



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

Weekly Report - Snowpack / Drought Monitor Update **Date:** **January 11, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Snowpack: During the past week, snow depths have increased in all but portions of eastern Washington and Oregon, central Idaho, western Wyoming, and the Southwest (Fig 1). Current snow depth over Oregon are shown in Fig 1a and reflect the results of a large winter storm that moved through the Pacific Northwest earlier in the week. The snow water-equivalent values since the start of the 2007 Water Year (October 1, 2006) shows much above normal amounts over the Washington Cascades and Front Range of the Rockies in Colorado but 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). The start of a large Arctic outbreak of extremely cold air is depicted in Fig 2a over the Pacific Northwest and Northern Rockies.

Precipitation: During this report period, precipitation totals revealed a very scattered pattern between very wet and very dry areas (Fig. 3). California and the Southwest continued to remain dry. Total precipitation (Fig. 3a) is matching closely to snow water-equivalent thus far for this Water Year (Fig. 1b). Another words, areas that have seen above normal precipitation have also seen above normal snowfall. The areas that have below normal snow pack may also be reflecting above normal temperatures besides below normal precipitation.

WESTERN DROUGHT STATUS

The West and Rocky Mountains: Heavy rain in the Pacific Northwest was the main feature in the region this week. Some snow in the central to northern Rocky Mountains has helped to improve snowpack conditions for the region. In Wyoming, drought categories were expanded because of low snow totals so far this year as well as reservoir and water supply concerns. D3 was expanded in central Wyoming and D2 was expanded to the northwest into Montana. The D1 region in southern Colorado was removed as precipitation deficits have improved and current snowpack is above average.

In Arizona, D0 was improved in north-central Arizona, while D2 was expanded from southwest Arizona to the north and west to include southern Nevada and extreme southeast California. Winter precipitation is crucial in the expanded D2 region, and the water year has started off very badly in this region.

D0 was expanded along the California and Nevada border and along the coast of California. Some agricultural impacts on grazing lands have been reported in California, as pastures have not provided adequate forage for many producers in the region (Fig. 4).

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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 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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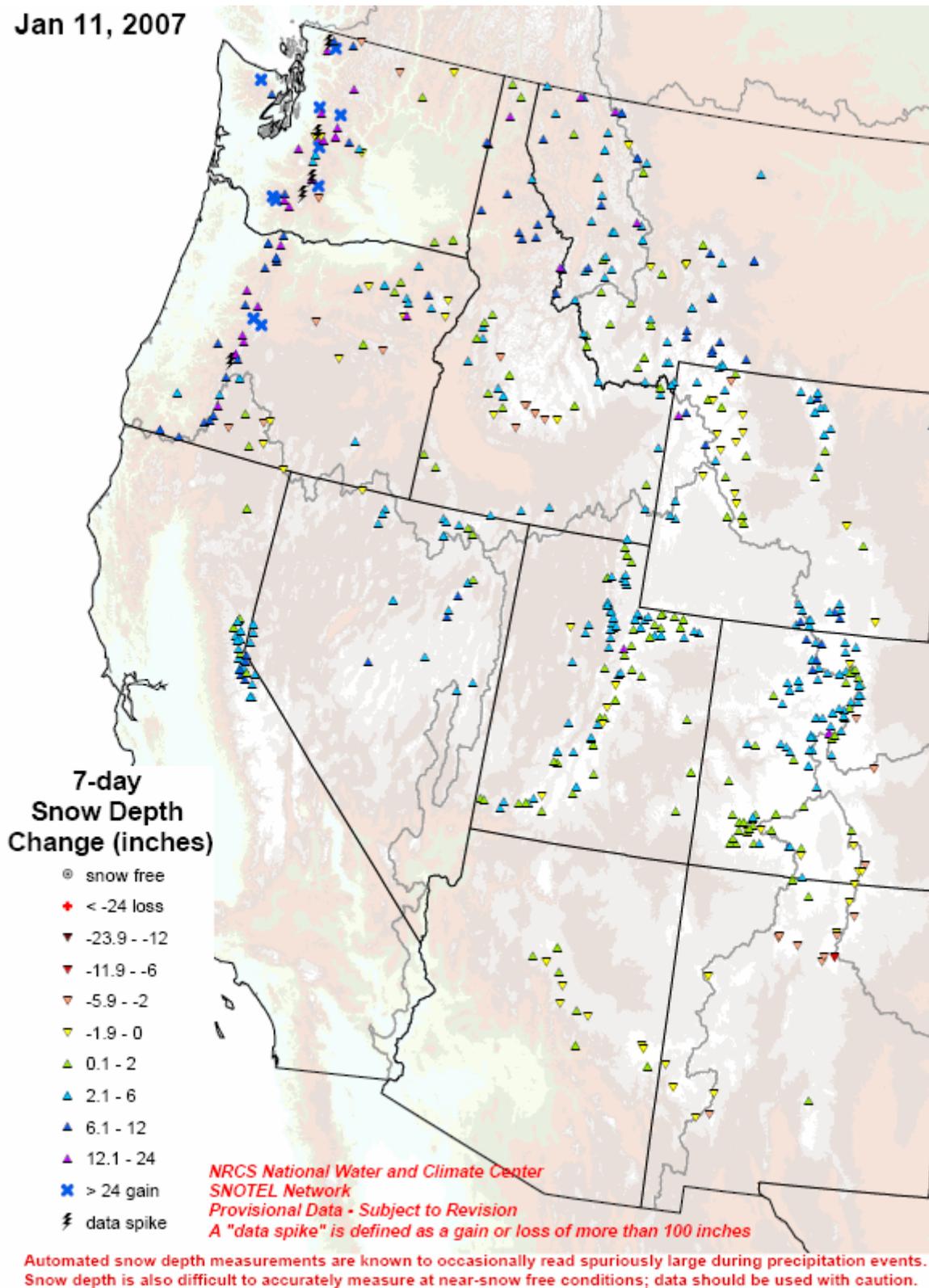


