New Assessment Tools in Monitoring Drought

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Prepared for:
USDA's 84th Agricultural Outlook Forum
Session 38: Food Risk & Security,
U.S. Drought Monitor & Disaster Declarations
February 22, 2008, 1:45 p.m. – 3:15 p.m.

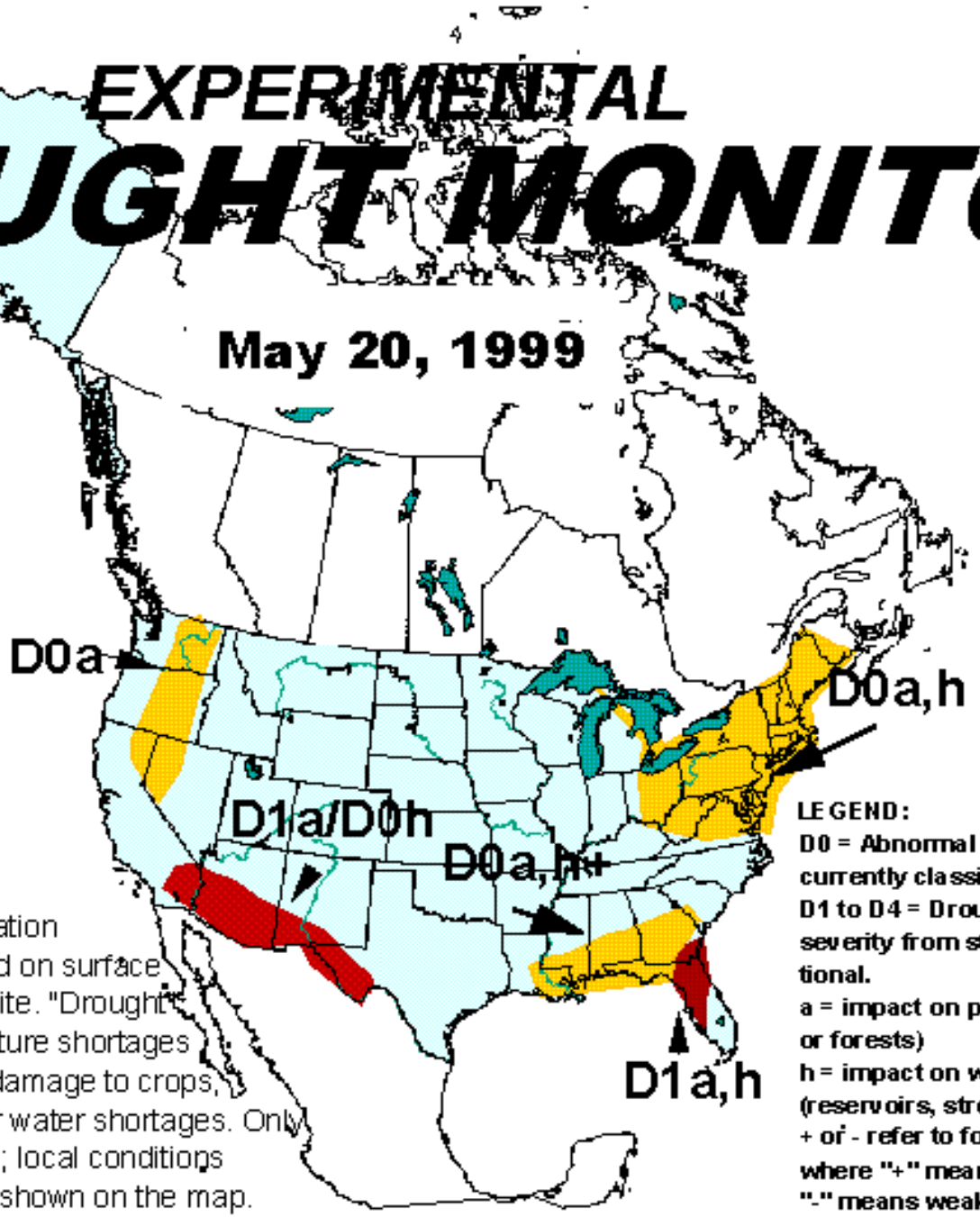
As Brad Rippey has just discussed, the weekly U.S. Drought Monitor has undergone numerous changes (improvements) from it's inception in 1999.

Over time, the main focus has been to SIMPLIFY the map for the end user (although with increased information available to the author, the author's tasks have gotten a tad more *COMPLEX*).

Major changes to the USDM since 1999…..

EXPERIMENTAL
DROUGHT MONITOR

May 20, 1999

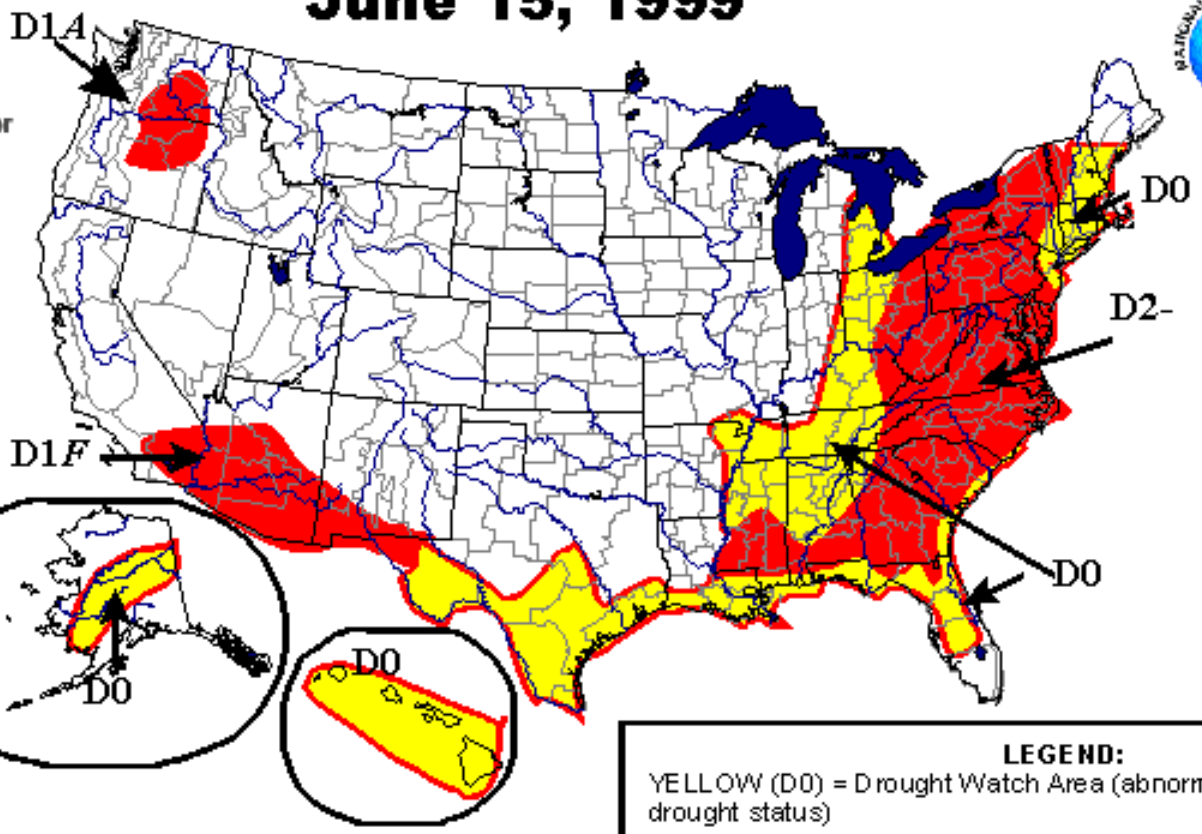


Areas depicted on chart are derived by consolidating information from a number of sources based on surface observation networks and satellite. "Drought" is used to mean abnormal moisture shortages resulting in imminent or actual damage to crops, or pastures; high wildfire risk; or water shortages. Only relatively large areas are shown; local conditions may differ markedly from those shown on the map.

