



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

Weekly Report - Snowpack / Drought Monitor Update **Date:** **January 4, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snowpack: During the past week, snow depths have increased by a foot over the Front Range of the Rockies in Colorado and New Mexico, parts of the Washington Cascades and to a lesser amount over the Northern Rockies. Elsewhere, snow depths decreased by up to a foot over the Sierra Mountains and to a lesser extent over the Intermountain West (Fig. 1). The effects of the snow storms that hit Colorado on December 21st and 28th-30th can be seen in Fig. 1a and on maps at: http://www.crh.noaa.gov/crnews/display_story.php?wfo=bou&storyid=5019&source=0. The snow water-equivalent since the start of the 2007 Water Year (October 1, 2006) shows values much above normal over the Washington Cascades and Front Range of the Rockies in Colorado and New Mexico. Near normal values are found over the Northern Rockies and Oregon Cascades. Below normal percentages dominate the remainder of the West, especially over the Sierra Mountains and in Arizona (Fig. 1b).

Temperature: During the past seven days, temperatures were within +/- 5°F of normal across most of the West (Fig. 2).

Precipitation: The past seven and 14 day precipitation pattern was on the wet side over Pacific Northwest and Front Range of Colorado and New Mexico (Eastern Plains) with recent 7-day dryness dominating the Intermountain West and California (Fig. 3). While total precipitation is above normal over the Northern Rockies and Southern Cascades (Fig. 3a) warmer than normal conditions since the start of the Water Year have prevented above normal snow accumulations in these areas (Fig. 1b).

WESTERN DROUGHT STATUS

The West and the Rockies: Heavy snows in the southern Rocky Mountains allowed improvements to the drought status in both Colorado and New Mexico. The D0 line was moved farther to the west in response to up to 50 inches of snow in the region. Dry conditions continue to dominate southern California. Precipitation values for 2006 were quite sparse across southern California. Thermal, California, recorded only 0.23 inches of precipitation for 2006, which is only 7 percent of normal. Palm Springs, California, recorded 1.78 inches of precipitation for 2006, which corresponds to 34 percent of normal. Water year precipitation values were below 25 percent of normal for almost the entire region. Almost every watershed in the state is below normal for the water year so far in California (Figs. 4).

