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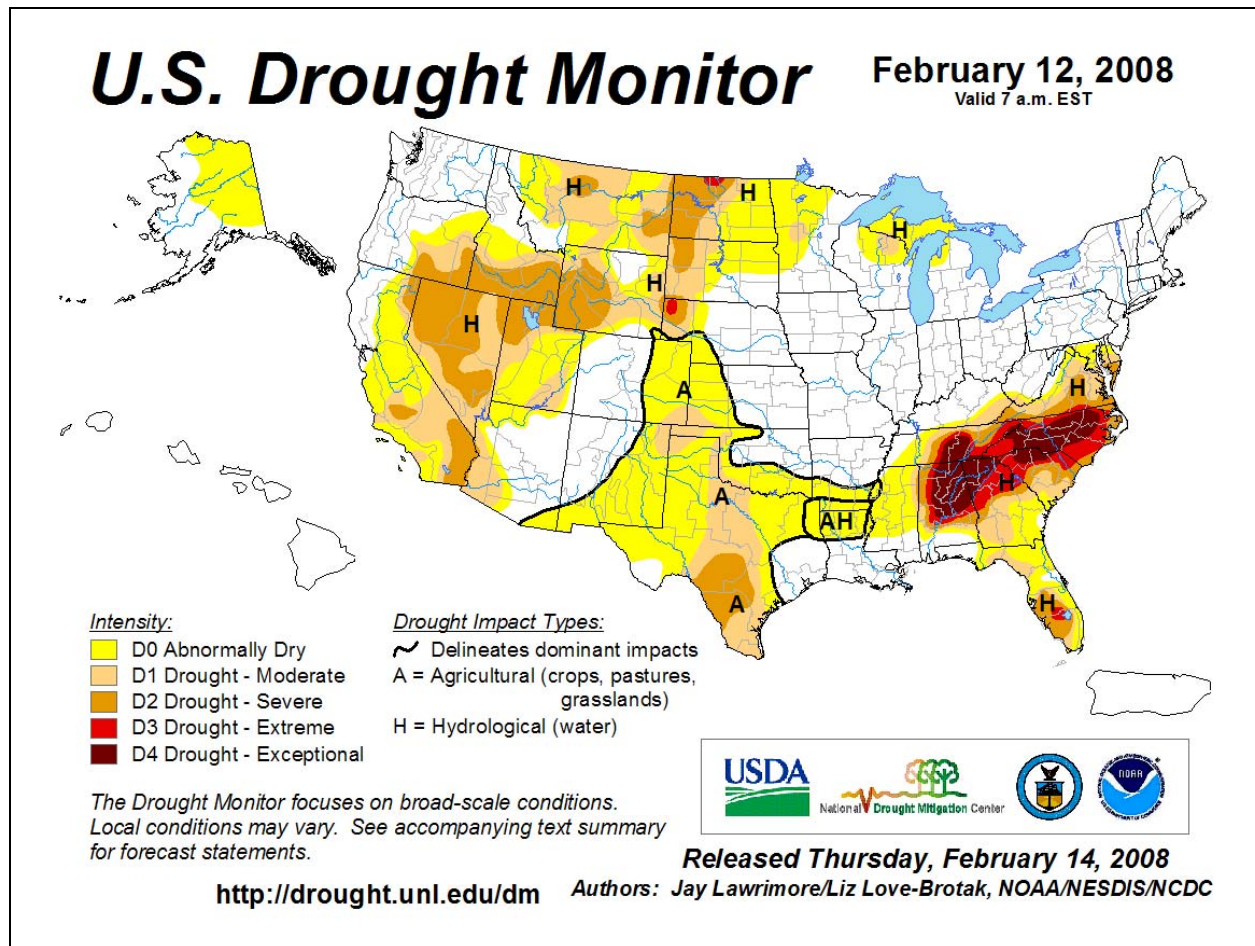
Agricultural Outlook Forum
U.S. Department of Agriculture

February 21-22, 2008

U.S. Drought Monitor: From the Meteorologist's Perspective

Brad Rippey

U.S. Drought Monitor: From the Meteorologist's Perspective



**Brad Rippey, USDA Agricultural Meteorologist
Washington, D.C.**

A Brief History of the U.S. Drought Monitor

“In the summer of 1998, a dialogue began between the National Drought Mitigation Center (NDMC) and the National Oceanic and Atmospheric Administration’s Climate Prediction Center (NOAA/CPC)... What emerged was a plan to develop a classification system for droughts that would be as recognizable to the public as the Fujita tornado intensity scale (F0-F5) and the Saffir-Simpson hurricane intensity scale (categories 1-5). Early in the process, the U.S. Department of Agriculture (USDA)... joined the effort. As a result of meetings held during the spring of 1999, an agreement was reached between NOAA, USDA, and NDMC to produce and maintain a drought monitoring product.”

(from “The Drought Monitor,” Bulletin of the American Meteorological Society, by Svoboda, Le Comte, Hayes, Heim, et al., August 2002)

