



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

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**Weekly Report - Snowpack / Drought Monitor Update      Date:    March 8, 2007**

## **SNOTEL SNOWPACK AND PRECIPITATION SUMMARY**

**Snowpack:** For the 2007 Water Year, the only regions showing a surplus in snow water-equivalent (SWE) totals are over the Northern Cascades and the Front Range of the Rockies in Colorado and New Mexico (Fig. 1). Increasing deficits are being experienced over eastern Oregon, the Sierra near Lake Tahoe, southern Utah, and all of Arizona. During the week, SWE values completely reversed (decreased) from last week over the Coastal Ranges of Oregon and Washington, the Northern Sierra, and Great Basin (Fig. 1a). Snow depths have decreased significantly over the Cascades and Sierra and to a lesser extent across the remainder of the West (Fig 1b). Warmer temperatures and snow settlement from last week's heaviest snows are contributing factors for these decreases. Snow densities are approaching the melting point for snow (e.g., percent of water in snow greater than 45 percent) over the Cascades (see: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideDensityPercent.pdf>). Warmer than normal weather is expected next week and this is expected to signal (in earnest) the start of the spring melt season across most of the West.

**Temperature:** During the past seven days, temperatures ranged from up to 10°F below normal over the Central Rockies to 10°F above normal over the Cascades (Fig. 2).

**Precipitation:** During this report period, moderate precipitation (rain and snow) was confined to areas west of the crest of the Cascades (Fig. 3) while lesser amounts occurred over the higher elevations of the Western Mountains. No precipitation fell from southern California to southern New Mexico and much of Wyoming and Montana. For the Water Year, precipitation totals continue to be slightly above normal over the Cascades, northern Idaho, and scattered across the Rockies. California and Arizona are continuing their downward spiral trend with respect to precipitation deficits (Fig. 3a).

## **WESTERN DROUGHT STATUS**

**The West:** The drought area from southern interior California through Arizona saw little precipitation this week, resulting in no improvement to the D1 to D2 drought. Los Angeles has seen their driest season to date on record, with cumulative rainfall of 2.42 inches (21 percent of normal) since July 1. The Sierra did see additional snowfall early in the week, but snow water content remained less than 60 percent of normal at many locations, so there was no change in the D1 area across southern California and western Nevada. Low snowpack resulted in a slight northward advance of the D1 into southern Utah and also in eastern Oregon. A re-assessment of overall conditions, including updated surface water supply conditions, resulted in some pullback of the D3 and D2 in northern Wyoming and retreat southward of the drought areas in Montana. For similar reasons, D1 expanded slightly westward in eastern Montana (Figs. 4, 4a, and 4b).

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

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### **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, 4a, and 4b).

### **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. 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.

[http://water.usgs.gov/cgi-bin/waterwatch?state=us&map\\_type=dryw&web\\_type=map](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

## Weekly Snowpack and Drought Monitor Update Report

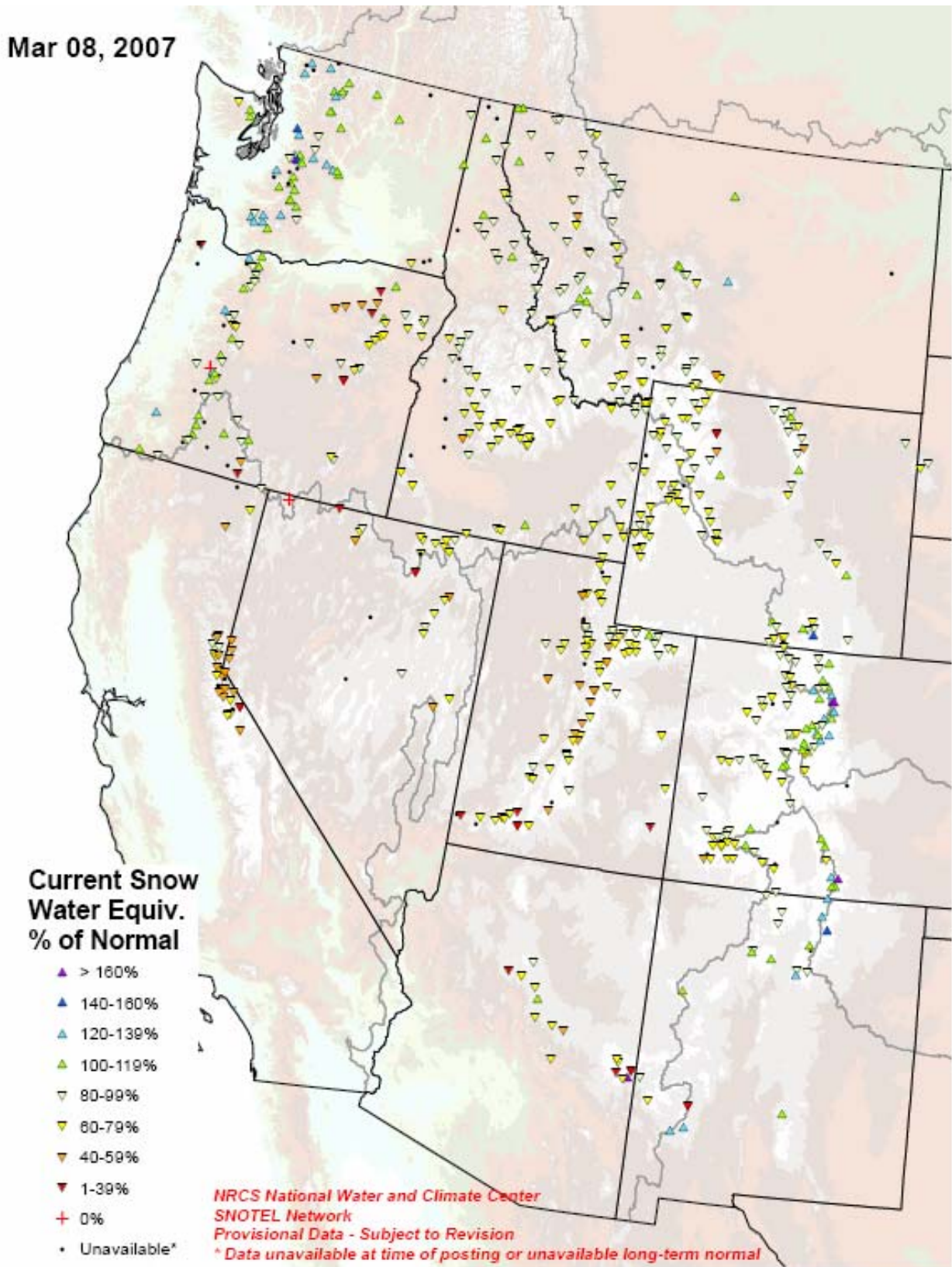


Fig. 1: Snow Water-Equivalent as a percent of normal for Water Year 2007.

