



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

Weekly Report - Snowpack / Drought Monitor Update **Date: February 15, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snowpack: For the 2007 Water Year (WY), snow water-equivalent (SWE) values continue to decrease over much of the West. Only portions of the Northern Cascades and Colorado and New Mexico Front Ranges show surpluses (above the long term average) (Fig. 1). California's SWE totals show much below normal snowpack (Fig. 1a) despite a large amount of snowfall that occurred during the past week (Fig. 1b).

Temperature: During the past seven days, temperatures have been mild across the eastern half of the West. Temperatures ranged from up to 15°F above normal over the Central Rockies to just above normal over the Sierra Nevada and Southern Cascades (Fig. 2).

Precipitation: During this report period, above normal precipitation (rain and snow) (Fig. 3) occurred from northern California to Montana and from northern California to western New Mexico. Only the western portions of the Pacific Northwest and the Central and Southern Rockies failed to get significant precipitation this week. For the Water Year, all but the Cascades and Central and Southern Rockies have experienced above normal moisture (Fig. 3a).

WESTERN DROUGHT STATUS

The West and Rocky Mountains: Heavy precipitation finally fell on parts of California. Amounts of 5 to 12 inches were fairly common across the southern Cascades, the western tier of the state as far south as the San Francisco Bay area, and the northern and central Sierra Nevada. Between 2 and 5 inches were recorded in the southern Sierra Nevada, and along the western tier from Monterrey southward to San Luis Obispo. Elsewhere, scattered totals of 0.5 to locally 2.0 inches were observed across much of the northern halves of the Rockies and Intermountain West, part of southwestern California, and a few of the higher elevations in Arizona. Meanwhile, most areas from central Utah and Nevada southward through southeastern California recorded a few tenths of an inch at best, and similarly low amounts fell on northeastern Montana and all but the western tier of Wyoming.

Despite the large precipitation totals in parts of California, its effect on the region's dryness and drought was surprisingly small. D0 was pulled out of interior northern California, and D1A conditions retreated only slightly to the south and east. Despite the wet week, basin-average totals since the start of the water year (October 2006) were only 50 to 60 percent of normal. The storm was a relatively warm one, so its effect on snowpack water content was even less impressive. As of mid-February, there were a few locations northwest of Lake Tahoe that were slightly above 70 percent of normal, but most sites in the central and southern Sierra Nevada were only 35 to 50 percent of normal.

In fact, precipitation totals since the start of the water year are below normal through many of the mountainous regions of the West, and with temperatures generally averaging above normal, the percent of normal snowpack water content is even lower in most places. As a result, several

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areas of deterioration were introduced this week. D2A conditions expanded westward in southern California, the D1A boundary was moved northward to include the southwestern one-third of Nevada, and D0 conditions were broadly expanded to include all of Utah and adjacent sections of Idaho and Nevada. Snowpack water content generally ranged from 55 to 75 percent of normal in the new D0 areas despite the fact that actual water year precipitation totals were somewhat above normal in southeastern Utah.

Finally, with above-normal water year precipitation totals and only slightly below normal snowpack water content, D0 conditions were removed from northern Montana.

In the D0 region of Alaska, a few locations reported between one-tenth and one-quarter inch of precipitation, but at most sites amounts were barely measurable at best, allowing D0 conditions to persist. Author: Richard Tinker, Climate Prediction Center, NOAA

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 (Fig. 4).

SOIL MOISTURE

Soil moisture (Fig. 5) 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. Reference: <http://www.cpc.ncep.noaa.gov/soilmst/img/curr.w.rank.daily.gif>.

OBSERVED FIRE DANGER CLASS

The National Interagency Coordination Center provides a variety of products that describe the current wildfire status for the U.S. - <http://www.nifc.gov/information.html>. The latest Observed Fire Danger Class is shown in Fig. 6.

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. Subregions 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.