Fig. 1: Previous 7-day SNOTEL snow depth change.

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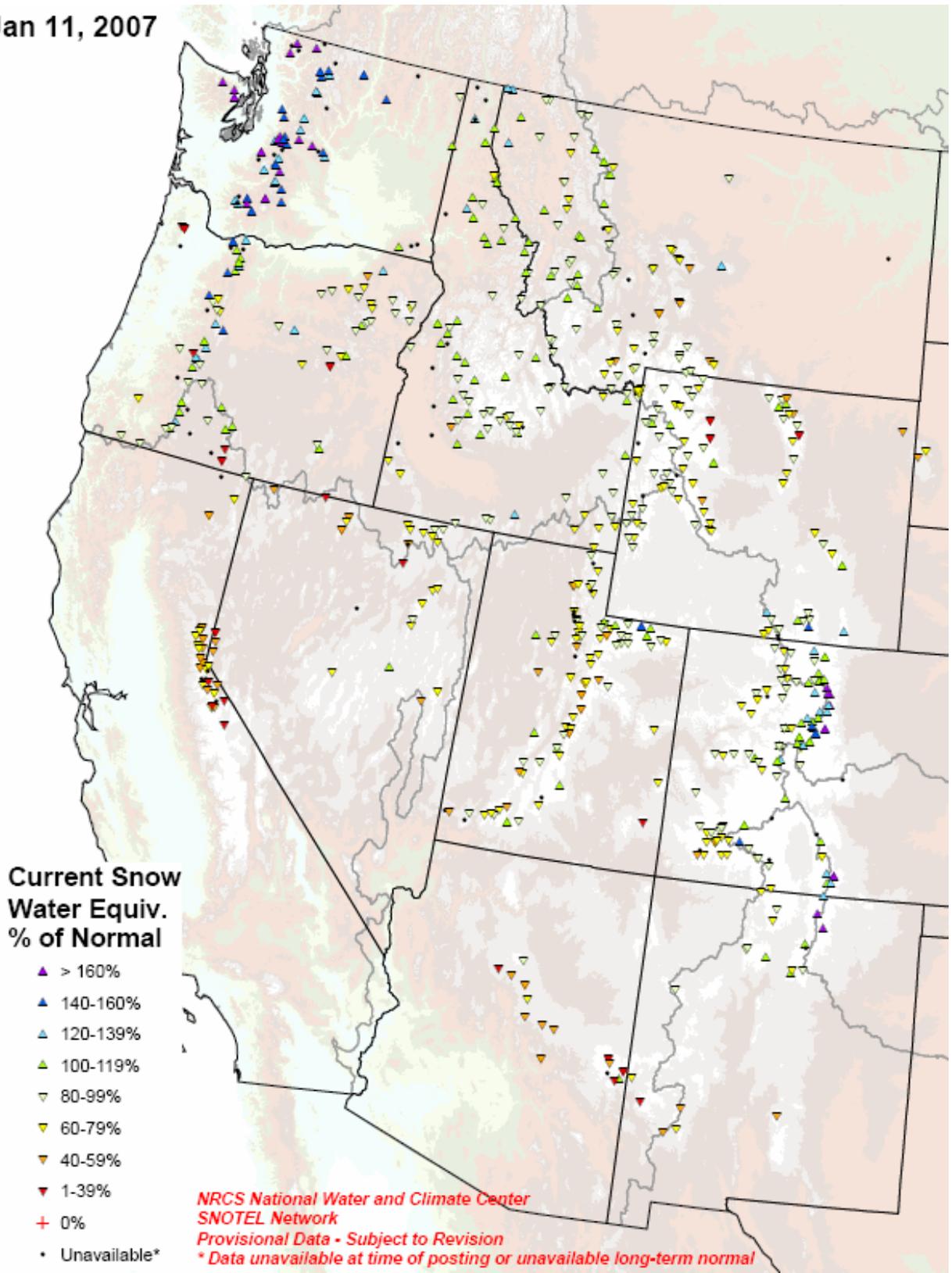


Fig. 1b. SNOTEL station water year (since October 1) snow water-equivalent as a percent of normal.