LEGEND:

D0 = Abnormal dryness but not currently classified as a drought.
D1 to D4 = Droughts ranging in severity from standard to exceptional.
a = impact on plant life (agric. or forests)
h = impact on water supplies (reservoirs, streams, wells)
+ or - refer to forecast 2-wk trend, where "+" means intensifying and "-" means weakening. No sign means no significant change.

Experimental
U.S. DROUGHT MONITOR
June 15, 1999



Areas depicted on map are derived by consolidating information from a number of sources based on surface observations and satellite products. "Drought" is used to mean abnormal moisture shortages resulting in imminent or actual damage to crops or pastures; high wildfire risk; or water shortages. Only relatively large areas are shown; local conditions may differ markedly from those shown on the map.

LEGEND:

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

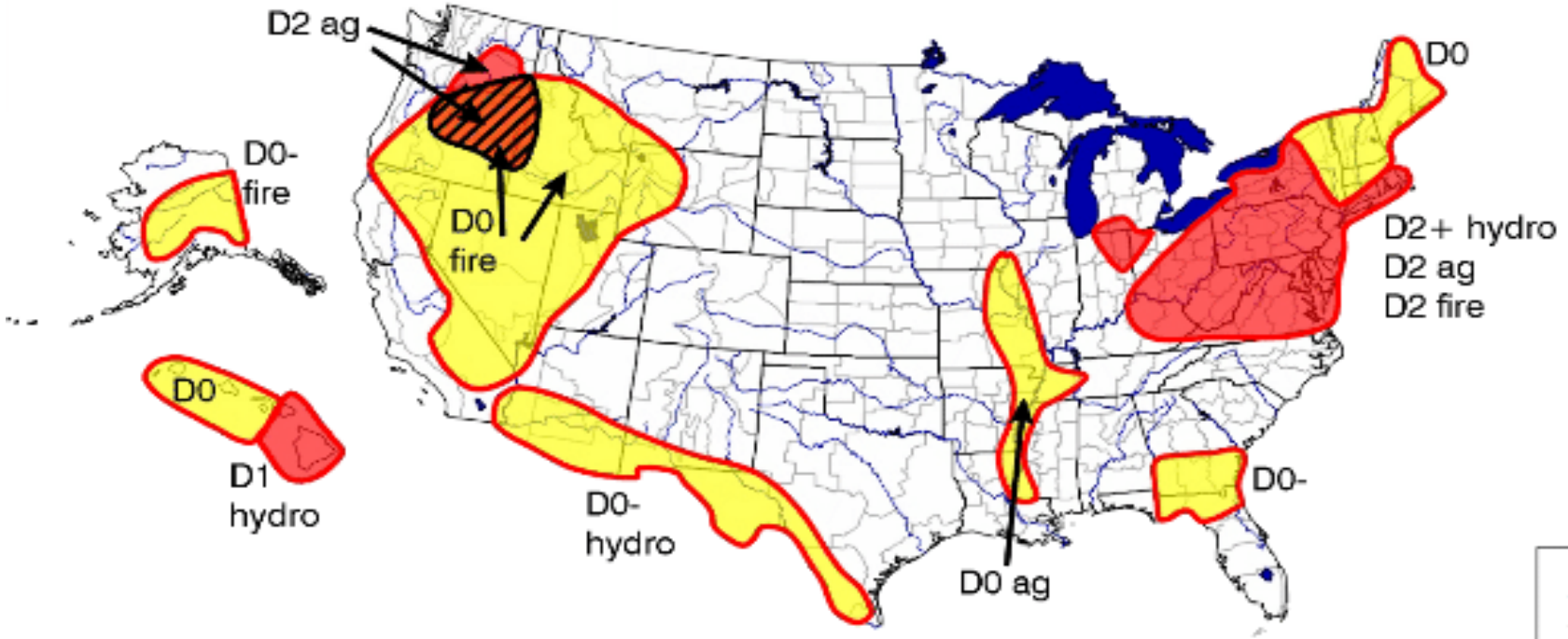
RED (D1-D4) = Current drought ranging in severity from standard (D1) to severe (D2-D3) to extreme (D4)

Drought Type: *Used when impacts differ*
A = agricultural (crops, grasslands)
F = forestry (wildfire potential)
H = hydrological (rivers, wells, reservoirs)

Plus = Forecast to intensify; Minus = Forecast to diminish

July 20, 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)

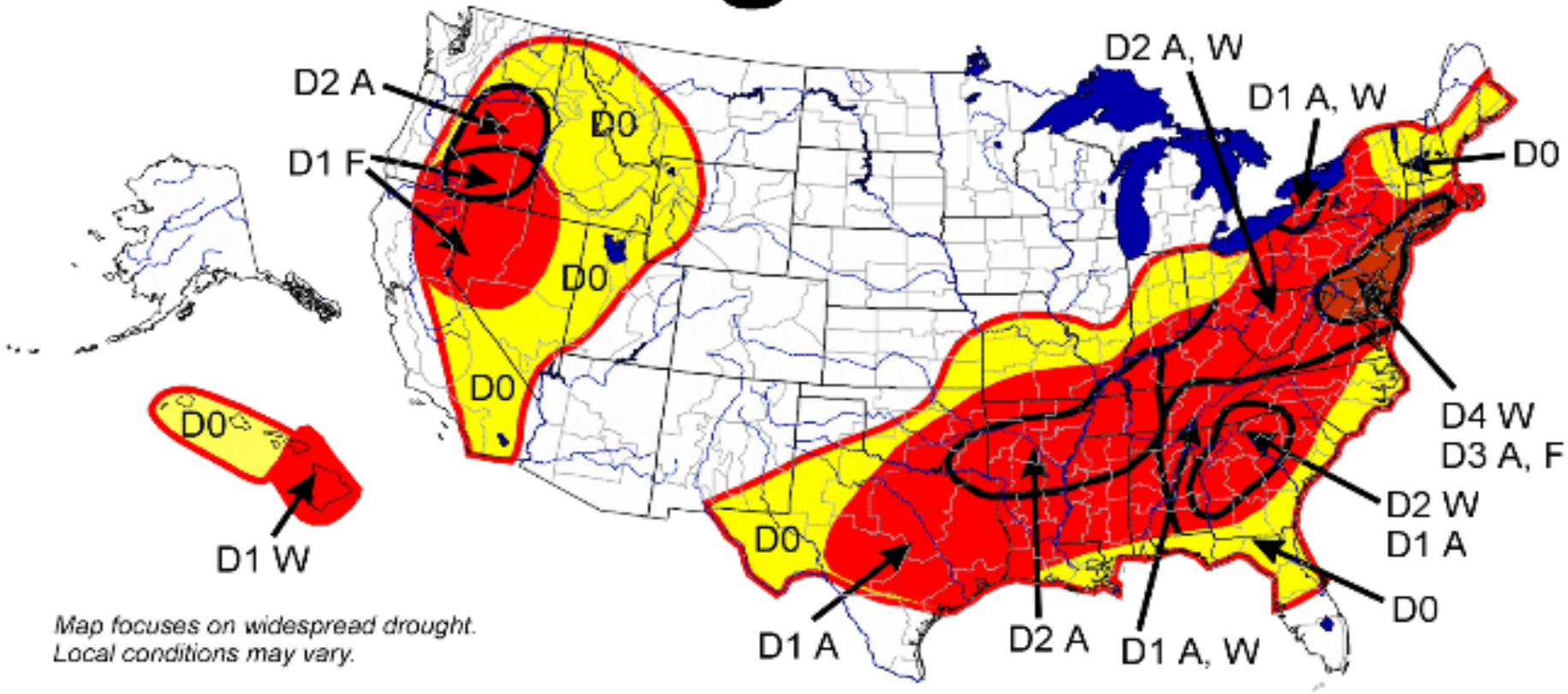
Plus (+) = Forecast to intensify
Minus (-) = Forecast to diminish

USDA

NCEP

August 24, 1999

U.S. Drought Monitor



Map focuses on widespread drought.
Local conditions may vary.