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

## Weekly SWE Change

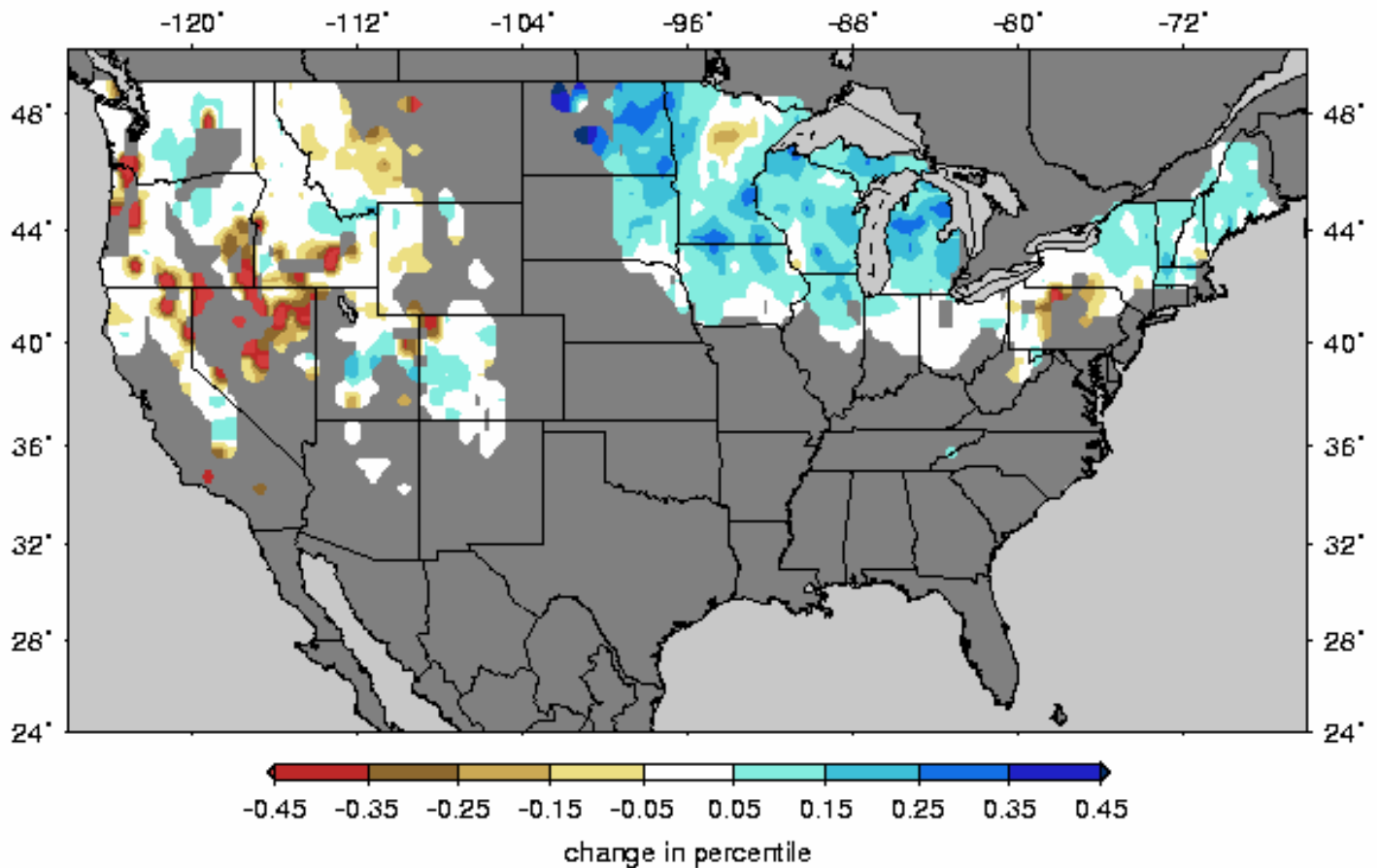


Fig. 1a. Snow Water-Equivalent changes as a percent during the period 27 February – 6 March 2007 based on 1915-2003 climatology. Ref: <http://www.hydro.washington.edu/forecast/monitor/index.shtml>



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### 7-day Snow Depth Change (inches)

- ✕ > 36" gain
- ▲ 19 - 36"
- ▲ 13 - 18"
- ▲ 4 - 12"
- ▲ 1 - 3"
- 0"
- ▼ -3 - -1"
- ▼ -12 - -4"
- ▼ -18 - -13"
- ▼ -36 - -19"
- ◆ < -36" loss
- Snow free
- Unavailable\*
- ⚡ data spike

\* Data unavailable at time of posting or snow depth sensor not available at site  
\*\* A "data spike" is a gain or loss of more than 100 inches in 7 days