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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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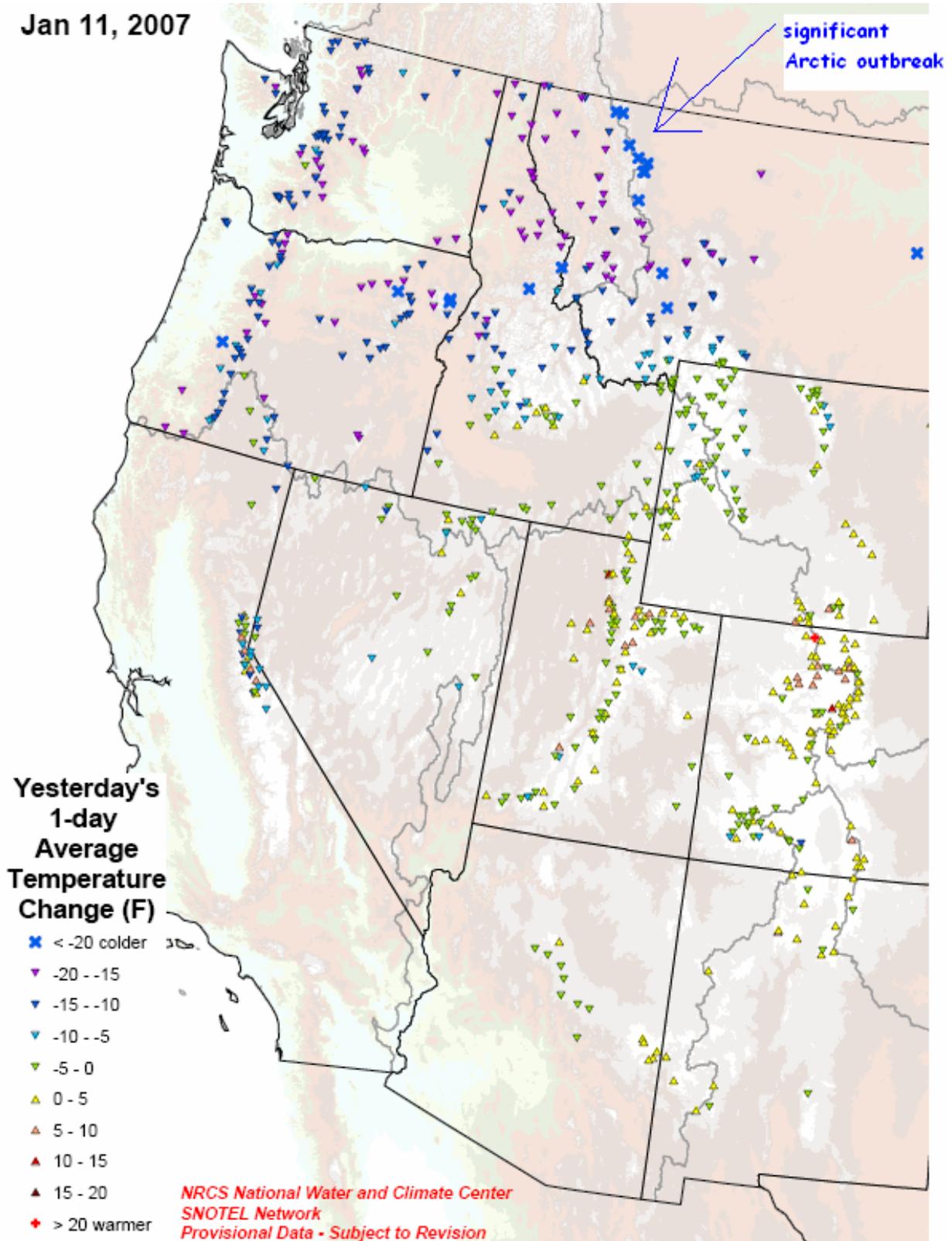
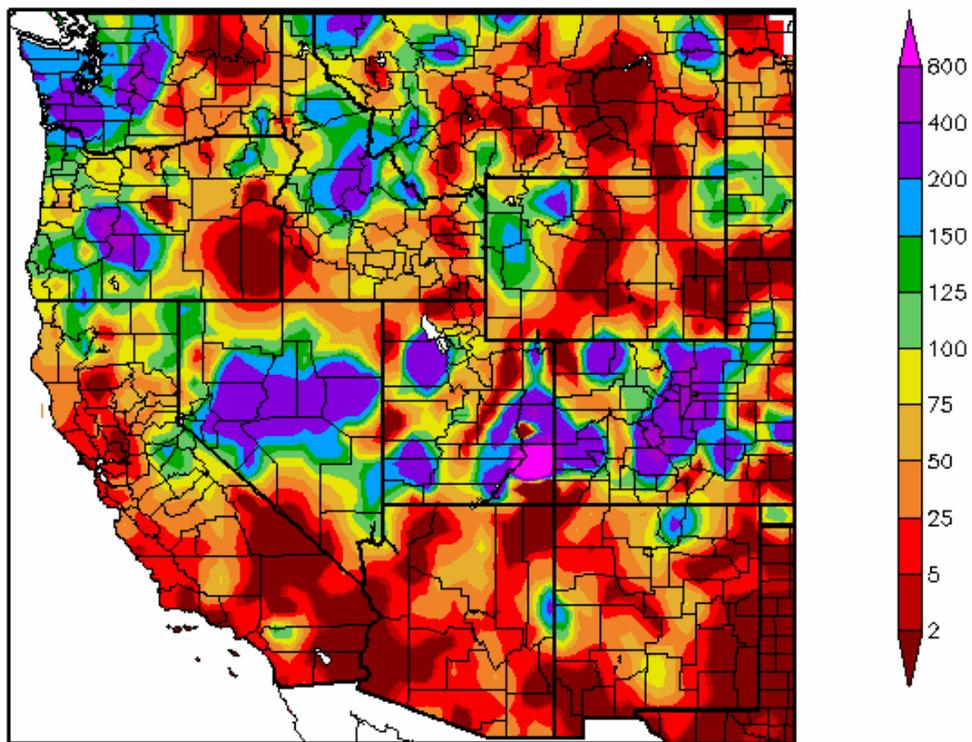