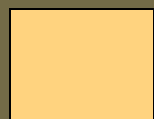


U.S. Drought Monitor Map

Drought Intensity Categories



D0 Abnormally Dry



D1 Drought – Moderate



D2 Drought – Severe



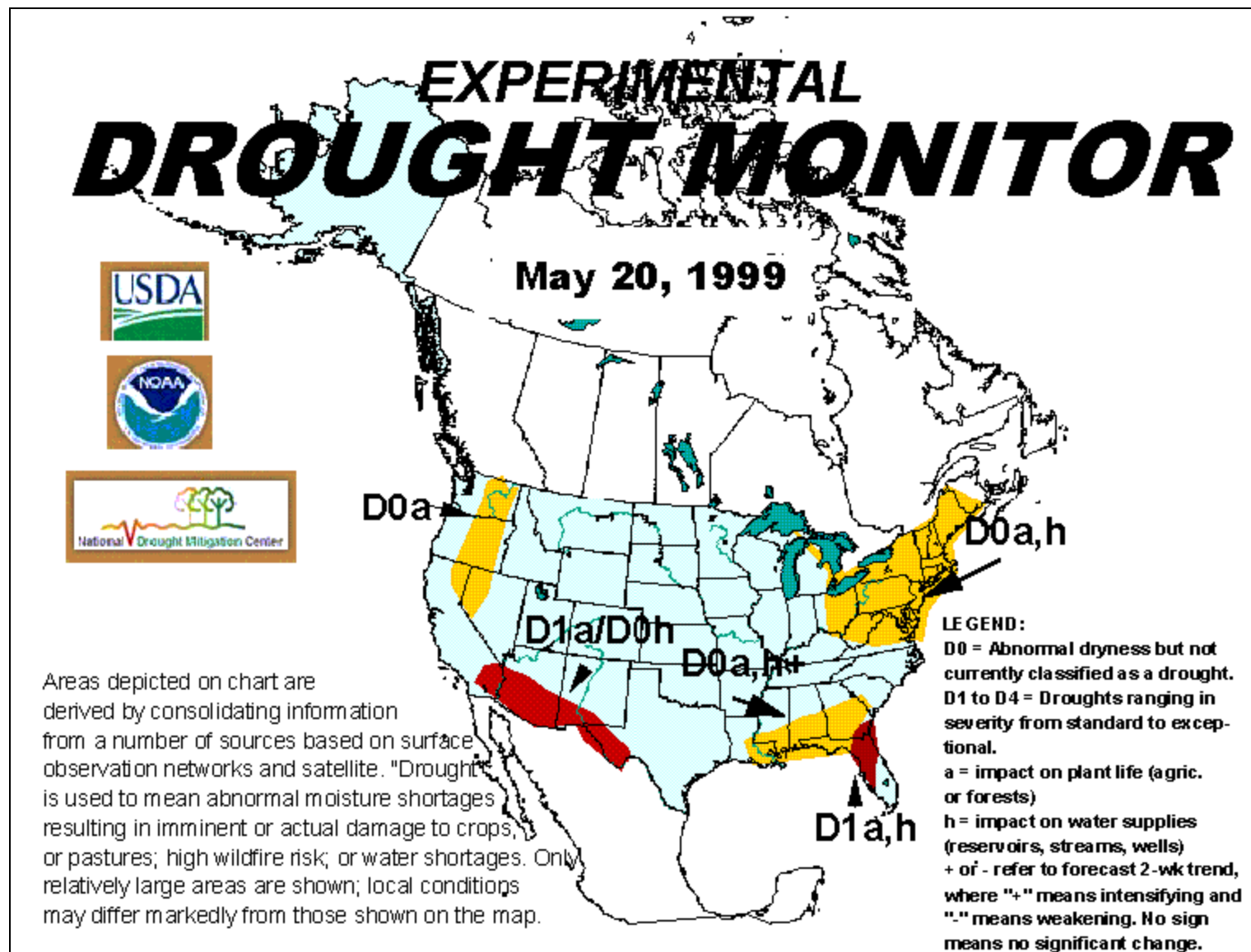
D3 Drought – Extreme



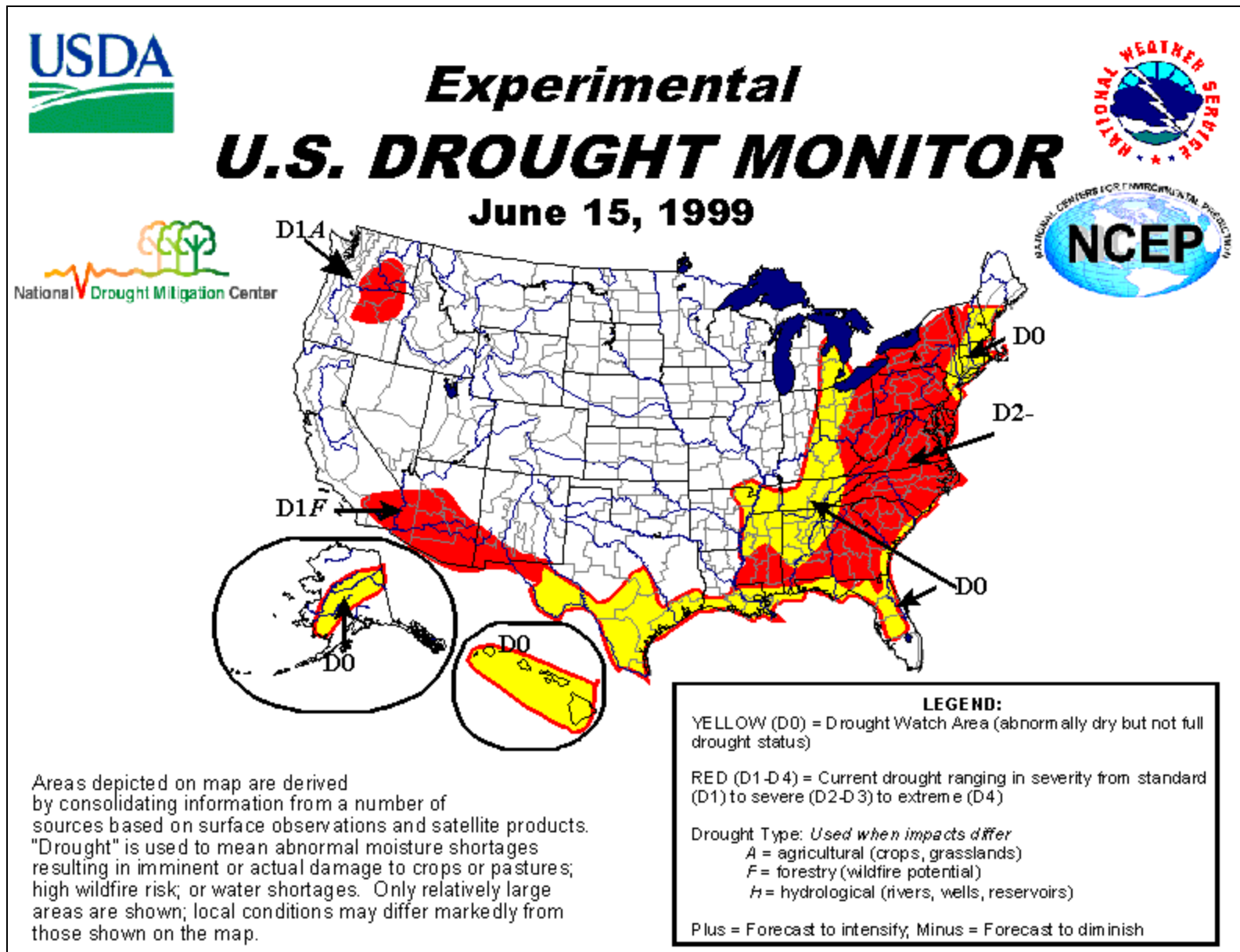
D4 Drought – Exceptional



U.S. Drought Monitor Growing Pains, 1999-2000



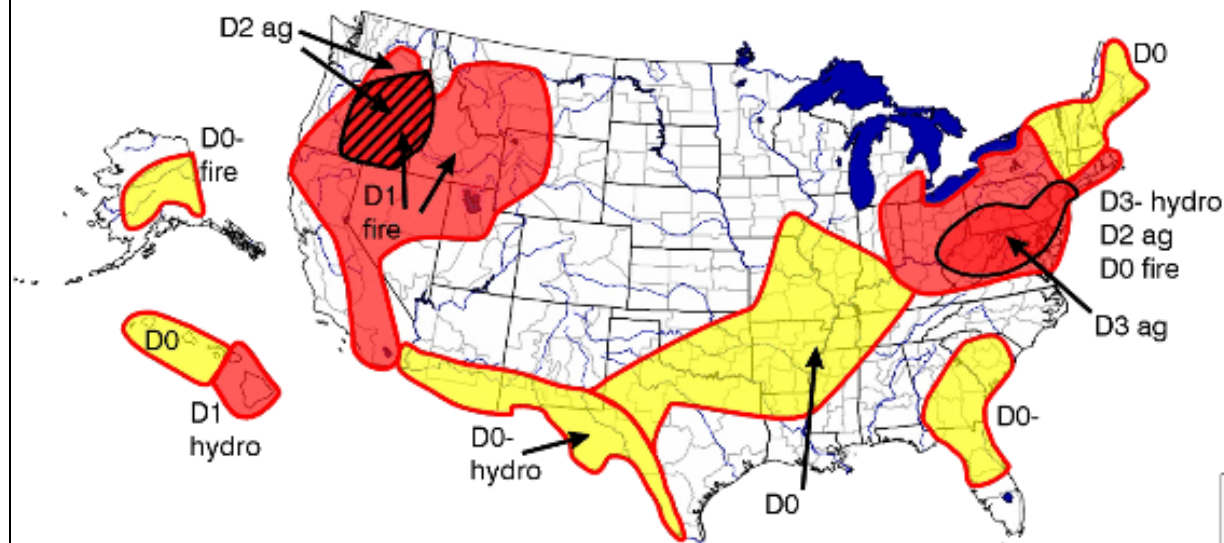
U.S. Drought Monitor Growing Pains, 1999-2000



U.S. Drought Monitor Growing Pains, 1999-2000

July 27, 1999

Experimental U.S. Drought Monitor



"Drought" means moisture shortages leading to damaged crops or pastures, high wildfire risk, or water shortages. The map is based on information from many sources, including both satellite and surface data, and it focuses on widespread drought. Local conditions may vary.

Yellow (D0) = Drought Watch Area (abnormally dry but not full drought status)

Red (D1-D4) = Current drought ranging in severity from standard (D1) to severe (D2-D3) to extreme (D4)

Crosshatching (▨) = Overlapping drought type areas

Drought type: Used when impacts differ

Ag = agricultural (crops, grasslands)

Fire = forestry (wildfire potential)

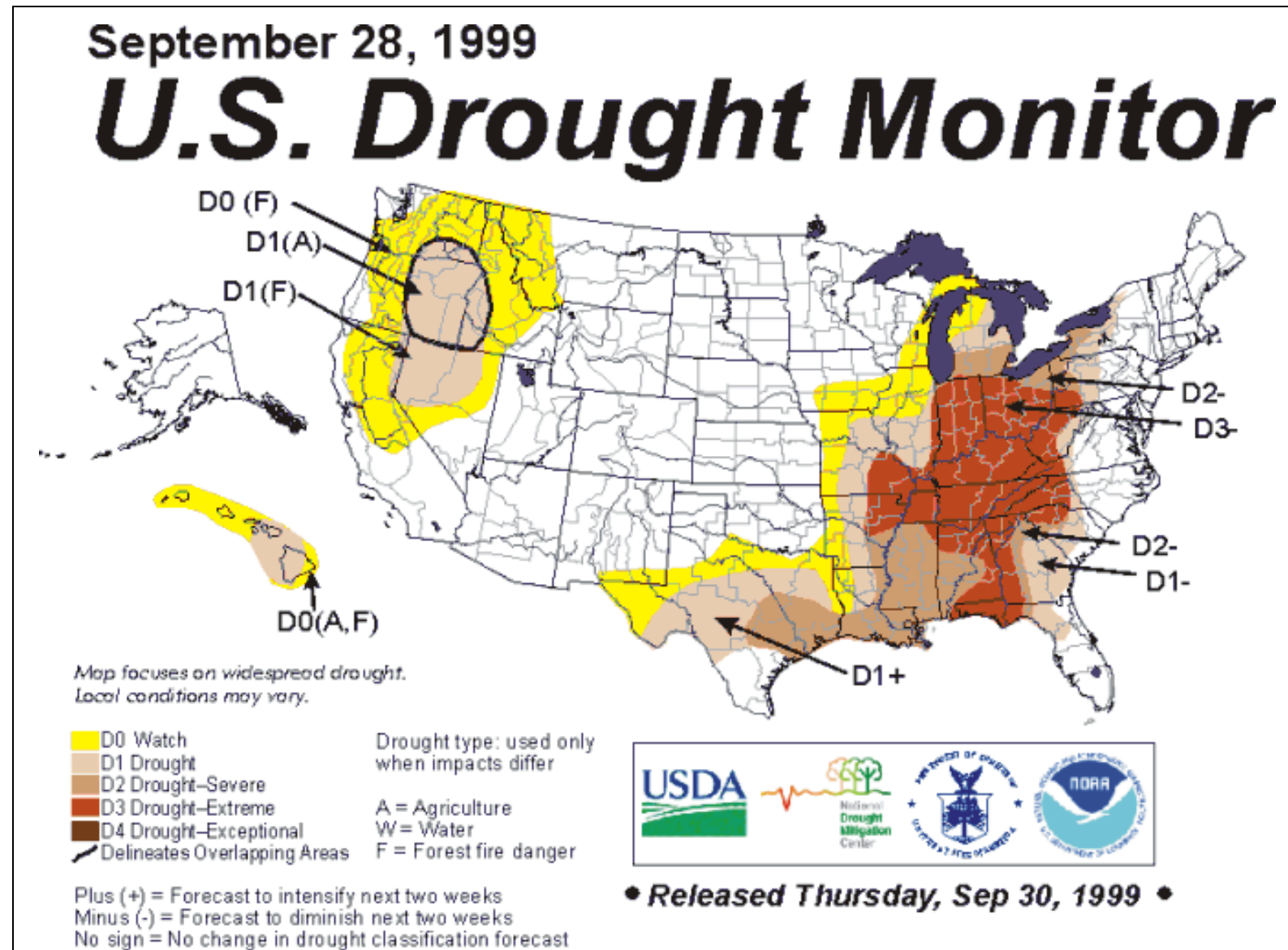
Hydro = hydrological (rivers, wells, reservoirs)

Plus (+) = Forecast to intensify

Minus (-) = Forecast to diminish



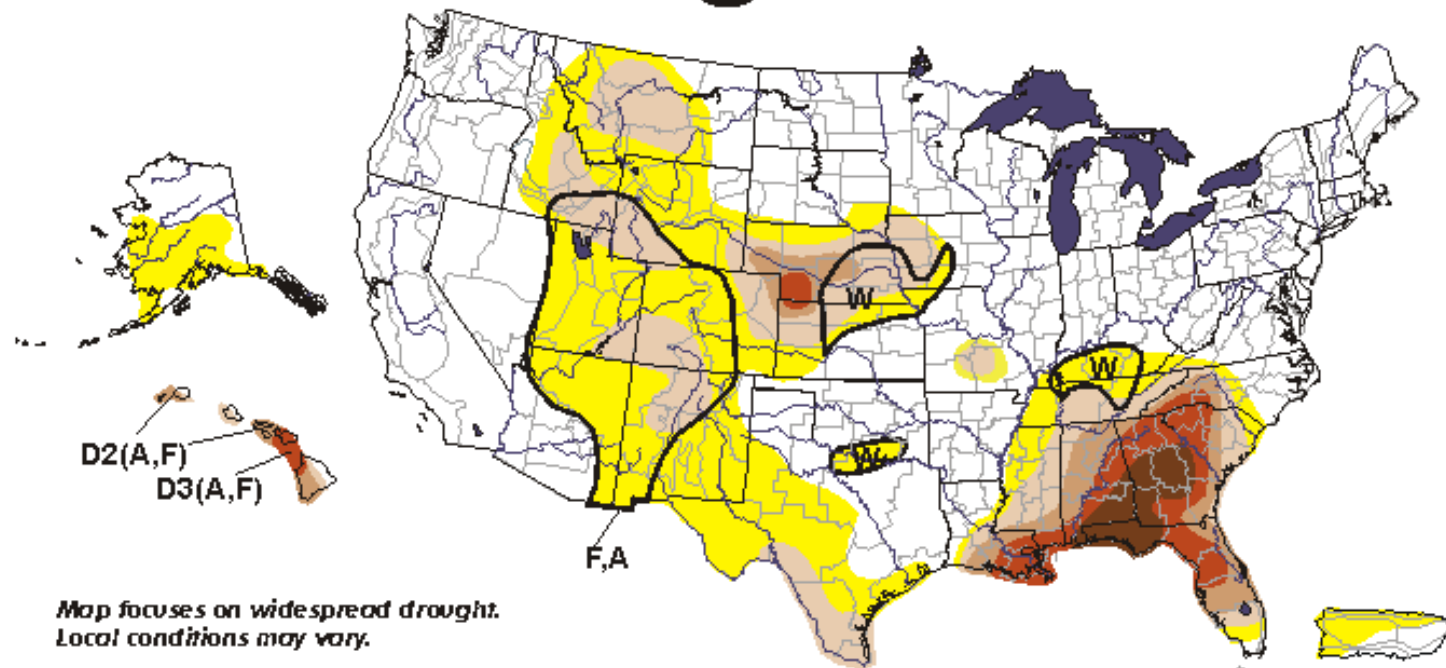
U.S. Drought Monitor Growing Pains, 1999-2000