*Provisional Data  
Subject to Revision*

0 50 100 200 Miles



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

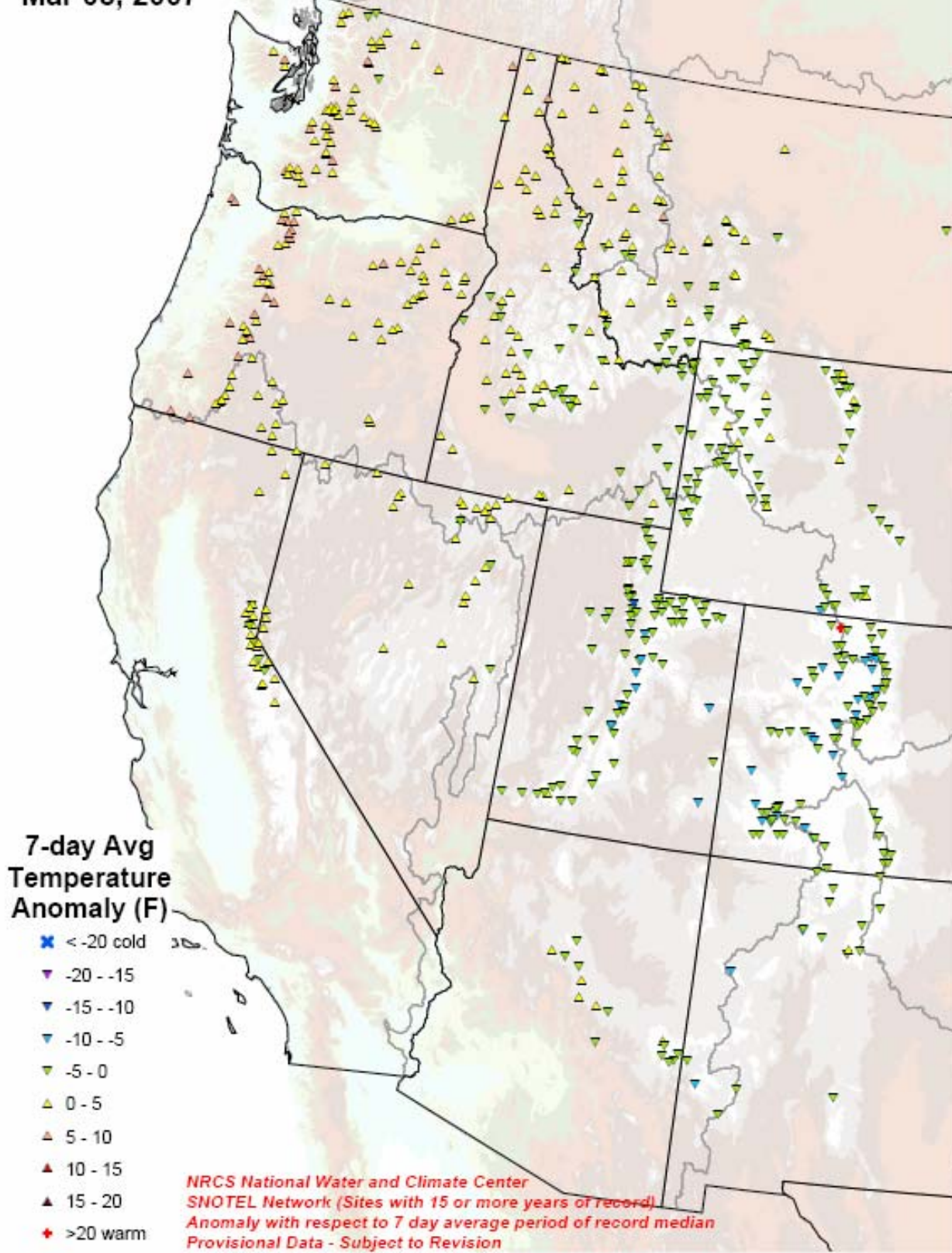
*Automated snow depth measurements are known to occasionally read spuriously large during precipitation events. Snow depth is also difficult to accurately measure at near-snow free conditions; data should be used with caution.*

