



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

Weekly Report - Snowpack / Drought Monitor Update **Date:** **February 22, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snowpack: For the 2007 Water Year (WY), snow water-equivalent (SWE) values continue to be above normal over the Northern Cascades and the Front Range in Colorado and New Mexico (Fig. 1). Values are exceptionally low over the Sierra Nevada near Lake Tahoe, eastern Oregon and southern Utah (Fig. 1a). During the past week, snowfall was abundant over the Cascades and to a less extent over the Intermountain West, Great Basin, and Northern and Central Rockies. Snow depths decreased over the Sierras, Southern Rockies and in Arizona (Fig. 1b).

Temperature: During the past seven days, temperatures were above normal over the entire West with readings up to 10°F above normal over the Intermountain West and Sierra Nevada ranges (Fig. 2).

Precipitation: During this report period, precipitation (rain and snow) was significantly above normal over the western halves of Washington and Oregon, northern Idaho, Intermountain Ranges, and spotty around Wyoming and Colorado. Little precipitation fell in California and the 4-Corners region of the Southwest (Fig. 3). For the Water Year, only the Cascades, portion of the eastern slope of the Rockies, and ranges over southwest Colorado are above normal (Fig. 3a).

WESTERN DROUGHT STATUS

The West and Rocky Mountains: A few locations in western Montana and northern Utah received 2 to 3 inches of precipitation last week while amounts of 1 to 2 inches were scattered to isolated across southwestern Montana, western and northern Wyoming, far southeastern Idaho, north-central Utah, central Arizona, and southwestern California (particularly near San Diego). Light precipitation fell on most other existing areas of dryness and drought, keeping conditions unchanged in most areas, except California and Nevada. Exceptionally low snowpack and subnormal precipitation over the last 5 months led to the expansion of D0 into north-central California with D1A pushing into northwestern Nevada and northeastern California. Snowpack is less than half of normal for mid-February in the Sierra Nevada and the higher elevations of northwestern Nevada. Reservoir levels and water supplies have not yet been impacted by this dryness, but concerns about agricultural and environmental impacts are increasing as conditions persist (Figs. 4 and 4a).

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

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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 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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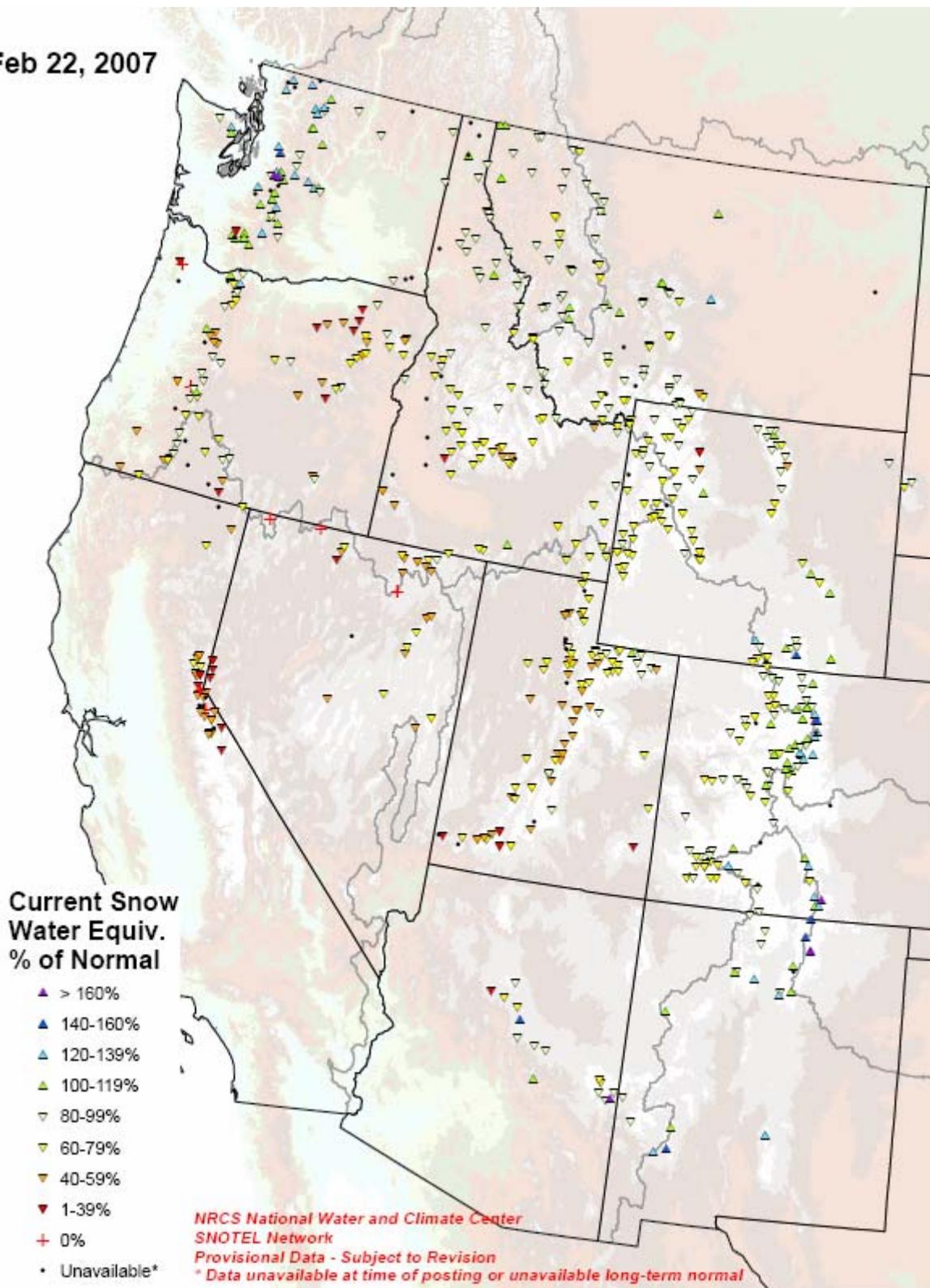


Fig. 1: Snow Water-Equivalent as a percent of normal for Water Year 2007.

