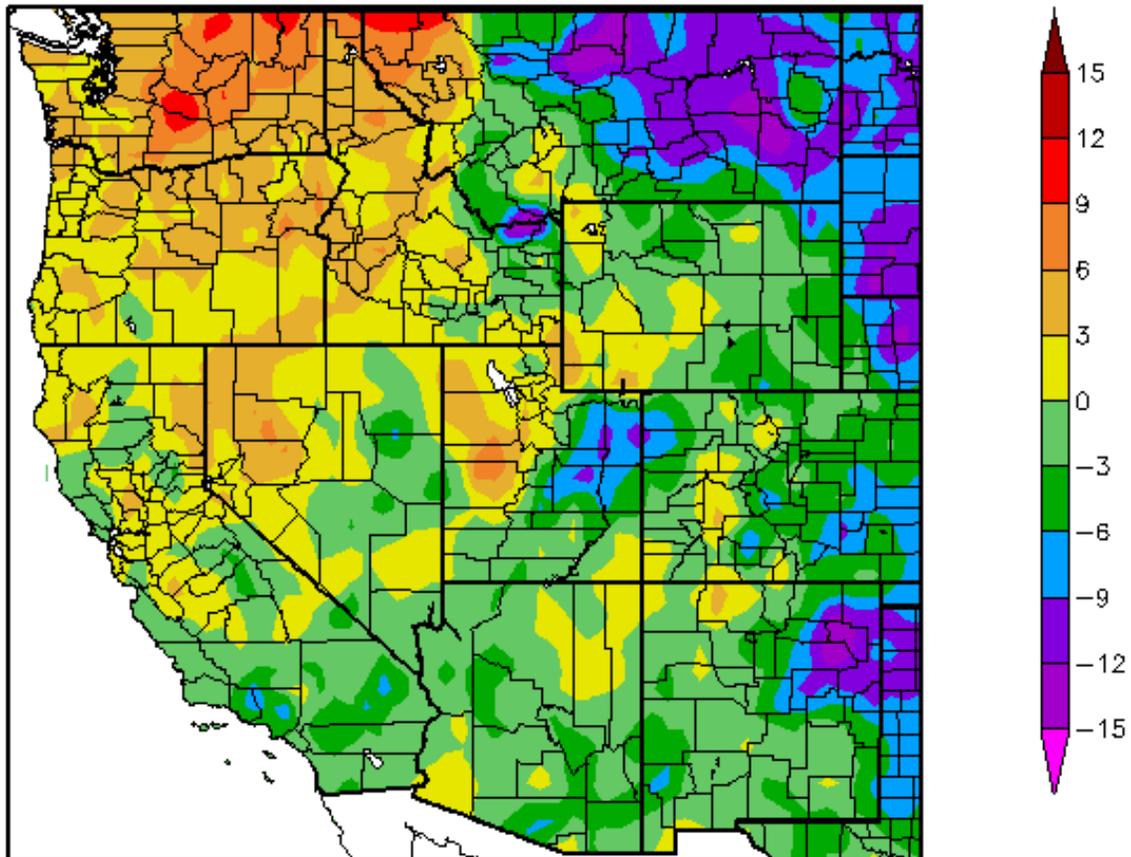


Fig. 2. SNOTEL and ACIS-day station average weekly temperature were generally up to 5°F above the long-term average across the Pacific and 5°F below normal elsewhere. Colder departures were noted over the High Plains.

Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideTavg7dAnomalyAcis.pdf>

Departure from Normal Temperature (F)
2/4/2010 – 2/10/2010



Generated 2/11/2010 at HPRCC using provisional data.