- D0 Watch
- D1 Drought
- D2 Drought–Severe
- D3 Drought–Extreme
- D4 Drought–Exceptional

Drought type: used only when impacts differ

A = Agriculture
W = Water
F = Forest fire danger

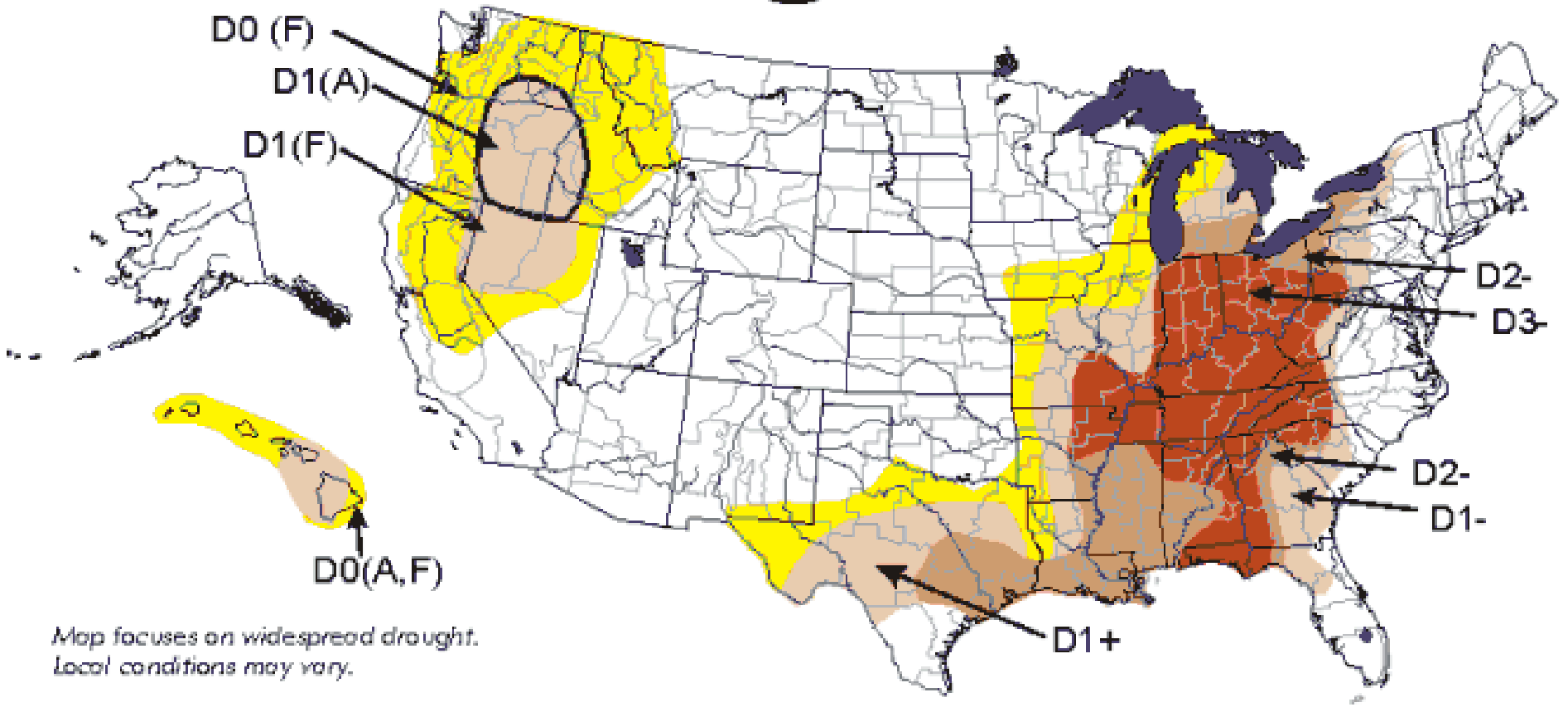
Plus (+) = Forecast to intensify next two weeks
Minus (-) = Forecast to diminish next two weeks
No sign = No change in drought classification forecast

USDA · National Drought Mitigation Center · NOAA

• ***Updated every Thursday morning*** •

September 28, 1999

U.S. Drought Monitor



Map focuses on widespread drought.
Local conditions may vary.

- D0 Watch
- D1 Drought
- D2 Drought–Severe
- D3 Drought–Extreme
- D4 Drought–Exceptional
- Delineates Overlapping Areas

Drought type: used only when impacts differ

A = Agriculture
W = Water
F = Forest fire danger

Plus (+) = Forecast to intensify next two weeks
Minus (-) = Forecast to diminish next two weeks
No sign = No change in drought classification forecast

USDA

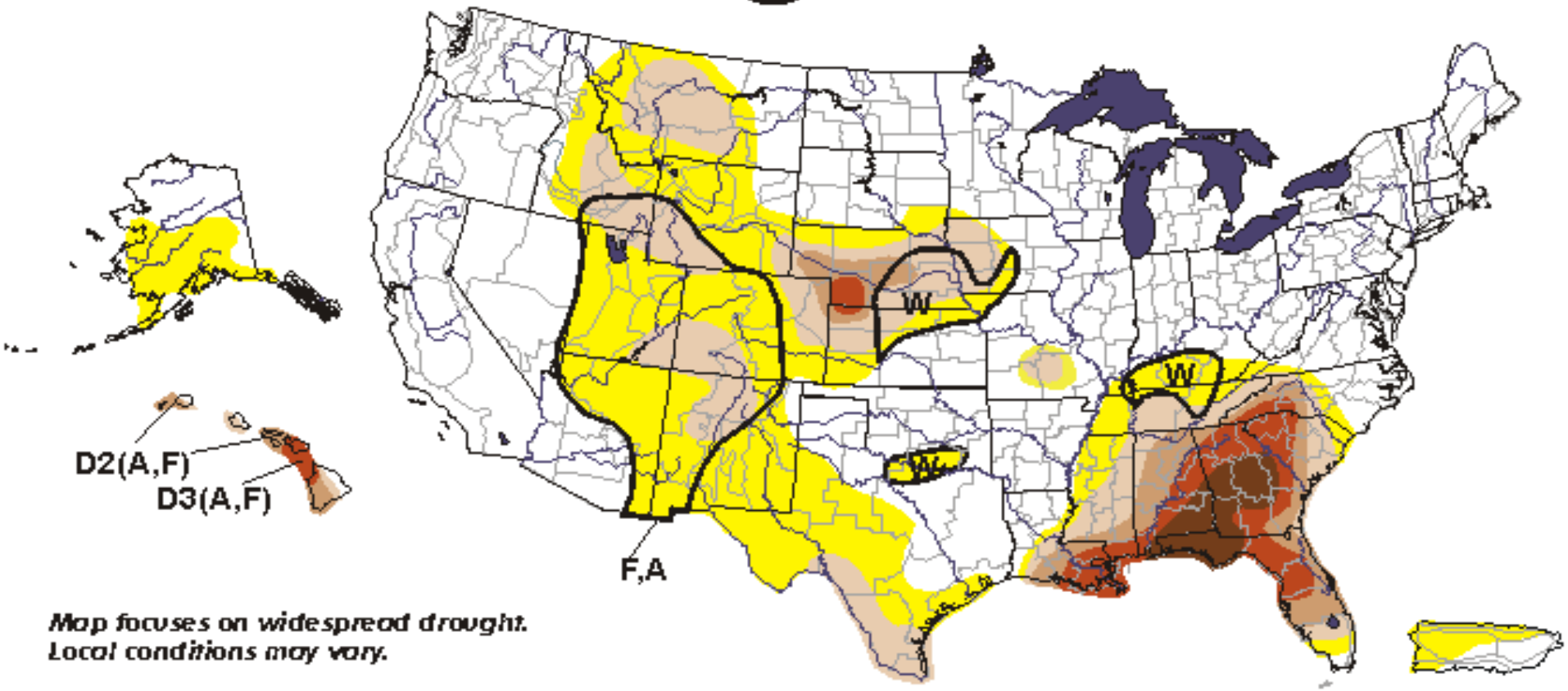
National Drought Mitigation Center

NOAA

• ***Released Thursday, Sep 30, 1999*** •

July 11, 2000 Valid 7 a.m. EST

U.S. Drought Monitor



Map focuses on widespread drought.
Local conditions may vary.