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

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

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

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



## Weekly Snowpack and Drought Monitor Update Report

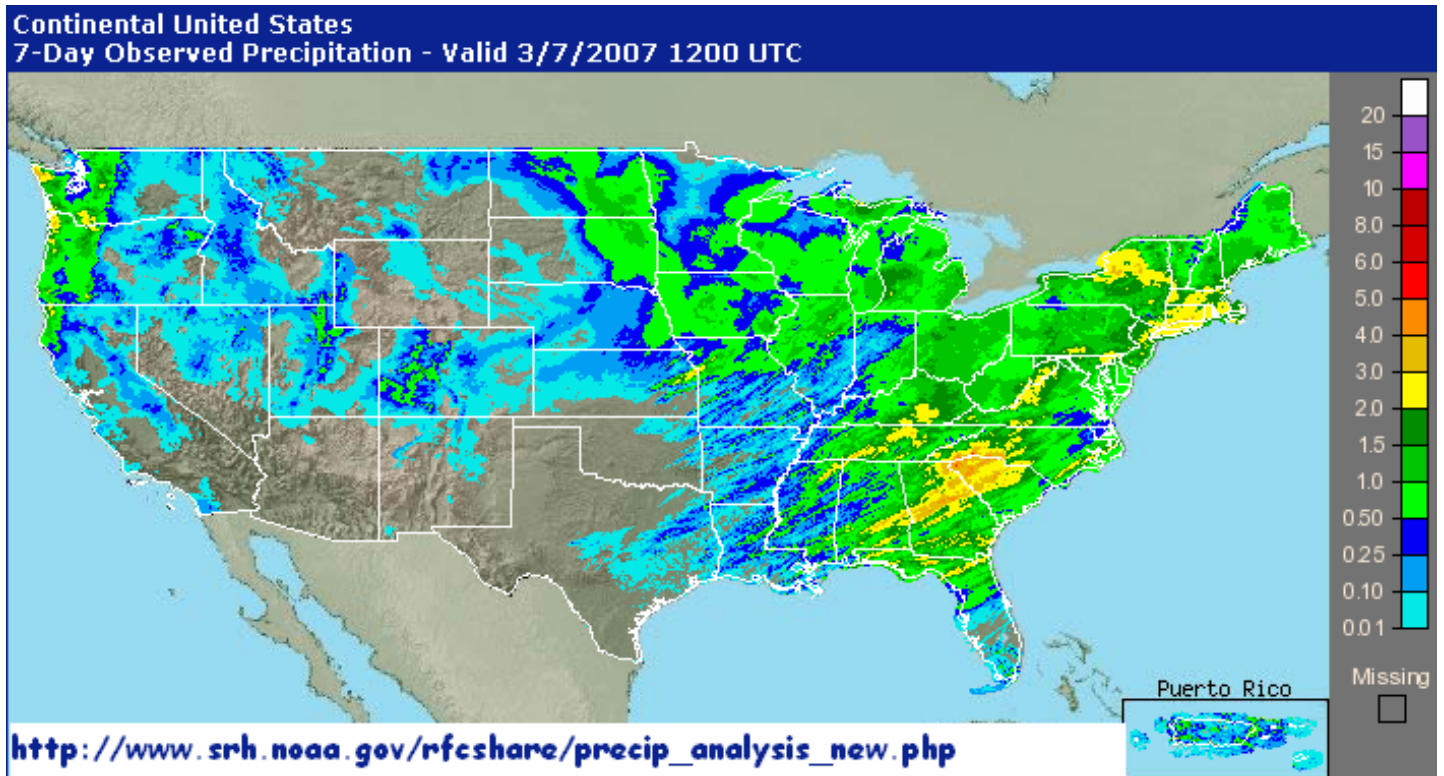
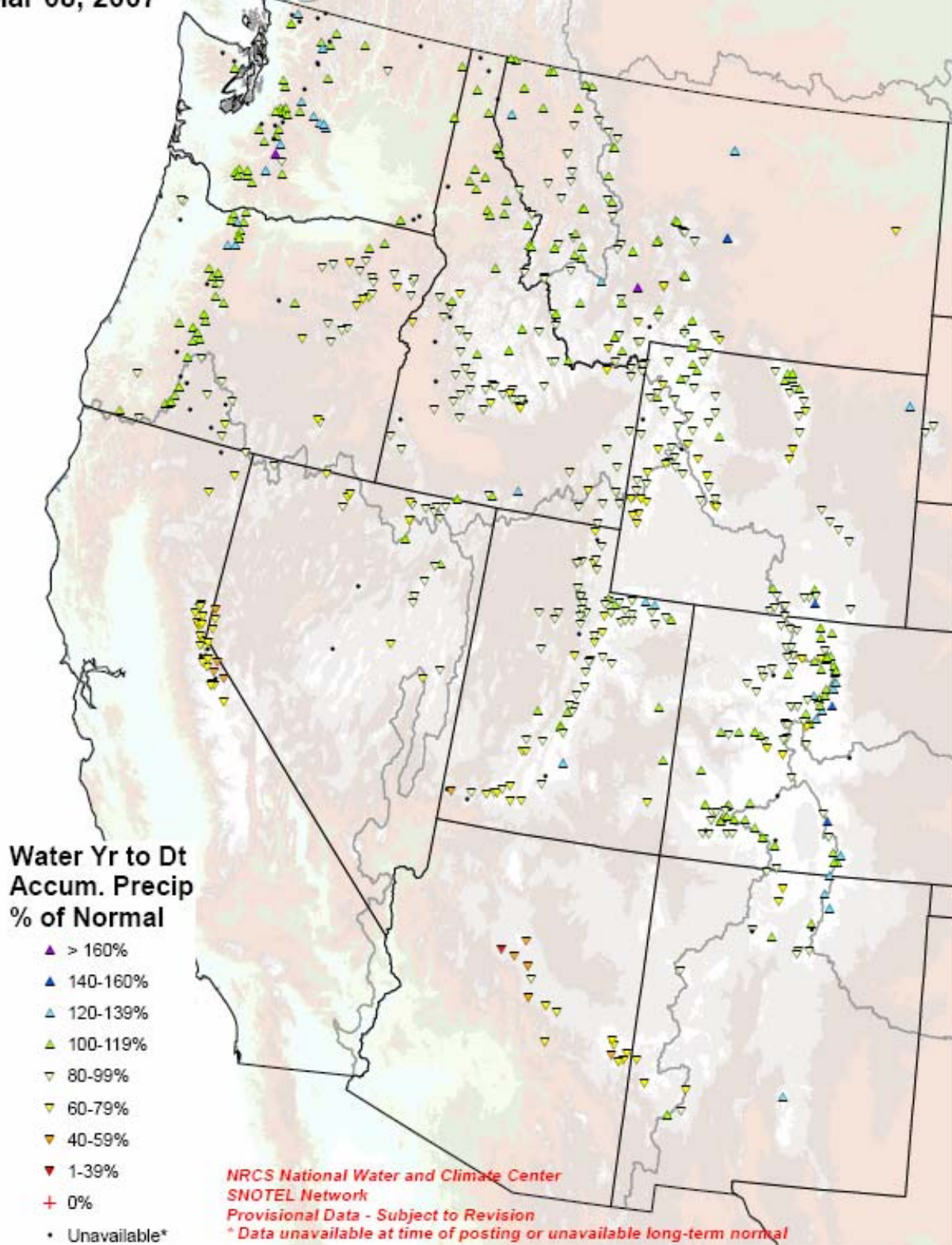


Fig. 3. Radar preliminary estimates of precipitation totals (inches) for the 7-day period ending March 7, 2007.

## Weekly Snowpack and Drought Monitor Update Report

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**Fig. 3a. SNOTEL station water year (since October 1) precipitation as a percent of normal.**