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

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

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

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/ DANIEL MEYER

Acting Director, Conservation Engineering Division

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Feb 14, 2007

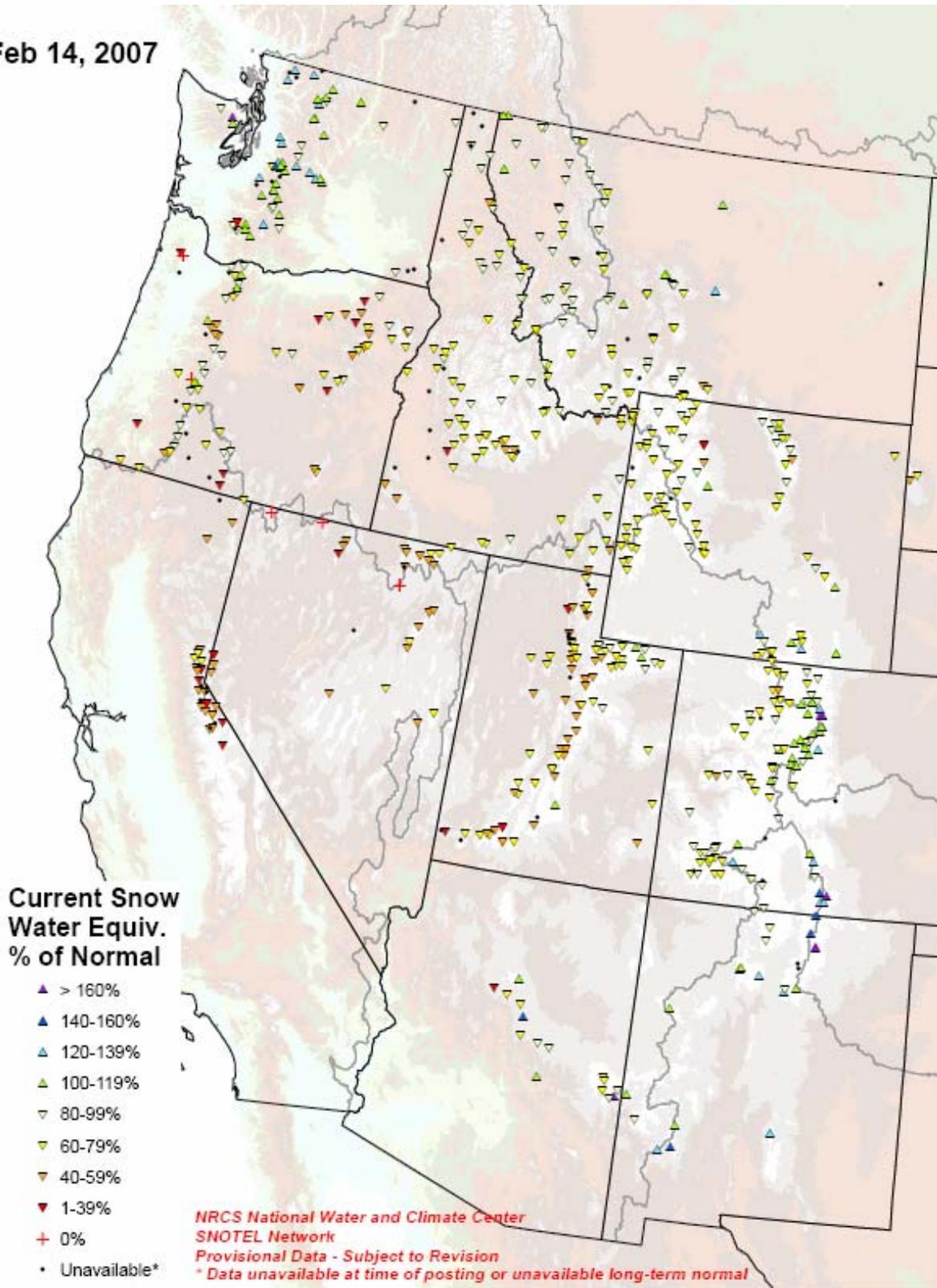


Fig. 1: Snow Water-Equivalent as a percent of normal for Water Year 2007.

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

California SNOTEL Snow Water Equivalent (SWE) % of Normal

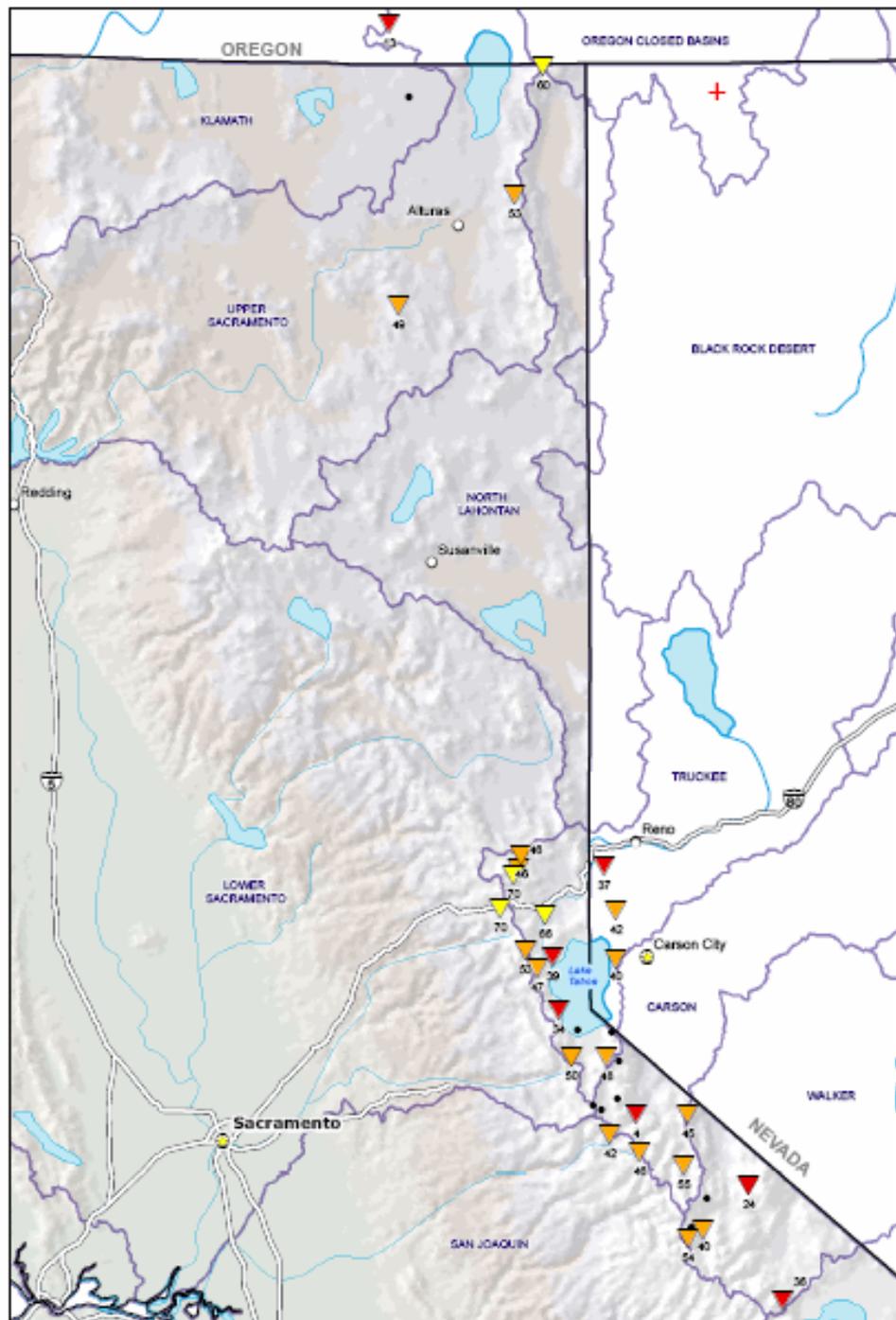
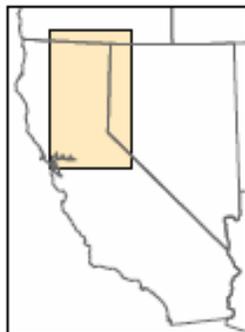
Feb 14, 2007

Current SWE
% of Normal

- ▲ > 160%
- ▲ 140-160%
- ▲ 120-139%
- ▲ 100-119%
- ▼ 80-99%
- ▼ 60-79%
- ▼ 40-59%
- ▼ 1-39%
- + 0%
- Unavailable*