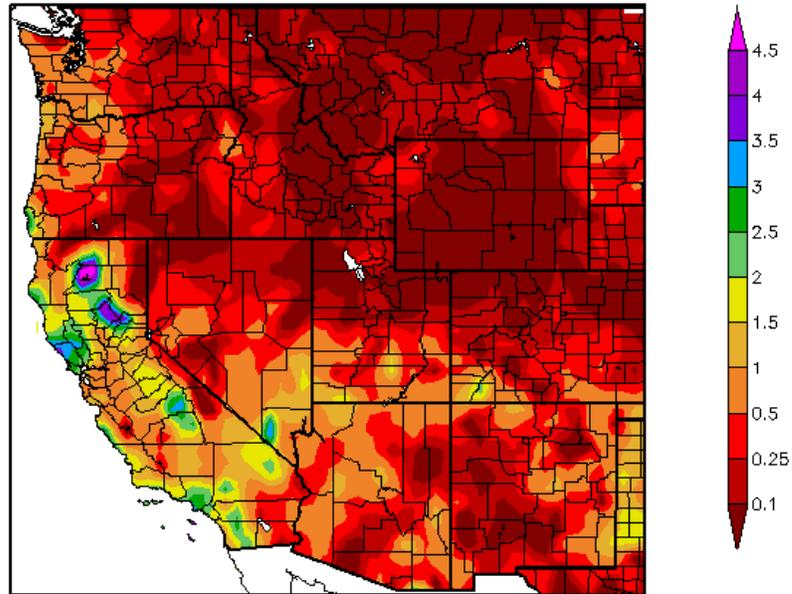
NOAA Regional Climate Centers

Fig. 2a. ACIS 7-day average temperature anomalies show that the greatest positive temperature departures were over parts of Northern Washington and Montana (>+9°F) and the greatest negative departure occurred over parts of eastern Montana and New Mexico (<-12°F).

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

Weekly Snowpack and Drought Monitor Update Report

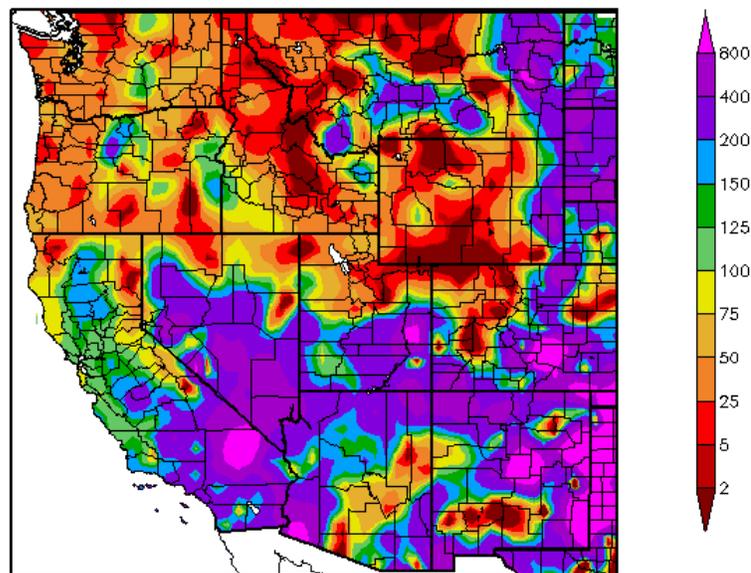
Precipitation (in)
2/4/2010 - 2/10/2010



Generated 2/11/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of Normal Precipitation (%)
2/4/2010 - 2/10/2010



Generated 2/11/2010 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. and 3a. ACIS 7-day average precipitation amounts for the period ending 10 February shows the bulk of the heaviest precipitation fell over parts of the Sierra. Areas with significant deficits occurred over the remainder of the high country across the West. In terms of percent of normal, well above normal amounts dominated the southern half of the West, parts of the Montana Rockies, and the High Plains. The remainder of the West was particularly dry. Ref: <http://www.hprcc.unl.edu/maps/current/>