U.S. Drought Monitor Growing Pains, 1999-2000

July 11, 2000 Valid 7 a.m. EST

U.S. Drought Monitor



*Map focuses on widespread drought.
Local conditions may vary.*

- | | |
|------------------------------|---|
| D0 Abnormally Dry | Drought type: used only when impacts differ |
| D1 Drought-First Stage | |
| D2 Drought-Severe | |
| D3 Drought-Extreme | |
| D4 Drought-Exceptional | |
| Delineates Overlapping Areas | |
| | A = Agriculture |
| | W = Water |
| | F = Wildfire danger |

See accompanying text summary
for forecast statements



● Released Thursday, July 13, 2000 ●

The Drought Monitor:

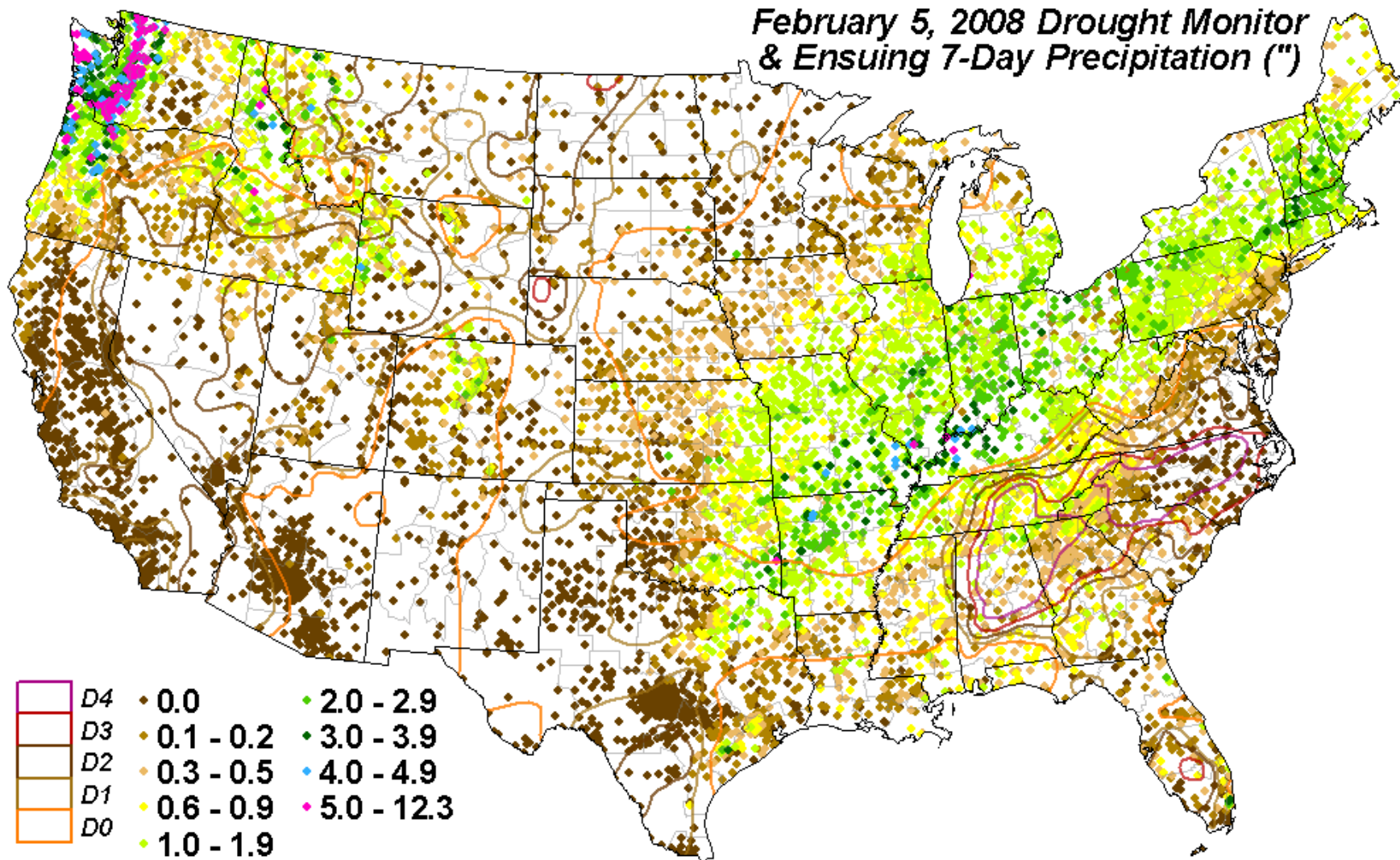
A new way of looking at drought in the U.S.

- Integrates **daily** rainfall reports from thousands of stations
- Rates drought intensity by **percentile** ranks
- Uses weekly feedback from **local experts** to reflect impacts and for the product's “ground truth”



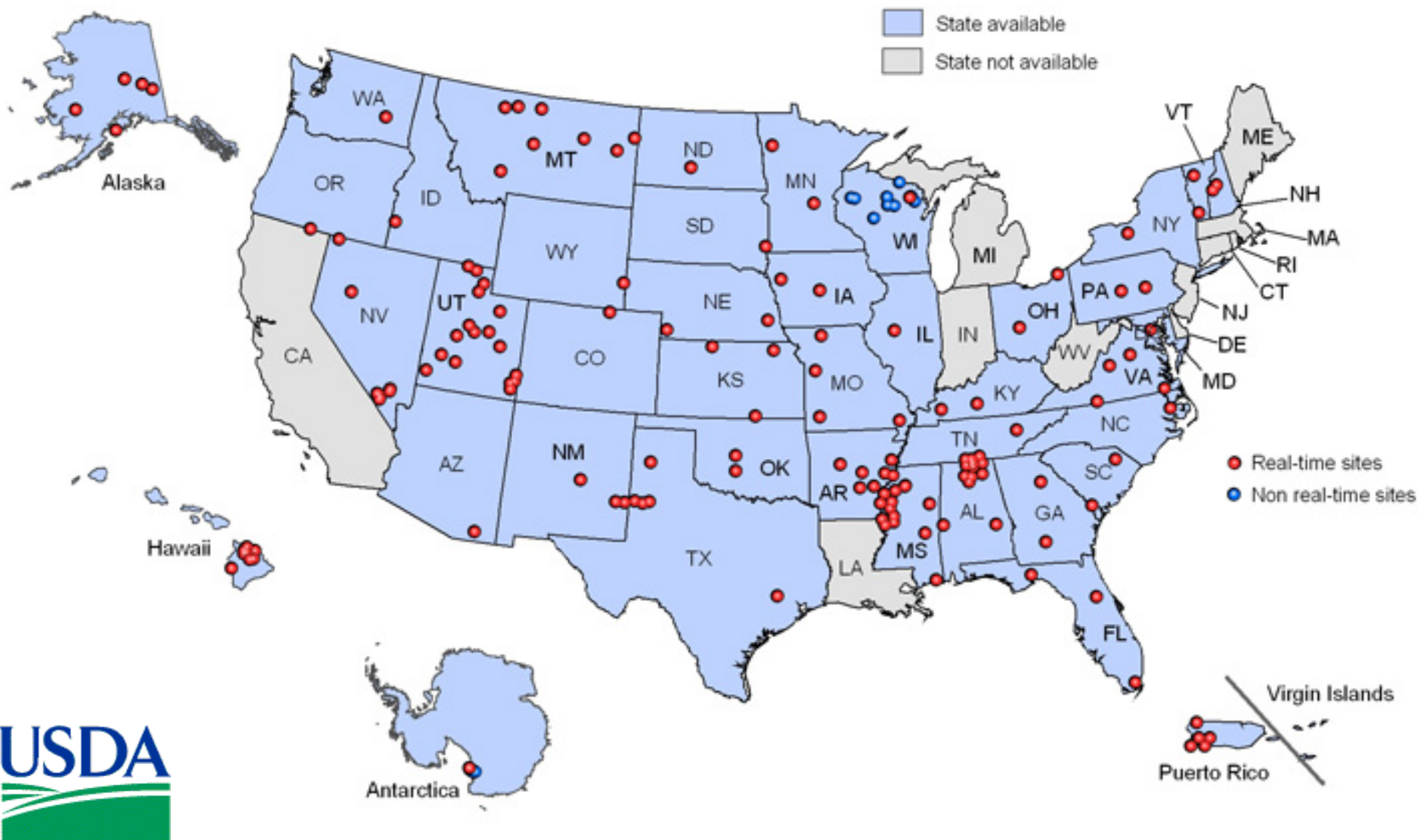
Drought Monitor Analysis Tools: Precipitation

*February 5, 2008 Drought Monitor
& Ensuing 7-Day Precipitation (")*



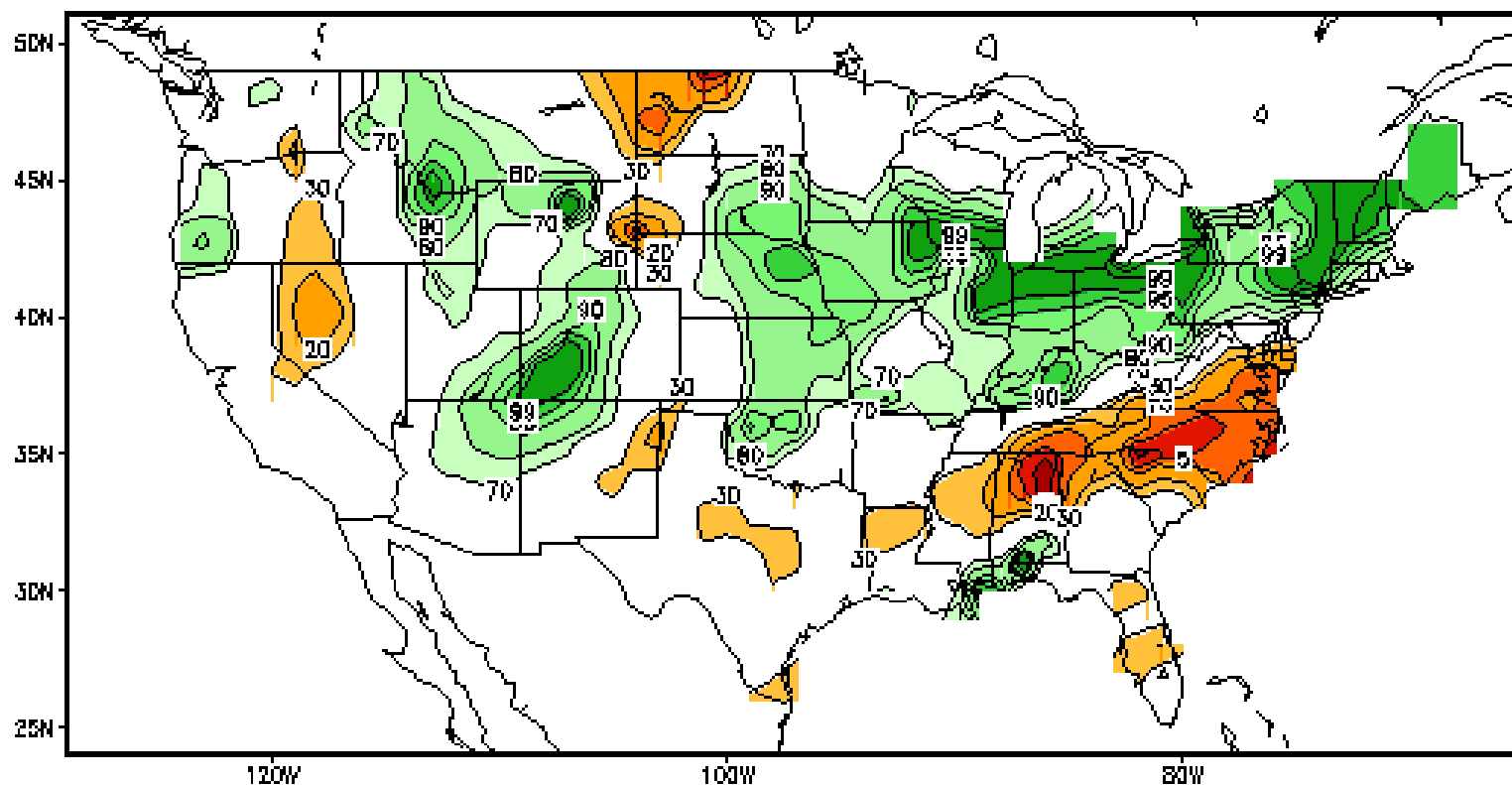
DM Analysis Tools: Observed Soil Moisture