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



# U.S. Drought Monitor

March 6, 2007  
Valid 7 a.m. EST

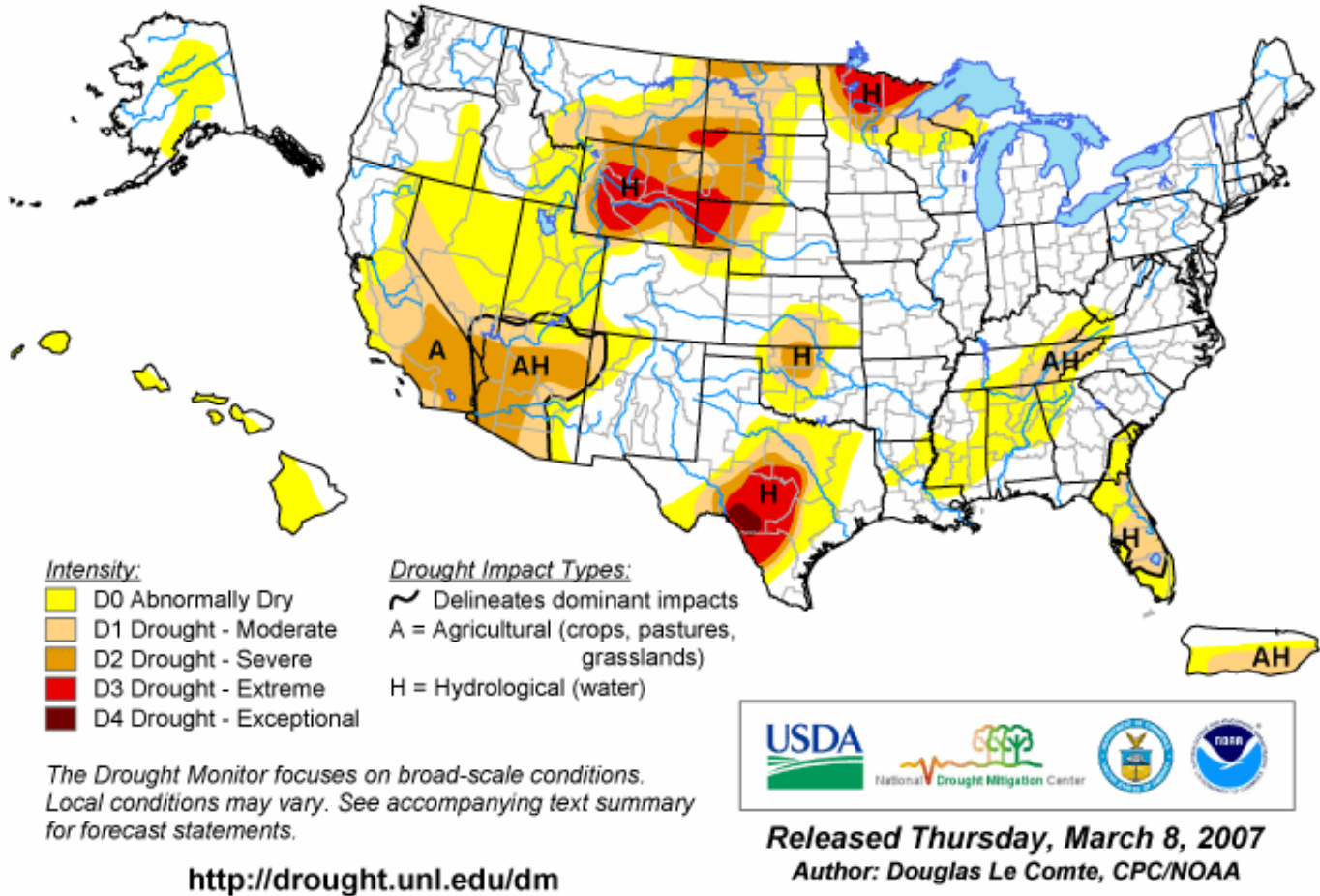


Fig. 4. Current Drought Monitor weekly summary.

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

# U.S. Drought Monitor

## West

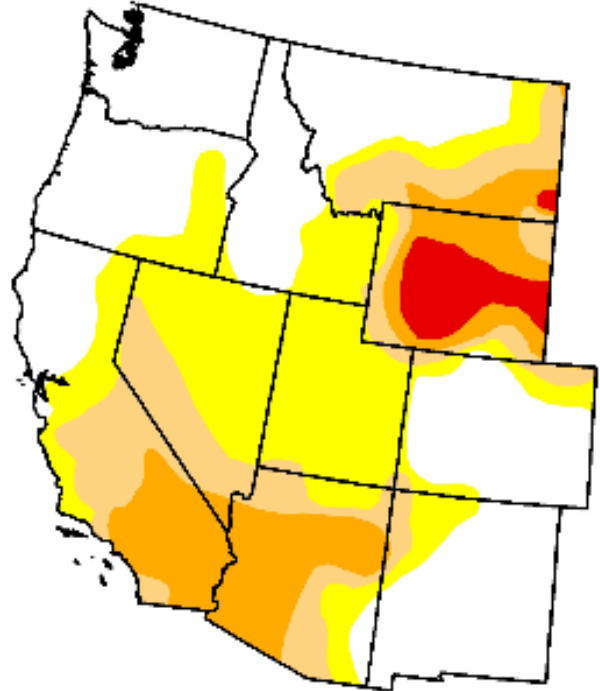
March 6, 2007

Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.9	58.1	31.8	16.6	3.2	0.0
Last Week (02/27/2007 map)	41.9	58.1	31.4	17.7	4.0	0.0
3 Months Ago (12/12/2006 map)	52.4	47.6	23.7	10.6	4.1	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 (03/07/2006 map)	58.0	42.0	25.1	14.8	6.7	0.0

