



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

Weekly Report - Snowpack / Drought Monitor Update **Date: July 26, 2007**

SNOTEL SNOWPACK AND PRECIPITATION SUMMARY

Temperature: During the past seven days, temperatures were extremely warm in Montana, Idaho, Wyoming and northern Utah, ranged from 7 to 14°F above normal. In contrast, temperatures were slightly below average in New Mexico, Arizona, California, Washington and Oregon as an unusually strong July weather system brought rain to the Pacific Northwest and monsoon thunderstorms started in the Southwest (Fig. 1).

Precipitation: For the past week, isolated but heavy thunderstorms were experienced over southern New Mexico where the McKnight and Signal Peak SNOTEL sites reported 2.2" and 2.3" of precipitation respectively. Amounts ranged from between 0.50" and 1.25" in southern Utah, northern New Mexico and southern Colorado.

Far to the northwest, nearly 3" of rain was reported by the Mt. Crag SNOTEL site on the Olympic Peninsula in Washington State. Scattered amounts of nearly 2" were reported in the northern Cascades of Washington (Fig. 2). Isolated thunderstorm activity was observed over much of the interior West. For the Water Year (began 1 October 2006), total amounts have not changed appreciably since last week. The Interior West (Great Basin and Intermountains) including the Sierra Nevada and the Arizona ranges continue to show significant deficits.

WESTERN DROUGHT STATUS

The West: The week was hot and dry across most of the West. Over four dozen large wildfires raged across the region, mostly from Nevada and Utah to Idaho and western Montana. The national acreage burned so far in 2007 (as of July 24) exceeded 4.5 million acres. Record heat was concentrated in the Big Sky state, where Missoula, Montana, recorded 9 days with highs of 100°F or greater during the first 23 days of July, shattering its 1936 annual record of 6 days. Bozeman set a new all-time record high temperature several times during this month, exceeding the 1941-2006 record of 103°F six times. Miles City, in eastern Montana, reported 110°F on July 23, which tied its second-hottest day on record behind 113°F on July 18, 2003. The excessive heat magnified evaporation, which exacerbated the drought conditions. According to USDA reports, poor to very poor (dry) topsoil conditions deteriorated from about 60% of each state last week to 73% in Idaho and 77% in Montana this week.

On the U.S. Drought Monitor map, D0 (abnormally dry) was introduced into eastern Montana, D0 and D1 (moderate drought) expanded into the central counties, and D2 (severe drought) expanded in the High Plains counties. D2 grew across Yellowstone National Park in northwest Wyoming and into the eastern third of Idaho. D2 in eastern Oregon crept across Idaho and into the west central counties of Montana.

Most of Utah suffered from above-normal temperatures, severe drought, and wildfires, with all of the counties reporting some percentage of loss on crops and/or range land. Water levels in reservoirs and streams were low to nonexistent with conditions worsening. These deteriorating impacts resulted in D2 being expanded across most of the state.

Weekly Snowpack and Drought Monitor Update Report

On the other hand, abnormal rainfall drenched portions of Washington and Oregon. More than an inch of rain in some areas prompted a retreat of D0 in north central Washington and coastal Oregon. Topsoil conditions in Washington improved from 67% poor or very poor last week to 45% this week. Author: Richard Heim, NOAA/NESDIS/National Climatic Data Center

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. 3 and 3a).

SOIL MOISTURE

Soil moisture (Fig. 4), is simulated by the [VIC macroscale hydrologic model](#). The detailed, physically-based VIC model is driven by observed daily precipitation and temperature maxima and minima from approximately 2130 stations, selected for reporting reliably in real-time and for having records of longer than 45 years (and various other criteria).

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. 5. Fig. 5a shows the current active wildfires across the West - <http://geomac.usgs.gov/>.

U.S. HISTORICAL STREAMFLOW

This map, (Fig. 6) 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.

VEGETATION HEALTH

The images (Fig. 7) are color-coded maps of vegetation condition (health) estimated by the Vegetation and Temperature Condition Index (VT). The VT is a numerical index, which changes from 0 to 100 characterizing change in vegetation conditions from extremely poor (0) to excellent (100). Fair conditions are coded by green color (50), which changes to brown and red when conditions deteriorate and to blue when they improve.

<http://www.orbit.nesdis.noaa.gov/smcd/emb/vci/usa.html>.

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

Weekly Snowpack and Drought Monitor Update Report

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/ NOLLER HERBERT
Director, Conservation Engineering Division