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

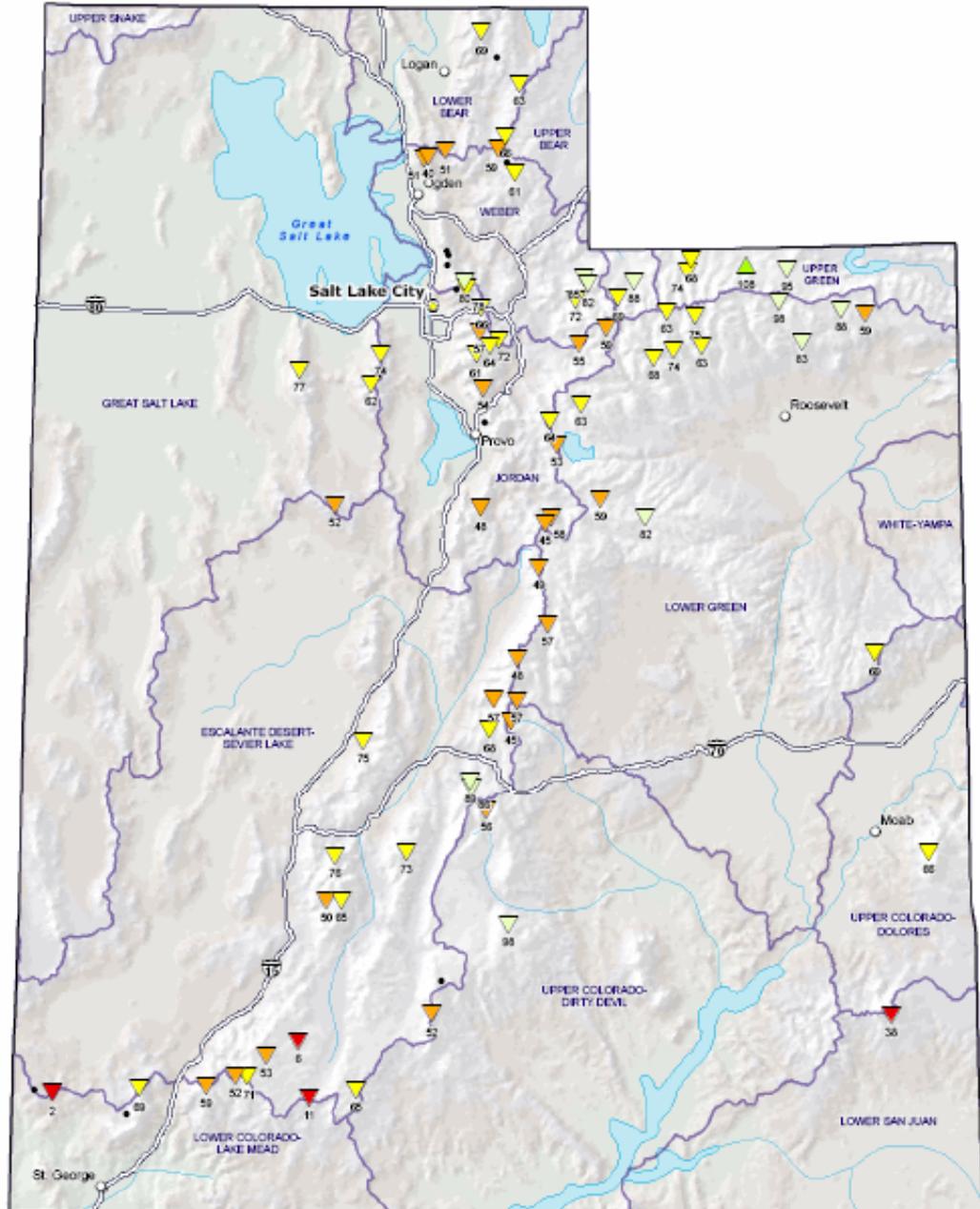
Utah SNOTEL Snow Water Equivalent (SWE) % of Normal