*Provisional Data
Subject to Revision*

Locator Map



0 5 10 20 30 40 50 Miles



Prepared by the
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov/gis/>

** Data unavailable at time of posting or
unavailable long-term normal.*

Fig. 1a. Current SNOTEL SWE percent of normal for Water Year 2007 over California.
ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/ca_swepctnormal.pdf

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7-Day SNOTEL Snow Depth Change

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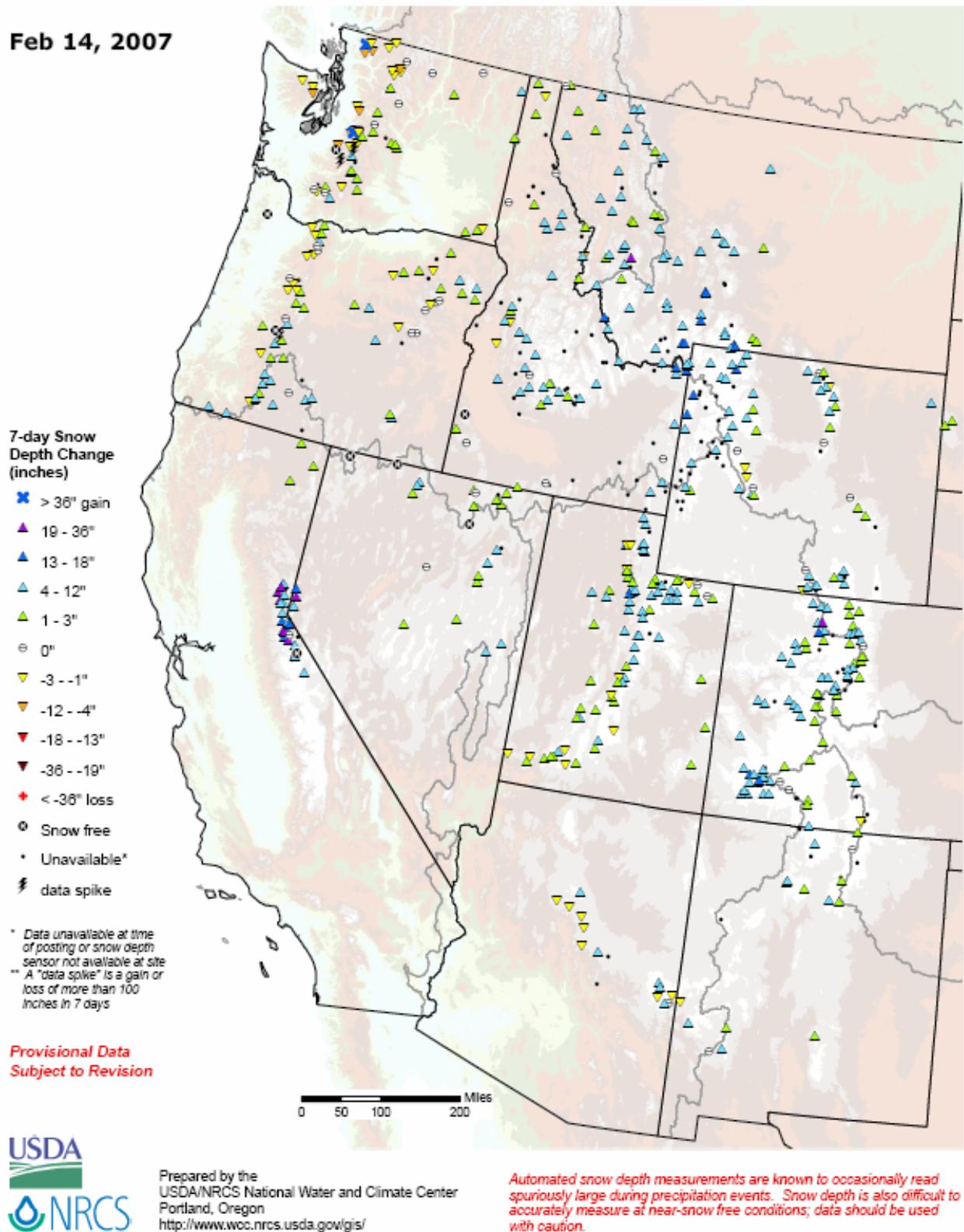


Fig. 1b. SNOTEL 7-day snow depth change.

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

Feb 14, 2007

**7-day Avg
Temperature
Anomaly (F)**

- ✖ < -20 cold
- ▼ -20 - -15
- ▼ -15 - -10
- ▼ -10 - -5
- ▼ -5 - 0
- ▲ 0 - 5
- ▲ 5 - 10
- ▲ 10 - 15
- ▲ 15 - 20
- ◆ >20 warm