Weekly Snowpack and Drought Monitor Update Report

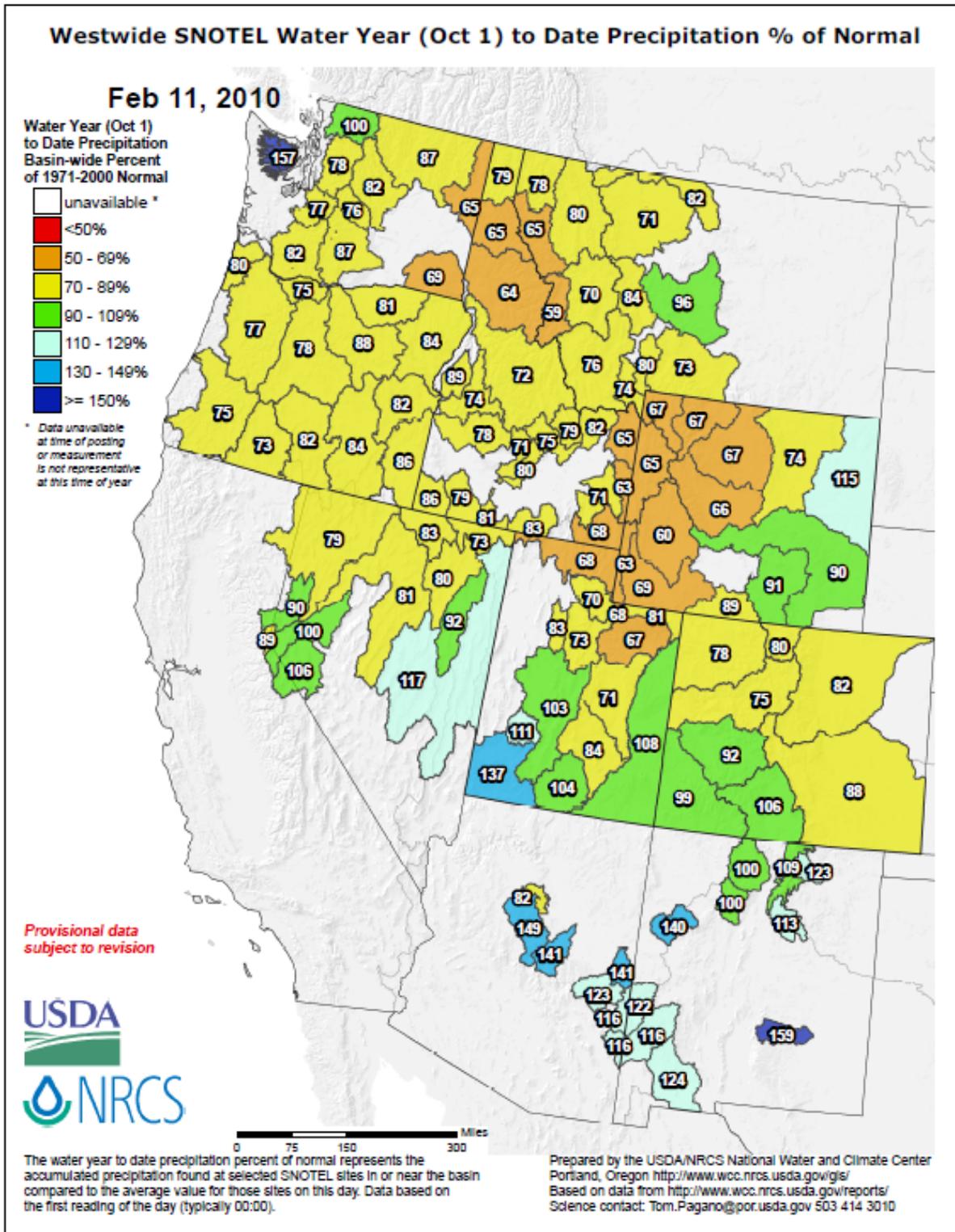


Fig 3b. Seasonal precipitation (rain & snow water equivalent) as a percent of normal for the 2010 Water Year that began on October 1, 2009 shows most of the West at or below normal values. Areas with the greatest percentages remain in the Southwest. There were no significant changes since last week.