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Current SWE
% of Normal

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

*Provisional Data
Subject to Revision*



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

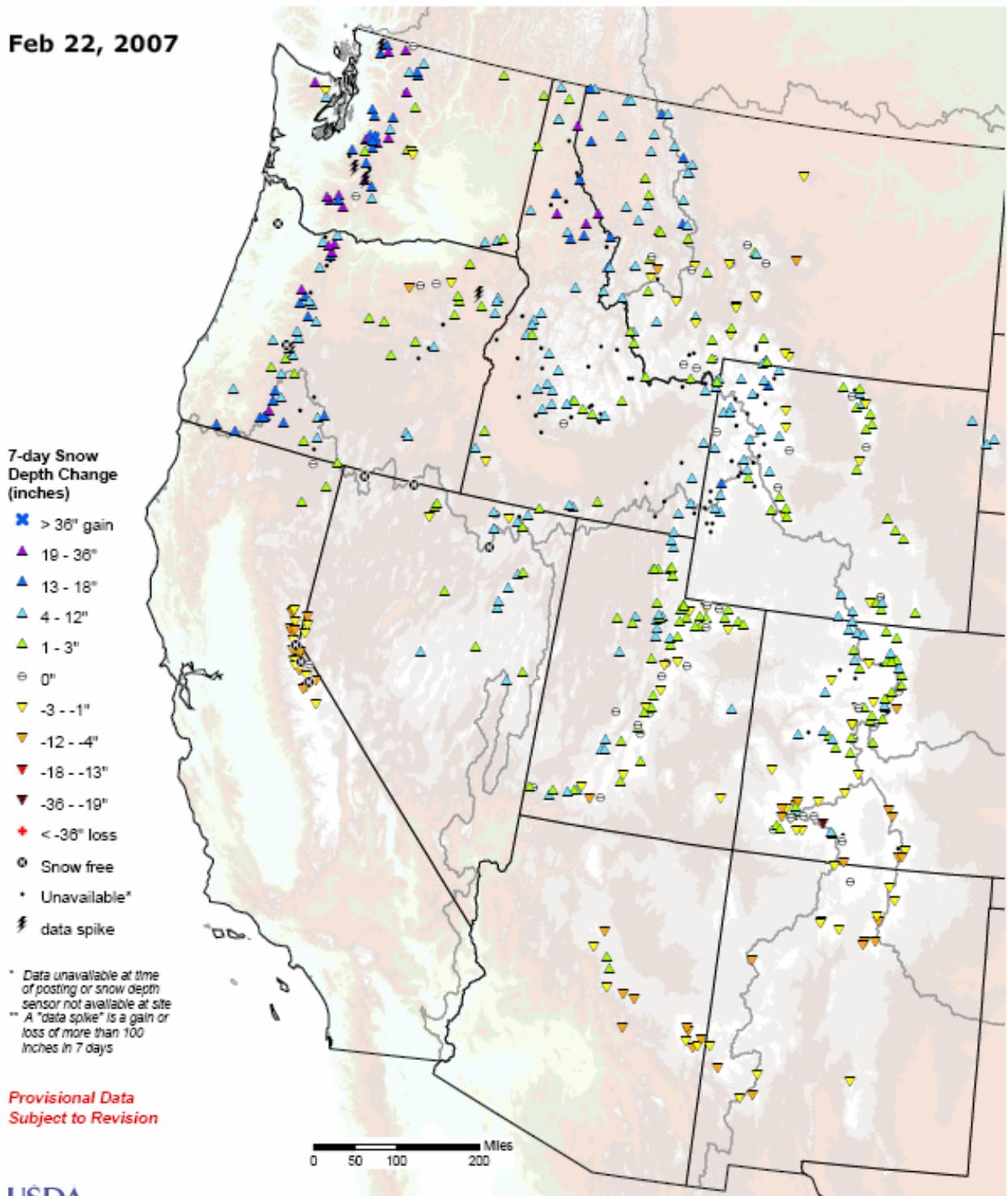
** Data unavailable at time of posting or
unavailable long-term normal.*

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

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7-Day SNOTEL Snow Depth Change

Feb 22, 2007



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

Automated snow depth measurements are known to occasionally read spuriously large during precipitation events. Snow depth is also difficult to accurately measure at near-snow free conditions; data should be used with caution.

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

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

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

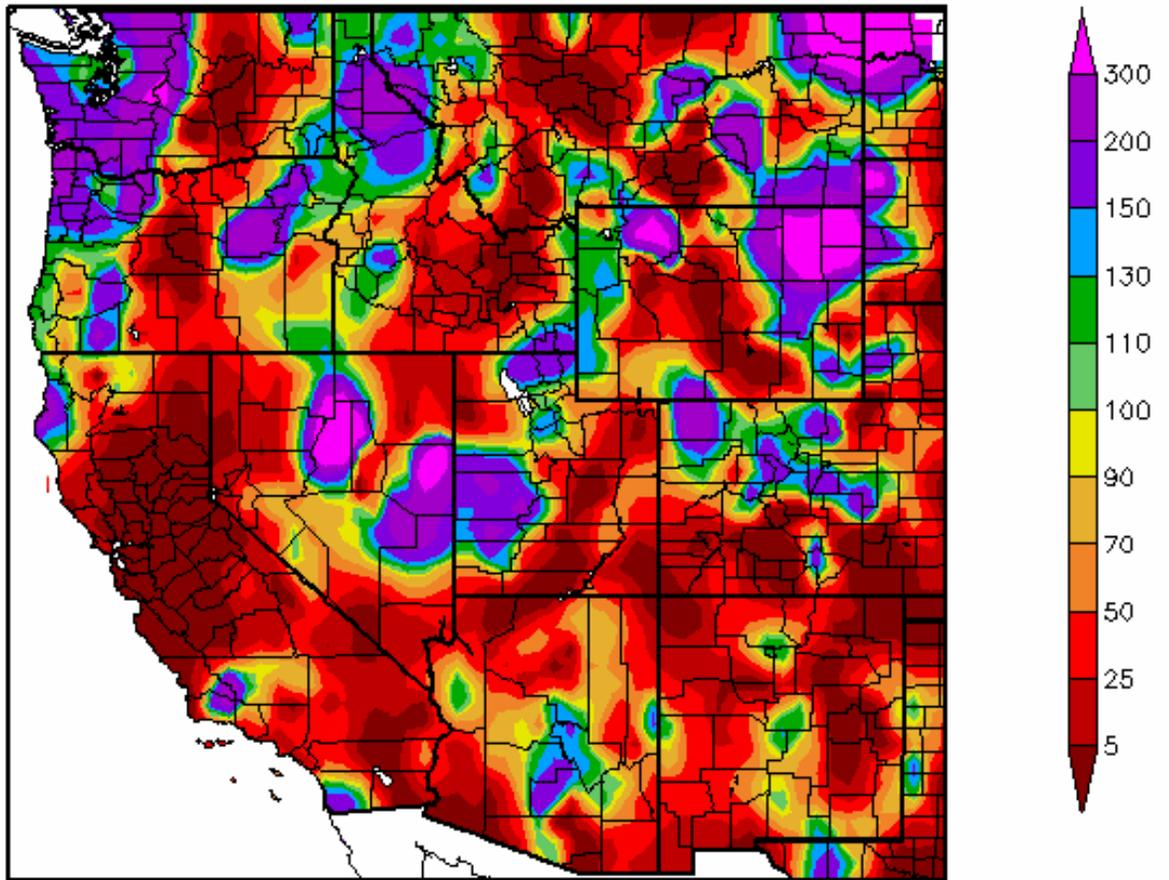
- ✖ < -20 cold
- ▼ -20 - -15
- ▼ -15 - -10
- ▼ -10 - -5
- ▼ -5 - 0
- ▲ 0 - 5
- ▲ 5 - 10
- ▲ 10 - 15
- ▲ 15 - 20
- ★ >20 warm