### Intensity:

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



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

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



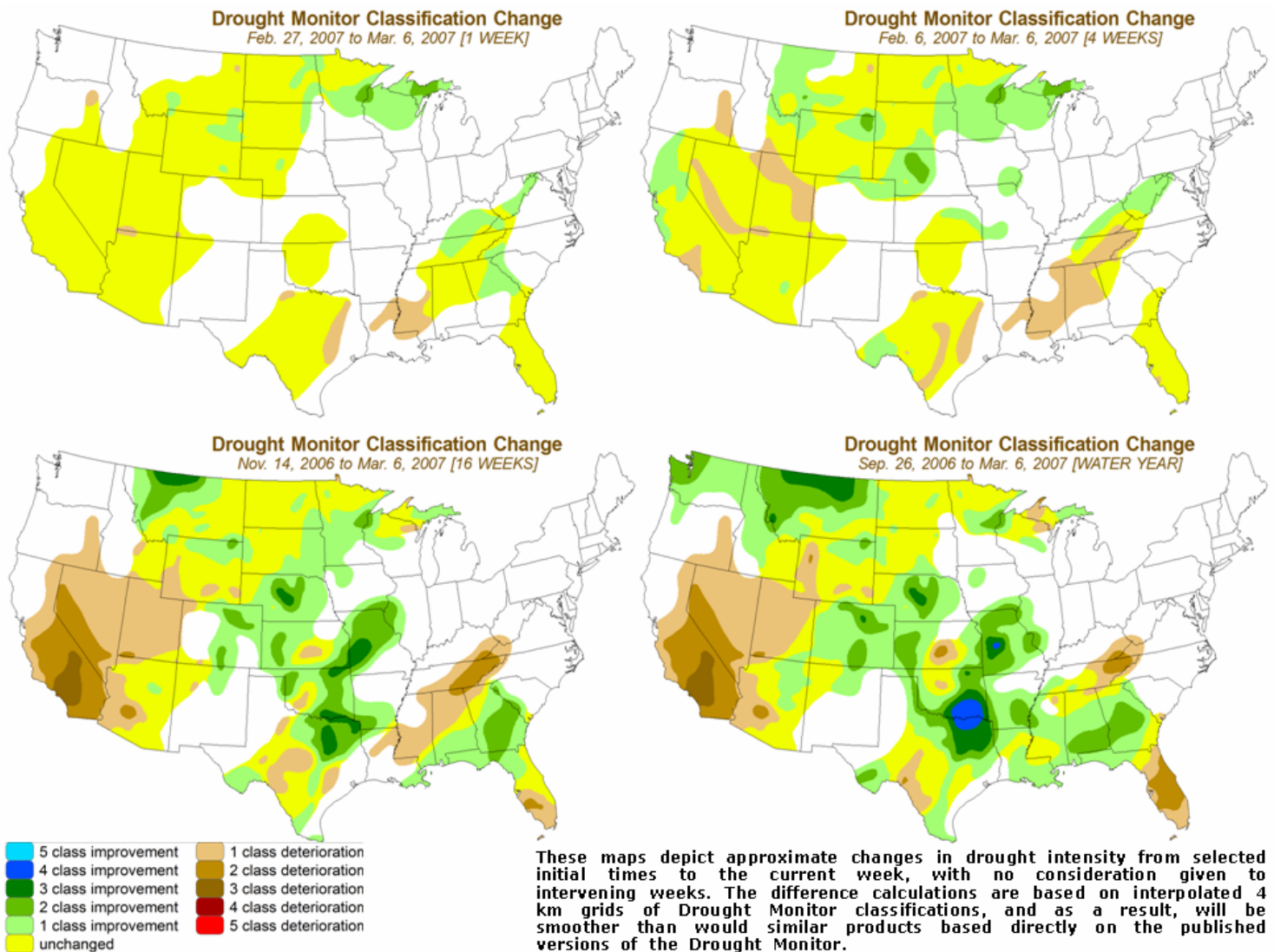
Released Thursday, March 8, 2007

Author: Douglas Le Comte, CPC/NOAA

Fig 4a. Drought Monitor for the Western States with statistics over various time periods.

Ref: [http://www.drought.unl.edu/dm/DM\\_west.htm](http://www.drought.unl.edu/dm/DM_west.htm)

## Weekly Snowpack and Drought Monitor Update Report

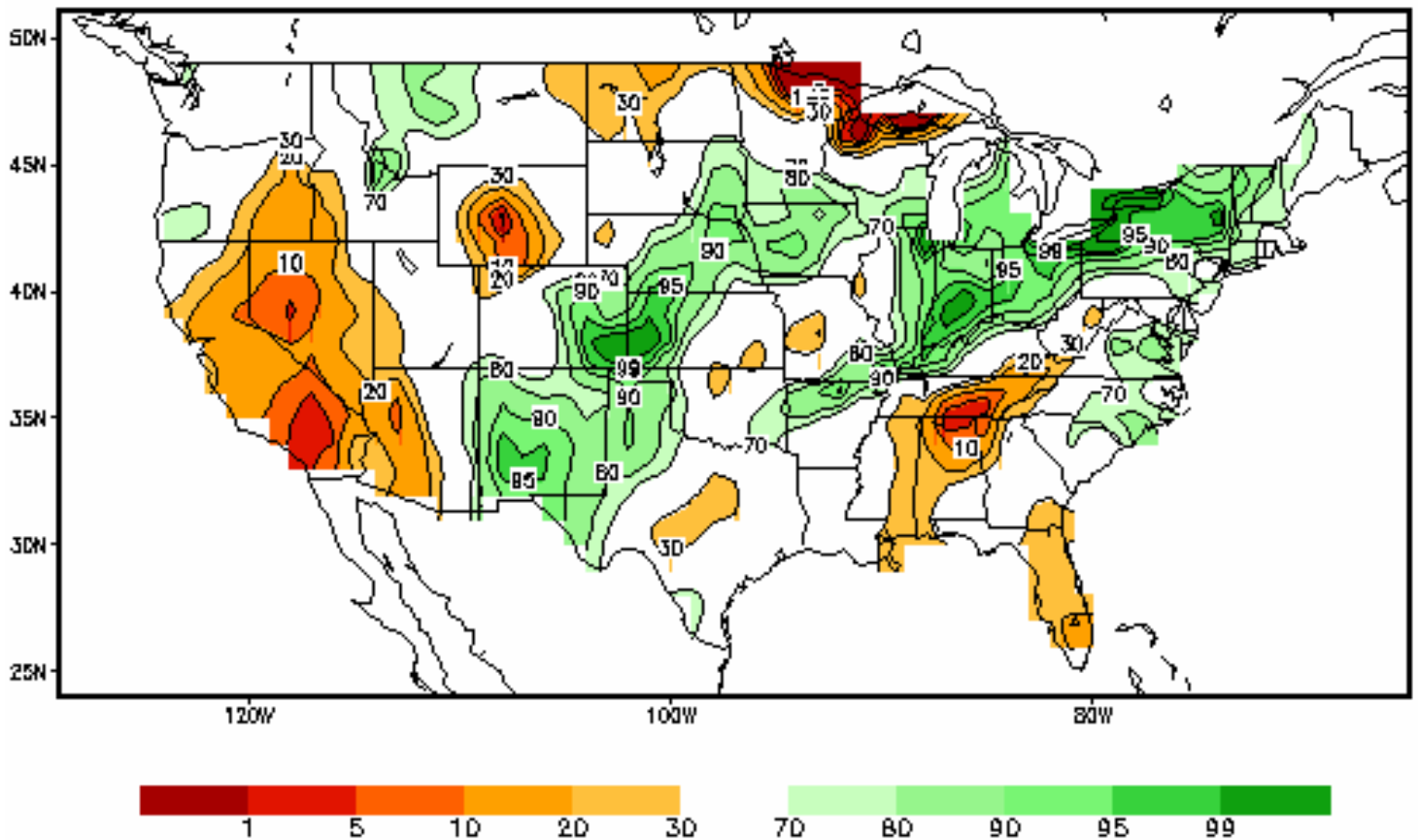


**Fig 4b. Drought Monitor classification changes over various time periods.**

Ref: <http://www.cpc.ncep.noaa.gov/products/predictions/experimental/edb/dm-change-4maps.png>