Weekly Snowpack and Drought Monitor Update Report

Jul 26, 2007

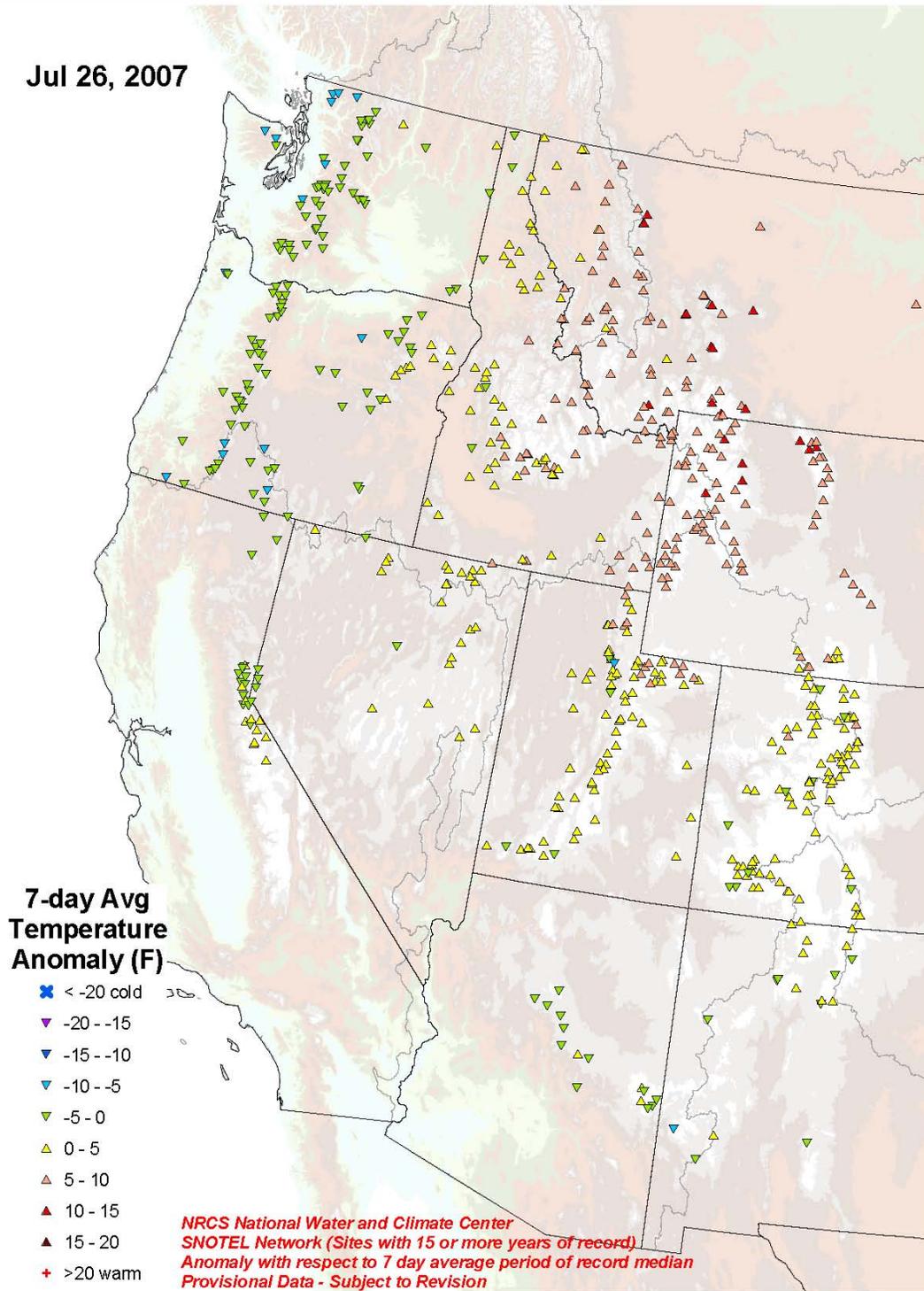


Fig. 1. SNOTEL 7-day average temperature anomaly.

Weekly Snowpack and Drought Monitor Update Report

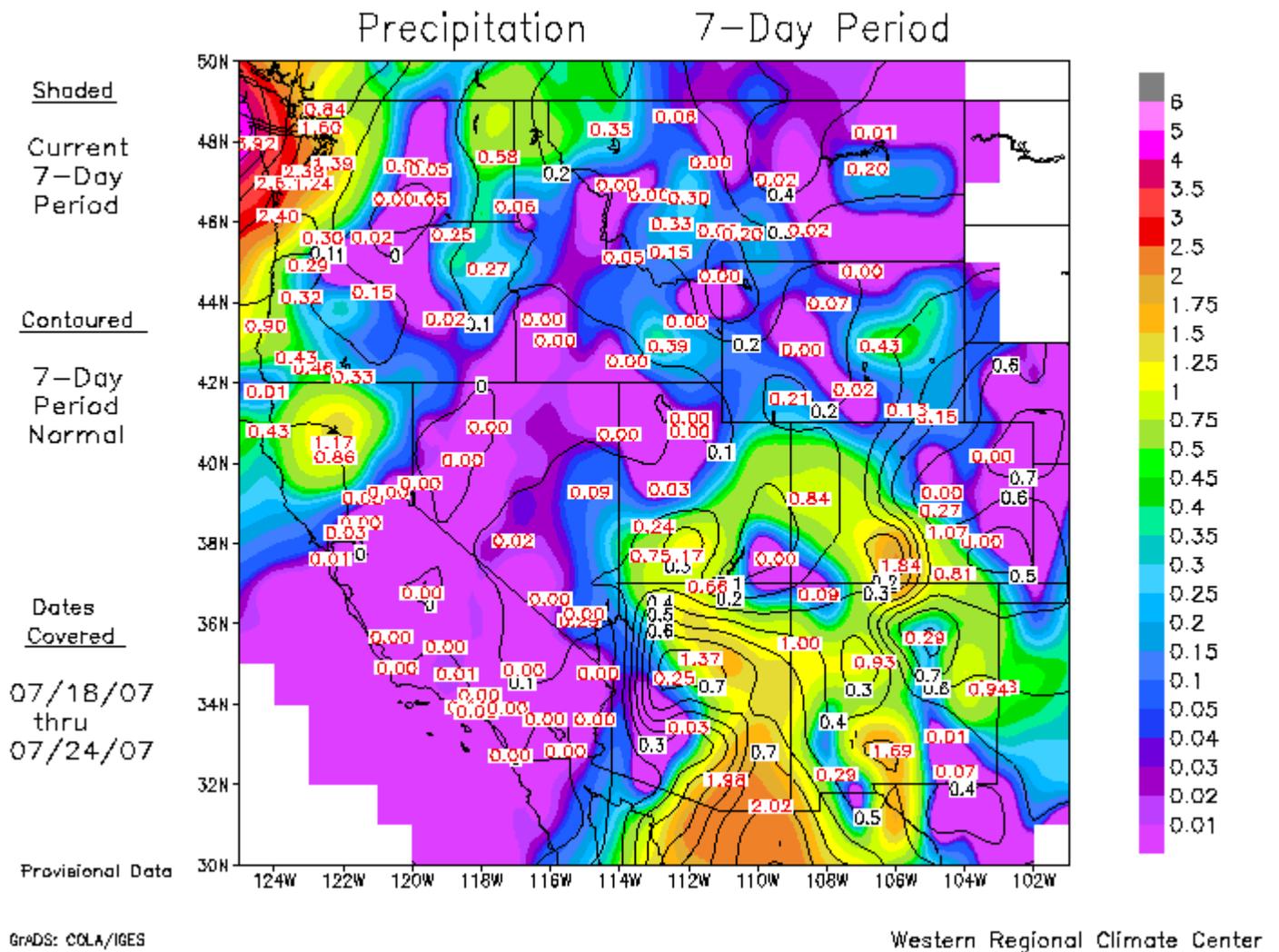


Fig. 2. Observed precipitation, 7-day period ending 24 July 2007.
 Ref: <http://www.wrcc.dri.edu/cacanom/images/p07.gif>