*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>

Percent of Normal Precipitation (%)
2/15/2007 – 2/21/2007



Generated 2/22/2007 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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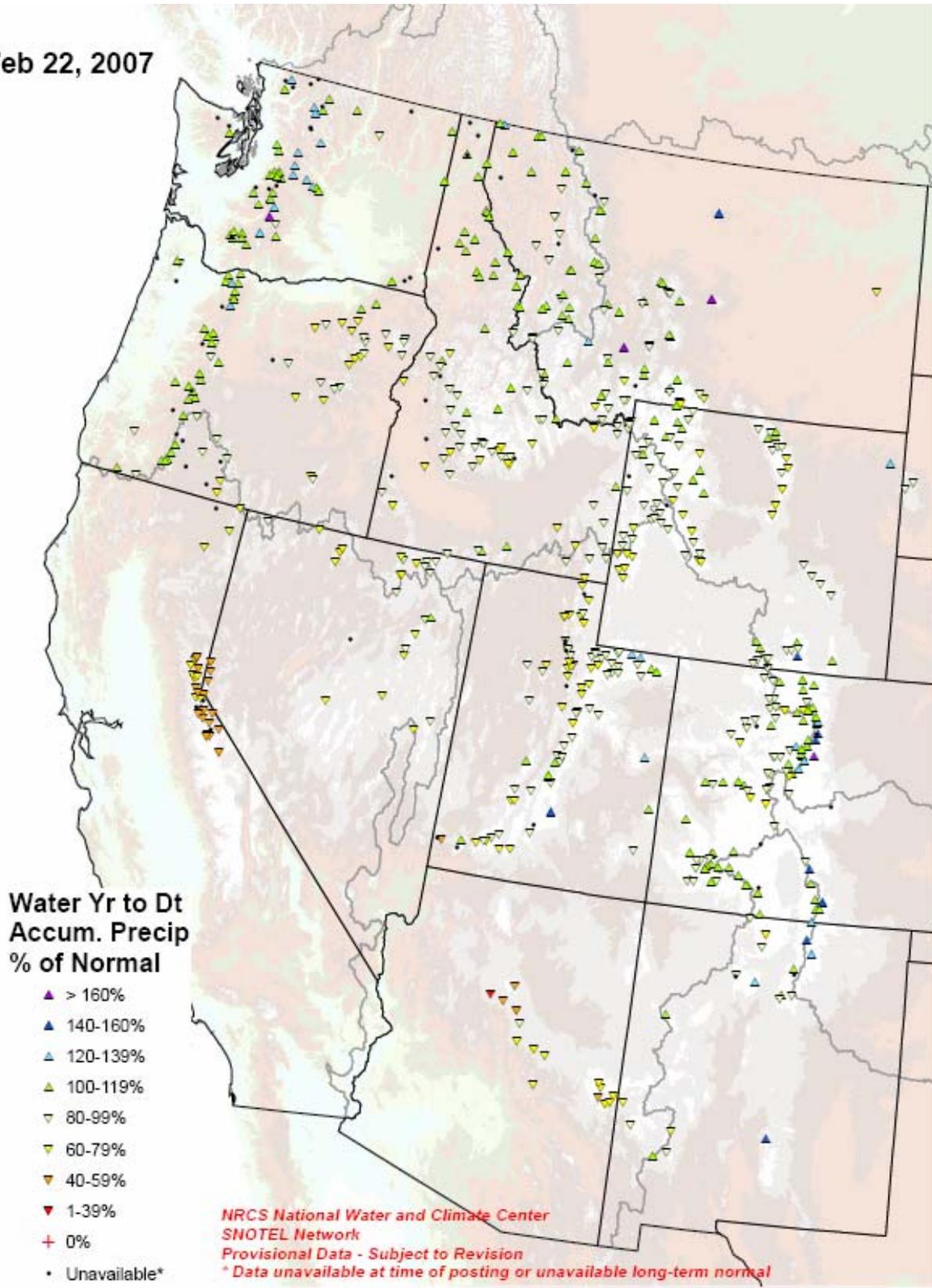
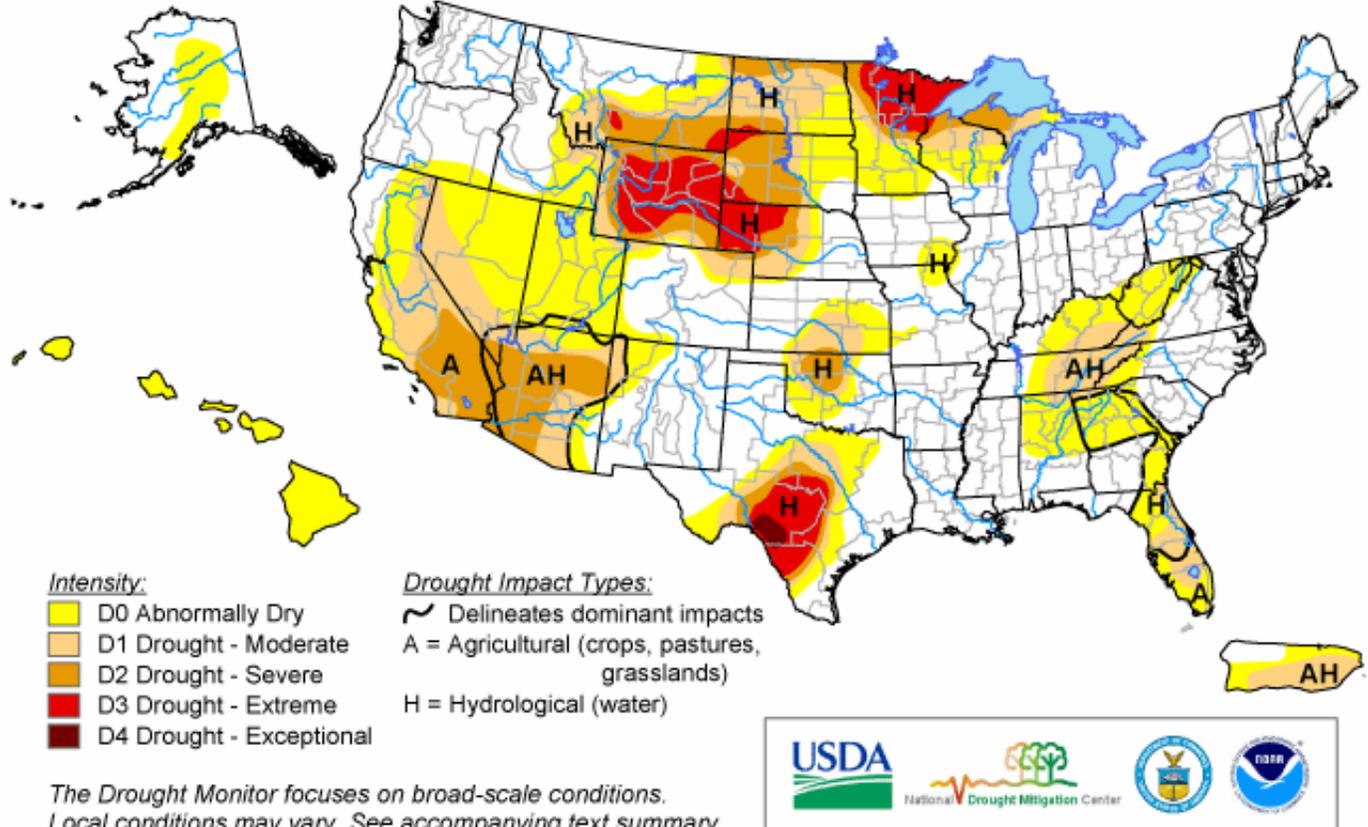