SCAN: Soil Climate Analysis Network








DM Analysis Tools: CPC Modeled Soil Moisture

Calculated Soil Moisture Ranking Percentile
FEB 18, 2008



Percentiles and the U.S. Drought Monitor

- Advantages of percentiles:
 - Can be applied to any parameter
 - Can be used for any length of data record
 - Helps to put drought in historical perspective
- D4, Exceptional Drought:  once per 50 years or less
- D3, Extreme Drought:  once per 20 to 50 years
- D2, Severe Drought:  once per 10 to 20 years
- D1, Moderate Drought:  once per 5 to 10 years
- D0, Abnormally Dry:  once per 3 to 5 years

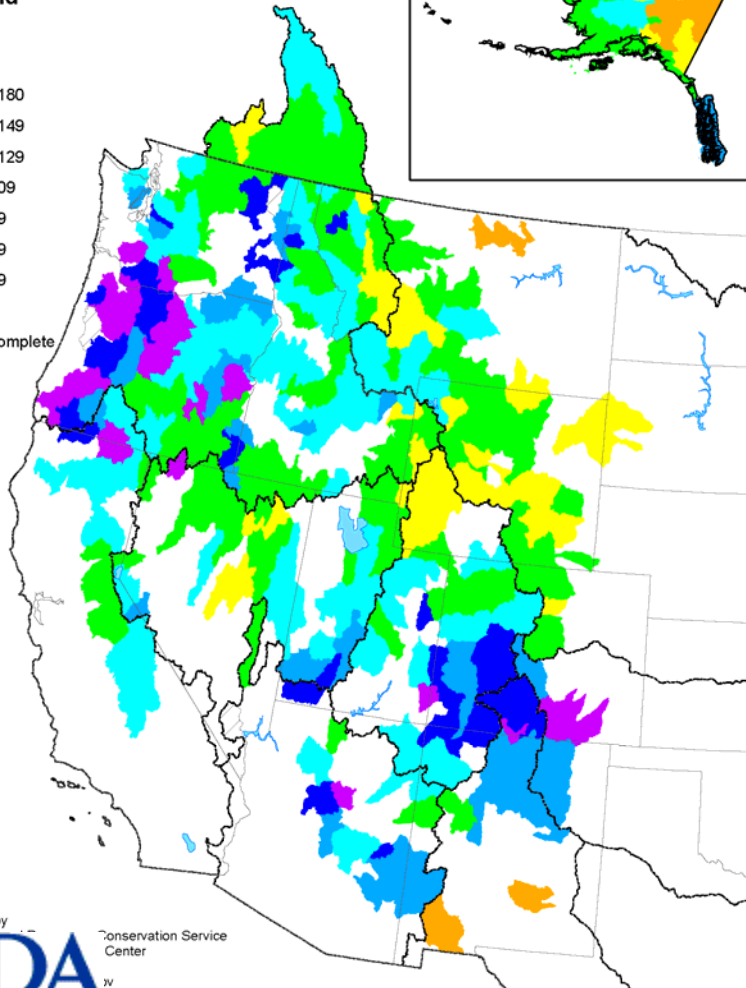


DM Analysis Tools: Western Water Supply

**Mountain Snowpack
as of February 1, 2008**

Legend

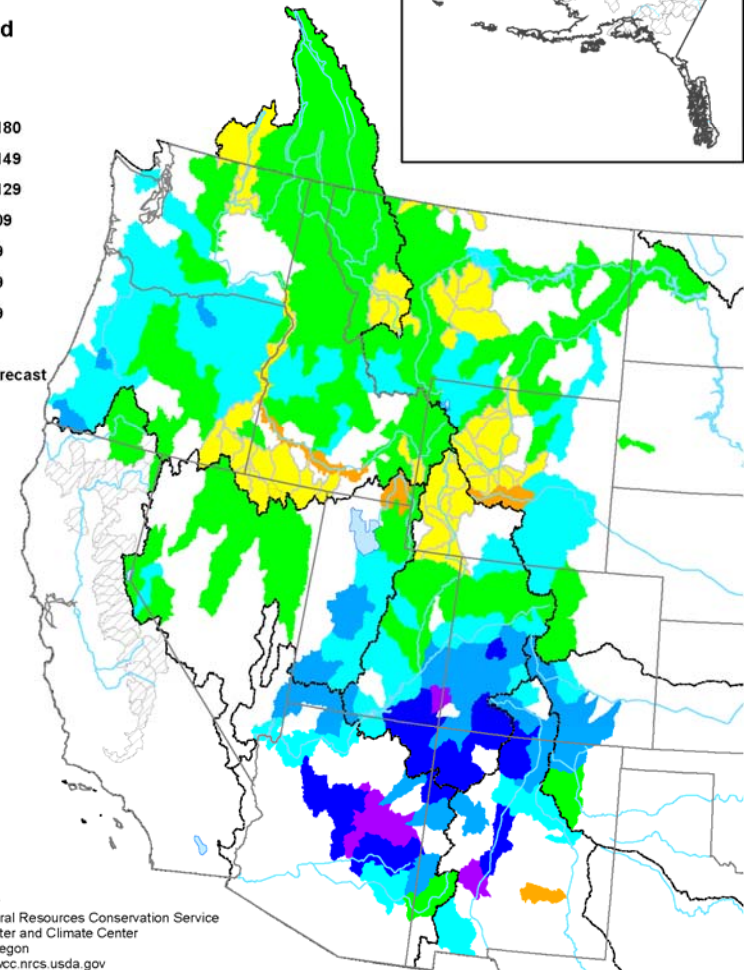
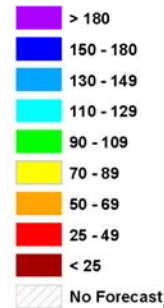
percent