- D0 Abnormally Dry
- D1 Drought–First Stage
- D2 Drought–Severe
- D3 Drought–Extreme
- D4 Drought–Exceptional
- Delineates Overlapping Areas

Drought type: used only when impacts differ

A = Agriculture
W = Water
F = Wildfire danger

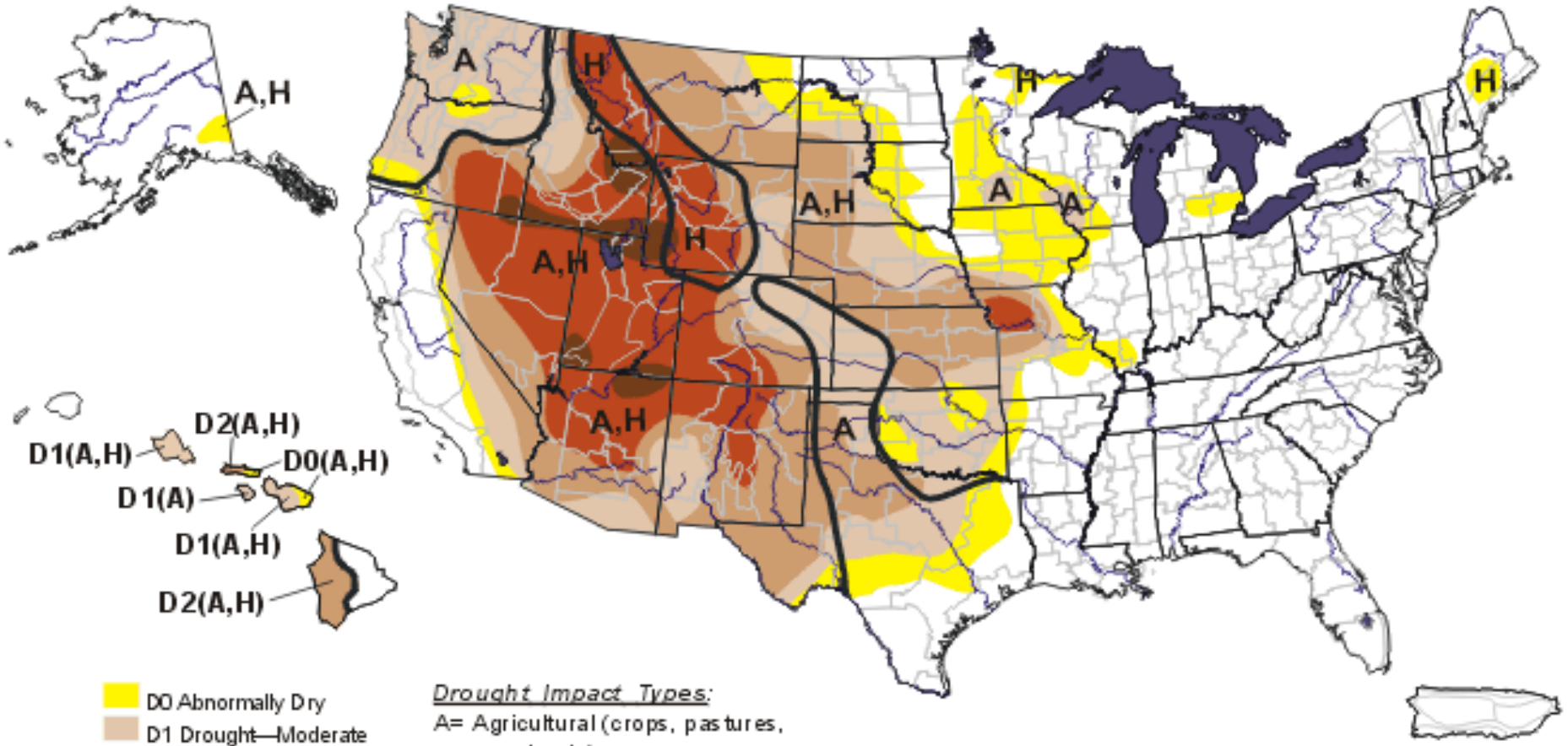
USDA — National Drought Mitigation Center — NOAA

See accompanying text summary for forecast statements

Released Thursday, July 13, 2000

U.S. Drought Monitor

August 12, 2003
Valid 8 a.m. EDT



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

Drought Impact Types:
A= Agricultural (crops, pastures, grasslands)
H= Hydrological (water)
No type = both impacts
Delineates dominant impacts

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

http://drought.unl.edu/dm

USDA | National Drought Mitigation Center | NOAA

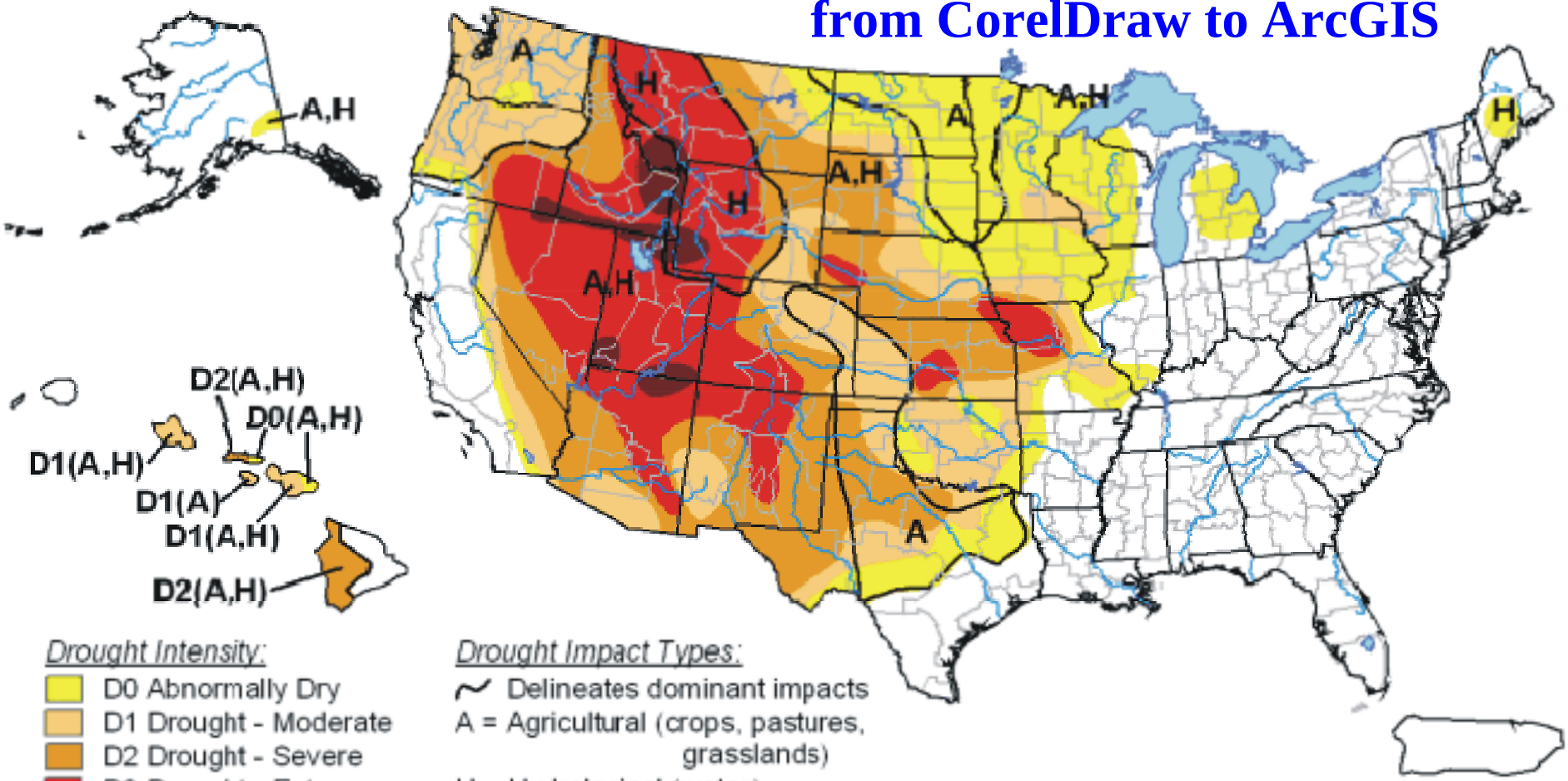
Released Thursday, August 14, 2003

Author: *Douglas Le Comte, NOAA/CPC*

U.S. Drought Monitor

August 19, 2003
Valid 8 a.m. EDT

from CorelDraw to ArcGIS



Drought Intensity:

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

Drought Impact Types:

~ Delineates dominant impacts
A = Agricultural (crops, pastures, grasslands)
H = Hydrological (water)
(No type = Both impacts)

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

http://drought.unl.edu/dm

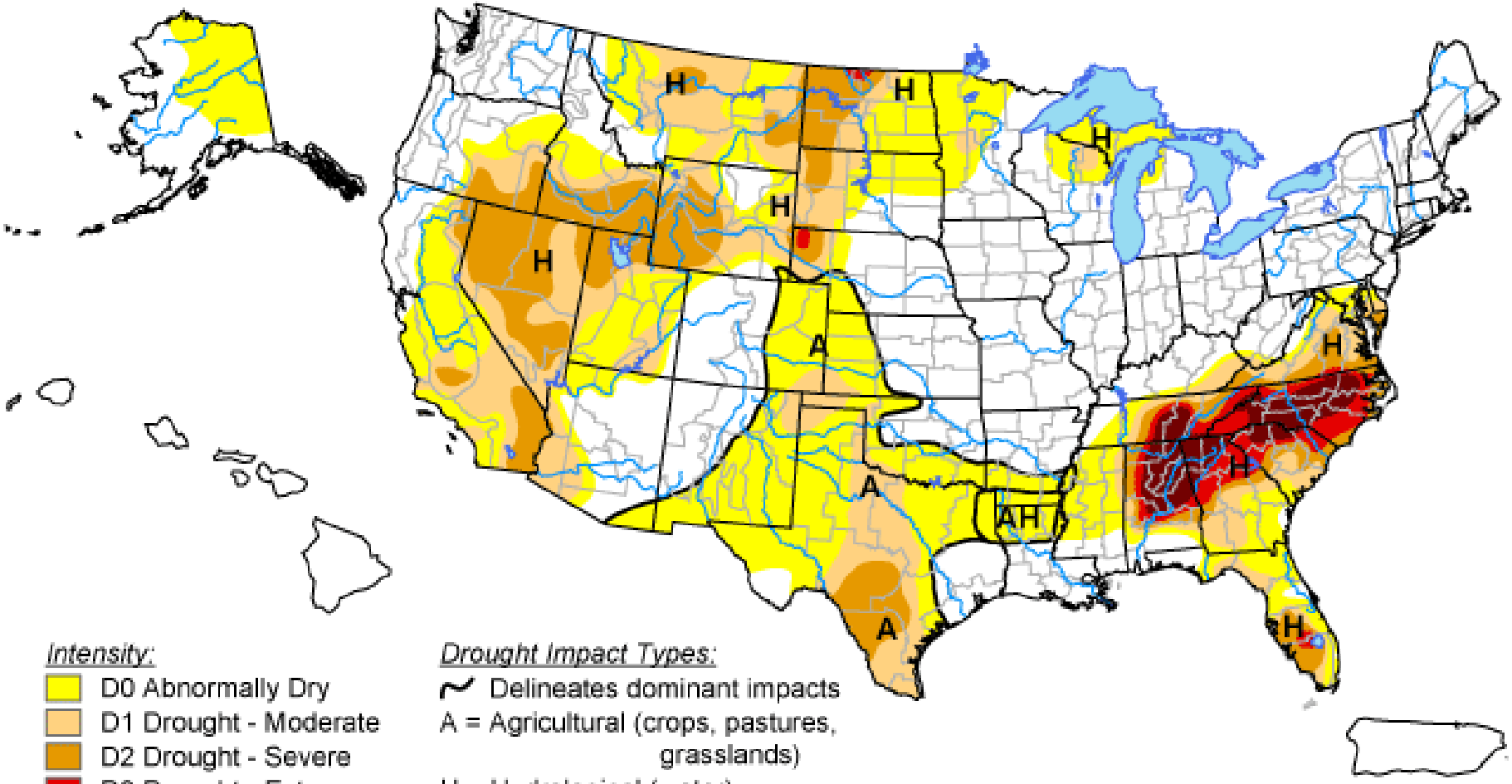
USDA National Drought Mitigation Center

Released Thursday, August 21, 2003

Author: Candace Tankersley/Richard Heim, NOAA/NCDC

U.S. Drought Monitor

February 12, 2008
Valid 7 a.m. EST



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

Drought Impact Types:
- ~ Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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, February 14, 2008

Authors: Jay Lawrimore/Liz Love-Brotak, NOAA/NESDIS/NCDC

BACKGROUND

While trying to keep the USDM 'simple' for the consumer, the author(s) require as much current and past information as possible (e.g. multiple indices, products, local expertise, etc.) in order to determine this week's drought analyses …. since no single definition of drought or index works for all circumstances.

So, as technology continues to improve, we have tried to utilize these upgrades to assist us in creating the weekly USDM.

(Each of the following slides could be made into its own presentation)

OVERVIEW

Modified or New Tools used in the Assessment of Drought in the Production of the USDM:

1) **Improving Input Data Quality & Quantity;**

2) **Creating New Products, Indices, or Blends for a more Objective Analyses, inc. Soil Moisture Models;**

3) **Differentiating between Temporal (Short vs. Long) & Regional (East vs. West) Drought Distinctions;**

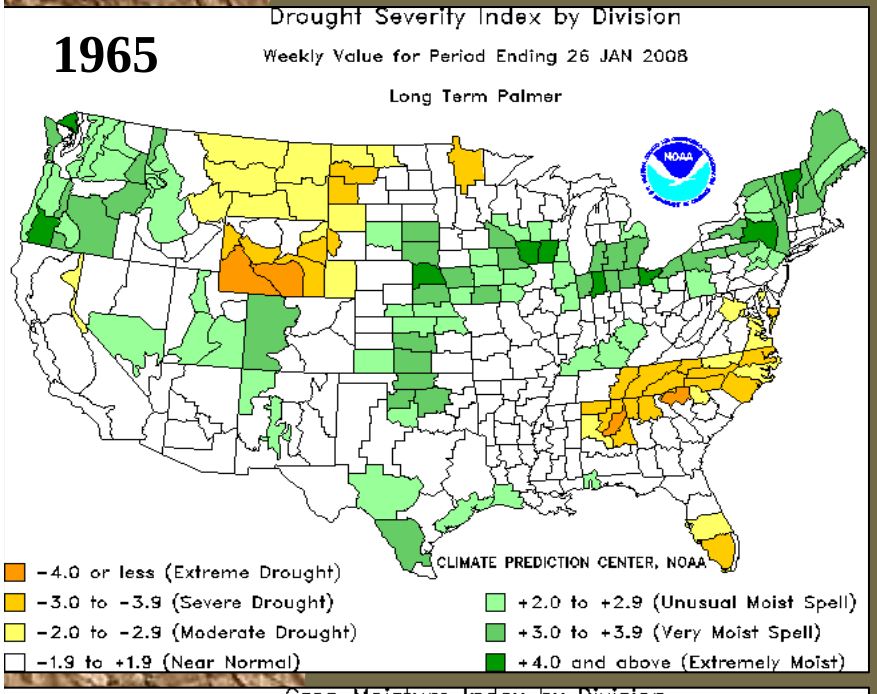
4) **Migrating USDM Analyses & Production to State-of-the-Art Software (ArcGIS);**