Fig. 3a. SNOTEL station water year (since October 1) precipitation as a percent of normal.
<ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideWYTDPrecipPercent.pdf>

U.S. Drought Monitor

February 20, 2007
Valid 7 a.m. EST



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

Released Thursday, February 22, 2007
Author: Richard Tinker, Climate Prediction Center/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

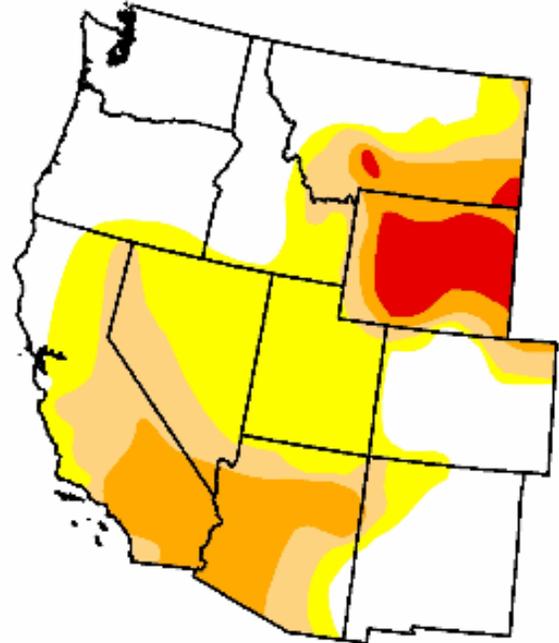
February 20, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	40.4	59.6	34.2	18.9	4.8	0.0
Last Week (02/13/2007 map)	41.7	58.3	33.2	18.9	5.0	0.0
3 Months Ago (11/28/2006 map)	58.9	41.1	23.9	10.8	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 (02/21/2006 map)	59.0	41.0	24.7	11.7	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 22, 2007
Author: Richard Tinker, Climate Prediction Center/NOAA