**Spring and Summer
Streamflow Forecasts
as of February 1, 2008**

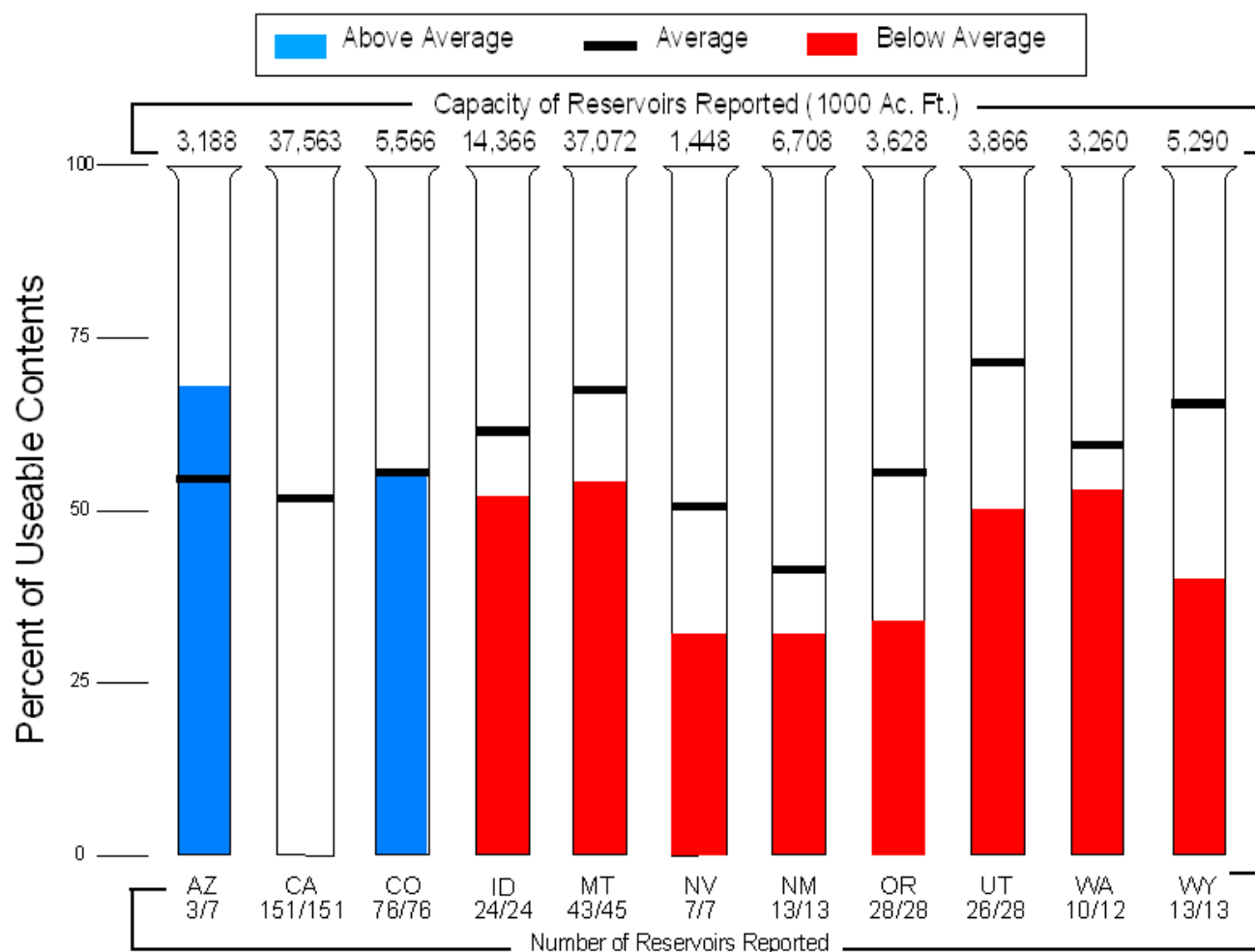
Legend

percent



Drought Monitor Analysis Tools: Reservoirs

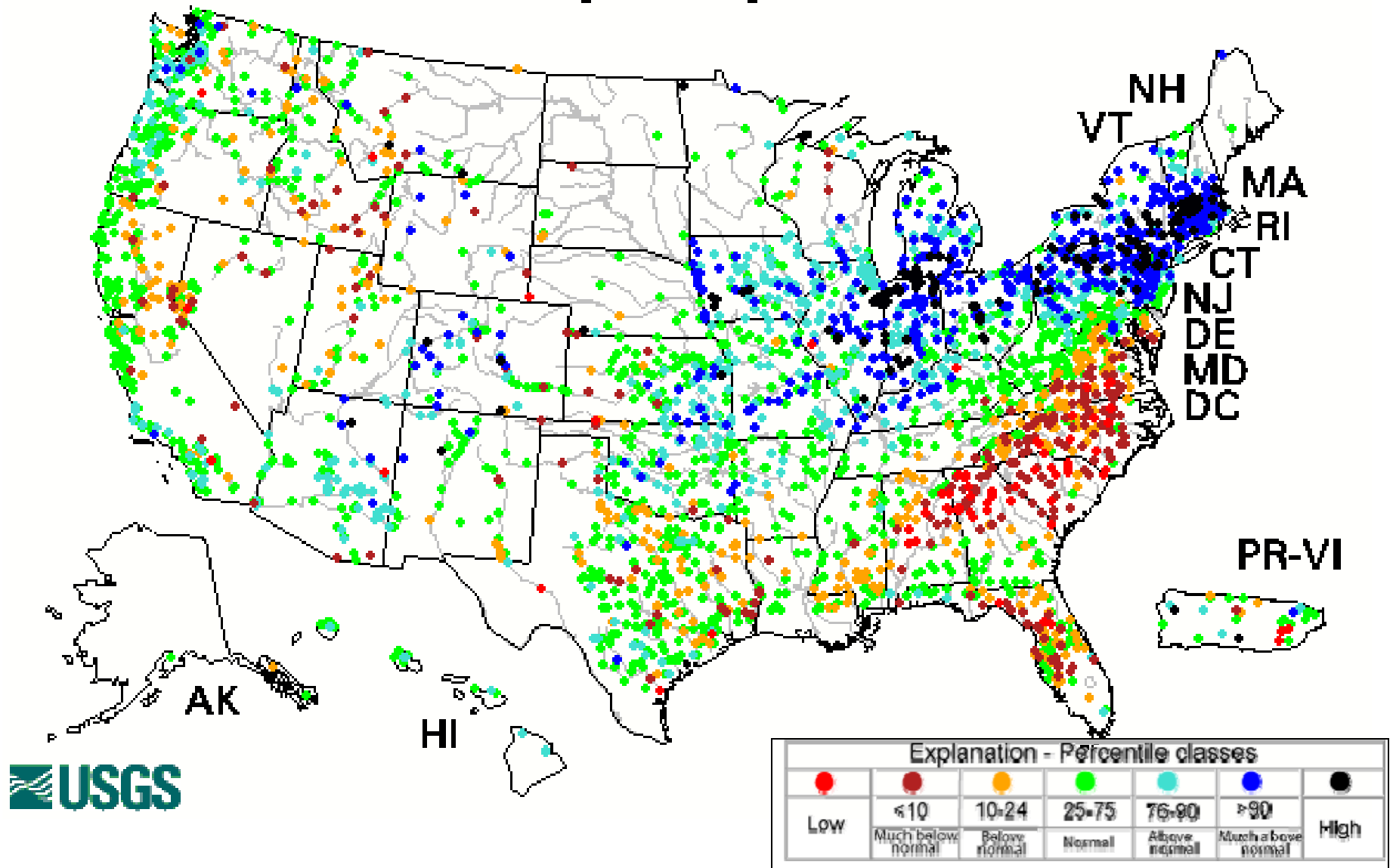
Reservoir Storage as of February 1, 2008



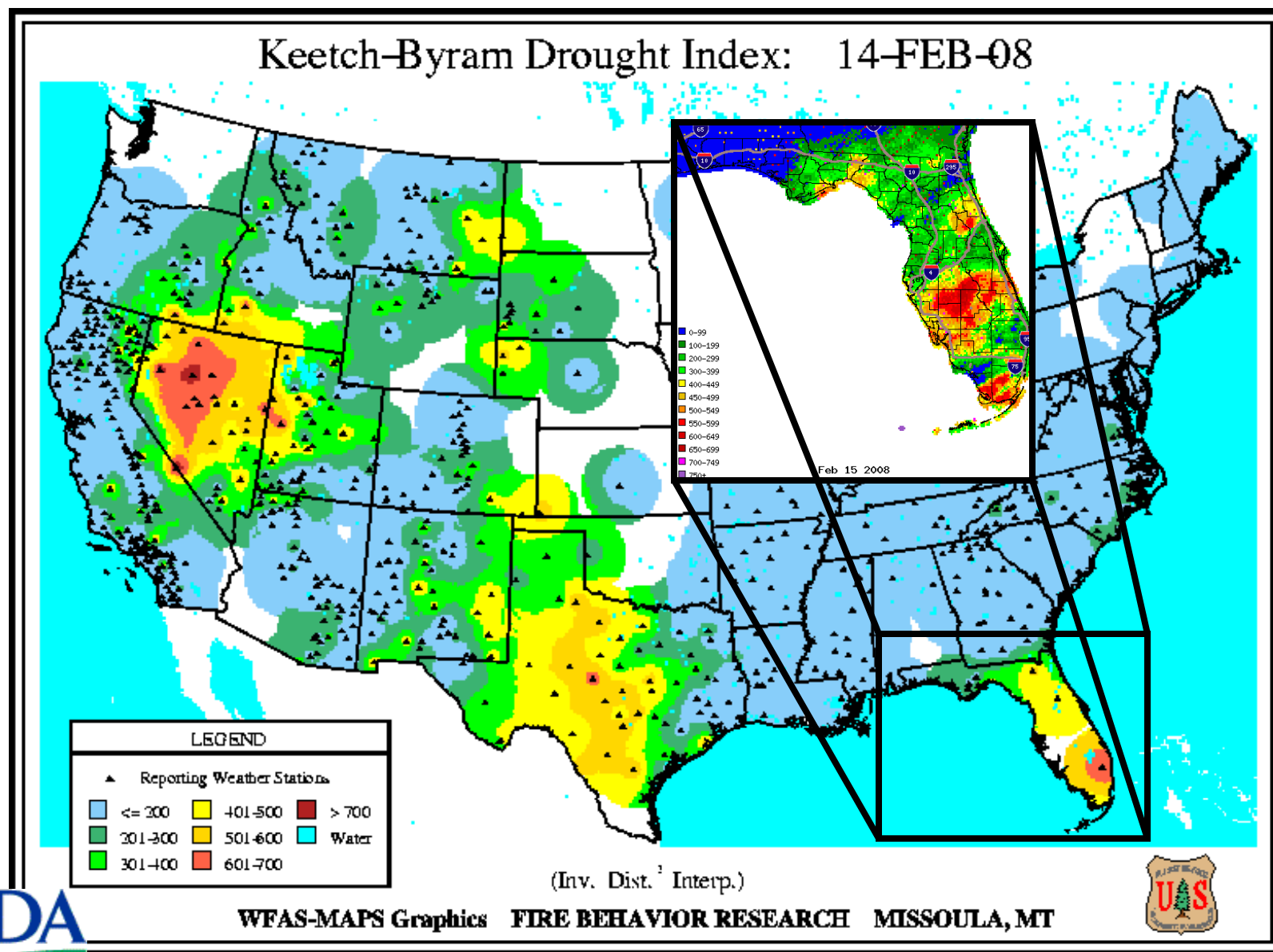
Prepared by: USDA, Natural Resources Conservation Service, National Water and Climate Center, Portland, OR
<http://www.wcc.nrcs.usda.gov>