Weekly Snowpack and Drought Monitor Update Report

Jul 26, 2007

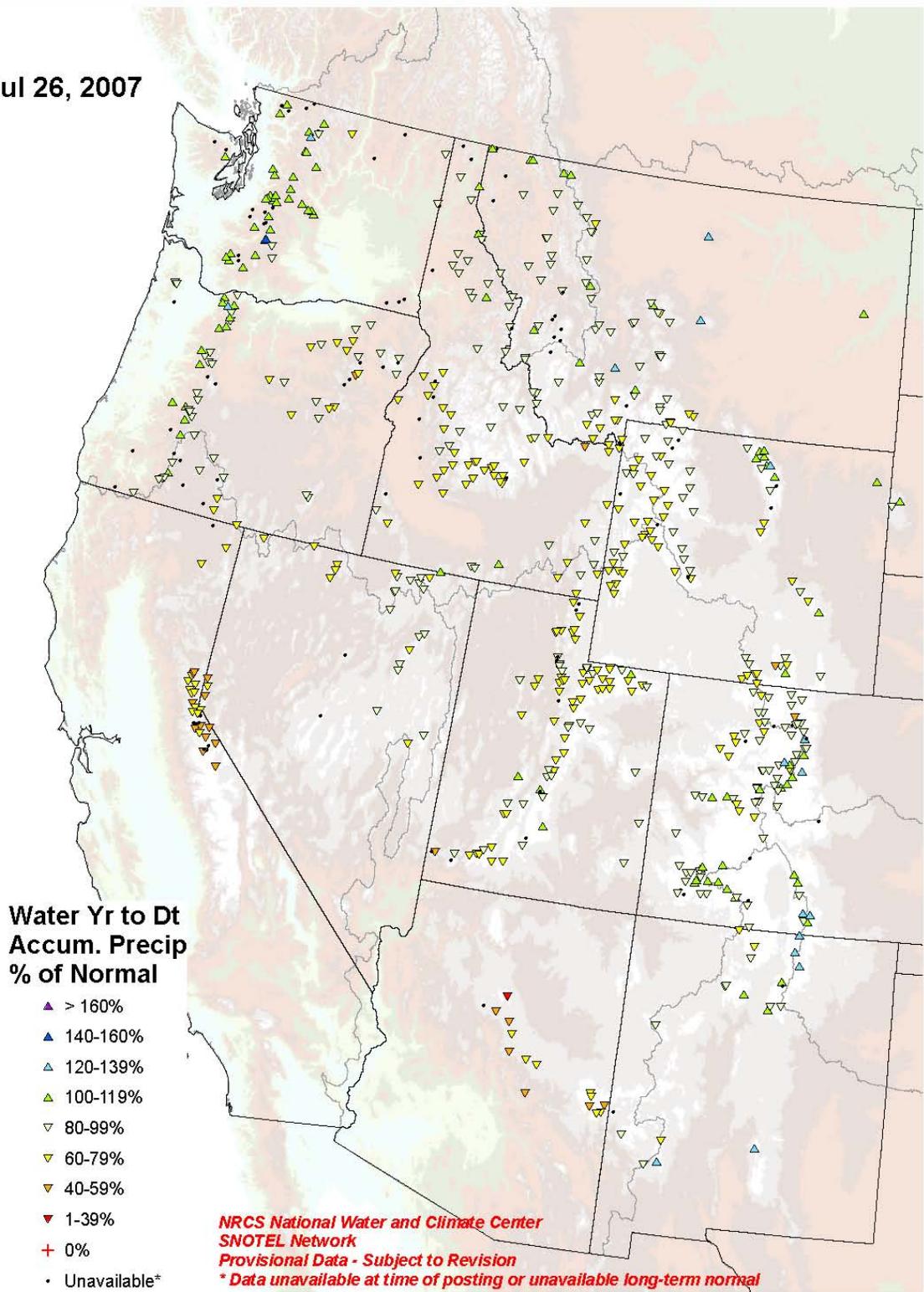


Fig. 2a. SNOTEL station water year (since October 1) precipitation as a percent of normal.
Ref: <ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/WestwideWYTDPrecipPercent.pdf>