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/ DAVID THACKERAY

Director, Conservation Engineering Division

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Jan 04, 2007

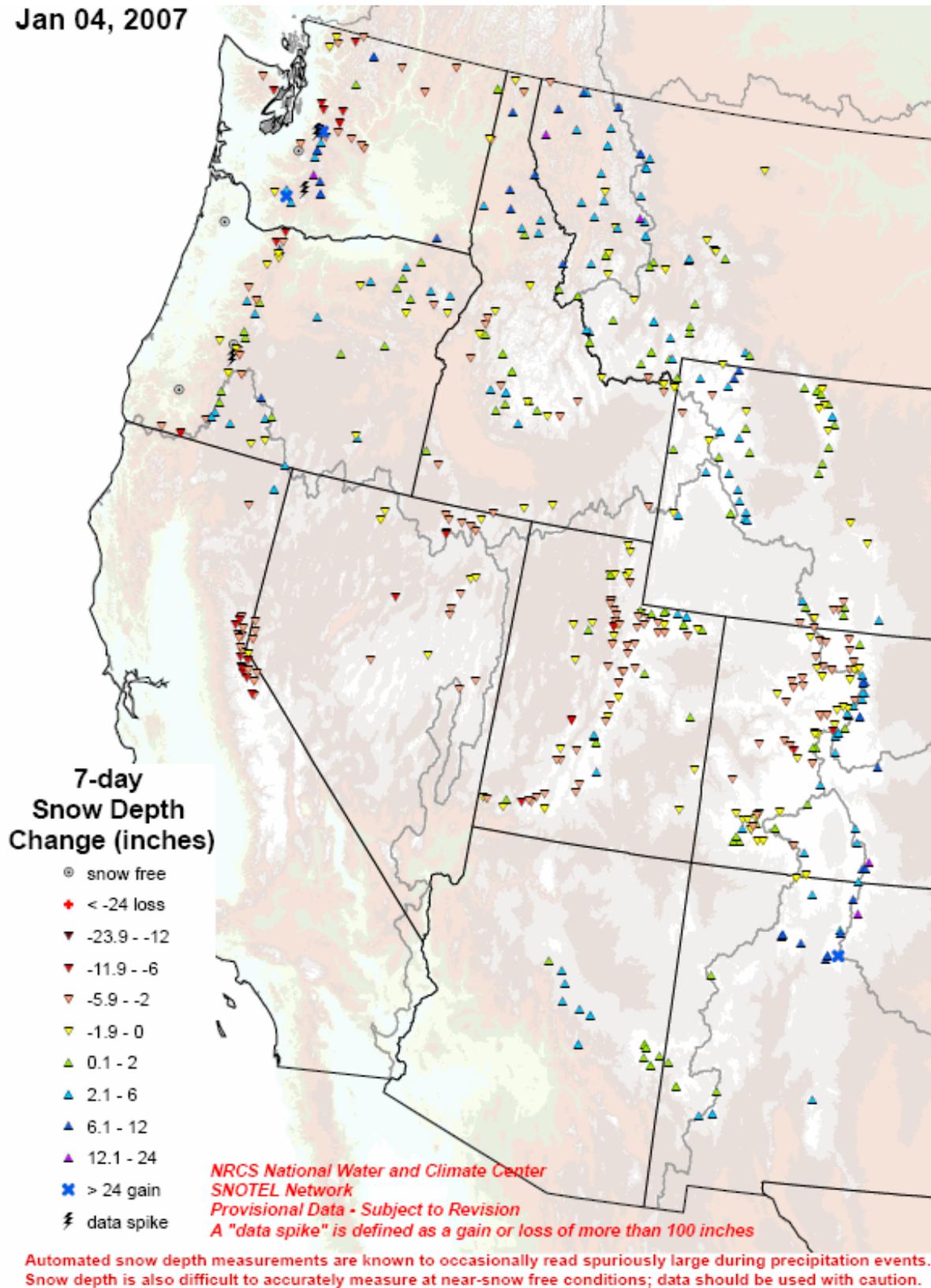


Fig. 1: Previous 7-day SNOTEL snow depth change.

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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.

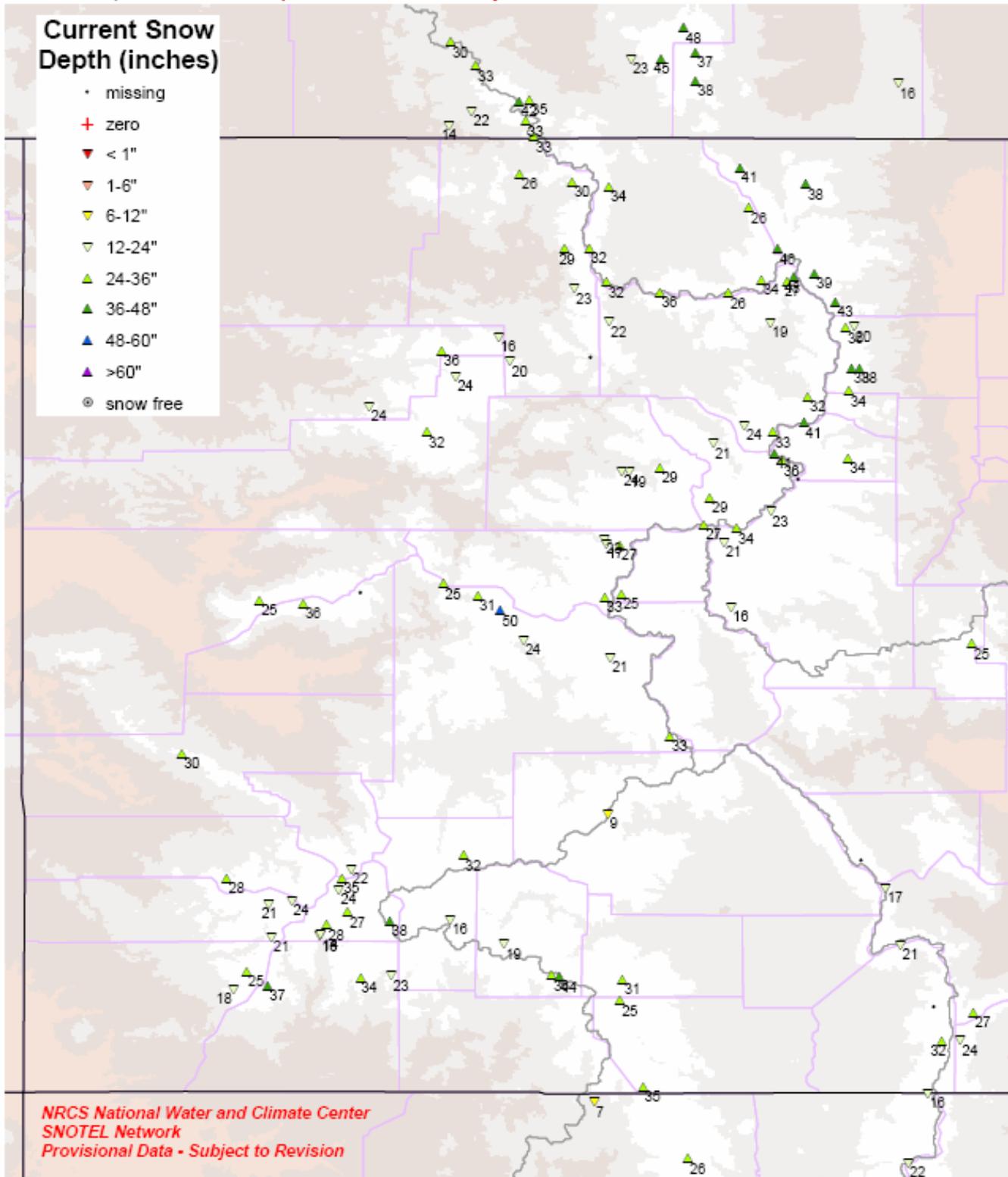


Fig. 1a. Current SNOTEL snow depths over Colorado as of January 4, 2007.
<http://www.wcc.nrcs.usda.gov/gis/index.html>.