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

Calculated Soil Moisture Ranking Percentile FEB 21, 2007

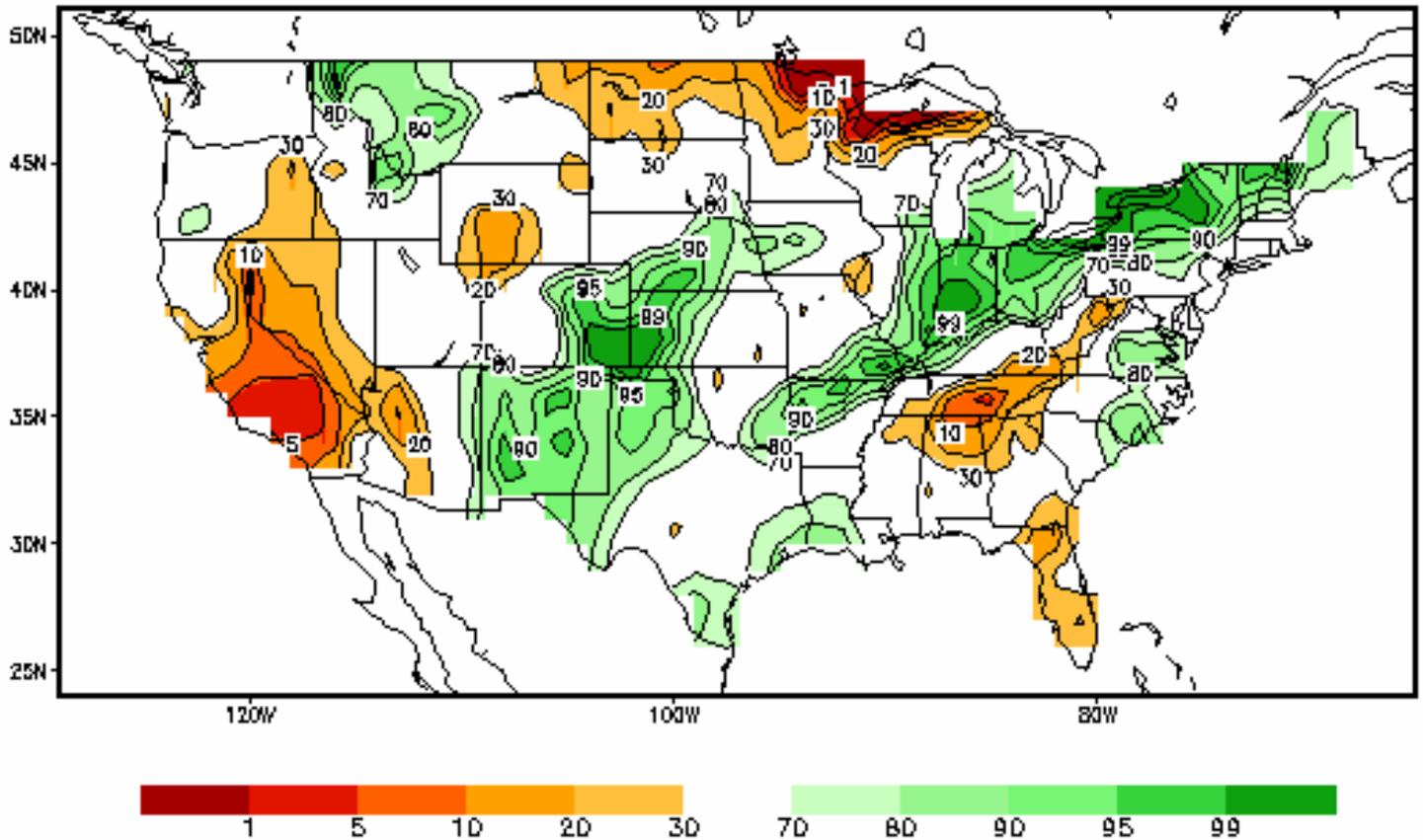


Fig. 5: Soil Moisture Ranking Percentile based on 1932-2000 climatology. Source NOAA-CPC <http://www.cpc.ncep.noaa.gov/soilmst/img/curr.w.rank.daily.gif>