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

U.S. Drought Monitor

February 9, 2010
Valid 7 a.m. EST

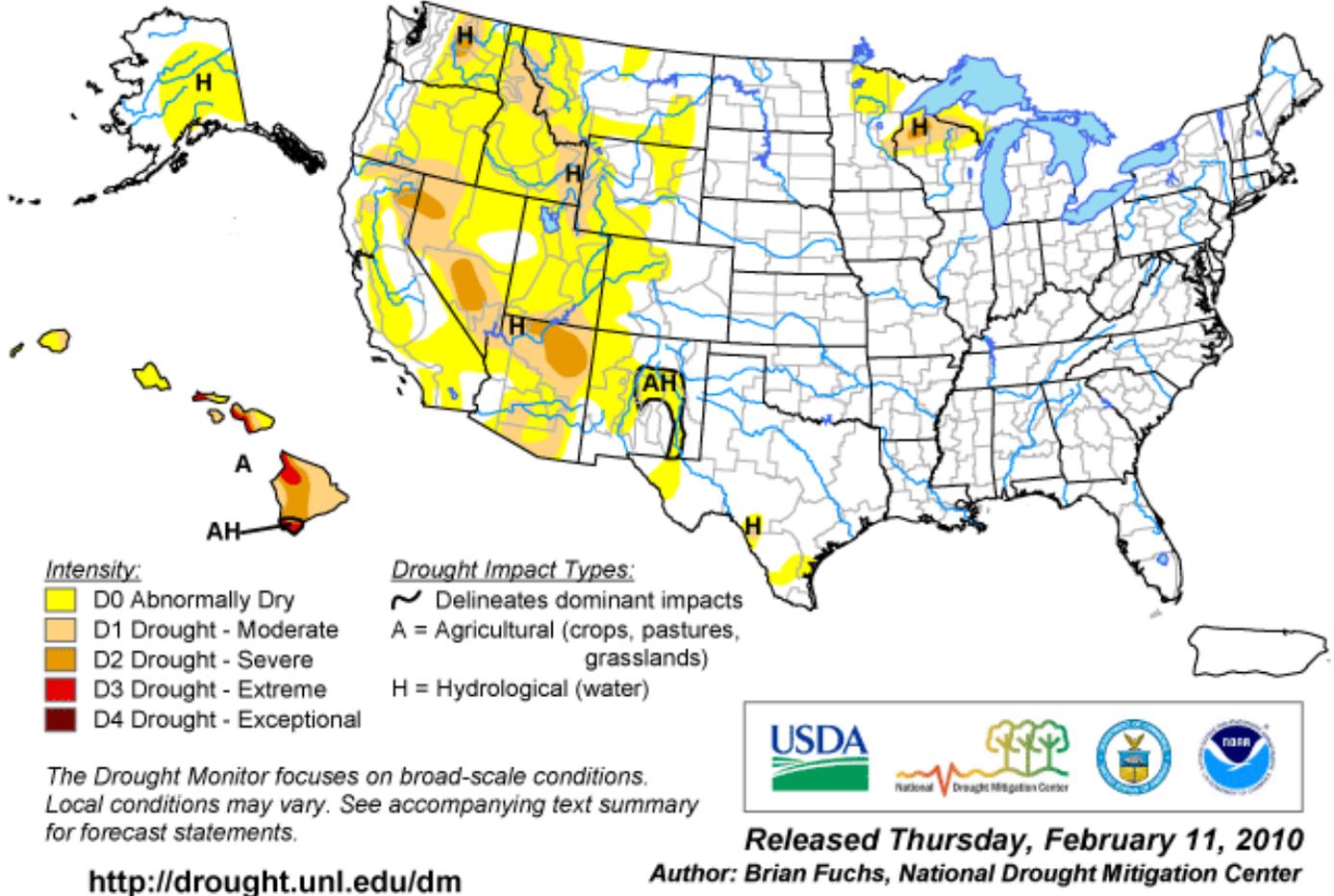


Fig. 4. Current Drought Monitor weekly summary.

Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

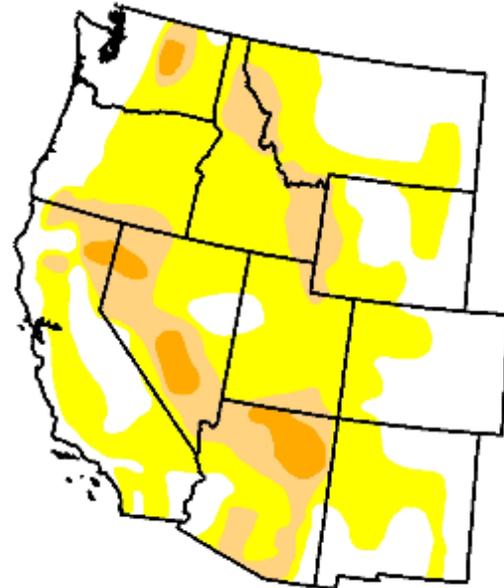
U.S. Drought Monitor

West

February 9, 2010
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	36.6	63.4	18.3	3.3	0.0	0.0
Last Week (02/02/2010 map)	38.7	61.3	19.2	3.3	0.0	0.0
3 Months Ago (11/17/2009 map)	52.0	48.0	27.1	9.9	0.0	0.0
Start of Calendar Year (01/05/2010 map)	40.1	59.9	30.6	9.9	0.5	0.0
Start of Water Year (10/06/2009 map)	42.1	57.9	25.4	8.5	0.0	0.0
One Year Ago (02/10/2009 map)	37.1	62.9	26.2	10.7	2.5	0.0



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, February 11, 2010
Author: National Drought Mitigation Center