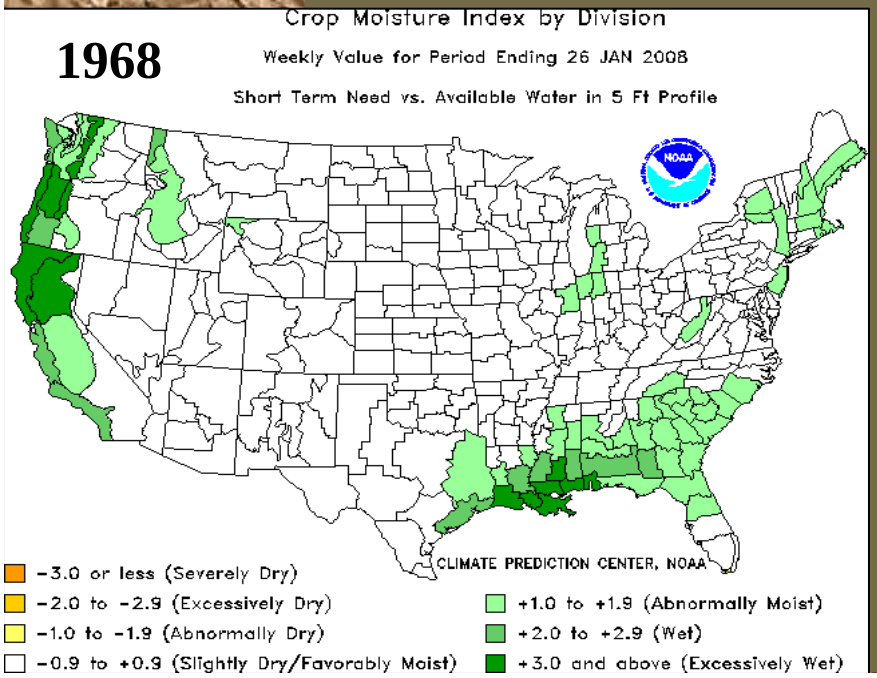
5) **Consolidating all drought-related information to a "one-stop drought shop" (NIDIS & Drought Portal);**

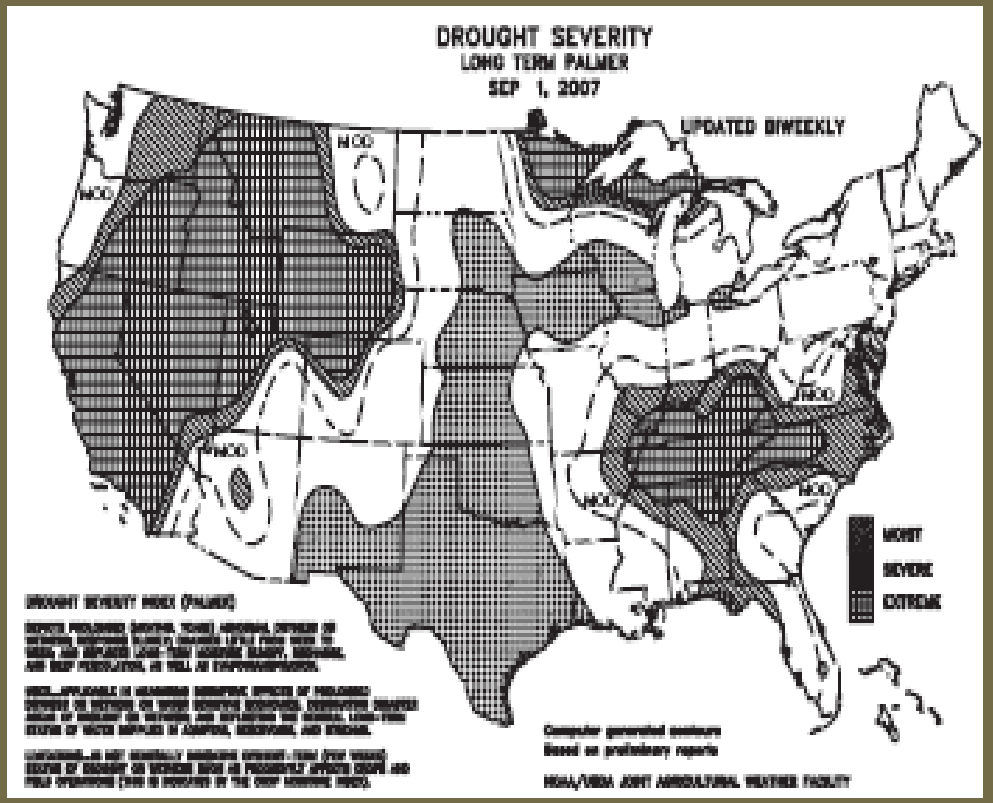
6) **Expanding Drought Monitoring Beyond the U.S.;**

7) **Forecasting Drought (U.S. Seasonal Drought Outlooks);**

1) Improving Input Data Quality & Quantity;





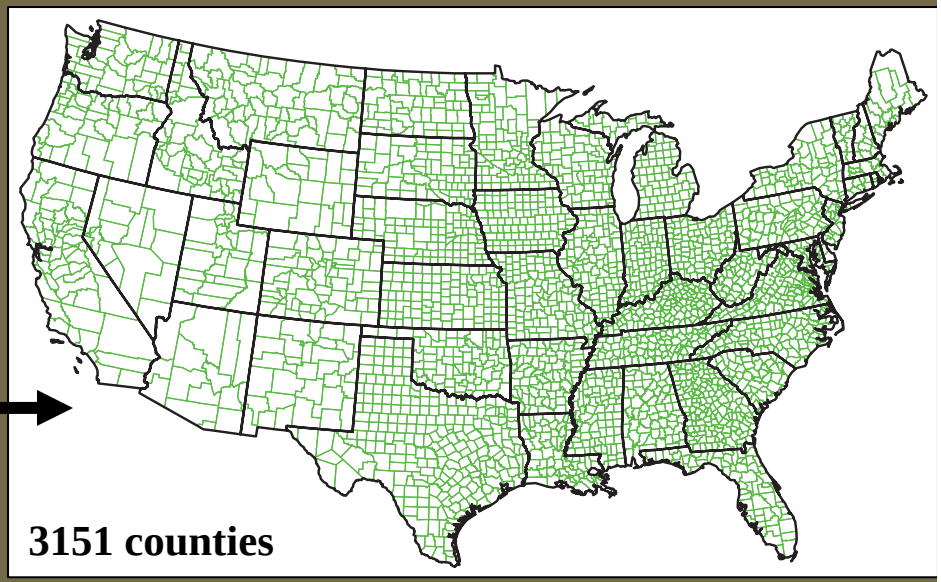


In the past, the Palmer Drought Index had been the standard for measuring drought in the U.S. (the CMI was developed 3 years later for short-term [ag] dryness)…