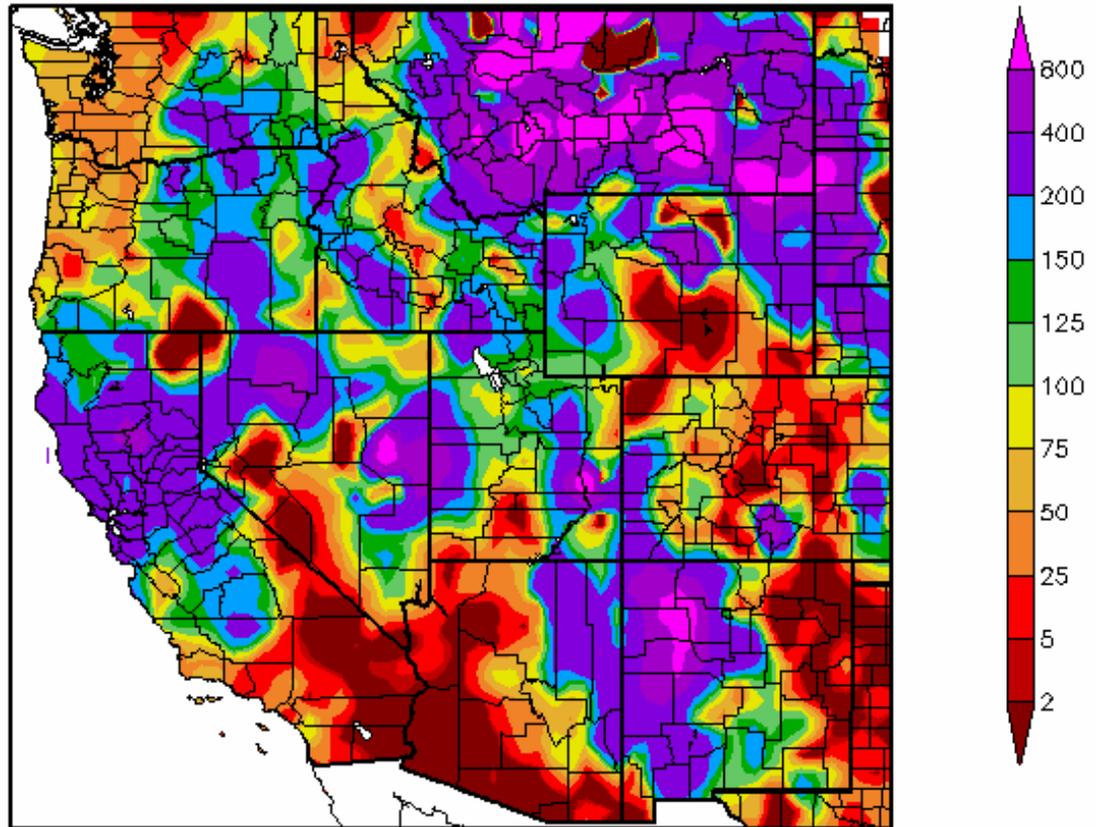
*NRCS National Water and Climate Center
SNOTEL Network (Sites with 15 or more years of record)
Anomaly with respect to 7 day average period of record median
Provisional Data - Subject to Revision*

Fig. 2. SNOTEL 7-day average temperature anomaly.

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

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Percent of Normal Precipitation (%)
2/7/2007 - 2/13/2007



Generated 2/14/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig. 3. ACIS percent of normal precipitation for the past 7 days over the Western US.
<http://www.hprcc.unl.edu/products/current.html>

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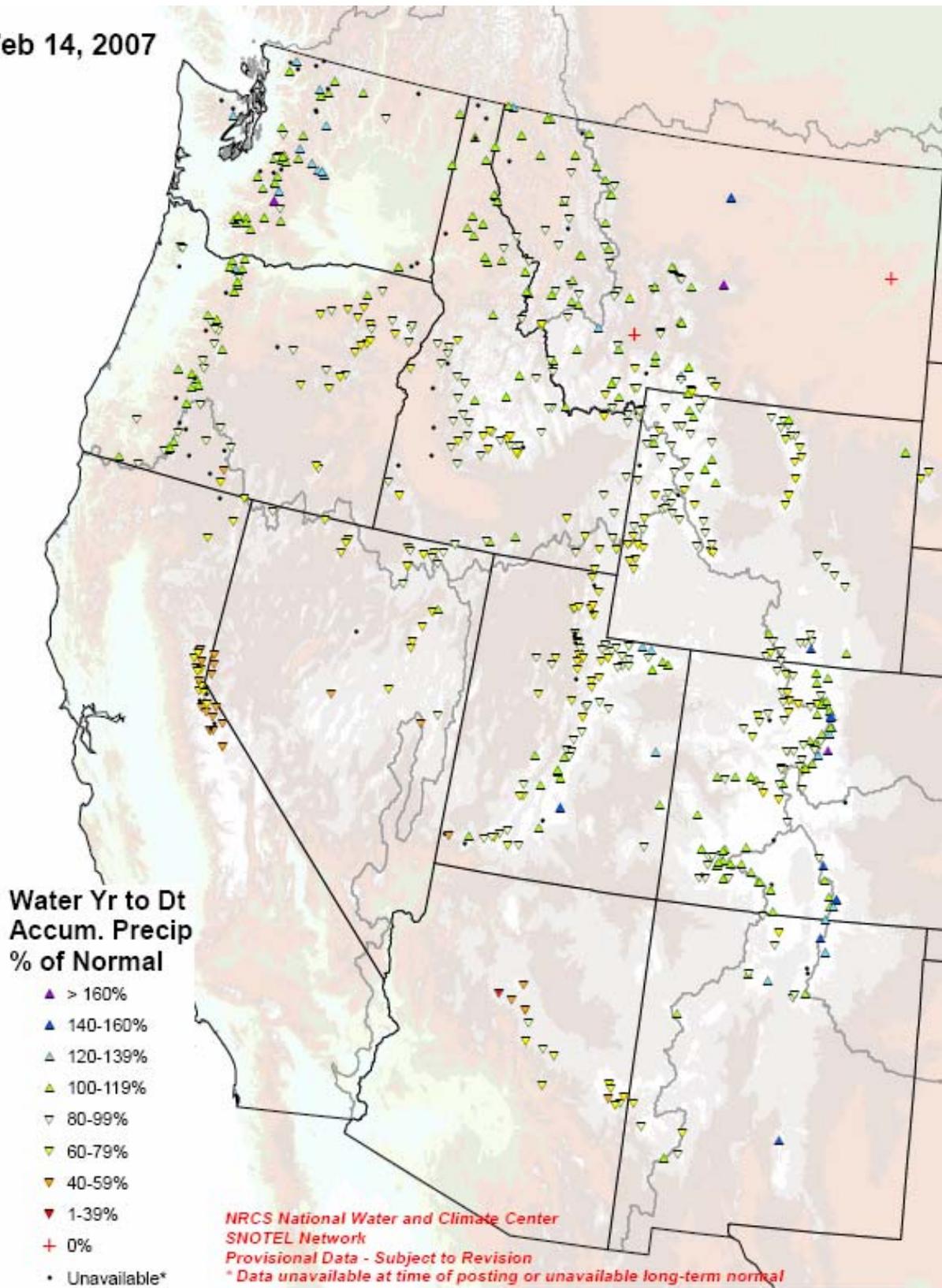
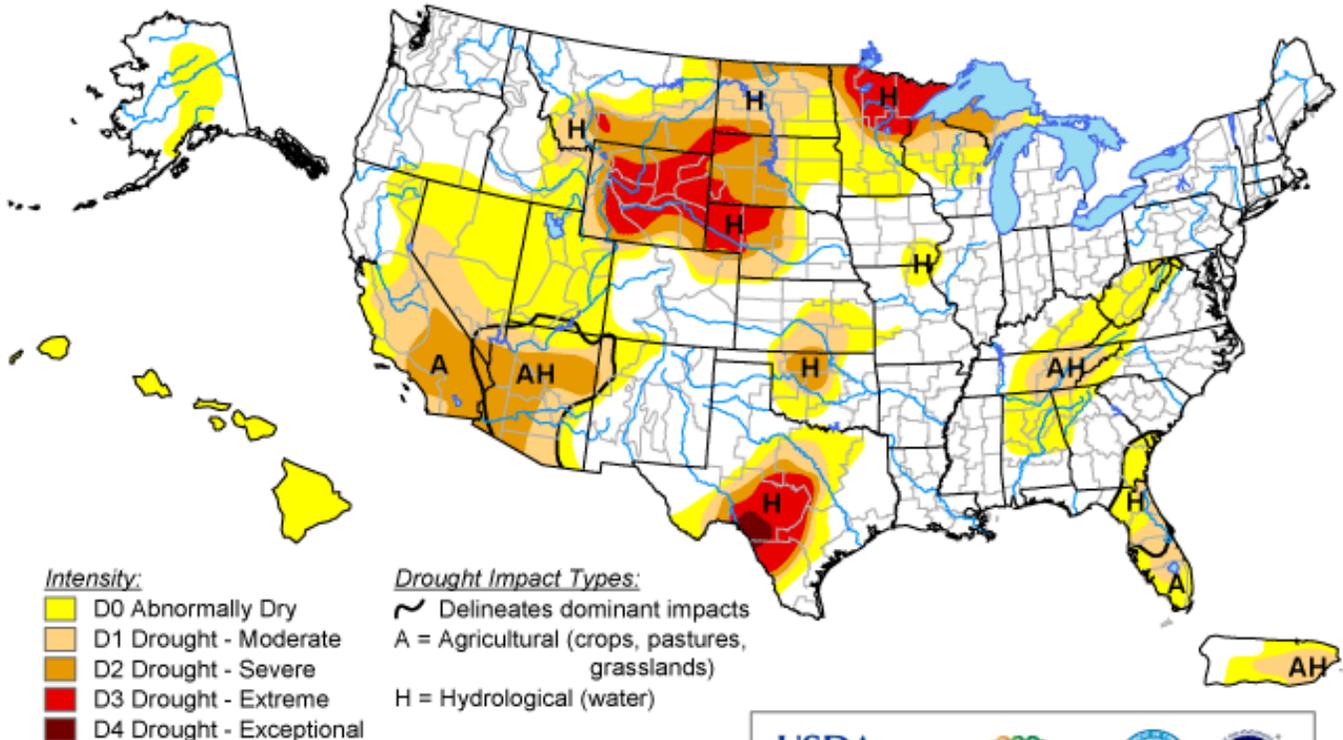