Fig 2a: Previous 24 hour temperature change reflecting a new Arctic outbreak over the Northern Rockies and Pacific Northwest.

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Percent of Normal Precipitation (%)
1/4/2007 - 1/10/2007



Generated 1/11/2007 at HPRCC using provisional data.

NOAA Regional Climate Centers

Fig 3. ACIS percent of normal precipitation for the past week over the Western US.

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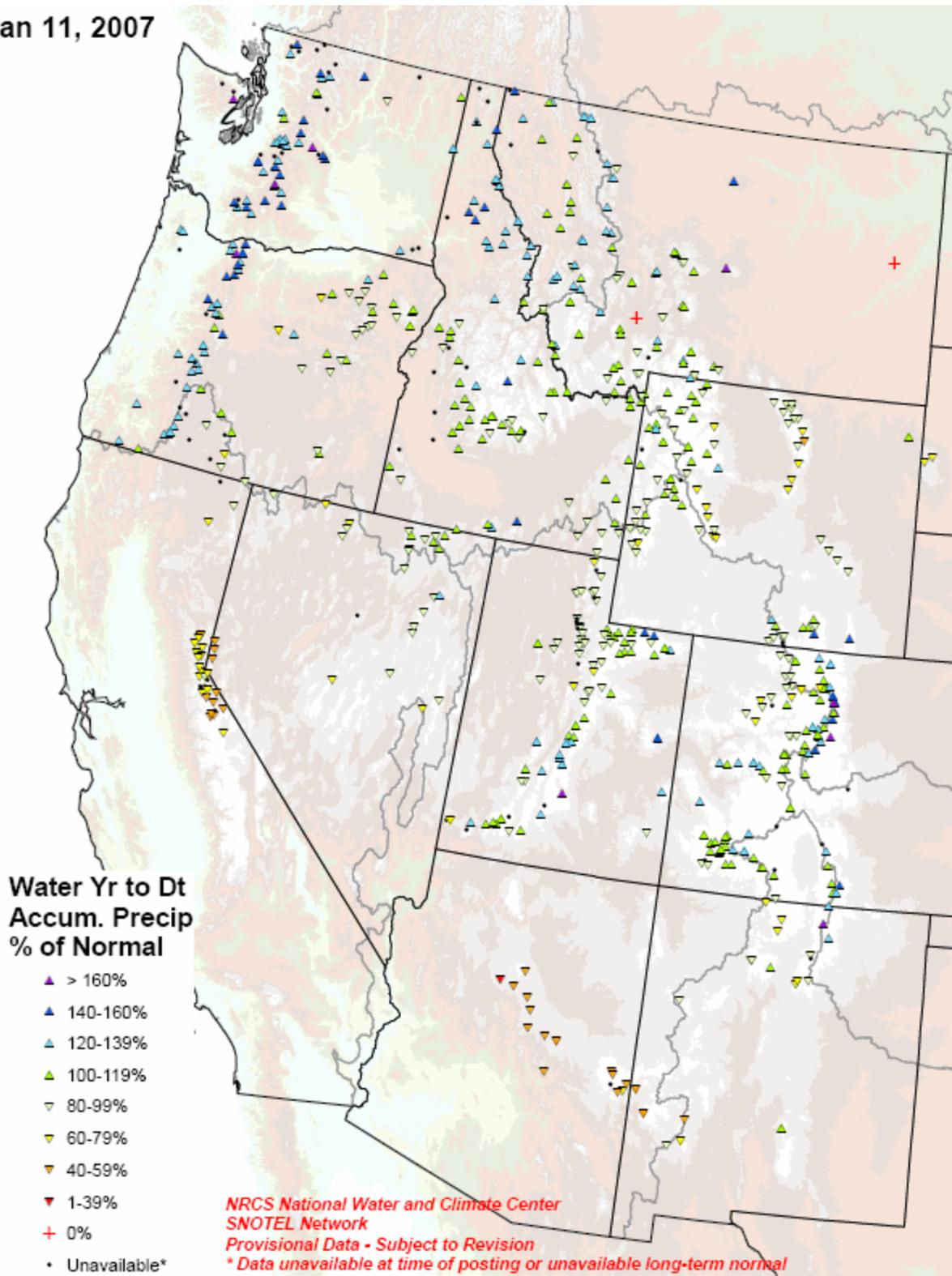
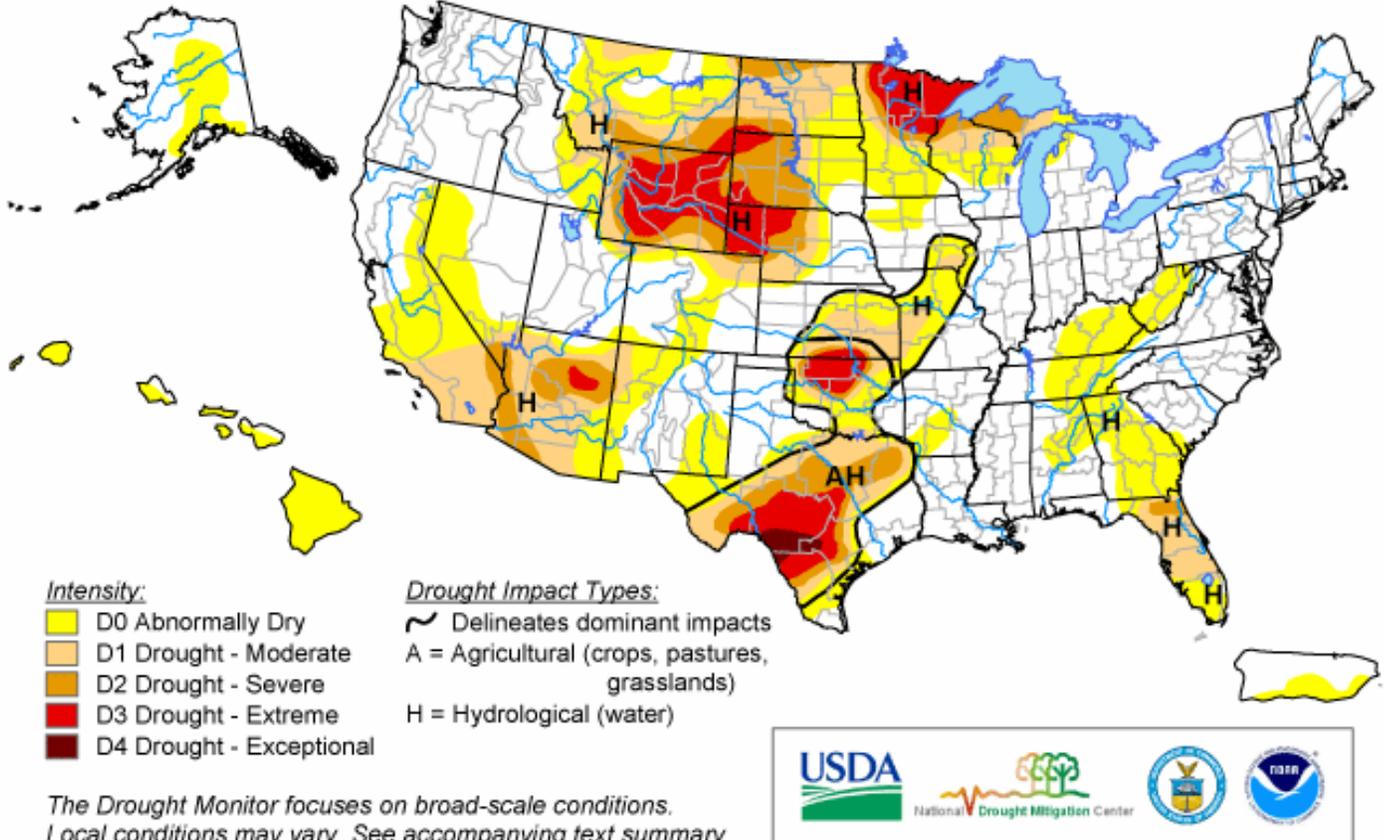


Fig. 3. SNOTEL station water year (since October 1) precipitation as a percent of normal.