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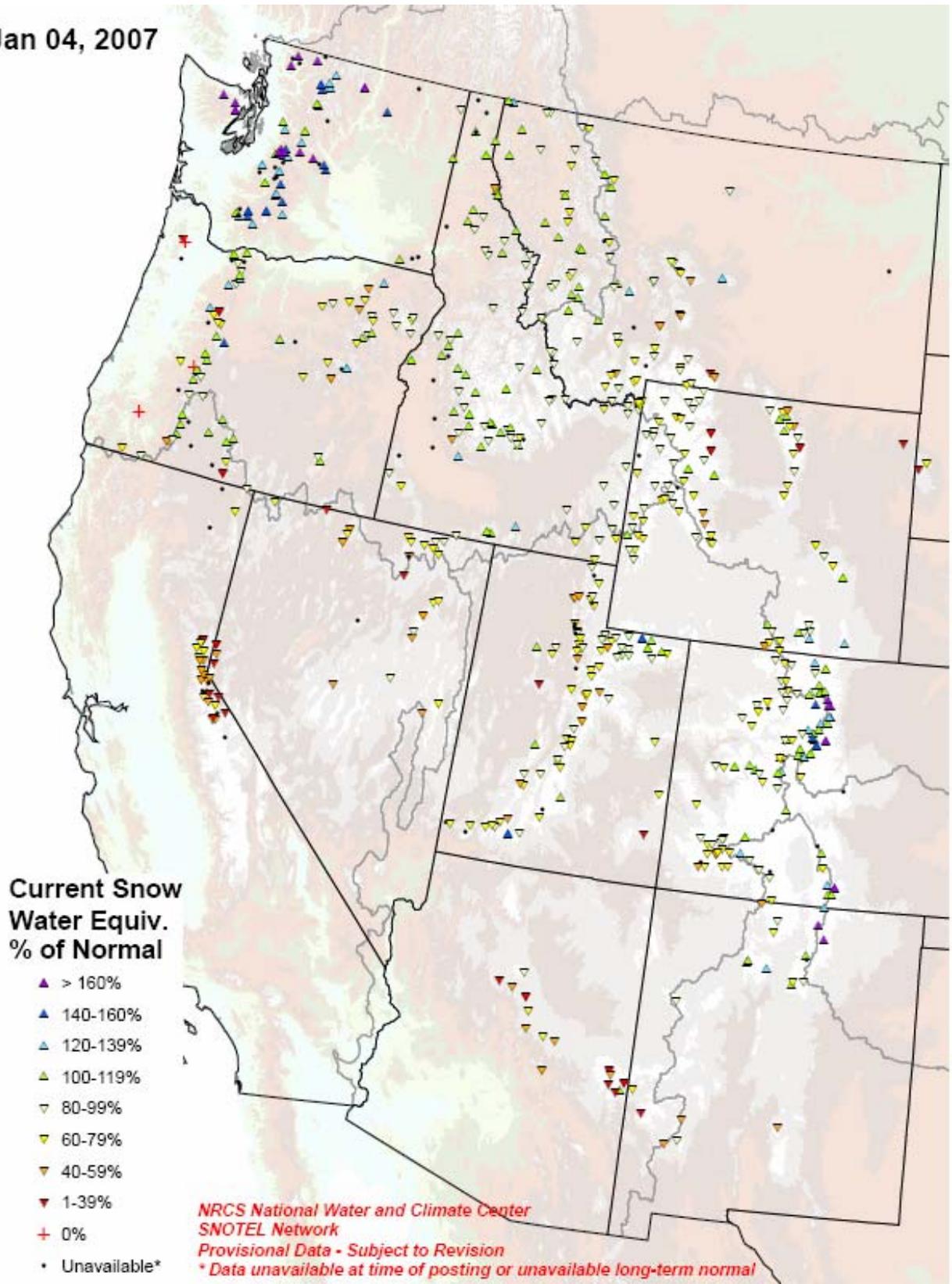


Fig. 1b. SNOTEL station water year (since October 1) snow water-equivalent as a percent of normal.

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

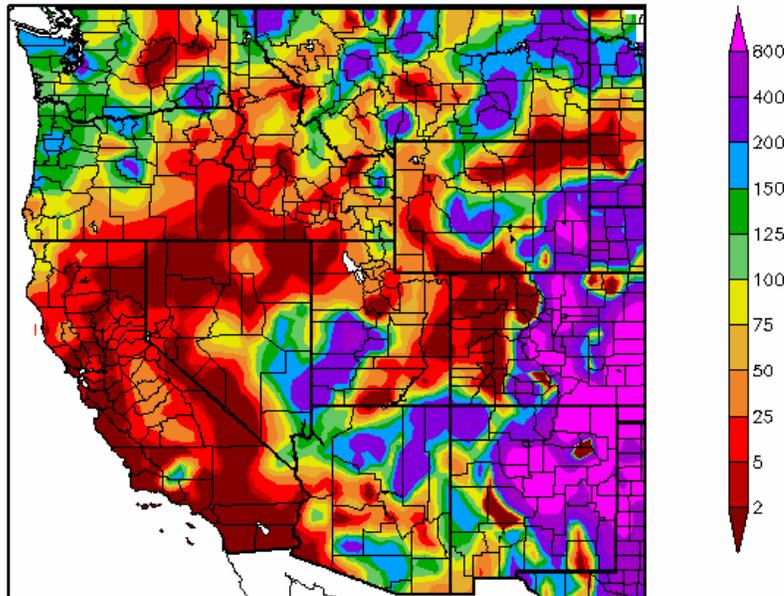
- ✖ < -20 cold
- ▼ -20 - -15
- ▼ -15 - -10
- ▼ -10 - -5
- ▼ -5 - 0
- ▲ 0 - 5
- ▲ 5 - 10
- ▲ 10 - 15
- ▲ 15 - 20
- ◆ >20 warm