Fig. 3a. SNOTEL station water year (since October 1) precipitation as a percent of normal.
<ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideWYTDPrecipPercent.pdf>

U.S. Drought Monitor

February 13, 2007
Valid 7 a.m. EST



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

Released Thursday, February 15, 2007
Author: Richard Tinker, CPC/NOAA

Fig. 4. Current Drought Monitor – Source: *National Drought Mitigation Center (NDMC)*
<http://www.drought.unl.edu/dm/monitor.html>

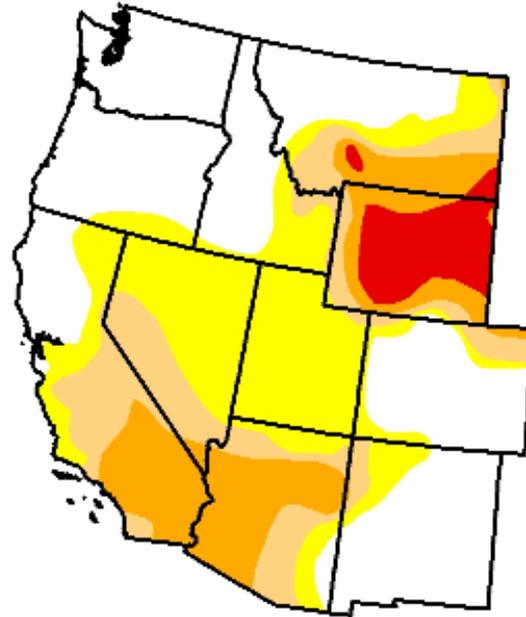
U.S. Drought Monitor

West

February 13, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.7	58.3	33.2	18.9	5.0	0.0
Last Week (02/06/2007 map)	40.5	59.5	32.6	18.2	5.0	0.0
3 Months Ago (11/21/2006 map)	59.1	40.9	23.8	10.6	4.8	0.0
Start of Calendar Year (01/02/2007 map)	51.2	48.8	25.8	9.4	4.0	0.0
Start of Water Year (10/03/2006 map)	43.5	56.5	33.5	16.9	5.2	0.0
One Year Ago (02/14/2006 map)	59.4	40.6	24.9	9.6	3.8	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 15, 2007
Author: Richard Tinker, Climate Prediction Center/NOAA

Fig 4a. Drought Monitor for the Western US with statistics over various time periods. (NDMC)

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Calculated Soil Moisture Ranking Percentile
FEB 14, 2007