U.S. Drought Monitor

July 24, 2007
Valid 8 a.m. EDT

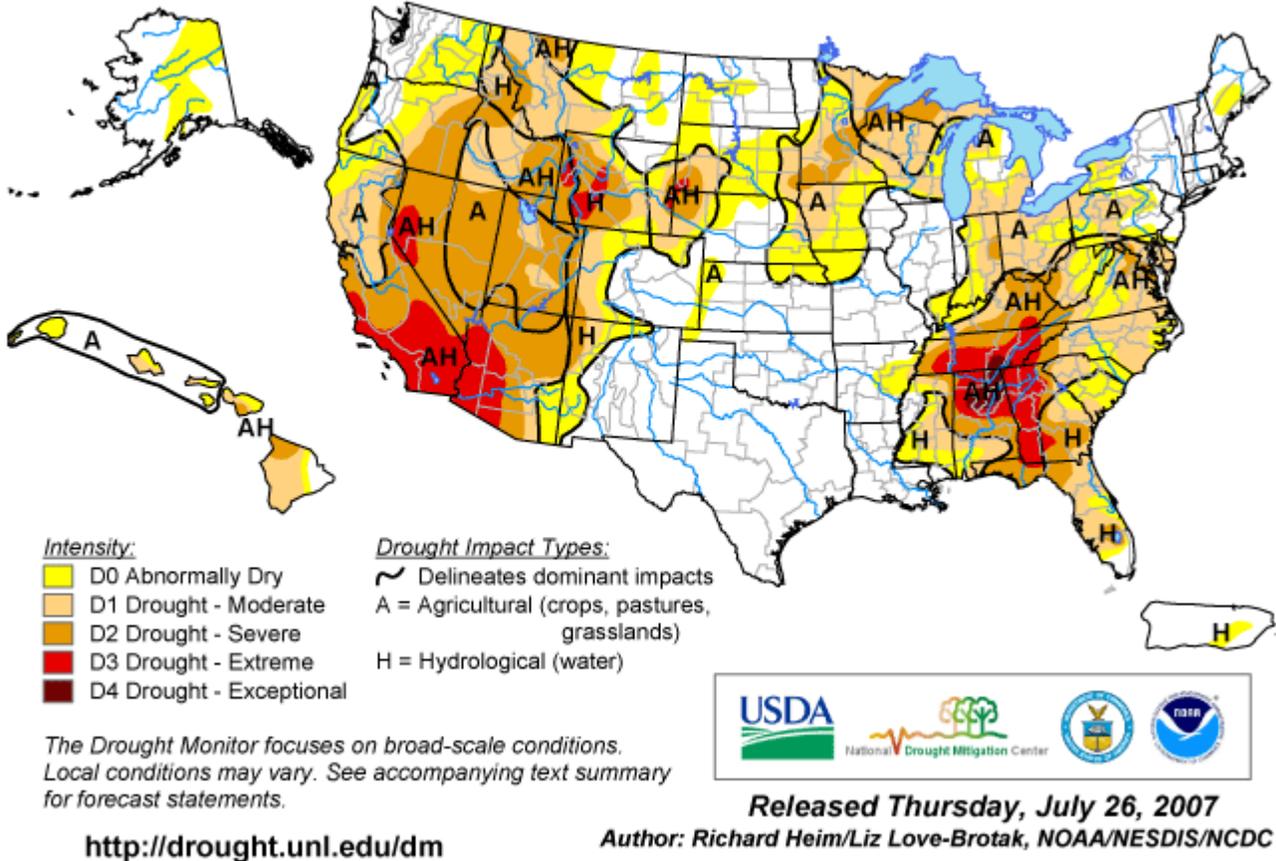


Fig. 3. Current Drought Monitor weekly summary.

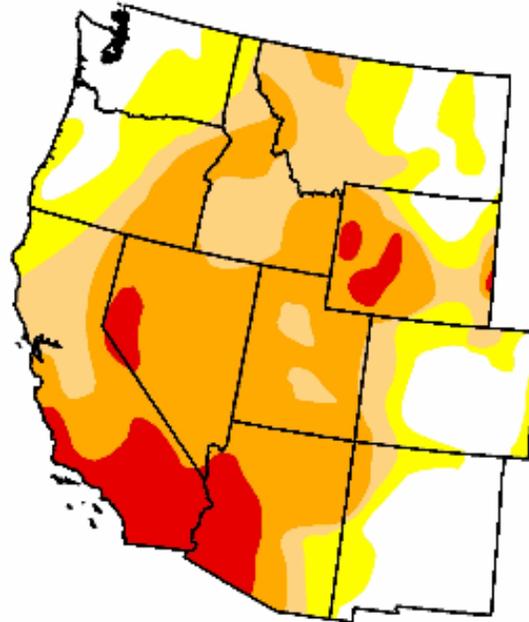
Ref: National Drought Mitigation Center (NDMC) - <http://www.drought.unl.edu/dm/monitor.html>

U.S. Drought Monitor West

July 24, 2007
Valid 7 a.m. EST

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|------|-------|-------|-------|-------|-----|
| Current | 21.2 | 78.8 | 61.4 | 43.0 | 9.5 | 0.0 |
| Last Week (07/17/2007 map) | 23.7 | 76.3 | 60.6 | 32.1 | 9.5 | 0.0 |
| 3 Months Ago (05/01/2007 map) | 27.9 | 72.1 | 51.7 | 21.7 | 6.6 | 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 (07/25/2006 map) | 47.7 | 52.3 | 42.8 | 23.5 | 6.7 | 0.6 |



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



Released Thursday, July 26, 2007

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

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

Fig 3a. Drought Monitor for the Western States with statistics over various time periods.
Ref: http://www.drought.unl.edu/dm/DM_west.htm