*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*

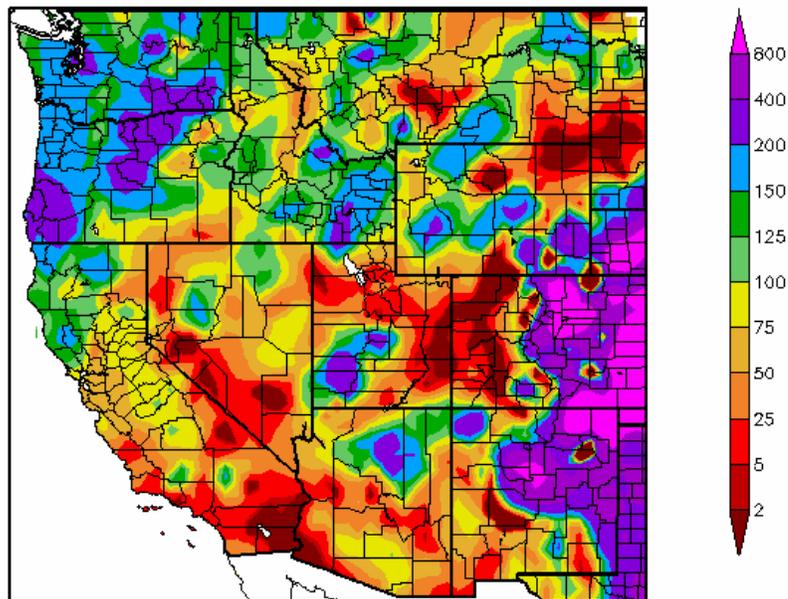
Fig. 2: SNOTEL 7-day average temperature anomaly.

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Percent of Normal Precipitation (%)
12/28/2006 - 1/3/2007



Percent of Normal Precipitation (%)
12/21/2006 - 1/3/2007



Generated 1/4/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig 3: The ACIS 7 (top) and 14 (bottom) day precipitation amounts as a percent of normal shows a wet Pacific Northwest and Front Range of Colorado and New Mexico (Eastern Plains) with recent 7-day dryness dominating the Intermountain West and California.