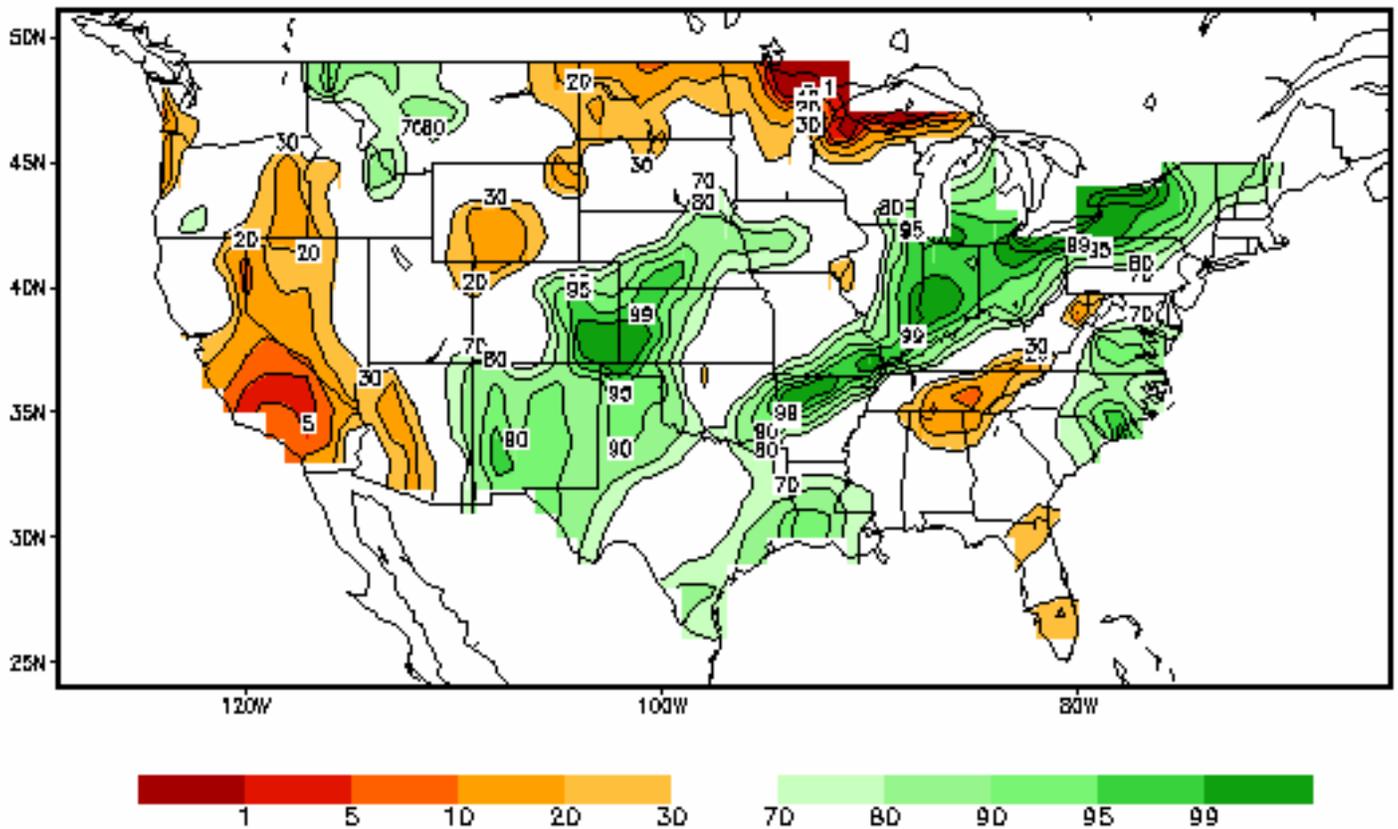


Fig. 5: Soil Moisture Ranking Percentile based on 1932-2000 climatology. Source NOAA-CPC
<http://www.cpc.ncep.noaa.gov/soilmst/img/curr.w.rank.daily.gif>