Fig. 4a. Drought Monitor for the Western States with statistics over various time periods. Regionally there was significant improvement since last week. Note Extreme drought in Arizona has been removed on this week's depiction. Ref: http://www.drought.unl.edu/dm/DM_west.htm. Useful California data Links:

Forecast of Unimpaired Runoff:

<http://cdec.water.ca.gov/cgi-progs/iodir?s=b120>

Full Natural Flow Data:

Daily FNF

http://cdec.water.ca.gov/cgi-progs/snowsurvey_ro/FNF

Monthly FNF

http://cdec.water.ca.gov/cgi-progs/snowsurvey_ro/FNFSUM

Seasonal FNF

http://cdec.water.ca.gov/cgi-progs/snowsurvey_ro/FLOWOUT

Precipitation Data:

Latest Northern Sierra 8-Station Precipitation Index: <http://cdec.water.ca.gov/cgi-progs/queryDaily?s=8SI&d=today>

Northern Sierra 8-Station Precipitation Tabulation Table: http://cdec.water.ca.gov/cgi-progs/products/8-Stations_Tab.pdf

Latest San Joaquin 5-Station Precipitation Index

<http://cdec.water.ca.gov/cgi-progs/queryDaily?s=5SI&d=today>

2010 WY Precipitation Summary

<http://cdec.water.ca.gov/cgi-progs/precip/PRECIPSUM>

Snow Data:

Latest Snow Sensor Report

<http://cdec.water.ca.gov/cgi-progs/snow/PAGE6>

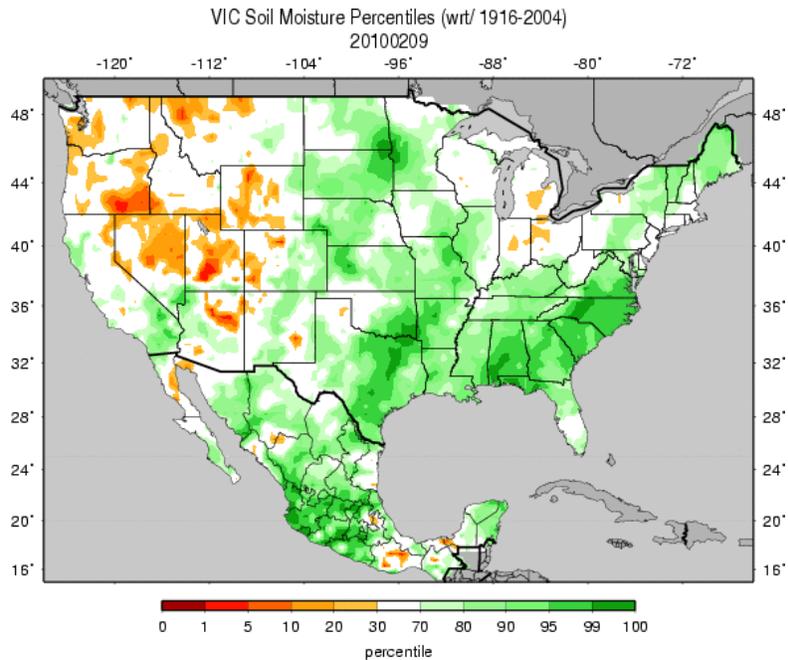
Latest Statewide Summary of Snow Water Equivalents