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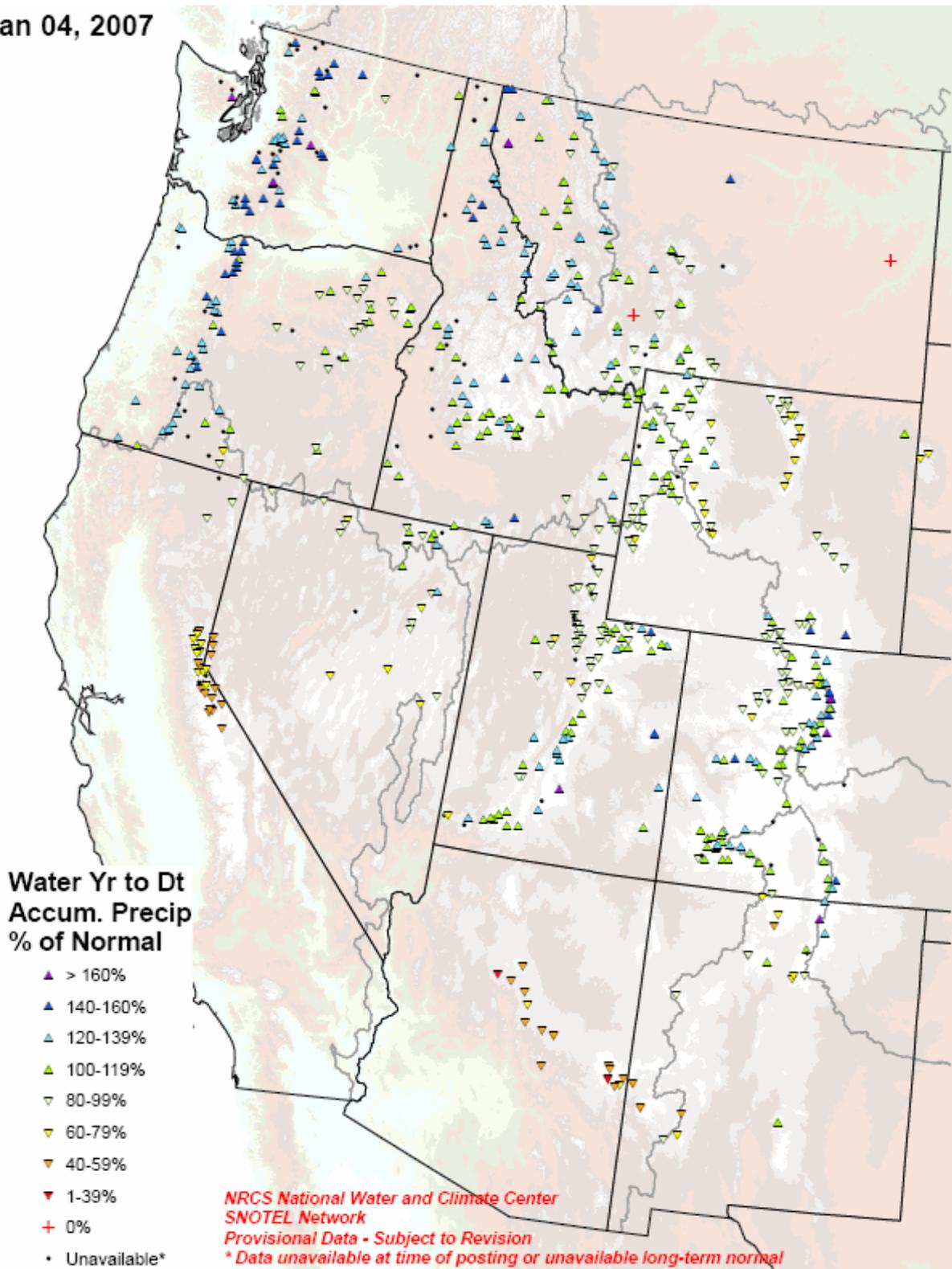
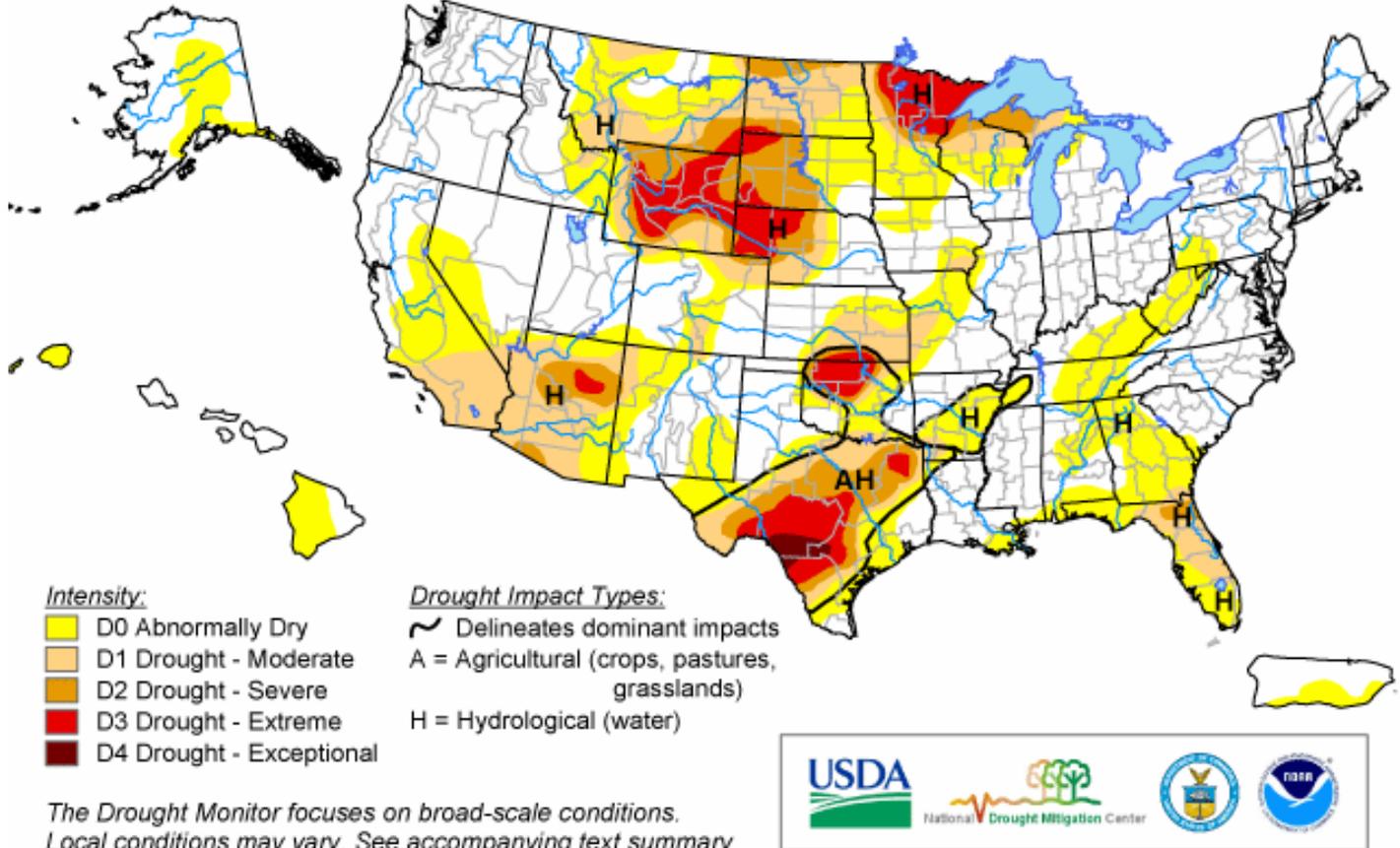


Fig. 3a. SNOTEL station water year (since October 1) precipitation as a percent of normal.