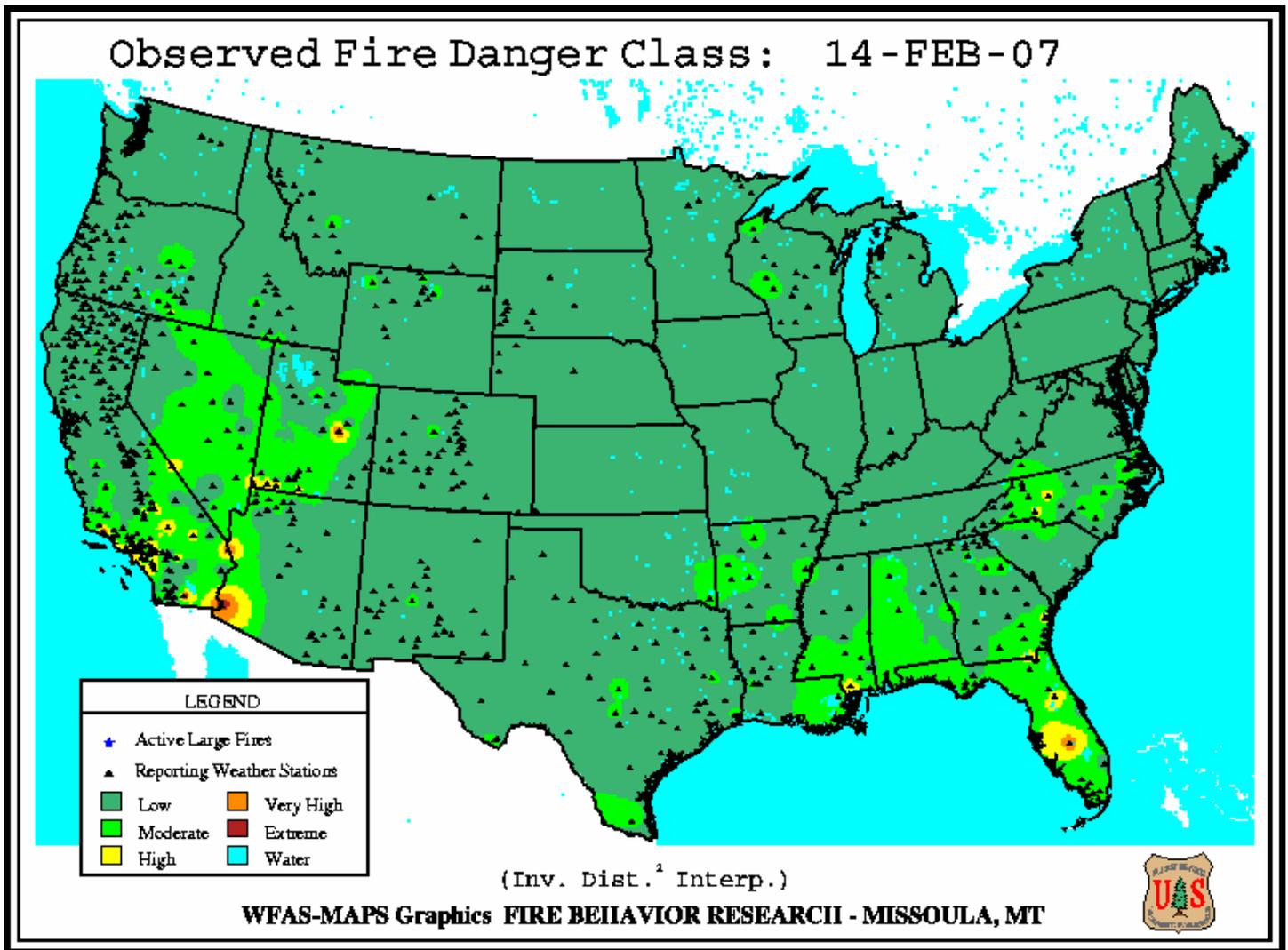
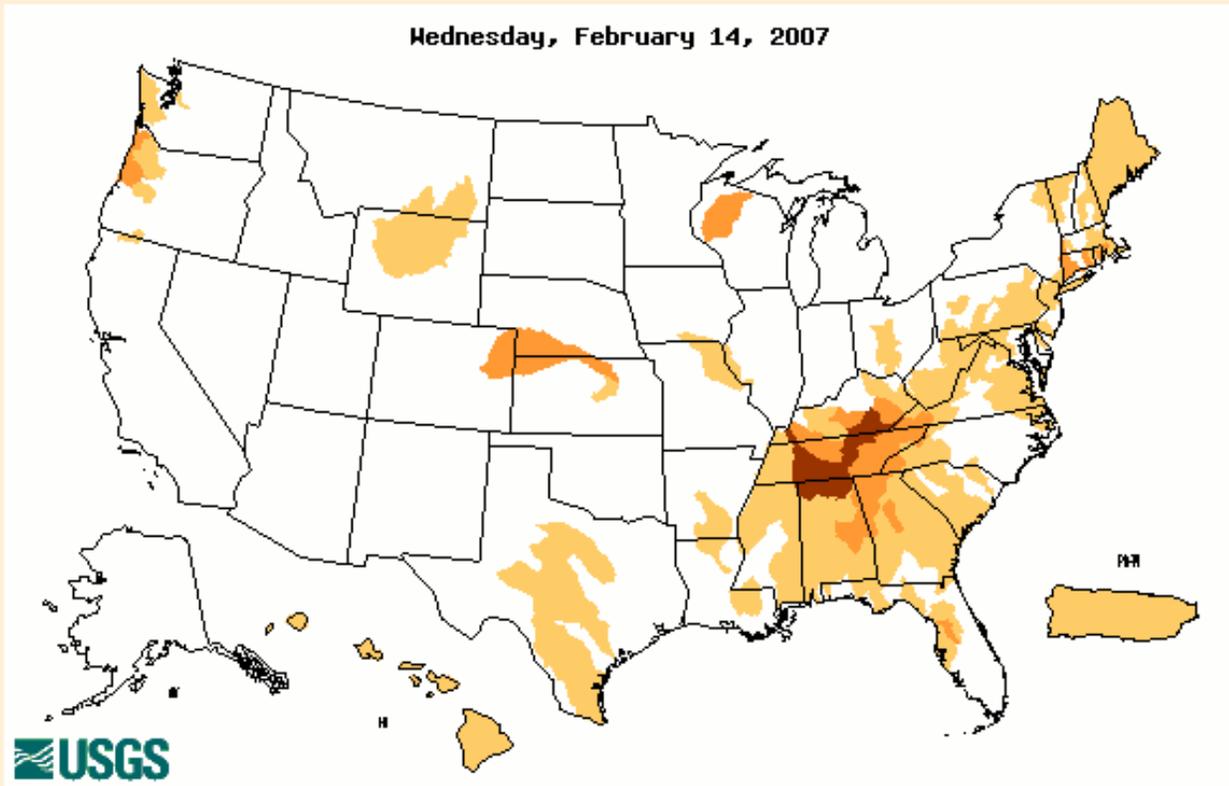


Fig. 6. Observed Fire Danger Class. Source: Forest Service Fire Behavior Research – Missoula, MT
http://www.fs.fed.us/land/wfas/fd_class.gif

Map of below normal 7-day average streamflow compared to historical streamflow for the day of year (United States)



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. 7. Map of below normal 7-day average streamflow compared to historical stream flow for the day of the year. **Caution:** Flows tend to freeze this time of year resulting in potentially erroneous gauge readings. Source: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

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National Drought Summary -- February 13, 2007

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 East and Southeast: It was another relatively dry week, with scattered precipitation totals of 0.5 to locally 2.0 inches confined to southeastern West Virginia and the southern half of the Florida Peninsula. Little or no precipitation fell on northern Florida and adjacent Georgia, and from northern sections of Alabama and Georgia northward to the Kentucky and Virginia borders.

On time scales ranging from 30 to 90 days, moisture deficits across northern Alabama, northwestern Georgia, and eastern Tennessee have been more significant than in other dry portions of the East. Anywhere from 10 to 50 percent of normal precipitation fell during the last 30 days in this region, and totals dating back to mid-November 2006 are 8 to locally 16 inches below normal. As a result, a new area of D1AH was introduced here. Only 5 inches of precipitation fell on Chattanooga, TN from December 2006 through January 2007, which was their sixth driest such period in 117 years of record.

In addition, increasingly dry conditions led to the expansion of D0AH into the northern half of Alabama and western North Carolina, and D0A was introduced in a small area near West Palm Beach, FL that for a while had been better off than other portions of the state.