**Calculated Soil Moisture Ranking Percentile  
MAR 07, 2007**



**Fig. 5: Soil Moisture Ranking Percentile based on 1932-2000 climatology. Note continued severe dryness over southern California. Ref: <http://www.cpc.ncep.noaa.gov/soilmst/img/curr.w.rank.daily.gif>**

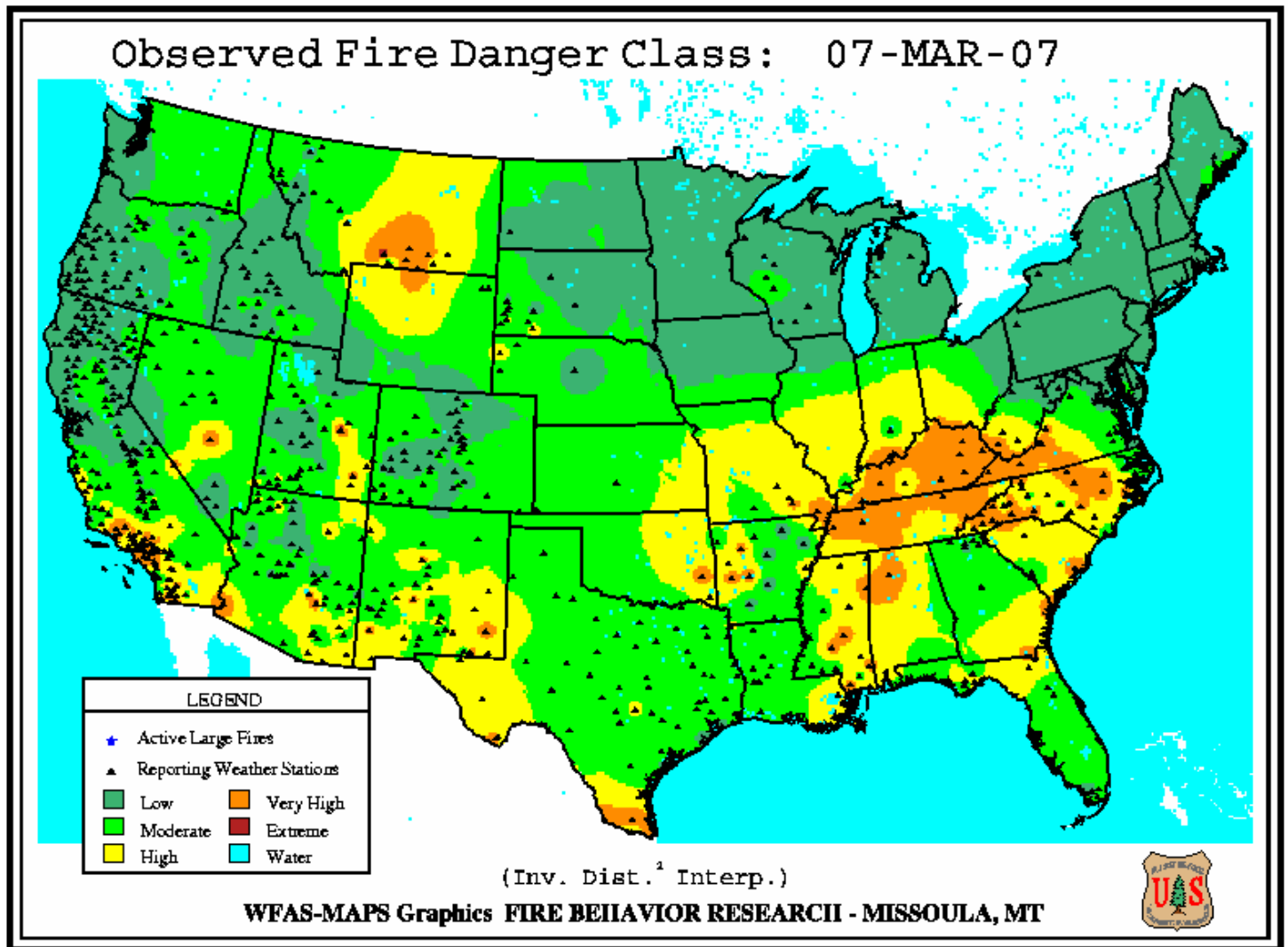
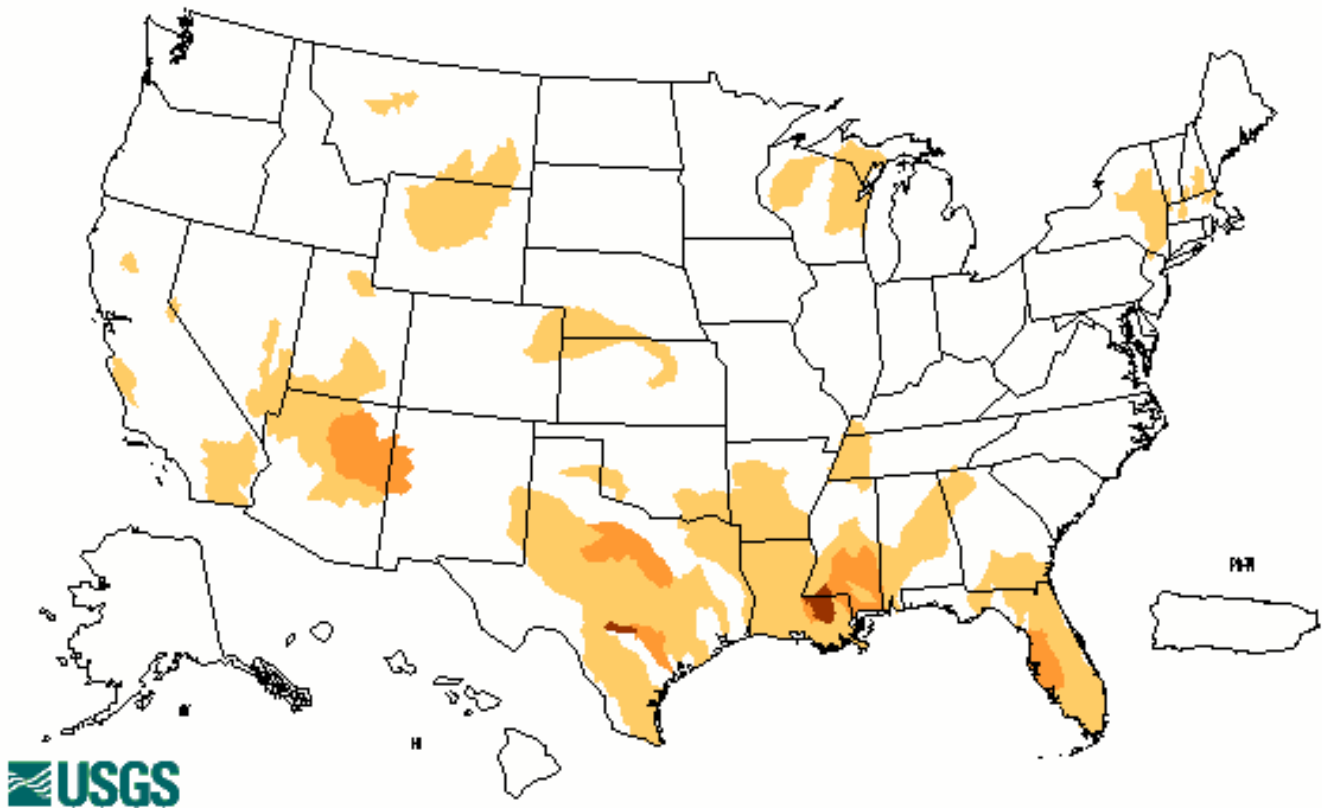