U.S. Drought Monitor

January 9, 2007

Valid 7 a.m. EST



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

Released Thursday, January 11, 2007
Author: Brian Fuchs, National Drought Mitigation Center

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

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Calculated Soil Moisture Ranking Percentile JAN 10, 2007

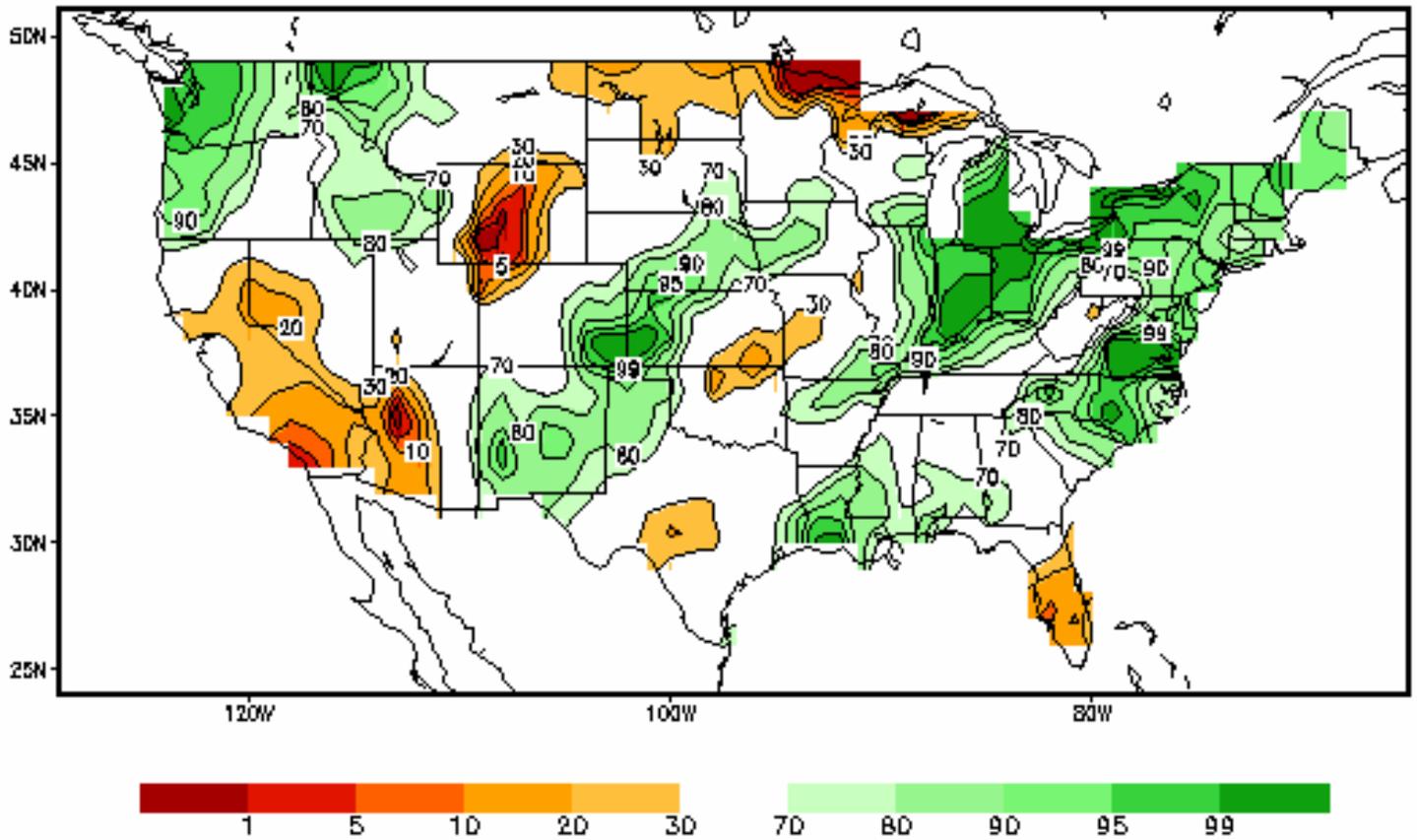


Fig. 5: Soil Moisture Ranking Percentile based on 1932-2000 climatology. **Caution:** Soils tend to freeze this time of year resulting in potentially erroneous sensor readings. Source NOAA-CPC