The Plains: Although moderate to heavy precipitation fell on a substantial portion of the central United States, very little of it affected areas that have been experiencing dryness and drought. Amounts ranging from 1 to 3 inches ended D0H conditions in most of southwestern Missouri, but in the remaining dry areas stretching from the northern Plains and Great Lakes southward through Texas, weekly amounts exceeding 0.5 inch were limited to central and eastern Kansas and southwestern Oklahoma. As a result, conditions remained unchanged for a vast majority of the area, though there were a few exceptions.

The last couple of months brought only 25 to 50 percent of normal precipitation to northeastern North Dakota and adjacent Minnesota, prompting deterioration to D2H for the region. Farther east, northern portions of Minnesota remained exceptionally dry. Across the state's D3H region, only isolated areas of measurable precipitation have been observed during the last 30 days, and totals for the last 6 months range from 10 inches down to as little as 2 inches, only 5 to 25 percent of normal in north-central Minnesota and in the eastern reaches of the Arrowhead.

Assessing the severity of dryness and drought has been challenging in the southern half of the Great Plains, with conditions for the past few months differing markedly from those of the previous couple of years. Precipitation totals for the past 60 days were above normal for a vast majority of this region. If you go back an additional month, the last 90 days were below normal for most of the D1H through D4H areas in Texas and in the D2H region of Oklahoma; however, amounts as low as half of normal were limited to a small part of the D4H region. Keep looking back farther and farther, through 2005 in Texas and 2004 in Oklahoma, and both the duration and magnitude of the drought appear progressively worse. During the last 12 months, most of the D3H and D4H regions in Texas recorded 4 to 12 inches less than normal precipitation while

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12 to 16 fewer inches than normal were reported across the northern sections of Oklahoma's D2H region. Go back an additional year, and since mid-February 2005 precipitation totals range from 1 to 2 FEET below normal across much of the D3H and D4H regions in Texas, with 2-foot shortfalls even more common across central Oklahoma and northern Texas. And keep in mind that these numbers include the above-normal totals observed in most areas for the last 60 days.

The recent precipitation has boosted topsoil moisture and virtually eliminated significant fire danger. However, subsoils (roughly below 60 cm deep) remain exceedingly dry, and as a result, the substantial precipitation that has fallen this winter has not been particularly effective in increasing base streamflow rates, refilling stock ponds, and boosting reservoir levels because a large proportion of the fallen precipitation gets soaked up by the dry subsoils, leaving less water available to produce tangible signs of drought recovery. For these reasons, the Drought Monitor continues to identify significant areas of moderate to excessive hydrologic drought across the southern half of the Plains.

Some adjustments were made to the Drought Monitor depiction across Texas, but this was the result of a re-analysis of the long-term indicators. No substantial precipitation fell on the region

The West and Rocky Mountains: Heavy precipitation finally fell on parts of California. Amounts of 5 to 12 inches were fairly common across the southern Cascades, the western tier of the state as far south as the San Francisco Bay area, and the northern and central Sierra Nevada. Between 2 and 5 inches were recorded in the southern Sierra Nevada, and along the western tier from Monterey southward to San Luis Obispo. Elsewhere, scattered totals of 0.5 to locally 2.0 inches were observed across much of the northern halves of the Rockies and Intermountain West, part of southwestern California, and a few of the higher elevations in Arizona. Meanwhile, most areas from central Utah and Nevada southward through southeastern California recorded a few tenths of an inch at best, and similarly low amounts fell on northeastern Montana and all but the western tier of Wyoming.

Despite the large precipitation totals in parts of California, its effect on the region's dryness and drought was surprisingly small. D0 was pulled out of interior northern California, and D1A conditions retreated only slightly to the south and east. Despite the wet week, basin-average totals since the start of the water year (October 2006) were only 50 to 60 percent of normal. The storm was a relatively warm one, so its effect on snowpack water content was even less impressive. As of mid-February, there were a few locations northwest of Lake Tahoe that were slightly above 70 percent of normal, but most sites in the central and southern Sierra Nevada were only 35 to 50 percent of normal.

In fact, precipitation totals since the start of the water year are below normal through many of the mountainous regions of the West, and with temperatures generally averaging above normal, the percent of normal snowpack water content is even lower in most places. As a result, several areas of deterioration were introduced this week. D2A conditions expanded westward in southern California, the D1A boundary was moved northward to include the southwestern one-third of Nevada, and D0 conditions were broadly expanded to include all of Utah and adjacent sections of Idaho and Nevada. Snowpack water content generally ranged from 55 to 75 percent of normal in the new D0 areas despite the fact that actual water year precipitation totals were somewhat above normal in southeastern Utah.

Finally, with above-normal water year precipitation totals and only slightly below normal snowpack water content, D0 conditions were removed from northern Montana.

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Alaska, Hawaii, and Puerto Rico: In the D0 region of Alaska, a few locations reported between one-tenth and one-quarter inch of precipitation, but at most sites amounts were barely measurable at best, allowing D0 conditions to persist.

In Hawaii, decent rains (1 to 4 inches) fell on parts of eastern Hawaii Island, northern Maui, and northern Kauai, but only scattered amounts exceeded 0.5 inch elsewhere, and D0 conditions were maintained throughout the state.

It was an exceptionally dry week throughout Puerto Rico, though some stations in eastern parts of the island recorded about one-quarter inch of rain. With rainfall deficits continuing to grow, both D0 and D1AH conditions were expanded northwestward. For the last 60 days, only the interior southwestern parts of the island have been wetter than normal, with most other locations (except the northern tier) recording under half of normal. Longer-term dryness is most substantial in central and eastern parts of the island, where some locations are 1 or 2 FEET short of normal rainfall for the last 6 months.

Looking Ahead: During the next 5 days (February 15-19), moderate precipitation (0.25 to 1.25 inches) is forecast for the central Appalachians and parts of the central and northern Rockies. Light amounts are expected in most other areas of dryness and drought, but little or none is anticipated from the northern tiers of California, Nevada, and Utah southward to the Mexican border, and in most of Kansas, Oklahoma, and Texas.

For the ensuing 5 days (February 20-24), the odds favor subnormal precipitation in the dry areas of Alaska, central and northern sections of the western Plains, and peninsular Florida. In contrast, wet weather is anticipated for California, Nevada, Arizona, and western Utah.

Author: Richard Tinker, Climate Prediction Center, NOAA

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 15, 2007