Drought Monitor Analysis Tools: Streamflow

7-Day Average Streamflow
Thursday, February 14, 2008



Drought Monitor Analysis Tools: Fire Danger

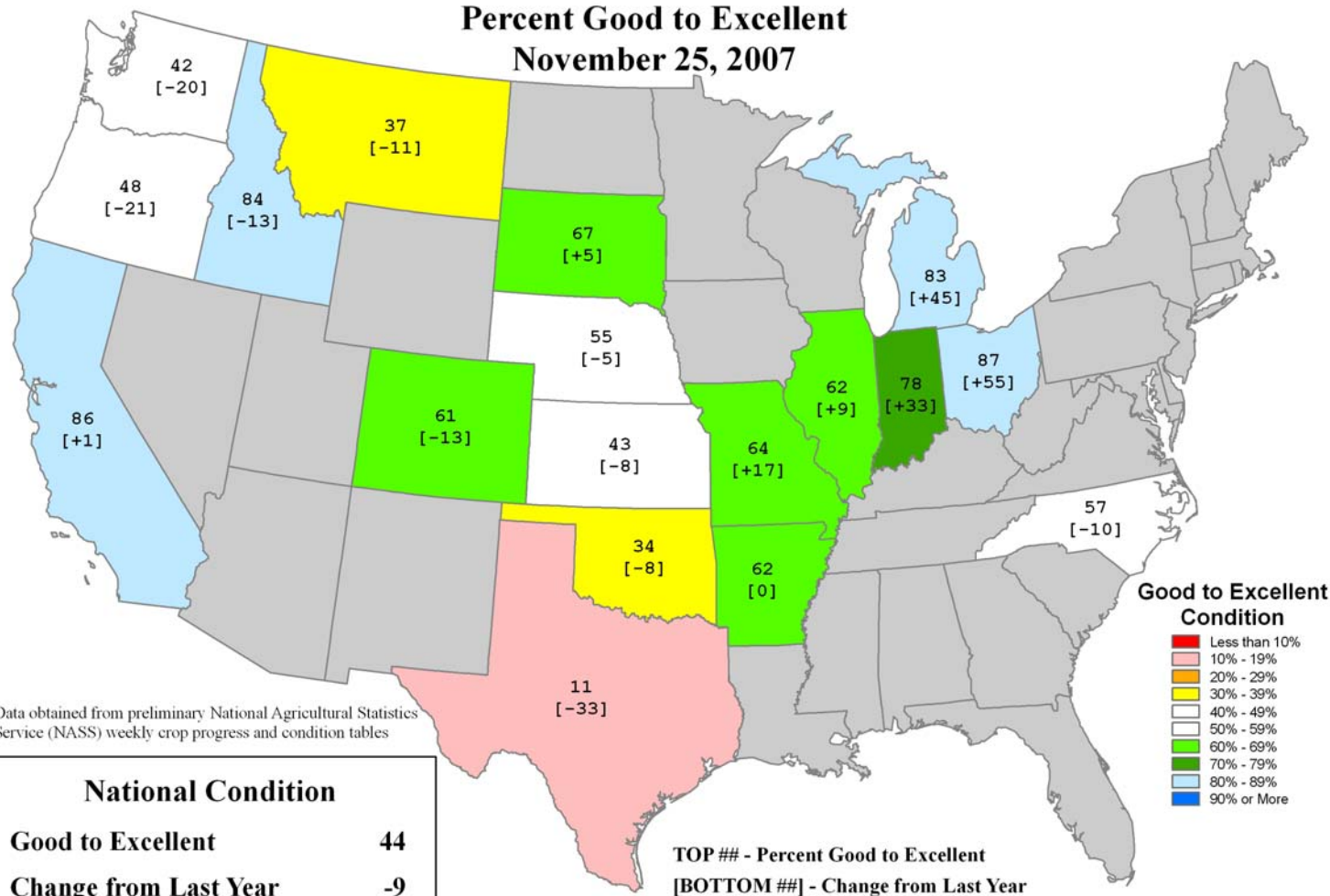


DM Analysis Tools: Agricultural Reports

U.S. Winter Wheat Condition

Percent Good to Excellent

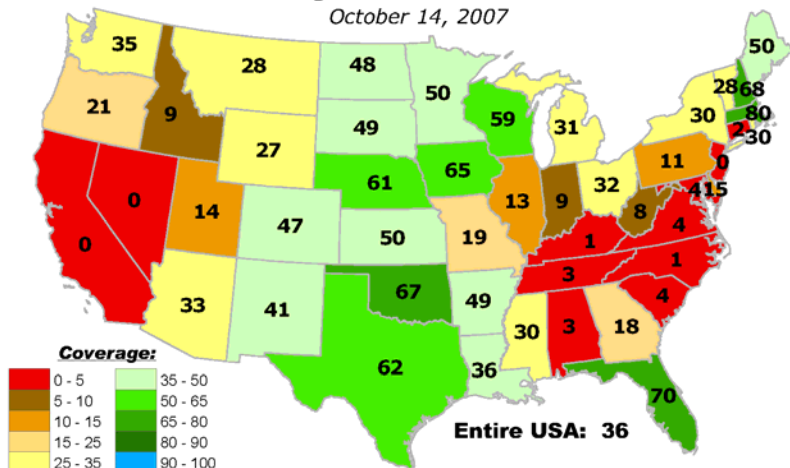
November 25, 2007



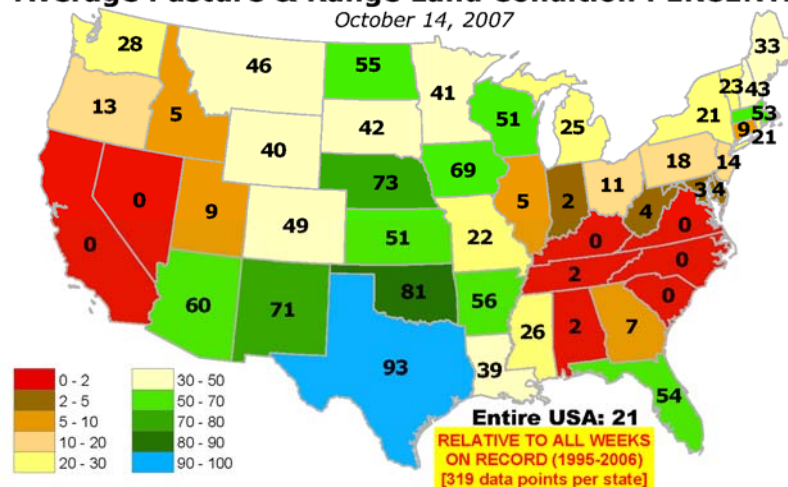
Joint Agricultural Weather Facility (JAWF)

DM Analysis Tools: Agricultural Reports

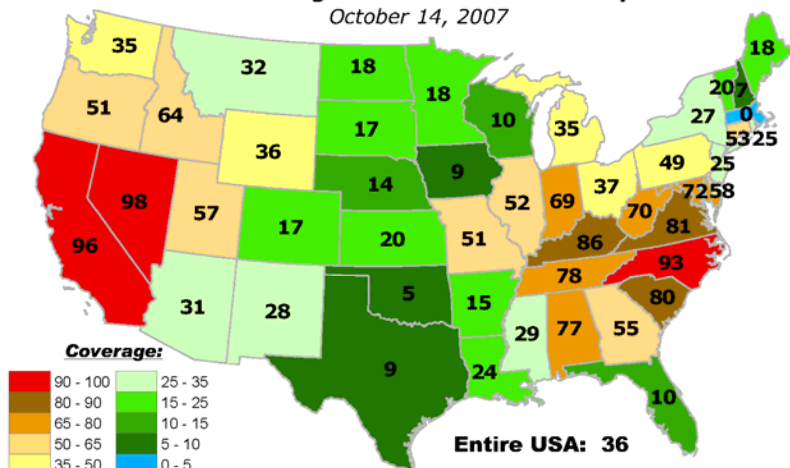
Percent of Pasture & Range Land in "Good" or "Excellent" Condition
October 14, 2007



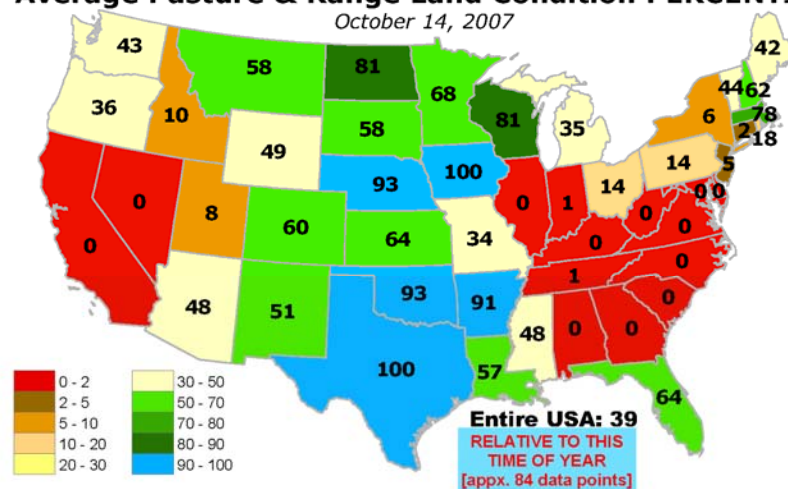
Average Pasture & Range Land Condition PERCENTILE
October 14, 2007



Percent of Pasture & Range Land in "Poor" or "Very Poor" Condition
October 14, 2007



Average Pasture & Range Land Condition PERCENTILE
October 14, 2007



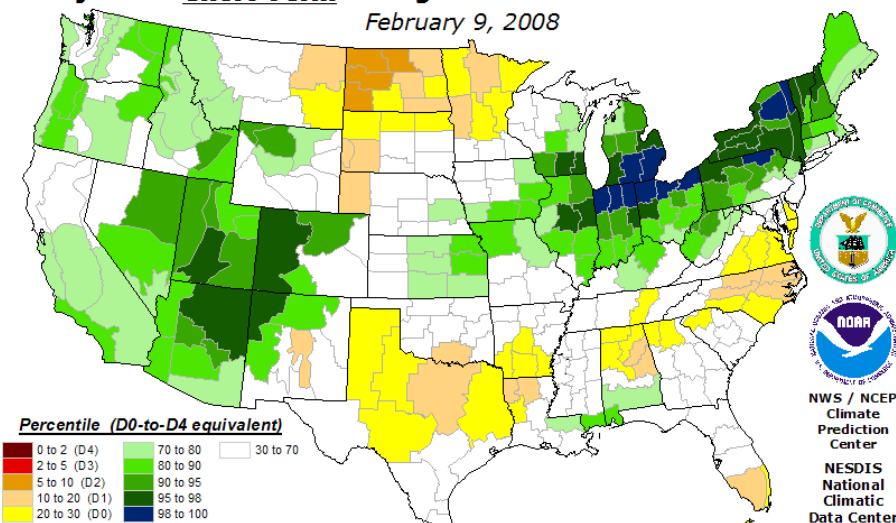
Long- and Short-Term Blends

- Produced weekly using CPC's real-time daily and weekly climate division data and NCDC's monthly archive of indices for 1932-2000
- All parameters are first rendered as percentiles w/ respect to 1932-2000 data using a percent rank method



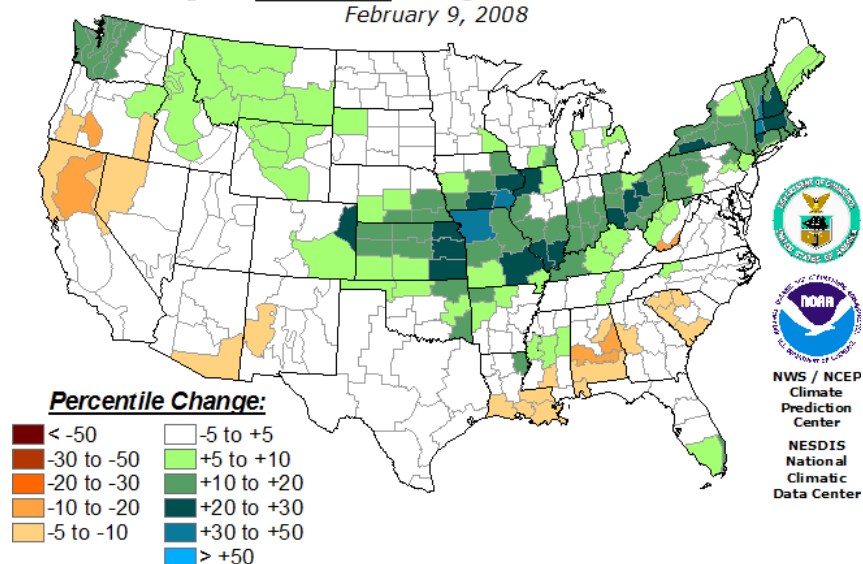
Objective **Short-Term** Drought Indicator Blend Percentiles

February 9, 2008



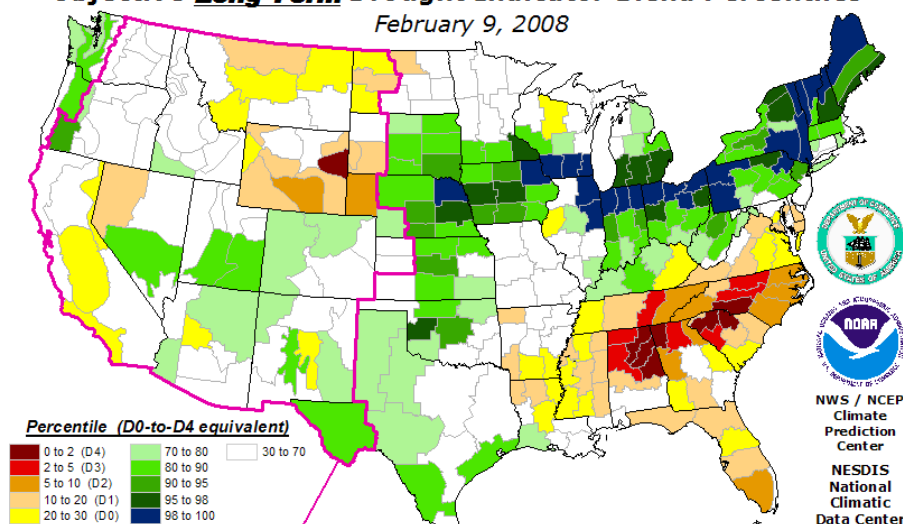
1-Week Change in **Short-Term** Drought Indicator Blend Percentiles