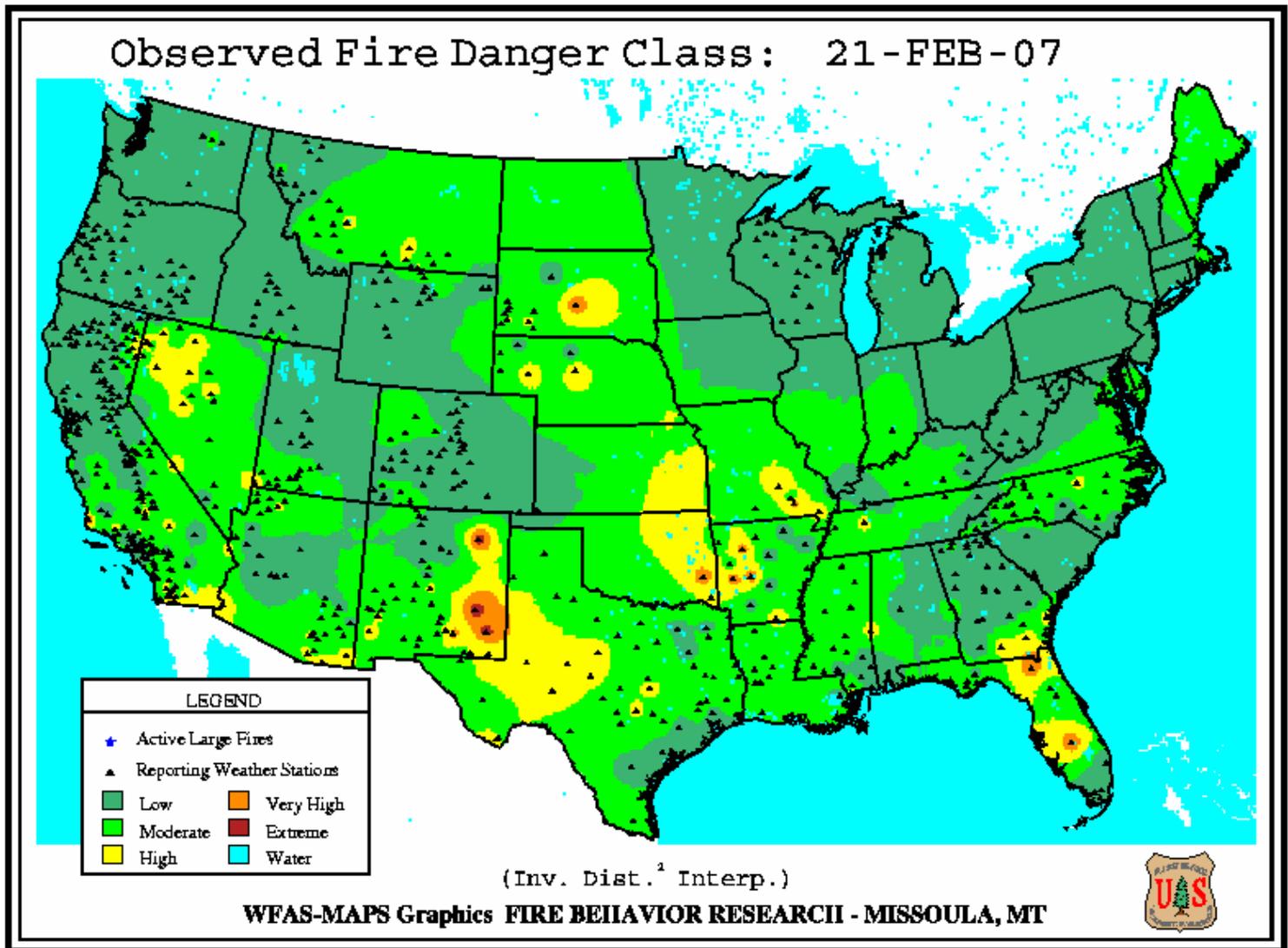
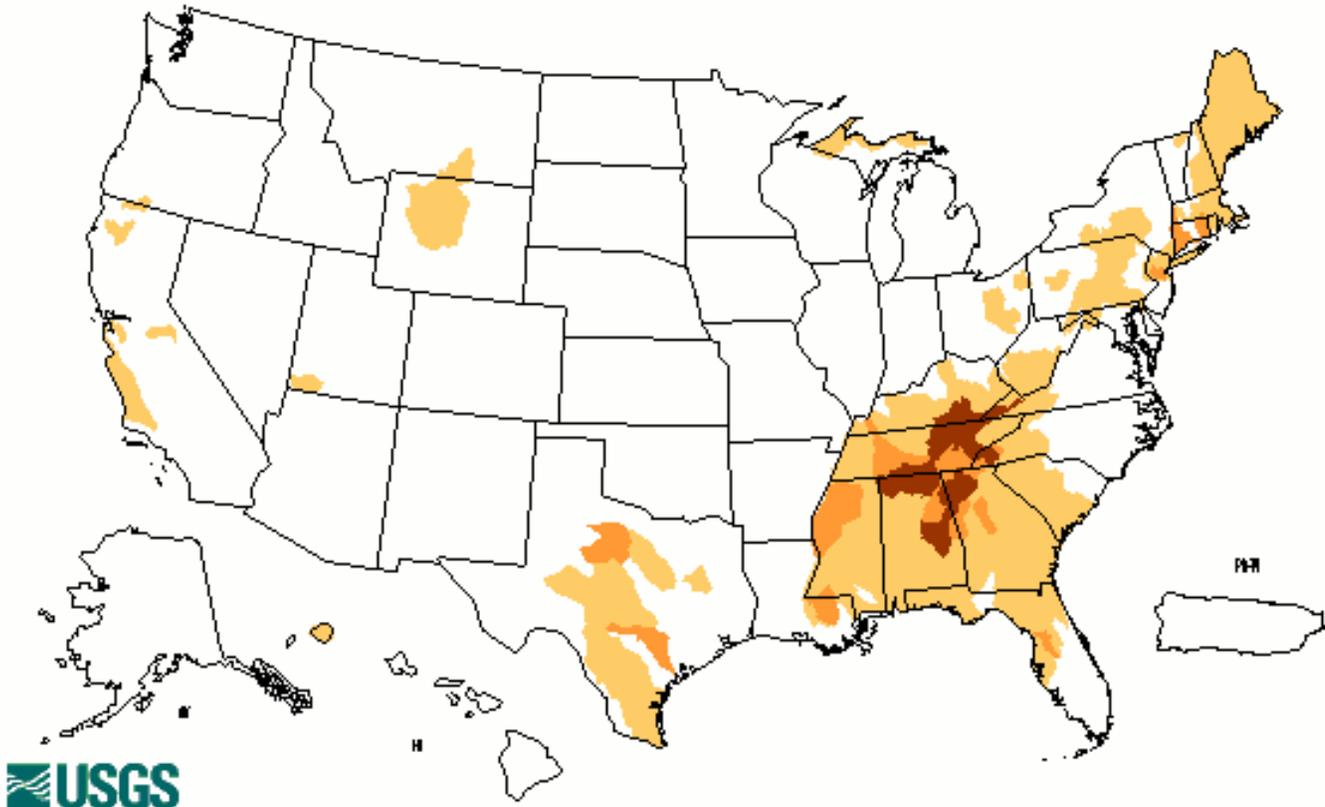