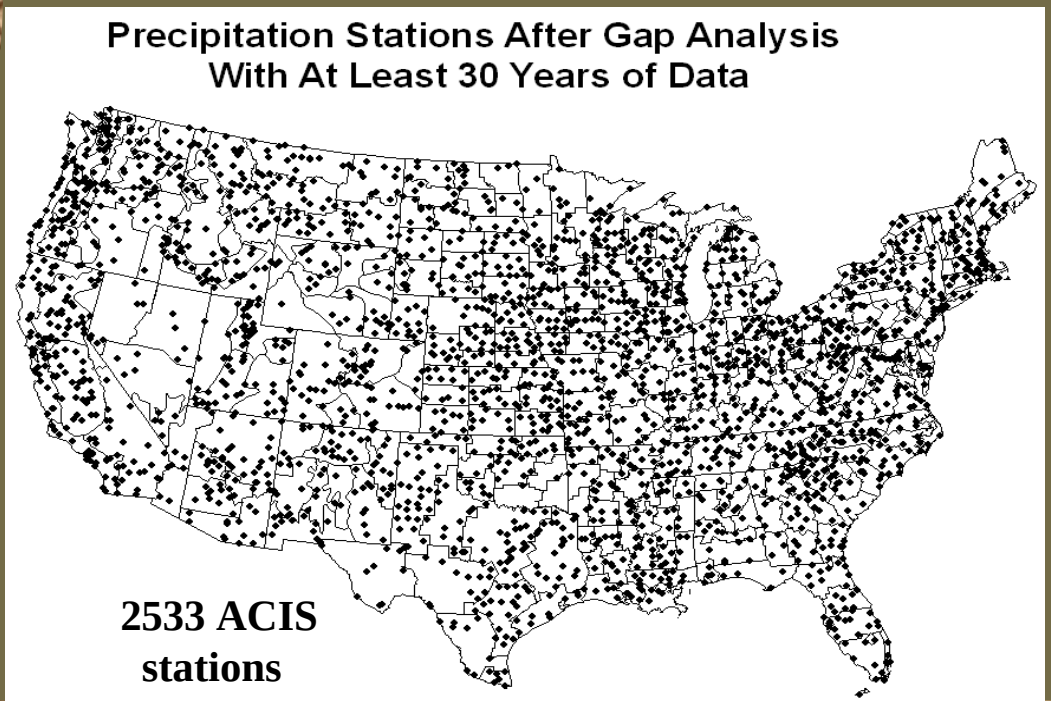
…but we've come a long way recently; increasing data quality & quantity, dissemination speed, user flexibility, and creating new products ….

1) Improving Input Data Quality & Quantity;

334 climate divisions



3151 counties

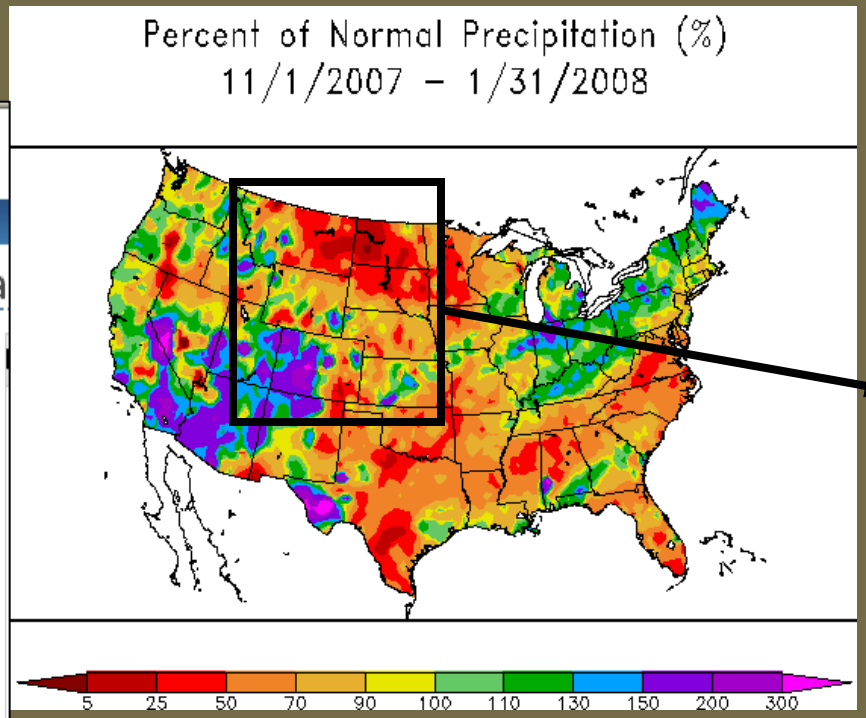


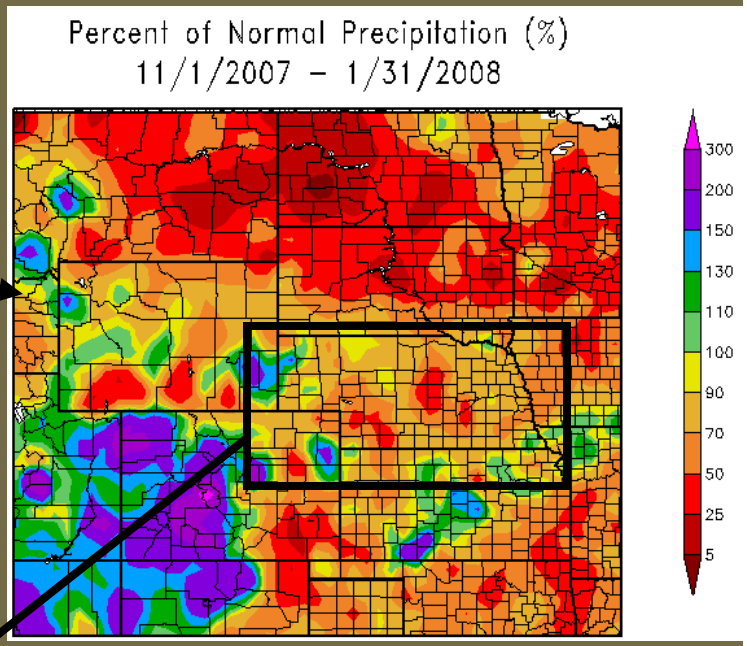
2533 ACIS stations

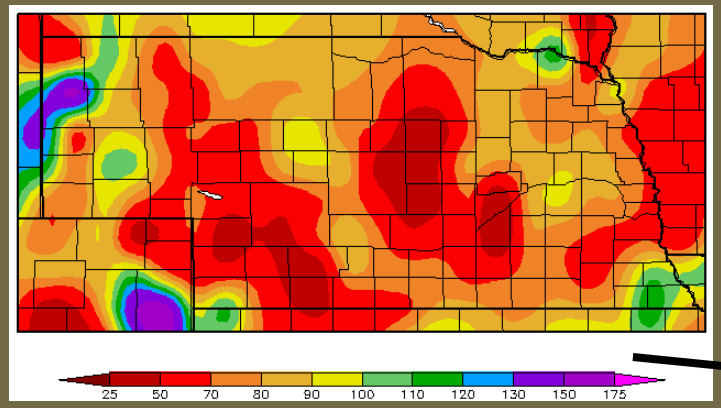
…although we still need to transition from a rather low-resolution (climate divisions) to higher resolution (e.g. county level) or to individual stations (e.g. ACIS) …where there is enough past quality data for statistics.

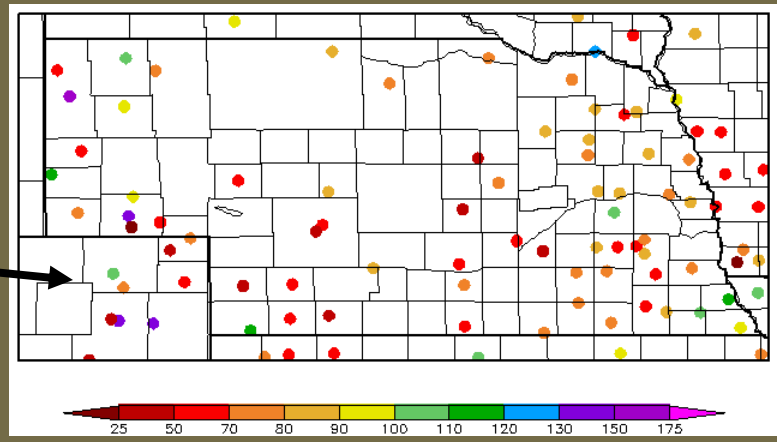
1) Improving Input Data Quality & Quantity;