February 9, 2008



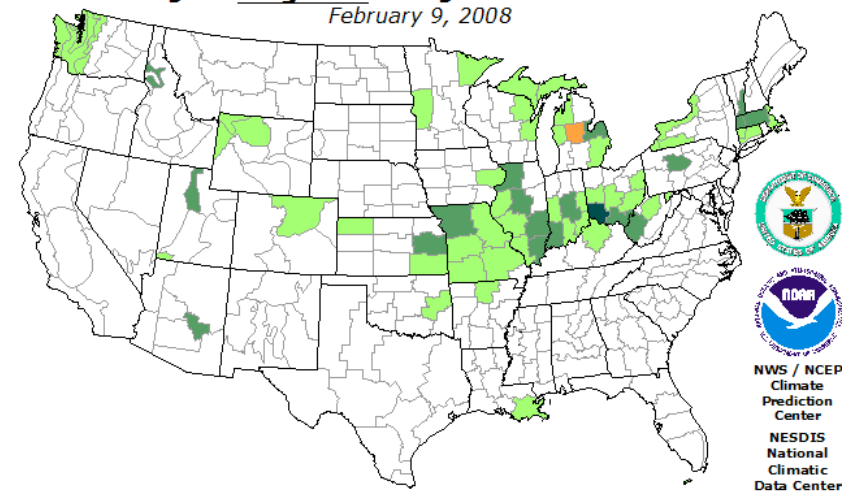
Objective **Long-Term** Drought Indicator Blend Percentiles

February 9, 2008

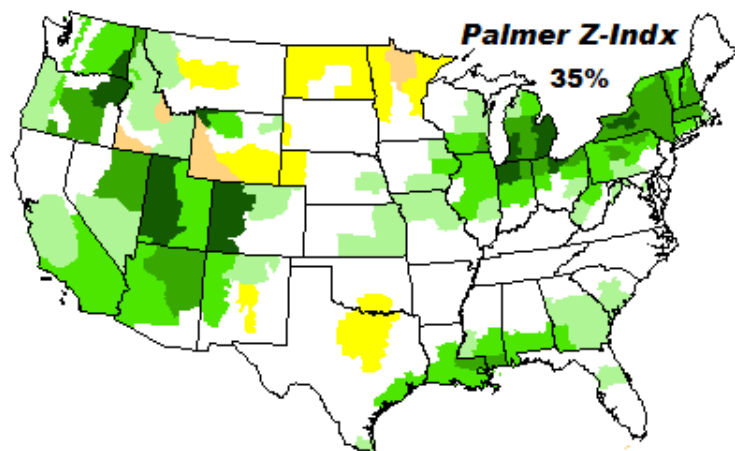


1-Week Change in **Long-Term** Drought Indicator Blend Percentiles

February 9, 2008

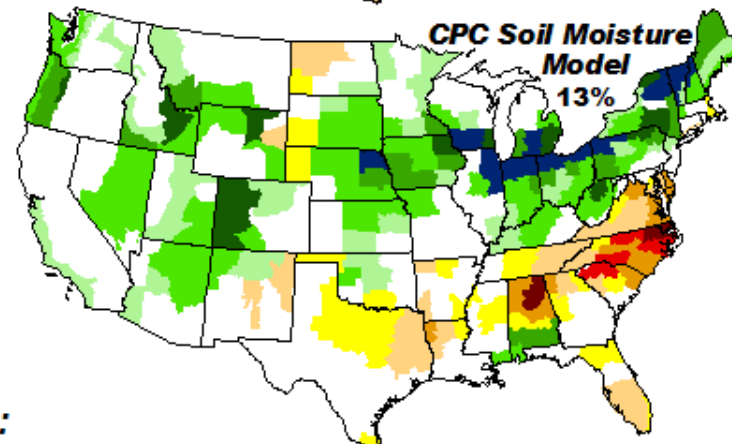
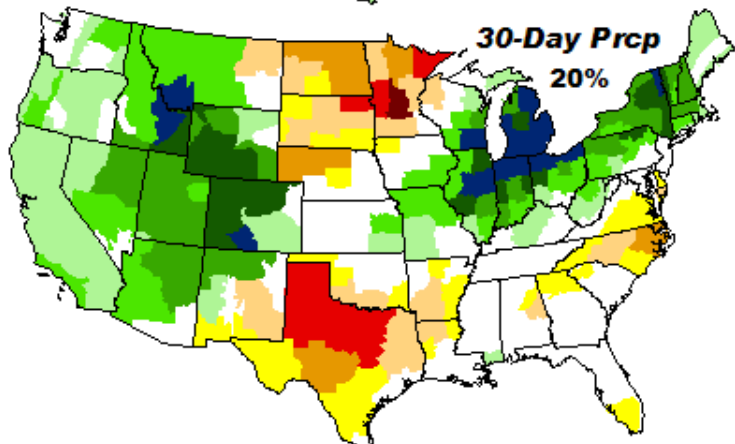
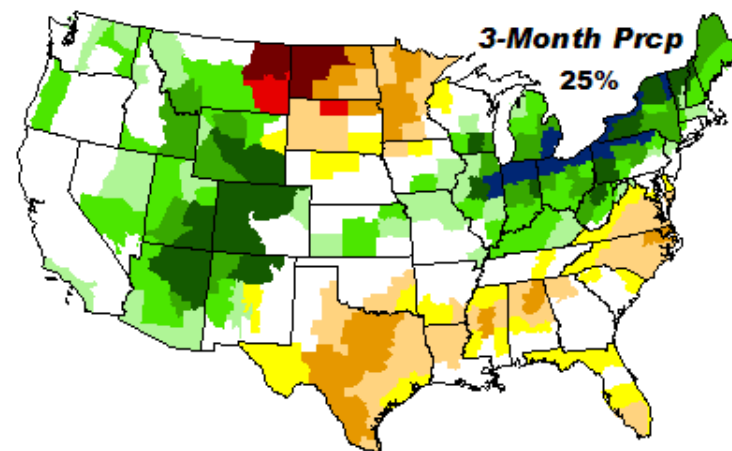


Objective **Short-Term** Drought Indicator Blend Percentiles -- February 9, 2008

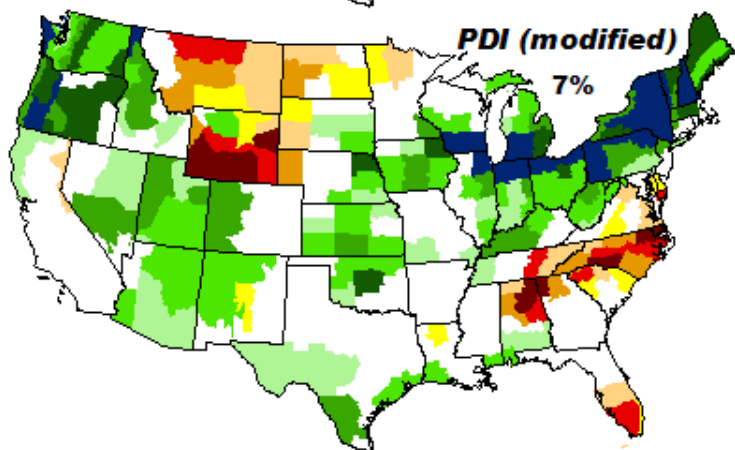
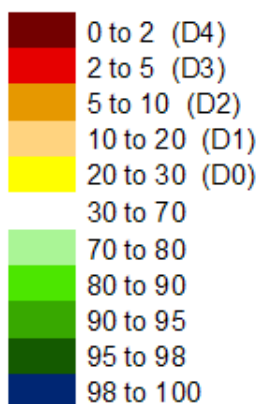


NWS / NCEP
Climate
Prediction
Center

NESDIS
National
Climatic
Data Center



Percentile
(D0-to-D4 equivalent):