<http://cdec.water.ca.gov/cgi-progs/snow/DLYSWEQ>

Monthly Snow Course Report

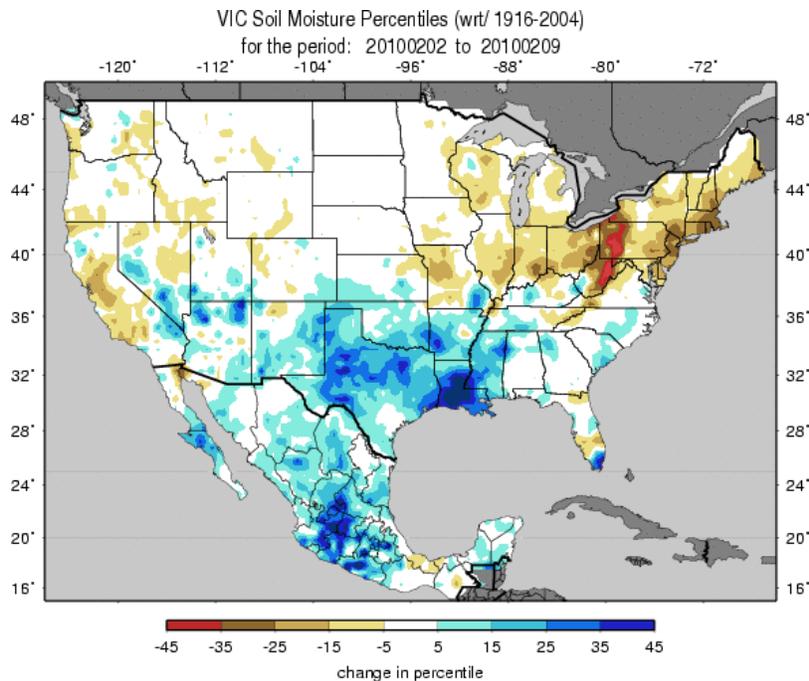
<http://cdec.water.ca.gov/cgi-progs/snow/COURSES>

Weekly Snowpack and Drought Monitor Update Report



Figs. 5a: Soil Moisture ranking in percentile based on 1916-2004 climatology as of 9 February. The same pattern exists this week as last week.

Ref: http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.gif



Figs. 5b: Soil Moisture change in percentile based on 1916-2004 climatology for the week. A wet week over the Southern Tier States while the Ohio Valley and New England dried out somewhat. The recent blizzards over the Mid-Atlantic States should be reflected on next week's depiction.

http://www.hydro.washington.edu/forecast/monitor/curr/conus.mexico/CONUS.MEXICO.vic.sm_qnt.1wk.gif