Fig. 6. Observed Fire Danger Class. Source: Forest Service Fire Behavior Research – Missoula, MT  
Ref: [http://www.fs.fed.us/land/wfas/fd\\_class.gif](http://www.fs.fed.us/land/wfas/fd_class.gif)

## Weekly Snowpack and Drought Monitor Update Report

Wednesday, March 07, 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>



## Weekly Snowpack and Drought Monitor Update Report

### National Drought Summary -- March 6, 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 second major storm system in 2 weeks brought heavy snow to the Upper Midwest and powerful thunderstorms to the South.

**Central States:** An intense storm system centered near southeastern Colorado on February 28 tracked northeastward to the southern Iowa area on March 1 and Wisconsin on the 2nd. The storm dumped at least 14 inches of snow on eastern South Dakota, southern and eastern Minnesota, northern Wisconsin, and northern Michigan, with totals reaching 20 inches in Duluth, Minnesota, and 25 inches in northern Wisconsin. The moisture caused a further pullback of the D0/D1/D2 drought complex in northern Minnesota and removed most of the D2 drought in Wisconsin and northern Michigan. In the core drought area of northern interior Minnesota, D3 persisted, as snowfall amounts totaled less than 10 inches, and 12-month precipitation totals remained as little as 50 percent of normal.

**Southeast:** The thunderstorms associated with the severe weather outbreak late in the week dropped over 2 inches of rain on parts of Kentucky, Tennessee, Georgia, and the Carolinas, reducing the D1 drought to a small area of eastern Tennessee and southeastern Kentucky, and removing D0 dryness from central Kentucky and most of West Virginia. The heavy rains ended D0 across central Georgia, but lingering low lake levels resulted in D0 remaining over northwestern and northern Georgia. Rainfall amounts were variable over Mississippi and Louisiana. With 60-day rainfall under 60 percent of normal, D0 dryness expanded into southwestern Mississippi and parts of Louisiana. This area has seen numerous wildfires develop, and streamflows have been unseasonably low.

**The Southern Plains:** With the dry February pattern continuing into early March, D0 dryness expanded eastward in Texas and northwestward toward the Panhandle. The area of D3 and D4 remained over south-central Texas. Both Austin and San Antonio recorded their sixth driest February on record.

**The West:** The drought area from southern interior California through Arizona saw little precipitation this week, resulting in no improvement to the D1 to D2 drought. Los Angeles has seen their driest season to date on record, with cumulative rainfall of 2.42 inches (21 percent of normal) since July 1. The Sierra did see additional snowfall early in the week, but snow water content remained less than 60 percent of normal at many locations, so there was no change in the D1 area across southern California and western Nevada. Low snowpack resulted in a slight northward advance of the D1 into southern Utah and also in eastern Oregon. A re-assessment of overall conditions, including updated surface water supply conditions, resulted in some pullback of the D3 and D2 in northern Wyoming and retreat southward of the drought areas in Montana. For similar reasons, D1 expanded slightly westward in eastern Montana.

## Weekly Snowpack and Drought Monitor Update Report

**Alaska, Hawaii, and Puerto Rico:** The second week of heavy rains eliminated the D0 over windward areas of the Hawaiian Islands. Precipitation amounts were not high enough to affect the D0 and D1 area in Puerto Rico. The D0 area in Alaska expanded slightly northward, westward, and eastward based on updated snow pack information and continued dry weather.

**Looking Ahead:** Weather features to watch over the next 2 weeks that could affect current dry or drought areas include: 1) a much milder and drier pattern for much of the country outside of the northern tier states, with unseasonable warmth and dryness pronounced from the Great Basin to the central Plains; 2) an exception to the dry pattern will be showers over the southern Plains and the lower Mississippi Valley during March 9-12, with locally as much as 2 inches possible in Texas; 3) above-normal precipitation in the Pacific Northwest the next 2 weeks, and Great Lakes region days 6 through 14.

**Author:** [Douglas Le Comte, NWS Climate Prediction 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 March 7, 2007