U.S. Drought Monitor

January 2, 2007
Valid 7 a.m. EST



Released Thursday, January 4, 2007

Author: Brian Fuchs, National Drought Mitigation Center

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

Fig. 4. Current Drought Monitor – Source: National Drought Mitigation Center (NDMC)

Calculated Soil Moisture Ranking Percentile JAN 03, 2007

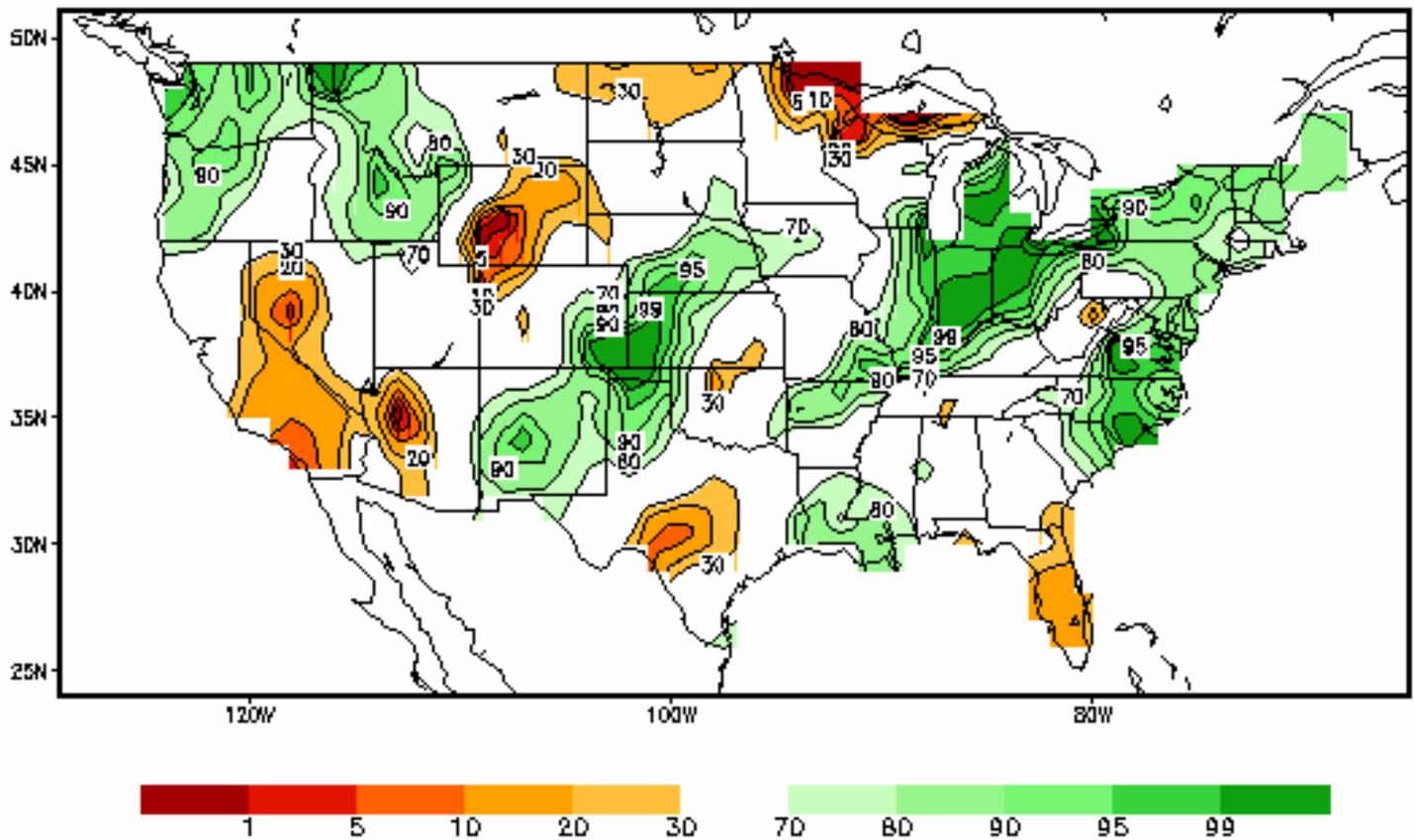


Fig. 5: Soil Moisture Ranking Percentile based on 1932-2000 climatology. **Caution:** Soils tend to freeze this time of year resulting in potentially erroneous sensor readings. Source NOAA-CPC