Weekly Snowpack and Drought Monitor Update Report

Wednesday, February 10, 2010

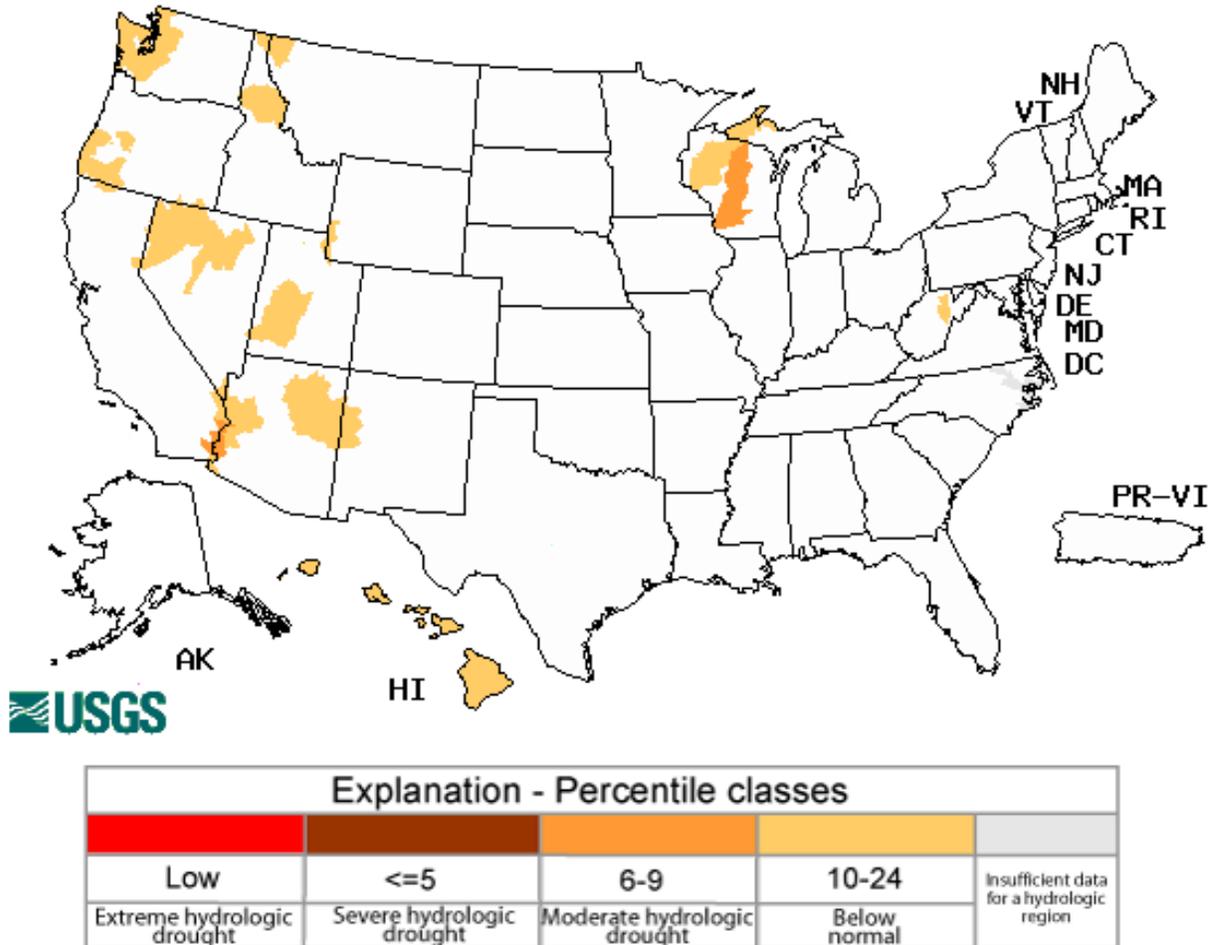


Fig. 6. Map of below normal 7-day average streamflow compared to historical streamflow for the day of year. Note, many streams are frozen and thus the flows become more unreliable during the winter. However, most of the nation is experiencing normal flows for this time of year with the exception of the Lower Colorado River and central Wisconsin.

Ref: <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- February 9, 2010

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/>.

Texas: The wet pattern across Texas continued this week with most locations in the state receiving precipitation. In the drought areas of south Texas, precipitation amounts were generally around 1.0 inches, but Carrizo Springs and Pleasanton recorded 3.17 and 2.71 inches, respectively. With the ongoing moisture, a full category improvement was made for most drought areas in Texas except for the D0 in west Texas. A small area of D1 is all that remains of the drought in Texas, and with the weather pattern continuing to stay active, further improvements may be needed.

The West: A less-than-stellar snowpack has warranted expansion of D0 and D1 in Idaho this week. Below-normal snowfall along with warmer-than-normal temperatures has lowered the spring run-off forecast for Idaho. With decent carryover in reservoirs, the full impact of the dryness will not be felt for a while, but the consensus was to introduce D0 to the entire state, including eastern Oregon, and expand the D1 in the panhandle and southeast portions of the state. Portions of Wyoming and Colorado continue to be dry and are being watched closely for any further degradation. Good precipitation in the Four Corners region has allowed for an improvement to the D1 in that area. D0 was also improved slightly in eastern New Mexico as more precipitation was recorded last week, allowing for some improvements. Improvements to the D0 in southwest New Mexico and southeast Arizona also were made. Lingering long-term hydrological issues continue to plague the western portions of Arizona, with conditions staying the same as last week. Lake Mary in north central Arizona is running at 31 percent of normal, which is unchanged so far this winter. D1 was improved in southern California and into southern Nevada this week.

Alaska and Hawaii and Puerto Rico: No changes were made this week in Alaska, Hawaii or Puerto Rico. Dryness continues to plague Hawaii, as it is the only state currently showing D3 extreme drought. For the start of 2010, most locations are below normal. On the Big Island, Hilo is 11.43 inches below normal for the year, Volcano National Park is 12.61 inches below normal, and Paauilo and the Kapapala Ranch are 8.61 inches below normal this year.

Looking Ahead: During the next 5 days (February 11-15), temperatures for most of the United States will be below normal. Temperatures will range from 12 degrees Fahrenheit below normal in Texas to 3 degrees Fahrenheit below normal across the northern plains and Great Lakes regions. The southern jet will continue to stay active, bringing widespread precipitation over much of the southern United States from Arizona to Florida. The coastal regions of Oregon and Washington as well as portions of New England and the Ohio River valley will be impacted by heavy precipitation. The Climate Prediction Center 6-10 day forecast (February 16-20) shows that the eastern half of the United States should experience below-normal temperatures, with the greatest departures in and around the southeast. The best chances for above-normal

Weekly Snowpack and Drought Monitor Update Report

temperatures are from Alaska through southern California. The best chances for above-normal precipitation are over the plains states and into portions of the Gulf coast. The coastal regions of Alaska and into the Pacific Northwest should also experience above-normal precipitation. The best chances for drier-than-normal conditions are centered on the Great Basin and into the Great Lakes regions.

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 February 10, 2010