Weekly Snowpack and Drought Monitor Update Report

Soil Moisture Percentiles (wrt/ 1915-2003)
20070724

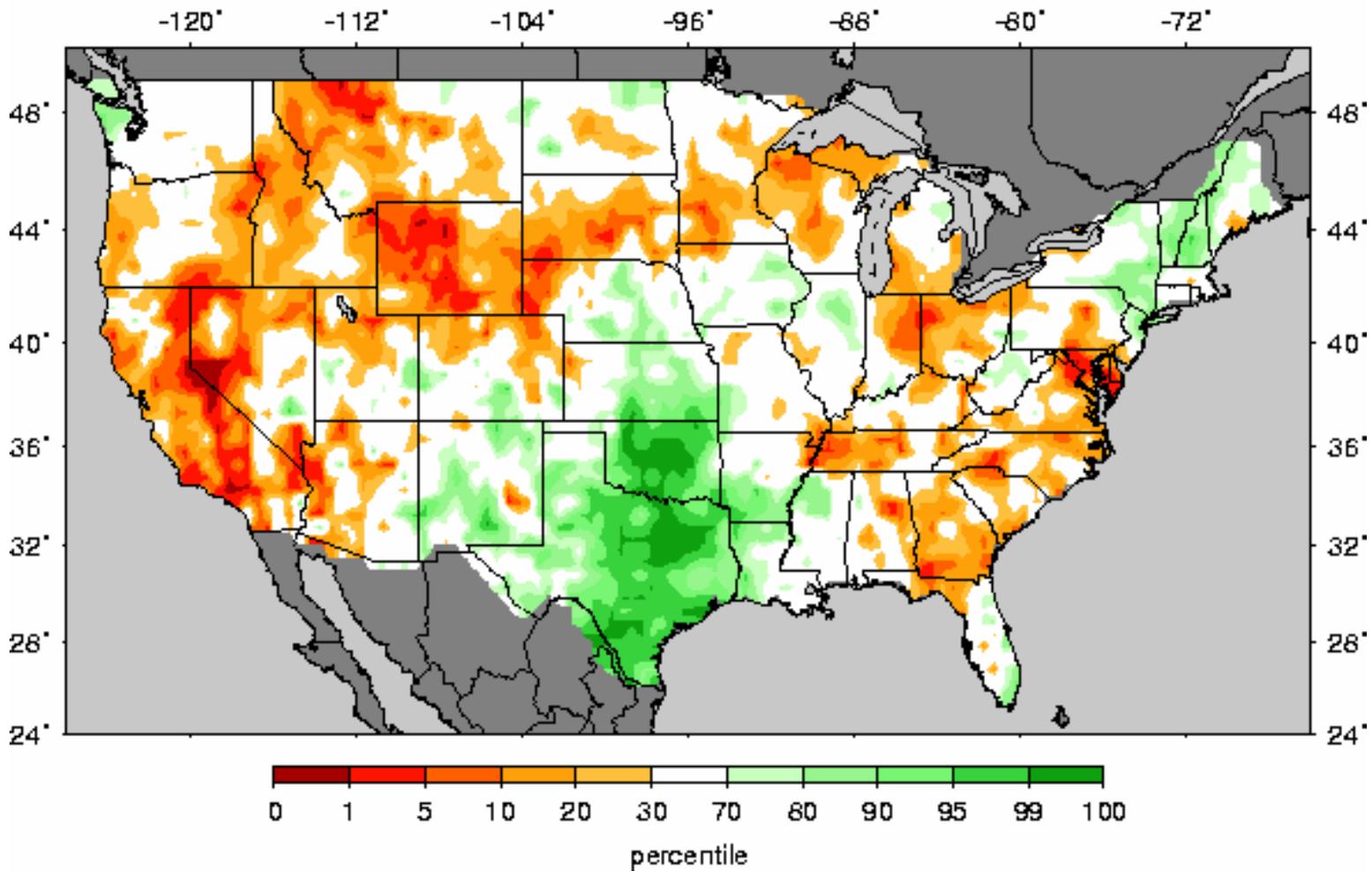


Fig. 4: Soil Moisture Ranking Percentile based on 1915-2003 climatology. (source: Univ. of Washington). Ref: http://www.hydro.washington.edu/forecast/monitor/curr/CONUS.sm_qnt.gif

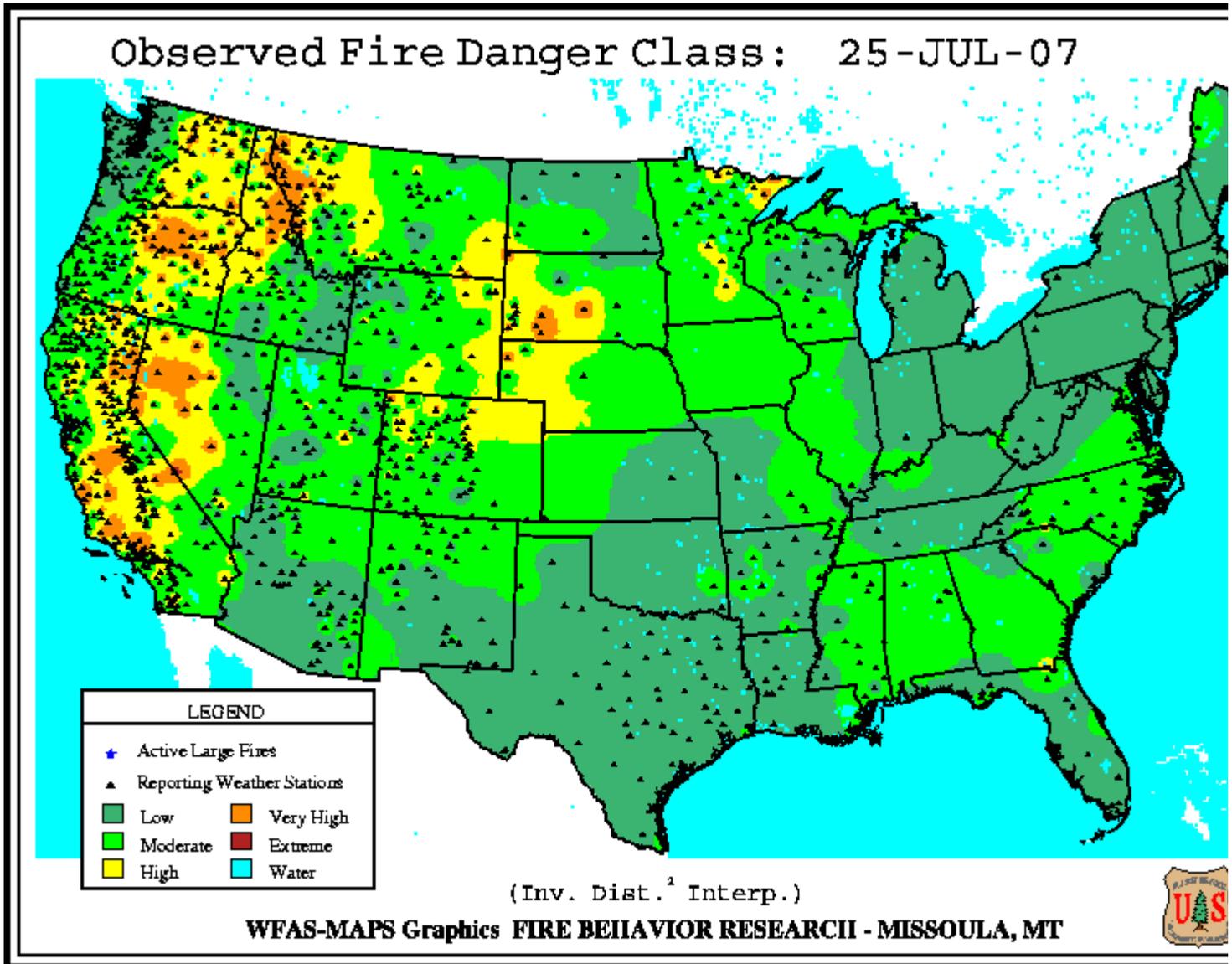


Fig. 5. Observed Fire Danger Class. Source: Forest Service Fire Behavior Research – Missoula, MT
Ref: http://www.fs.fed.us/land/wfas/fd_class.gif