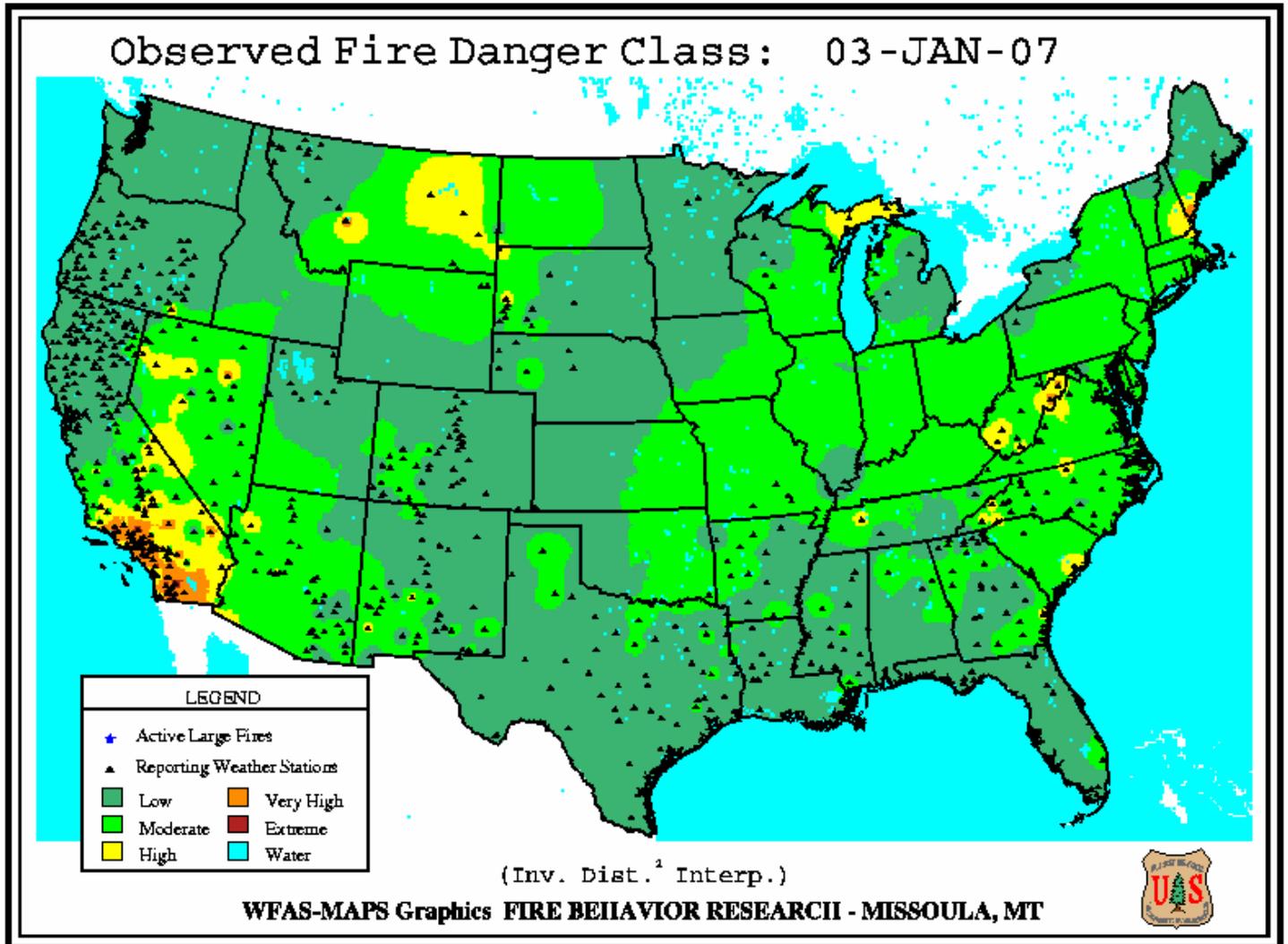
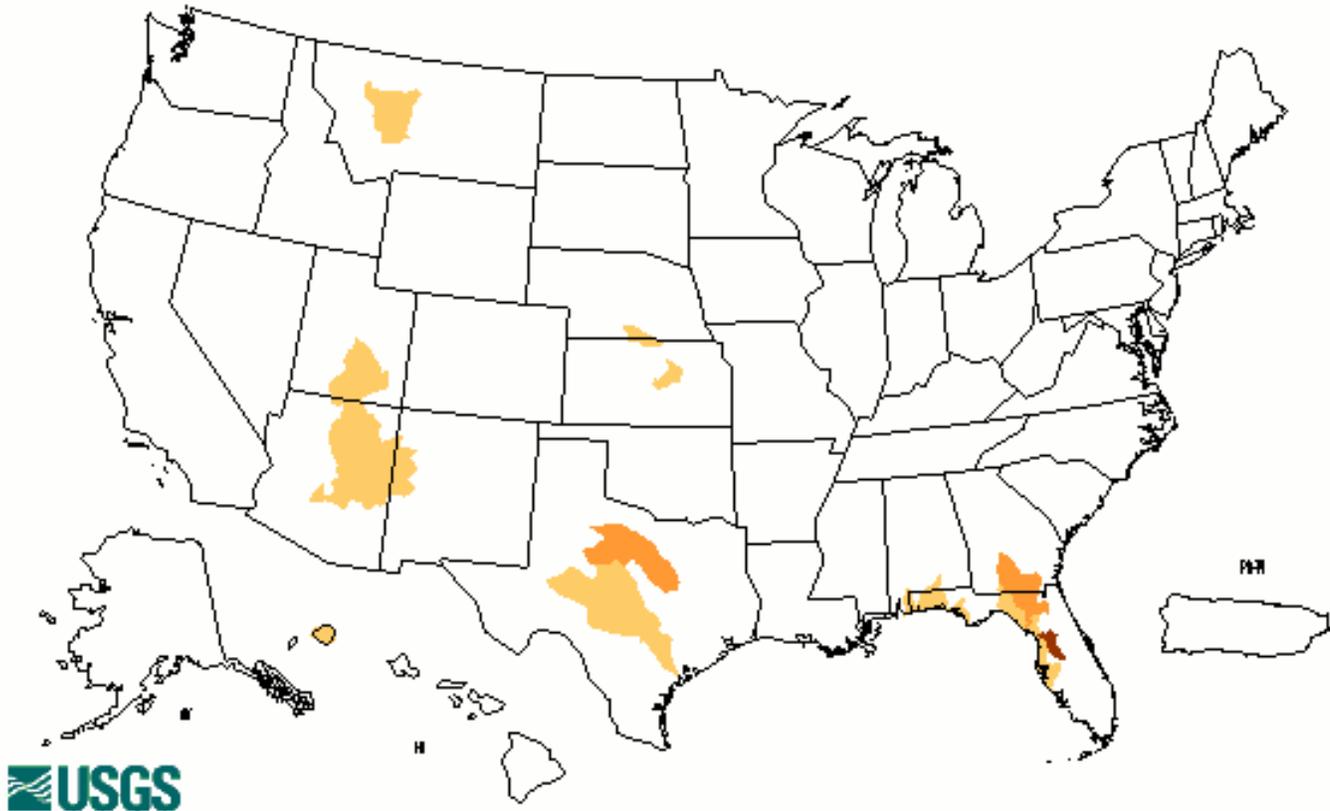