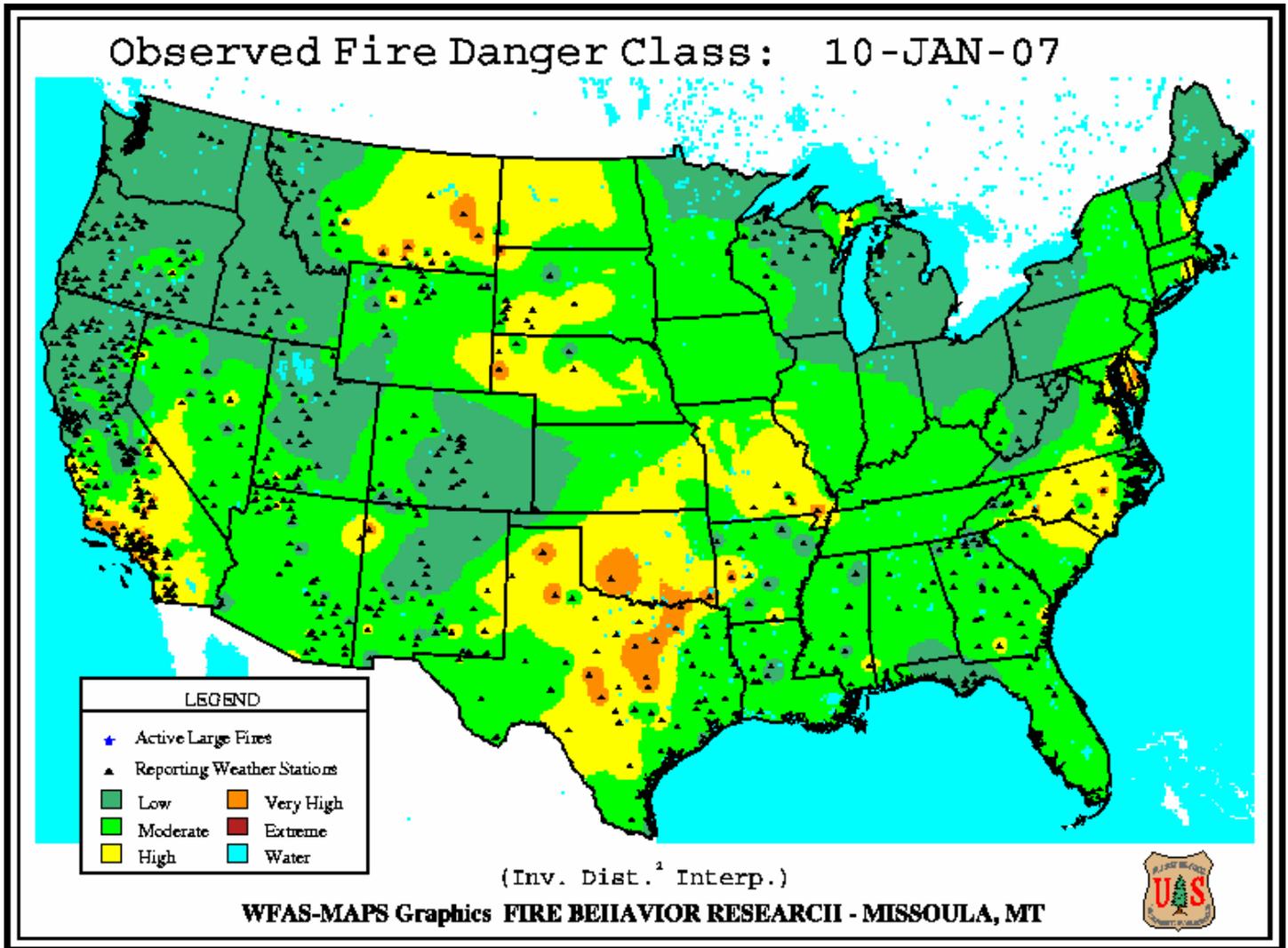
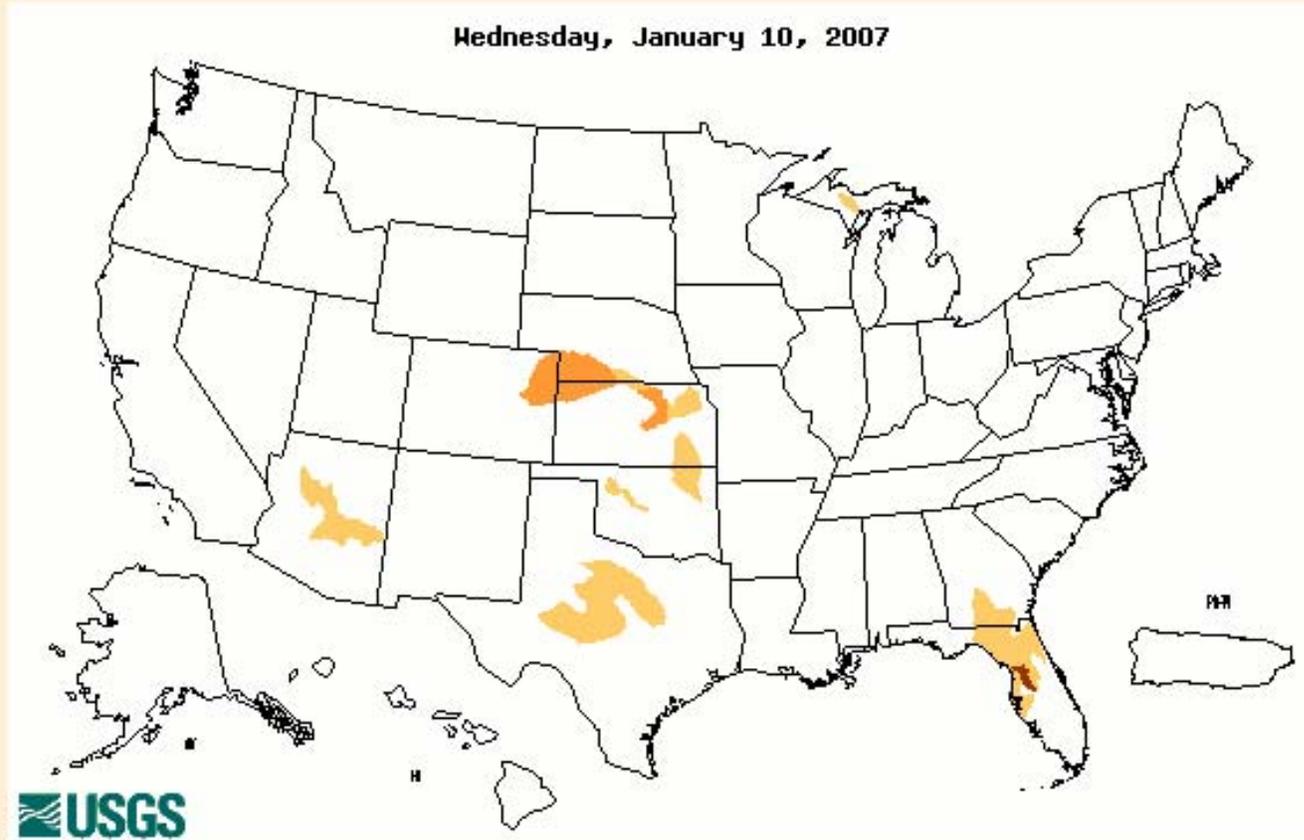