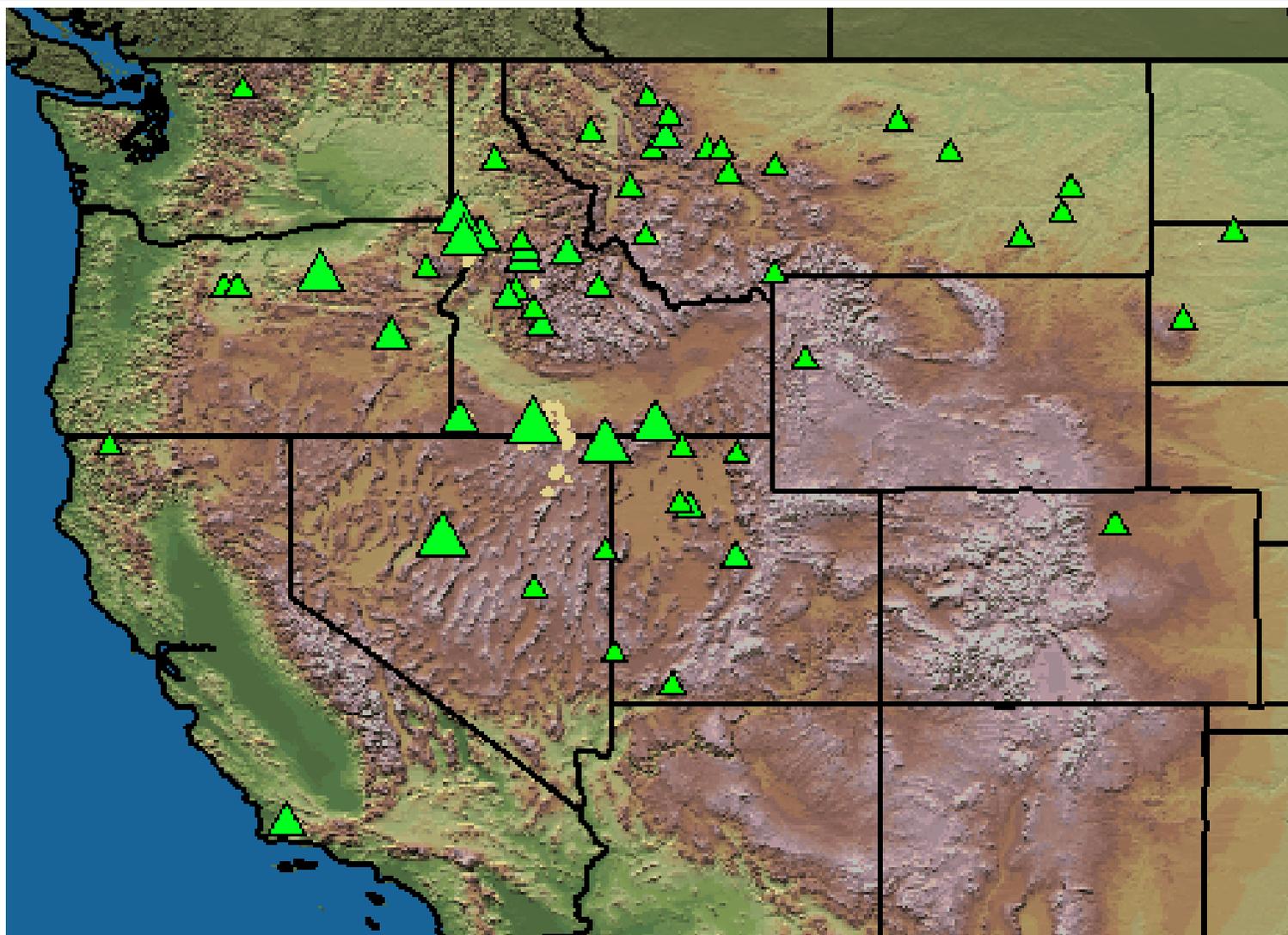
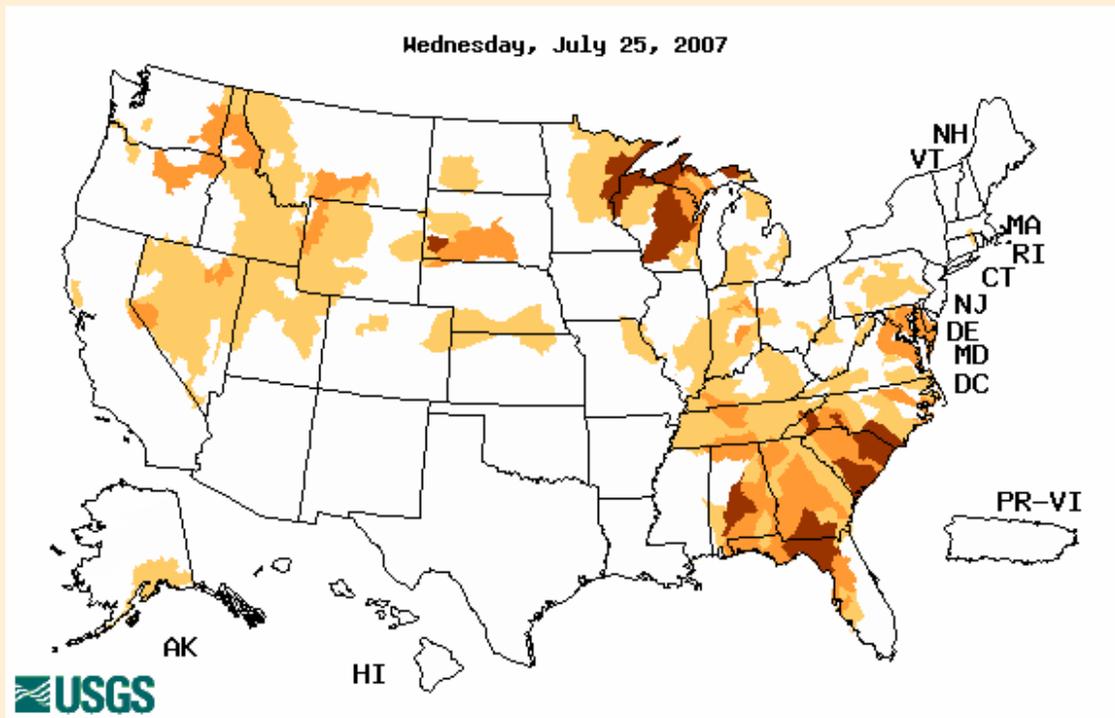