Fig. 6. Observed Fire Danger Class. Source: Forest Service Fire Behavior Research – Missoula, MT
http://www.fs.fed.us/land/wfas/fd_class.gif

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Wednesday, February 21, 2007



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 20, 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: While a winter storm pushed through the Northeast last week, most areas of dryness and drought received relatively light precipitation, with a few areas of moderate precipitation observed. Generally 1 to 2 inches fell on far northeastern West Virginia and adjacent sections of Maryland and northern Virginia, part of north-central Tennessee, and scattered sites across central Georgia, western South Carolina, and central Florida. In contrast, less than 0.5 inch fell on the southern half of the Appalachians and adjacent areas to the south and west, and across both northern and southern portions of the Florida Peninsula.

As a result, D1AH conditions expanded into southwestern Virginia, southeastern Kentucky, and parts of northern Alabama and Georgia. Meanwhile, abnormal dryness expanded northwestward into northern and west-central Kentucky, and southeastern most Ohio. Farther south, a relatively dry start to the year has again raised concerns about hydrologic impacts across central Georgia and the Savannah River Valley, with D0H conditions expanding into these regions.

The Plains and Great Lakes: Reported precipitation totals were less than 0.5 inch throughout the D0 to D3 areas stretching from eastern Wyoming and Montana eastward through Michigan's Upper Peninsula and southward through Texas, but most areas did receive at least some measurable precipitation. This led to unchanged conditions across a vast majority of these areas, with a few exceptions. Specifically, D4H was removed from near the Rio Grande River Valley, and D1H through D3H conditions upstream were curtailed slightly from the north and west, based on a reassessment of long-term precipitation deficits in these areas and some input reporting less seriously dry conditions just west of the Rio Grande River in Mexico. In addition, steady light to moderate precipitation during the last several weeks induced improvement to D2H in northeastern Wyoming and parts of the adjacent Dakotas and Montana, and conditions improved to D1H in the northern Black Hills and some adjacent areas where precipitation has been heavier for the last several months than in the nearby D2H areas.

The West and Rocky Mountains: A few locations in western Montana and northern Utah received 2 to 3 inches of precipitation last week while amounts of 1 to 2 inches were scattered to isolated across southwestern Montana, western and northern Wyoming, far southeastern Idaho, north-central Utah, central Arizona, and southwestern California (particularly near San Diego). Light precipitation fell on most other existing areas of dryness and drought, keeping conditions unchanged in most areas, except California and Nevada. Exceptionally low snowpack and subnormal precipitation over the last 5 months led to the expansion of D0 into north-central California with D1A pushing into northwestern Nevada and northeastern California. Snowpack is less than half of normal for mid-February in the Sierra Nevada and the higher elevations of northwestern Nevada. Reservoir levels and water supplies have not yet been impacted by this dryness, but concerns about agricultural and environmental impacts are increasing as conditions persist.

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Alaska, Hawaii, and Puerto Rico: In the D0 region of Alaska, no precipitation fell on northern and central sections while light amounts fell on most of the area's southern tier, with a small area of heavy totals southeast of Anchorage. With 90-day precipitation totals now significantly below normal, D0 conditions expanded southwestward through King Salmon. In contrast, D0 conditions were pulled out of Anchorage and areas to the south and east, where precipitation totals have been higher recently compared to areas farther north and west.

In Hawaii, decent rains (1 to 4 inches) fell on parts of eastern Hawaii Island, eastern Maui, central and southeastern Oahu, and northern Kauai, with only isolated reports exceeding 0.5 inch elsewhere. This kept D0 conditions intact throughout the state.

Some precipitation finally fell on parts of Puerto Rico, with 1 to locally 3 inches reported across the central tier of the Commonwealth. However, these totals were not sufficient to improve the Drought Monitor depiction, and with another dry week experienced in the southern sections of the Island, D0 expanded westward to cover all of southwestern Puerto Rico, and D1 expanded westward to the boundary of the D0 area depicted last week.

Looking Ahead: The next 5 days (through February 26) are expected to bring moderate to heavy precipitation to some areas currently experiencing dryness and drought, specifically northern California, the Sierra Nevada, the upper and middle Mississippi Valley, the western Great Lakes region, and the Appalachians. Most other D0 through D4 areas should receive light precipitation, except southwestern California, southern Nevada, southwestern Arizona, eastern Montana, part of the western Dakotas, northwestern Nebraska, southwestern Oklahoma, central and western Texas, and the southern Florida Peninsula. Less than 0.1 inch is forecast for these locations.

The next 5 days (through March 3) should bring wet weather to the Appalachians, Great Lakes region, the northern Plains, most of the Great Basin, and the northern half of California. In contrast, the odds favor subnormal precipitation in Alaska, far southern California, most of Arizona and New Mexico, central and northwestern Texas, and the central Plains.

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 21, 2007