Fig. 6. Observed Fire Danger Class. Note continued increase risk of fire over southern California. Source: Forest Service *Fire Behavior Research – Missoula, MT*

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Wednesday, January 03, 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

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National Drought Summary -- January 2, 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 New Year started off with a second consecutive winter storm over the High Plains region of the United States. This storm tracked almost entirely over the same region as the major storm last week, further improving drought conditions over the affected areas. As with the last storm, snow and blowing snow coupled with icing conditions contributed to hazardous conditions over Colorado, Kansas, and Nebraska and as far south as Oklahoma. The much-needed precipitation was welcomed by most.

The Plains and Midwest: The results of the last two winter storms have allowed for improvements to the drought status in the region. In Nebraska, the D0 was removed from all of eastern Nebraska as well as southeastern South Dakota and northwestern Iowa after this region received 2+ inches of precipitation in the last week, with Seward, Nebraska, recording 2.57 inches of precipitation for the week. Soil moisture profiles are at or near capacity for much of Nebraska except for the far western portions of the state. D1 and D2 conditions were pushed to the west in Nebraska as well in response to the above-normal precipitation. In Kansas, D0 was reduced in the western portion of the state where up to 5 inches of precipitation were recorded. Healy, Kansas, observed 4.70 inches of precipitation, while Leoti, Kansas, recorded 5.37 inches for the week. In the central portion of the state, D0 and D1 were also improved.

Oklahoma has been in a relatively wet pattern over the last month. December ended up as one of the wettest months on record for Oklahoma. With the moisture received, statewide changes were made, with a one-category improvement in the drought depiction. The D4 region was removed completely, with much of the region showing recovery from long-term water deficits and a positive hydrological response as well.

The Southeast and Appalachians: Dry conditions prevailed again over the Appalachians this last week. In response to short-term dryness over this region, the area of D0 was expanded to include eastern Kentucky and southwestern West Virginia, combining the two previous areas of D0. Some beneficial rain returned to parts of northeast Florida and southeast Georgia. Some improvements to the D1 areas here were made, but long-term precipitation deficits dominate the region.

The West and the Rockies: Heavy snows in the southern Rocky Mountains allowed improvements to the drought status in both Colorado and New Mexico. The D0 line was moved farther to the west in response to up to 50 inches of snow in the region. Dry conditions continue to dominate southern California. Precipitation values for 2006 were quite sparse across southern California. Thermal, California, recorded only 0.23 inches of precipitation for 2006, which is only 7 percent of normal. Palm Springs, California, recorded 1.78 inches of precipitation for 2006, which corresponds to 34 percent of normal. Water year precipitation values were below 25 percent of normal for almost the entire region. Almost every watershed in the state is below normal for the water year so far in California.

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Looking Ahead: The next 5 days (January 4-8) mild and dry conditions will dominate the Plains states. Temperatures are expected to be above normal, ranging from +15 to 18°F in the Great Lakes region to +6 to 9°F over much of the Plains. Rains are expected to continue along the Gulf Coast and in the Pacific Northwest, while significant precipitation is projected for New England as well.

For the ensuing 5 days (January 9-13), cold air is expected to funnel into the United States from the Pacific Northwest onto the Plains. With this, below-normal temperatures should be expected, especially over areas that have extensive snow cover. Warmer than normal temperatures are forecasted for much of the East Coast, with the warmest readings expected in New England. Dry conditions should prevail over the Southeast during this time, while above-normal precipitation should be expected over the Great Lakes region as well as the northern Plains.

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 3, 2007