Fig. 5a. Location of active wildfires across the West (2007-07-25). Ref: <http://geomac.usgs.gov/>

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. 6. Map of below normal 7-day average streamflow compared to historical stream flow for the day of the year. Ref: USGS <http://water.usgs.gov/waterwatch/?m=dryw&w=map&r=us>

Weekly Snowpack and Drought Monitor Update Report

Vegetation Health: Red - stressed, Green - fair, Blue - favorable, White - Cold Surface

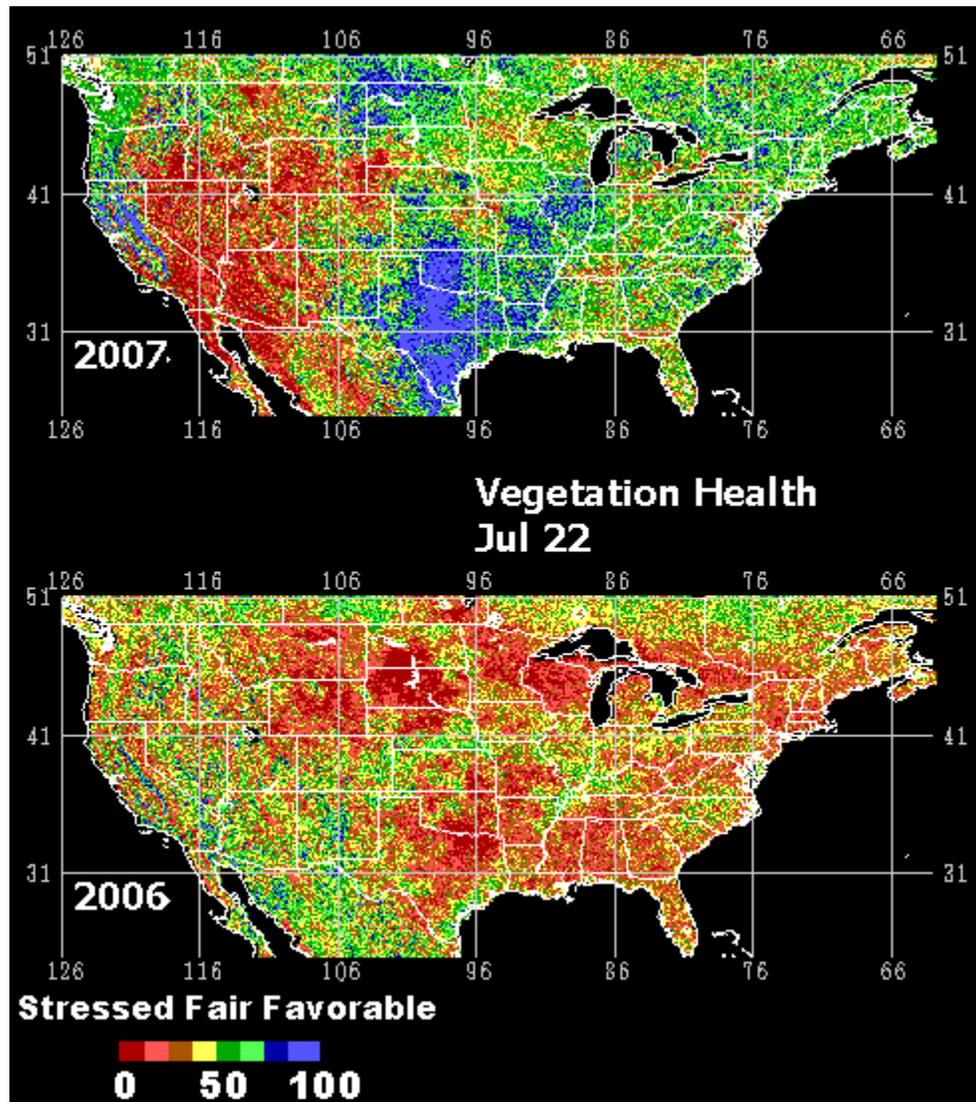


Fig. 7: This remote satellite AVHRR <http://www.orbit.nesdis.noaa.gov/smcd/emb/vci/usa.html>) map shows very stressed vegetation over the Southwest and Wyoming.

Weekly Snowpack and Drought Monitor Update Report

National Drought Summary -- July 24, 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/>.

An upper-level ridge of high pressure dominated the middle third of the country during this U.S. Drought Monitor period, with upper-level troughs over the Northwest and East. Pacific weather systems brushed Washington while dry weather dominated much of the West. Meanwhile, cold fronts and convective showers brought rain to parts of the eastern U.S.

The West: The week was hot and dry across most of the West. Over four dozen large wildfires raged across the region, mostly from Nevada and Utah to Idaho and western Montana. The national acreage burned so far in 2007 (as of July 24) exceeded 4.5 million acres. Record heat was concentrated in the Big Sky state, where Missoula, Montana, recorded 9 days with highs of 100°F or greater during the first 23 days of July, shattering its 1936 annual record of 6 days. Bozeman set a new all-time record high temperature several times during this month, exceeding the 1941-2006 record of 103°F six times. Miles City, in eastern Montana, reported 110°F on July 23, which tied its second-hottest day on record behind 113°F on July 18, 2003. The excessive heat magnified evaporation, which exacerbated the drought conditions. According to USDA reports, poor to very poor (dry) topsoil conditions deteriorated from about 60% of each state last week to 73% in Idaho and 77% in Montana this week.

On the U.S. Drought Monitor map, D0 (abnormally dry) was introduced into eastern Montana, D0 and D1 (moderate drought) expanded into the central counties, and D2 (severe drought) expanded in the High Plains counties. D2 grew across Yellowstone National Park in northwest Wyoming and into the eastern third of Idaho. D2 in eastern Oregon crept across Idaho and into the west central counties of Montana.

Most of Utah suffered from above-normal temperatures, severe drought, and wildfires, with all of the counties reporting some percentage of loss on crops and/or range land. Water levels in reservoirs and streams were low to nonexistent with conditions worsening. These deteriorating impacts resulted in D2 being expanded across most of the state.