Fig. 6. Observed Fire Danger Class. Note continued increase risk of fire over southern California. Source: Forest Service *Fire Behavior Research – Missoula, MT*

Weekly Snowpack and Drought Monitor Update Report



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 9, 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/>.

El Niño conditions continue to dictate the weather patterns over the continental United States. NOAA reported 2006 as the warmest year on record, with the 2006 average temperature 2.2°F above the 20th century mean. Wet conditions across the eastern third of the United States and along the Pacific Northwest coast dominated conditions this last week. Severe weather and flooding rains were common along the Gulf Coast in Louisiana, where 5+ inches of rain were recorded along with numerous tornadoes.

The Plains and Midwest: With small amounts of precipitation recorded this week, the drought designation remained unchanged for almost the entire region. In South Dakota, the D1 designation in the north-central part of the state was shifted to the east. This region was hard hit last summer and is slow in recovering. There was also a slight expansion of the D0 in Kentucky this week in response to the short-term dryness in the region, where only 50-75 percent of normal precipitation has been observed.

The South and Appalachians: Heavy rains over northeast and east Texas and into Arkansas allowed for the improvement of the region. D3 conditions were removed in northeast Texas as other drought categories were improved. Over the past week, 1.5 to 2 inches of rain fell over much of northeast Texas. This precipitation along with the recent wet pattern has allowed for conditions to improve. The D0 in Arkansas was reduced greatly and removed completely along the Gulf Coast from Louisiana to the Florida panhandle. The recent precipitation has improved conditions even though long-term deficits exist. In Georgia and Florida, the D1 area was reduced in size in response to the recent heavy rains in the area. D1 was expanded in Florida to the Gulf Coast, coinciding with the announcement of water restrictions in the area.

D0 conditions in Pennsylvania and into West Virginia were reduced. This area continues to be on the fringe of short-term dryness, and improvements were warranted this week.

The West and Rocky Mountains: Heavy rain in the Pacific Northwest was the main feature in the region this week. Some snow in the central to northern Rocky Mountains has helped to improve snowpack conditions for the region. In Wyoming, drought categories were expanded because of low snow totals so far this year as well as reservoir and water supply concerns. D3 was expanded in central Wyoming and D2 was expanded to the northwest into Montana. The D1 region in southern Colorado was removed as precipitation deficits have improved and current snowpack is above average.

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D0 was expanded along the California and Nevada border and along the coast of California. Some agricultural impacts on grazing lands have been reported in California, as pastures have not provided adequate forage for many producers in the region.

Hawaii and Alaska: D0 conditions were improved along the Alaskan coast because of recent precipitation, while D0 was expanded over most of the Hawaiian Islands because of recent dryness in the region.

Looking Ahead: The next 5 days (January 11-15) show a developing arctic outbreak with a large gradient of temperatures across the United States as the first big push of arctic air funnels south. Temperatures are expected to be 10-20°F below normal over the western two-thirds of the country and 5-15°F above normal in front of the cold air. Precipitation is also expected to fire up along the frontal boundary, with the greatest amounts positioned to be centered over Arkansas with lesser amounts in the Rocky Mountains and in the southwest.

For the ensuing 5 days (January 16-20), a large trough and cold air are expected to dominate the weather pattern, with the trough centered over the Great Lakes. Below-normal temperatures will cover much of the continental United States while Alaska will be above normal. Precipitation is expected to be above normal east of the Rocky Mountains and onto the Plains, along the Gulf Coast and up the Atlantic Coast. Below-normal precipitation is likely over the Pacific Northwest and California and in the upper Midwest and Great Lakes regions. Alaska should continue to see above-normal precipitation as well, especially along the coast.

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 10, 2007