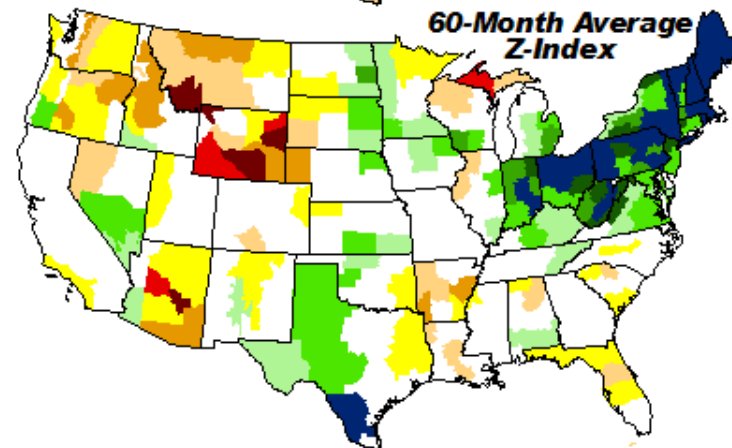
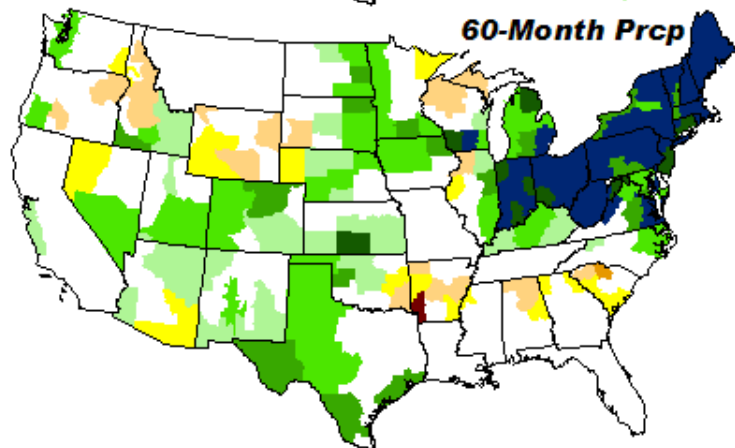
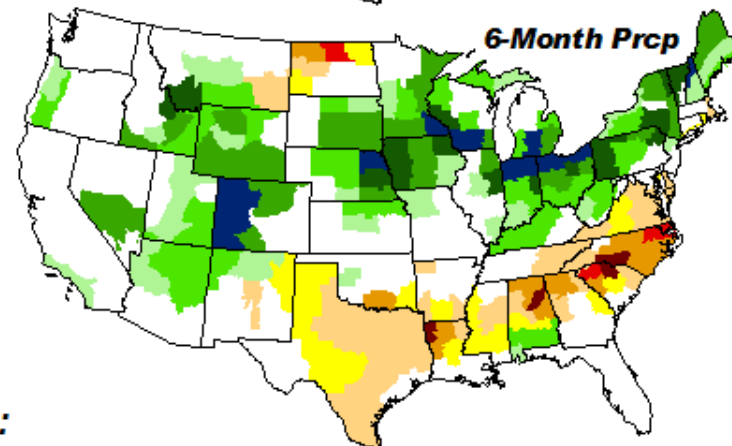
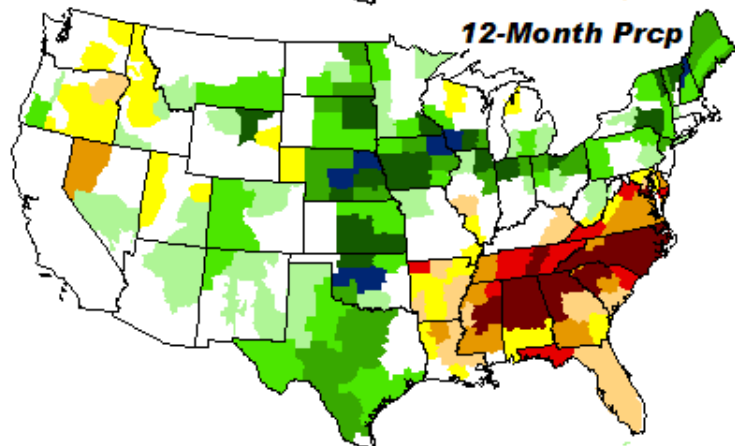
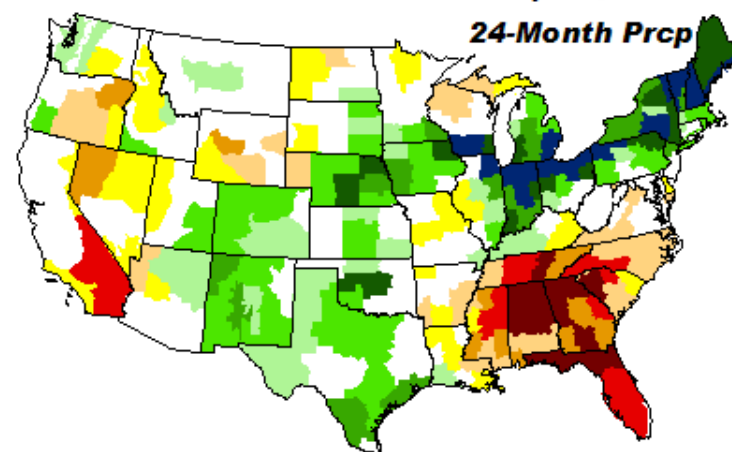
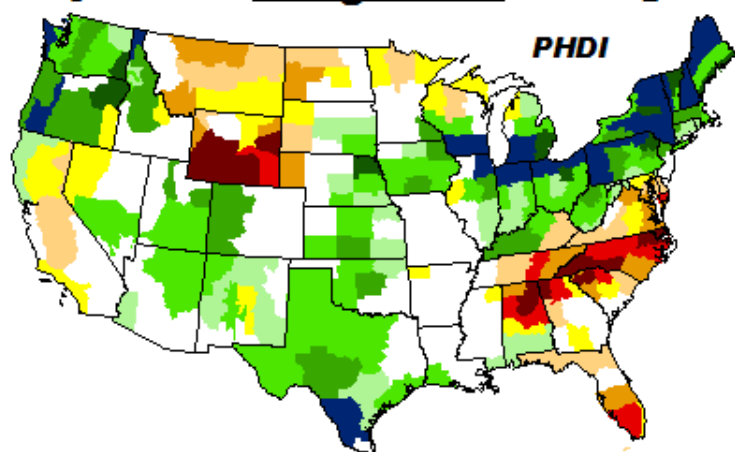
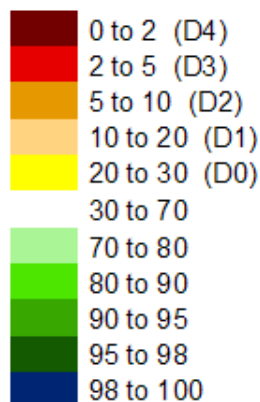
Objective **Long-Term** Drought Indicator Blend Percentiles -- February 9, 2008



NWS / NCEP
Climate
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Data Center

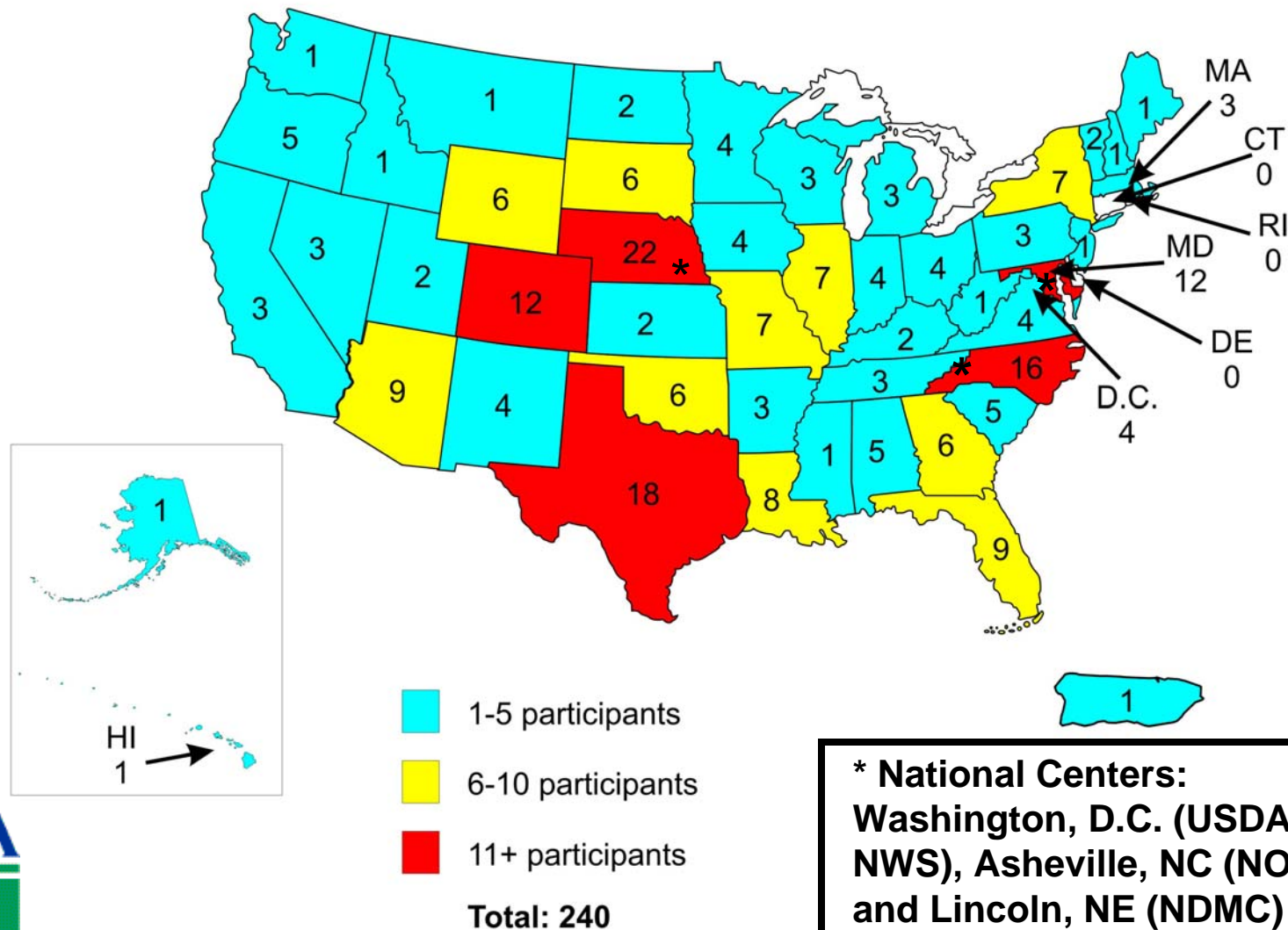
Percentile
(D0-to-D4 equivalent):



Creating the USDM: Help from Afar

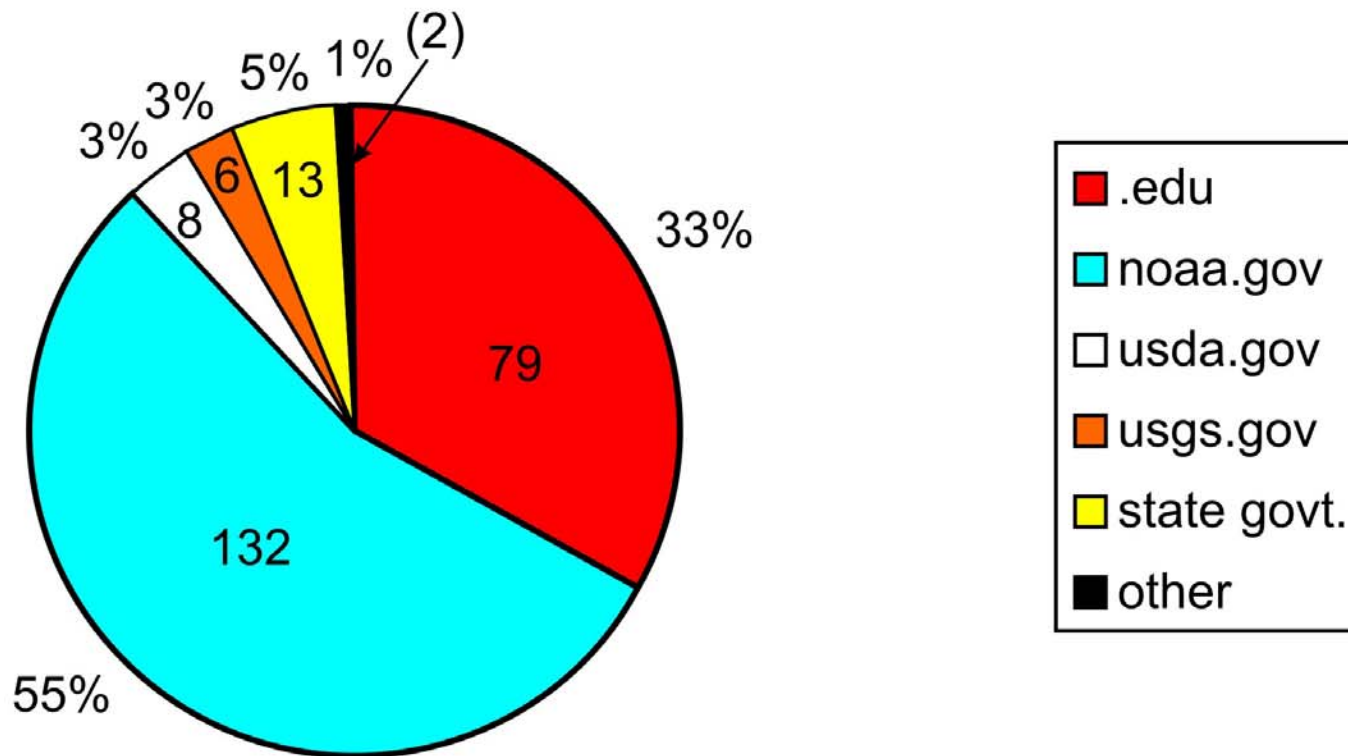
USDM Listserve Participants

(as of January 24, 2007)



Creating the USDM: Help from Afar

USDM Listserve Participants (as of January 24, 2007)



Questions or Comments?

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 - E-mail: brippy@oce.usda.gov
 - Phone: (202) 720-2397