On the other hand, abnormal rainfall drenched portions of Washington and Oregon. More than an inch of rain in some areas prompted a retreat of D0 in north central Washington and coastal Oregon. Topsoil conditions in Washington improved from 67% poor or very poor last week to 45% this week.

The High Plains: Excessive heat spread into the northern High Plains states, baking rain-starved crop and range land. Topsoil conditions worsened to 68% poor or very poor in South Dakota and 54% in Nebraska. Abnormally dry conditions (D0) spread across most of South Dakota and into north central Nebraska, while a sliver of D0 nudged toward central North Dakota. D0 also expanded in northeastern Kansas, northwestern Missouri, and south central Iowa. D1 and D2 expanded in southwestern South Dakota. From the Nebraska panhandle into adjoining parts of South Dakota, Wyoming, and Colorado, an area of AH impacts was

Weekly Snowpack and Drought Monitor Update Report

designated as crops become stressed. In Colorado, D0 and D1 expanded in the High Plains counties of the northeast.

The Midwest: The continued dryness prompted the insertion of a strip of D2 from northwest Wisconsin across Minnesota into southeast South Dakota. D1 was expanded around this new D2, and also expanded southward in Wisconsin. D0 and D1 expanded in Lower Michigan toward Saginaw Bay. D1 expanded into central Indiana and a spot of D2 was added to east central Indiana. Topsoil conditions continued poor or very poor across 80% of Michigan and Wisconsin and 72% of Minnesota.

But some parts of the Midwest received locally heavy rainfall, especially in a narrow band from the southern tip of Lake Michigan to the southern tip of Lake Erie. D0 and D1 were pulled back in northeast Illinois and northwest Indiana, and D1 retreated slightly in central Ohio. Topsoil conditions improved from 72% poor or very poor last week in Indiana to 55% this week. In Ohio, topsoil improvement went from 79% to 65%.

Good 1+ inch rains fell across parts of Kentucky this week. The rain brought limited improvement to topsoil conditions, with the state statistics improving from 65% poor to very poor last week to 61% this week. But no change was made to the Drought Monitor depiction due to lingering long-term precipitation deficits.

The Northeast and Mid-Atlantic: Locally heavy rains across western New York prompted the retreat of D1 south to the Pennsylvania state line, with a bubble of D1 remaining around Orleans and Genesee counties where longer-term deficits persisted. D0 expanded into Lancaster County of southeastern Pennsylvania, which has missed recent substantial rains. Severe drought (D2) expanded northward from the Virginia Tidewater into northern Virginia and western Maryland where dryness has persisted for several months. In Virginia, D1 nosed toward the Roanoke Valley from the north and south. Topsoil conditions continued to deteriorate, reaching 91% poor to very poor in Maryland, 90% in Delaware, and 82% in Virginia. The persistent dryness continued to impact crops.

The Southeast: Locally heavy rains eroded the D0 and D1 in Mississippi and the northwestern edge of the exceptional drought (D4) in Alabama. But major precipitation deficits remained over the Southeast, with significant topsoil shortages and crop impact. Since January 1, precipitation across much of Mississippi has remained 5 to 15 inches behind normal. A large swath from western Florida to Tennessee and the southwestern tip of North Carolina was 15 to 20 inches below normal, with the drought epicenter in eastern to northeastern Alabama still a staggering 25 inches behind, or less than 50 percent of normal precipitation. Huntsville and Cullman, Alabama, were still at a record low for year-to-date precipitation. Poor to very poor topsoil percentages ranged from 48% across Georgia to 61% in North Carolina, 68% across South Carolina, and 75% in Tennessee. In Alabama, topsoil conditions worsened from 66% last week to 69% poor to very poor this week, in spite of the rains in the north. Local rains brought short-term relief to some crops and pastures, but many crops suffered severe damage. In Alabama, 80% of the corn crop was still rated poor to very poor, soybeans 61%, and cotton 49%. In Georgia, 48% of the corn crop rated poor to very poor, pastures 43%, cotton 21%, peanuts 16%, and soybeans 13%. In Tennessee, ponds were going dry with 61% of hay in poor to very poor condition and 47% for corn.

In South Carolina, D0 expanded to cover the rest of the state to the coast along the North Carolina border, and D1 expanded further into the central sections.

Puerto Rico: A few stations reported more than 4 inches of rain during the week, but these were outside the area of long-term, hydrological dryness (D0H) across eastern portions of the

Weekly Snowpack and Drought Monitor Update Report

island. The stations within the dry area received 1 to 3 inches, which was not enough to alleviate the deficits which have accumulated over the last several months.

Alaska: Showers dropped an inch or more of rain over a few stations in the state. But most of the stations in the abnormally dry (D0) area of interior Alaska received only a few tenths of an inch, so no change was made to the depiction.

Hawaii: Tropical Depression Cosme brought several inches of rain to the windward side of the Big Island. With rainfall for June and July now near to above normal and adequate soil moisture conditions, the D0 over the eastern area of the Big Island was reduced. An inch or more of rain at favored locations on the other islands was not enough to alleviate long-term deficits, so the drought depiction across the rest of Hawaii was not changed.

Looking Ahead: The current upper-level weather pattern will persist for another week before the jet stream begins to flatten out a bit. Weather that could have an impact on drought areas in the next two weeks: 1) a cold front will sag southward across the eastern U.S., bringing a continued chance of rain to the drought areas in the South and East next week; 2) scattered showers associated with the monsoon (summer rainy season) will continue to affect the Four Corners states to southern Montana through July 30, but dry conditions are expected to dominate the rest of the West; 3) the NWS 6- to 10-day and 8- to 14-day outlooks call for above-normal precipitation along the East and Gulf coasts and up the Southern and Central Rockies for July 31-August 8, with dry conditions from the northern High Plains and Great Lakes to the Tennessee Valley; 4) unusually warm temperatures will dominate the northern tier states with cool conditions across the southern states east of the Rockies during this period; 5) the progs have the West warming up and the Pacific Northwest drying out near the end of the forecast period; 6) Alaska is expected to be drier than normal in the north and wetter than normal in the southwest.

Author: Richard Heim, NOAA/NESDIS/National Climatic Data 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 July 25, 2007