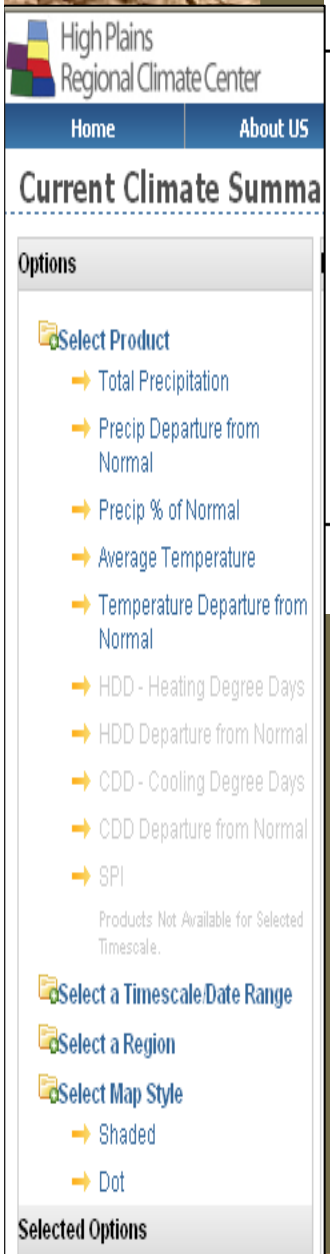
ACIS data









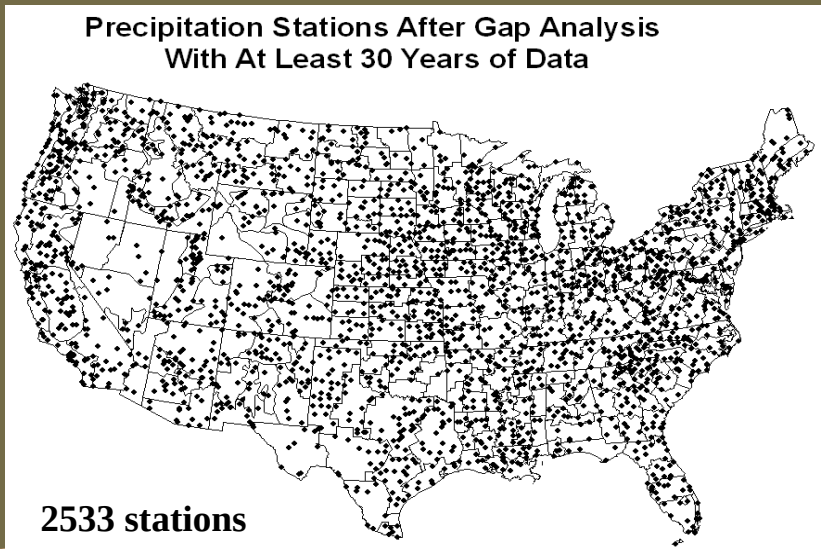


3-Month (Nov'07-Jan'08) PNP

Applied Climate Information System

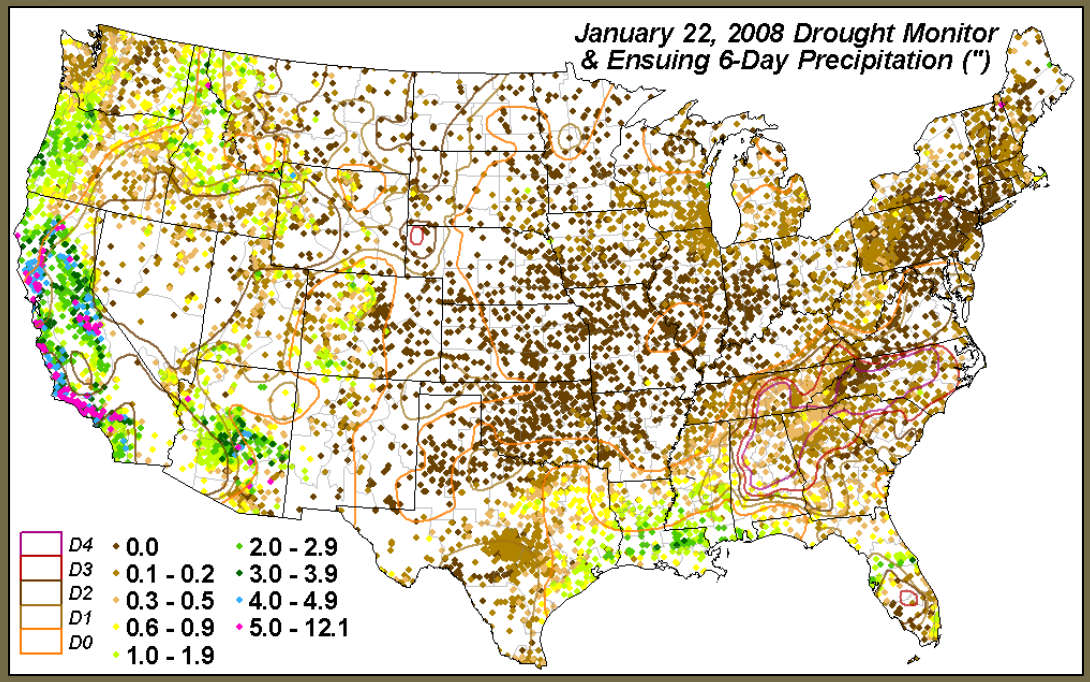
- Applied Climate Information System (ACIS)
  - NOAA Regional Climate Centers (RCCs)
- A framework for management of metadata and climate data:
  - Ingest, Quality Control, and Archive
  - Multiple Datasets
  - Networked/Robust System
  - Distributed Data Management
  - Manages climate data (so you don't have to!)

ACIS provides a platform for suites of climate products:
* CLIMOD (RCCs)
* xmACIS (NWS)
* NOWData (NWS)
* AgACIS (NRCS)

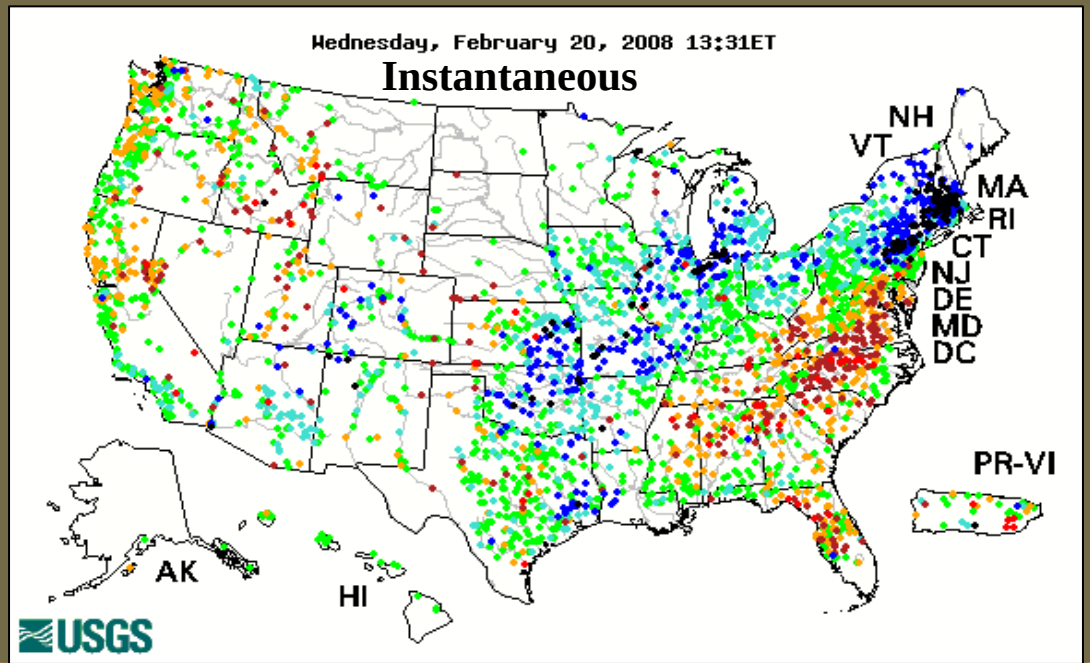


1) Improving Input Data Quality & Quantity;

RFC Network (n-days)



USGS Stream flow Network (Instant, 1-, 7-, 14-, and 28-days)



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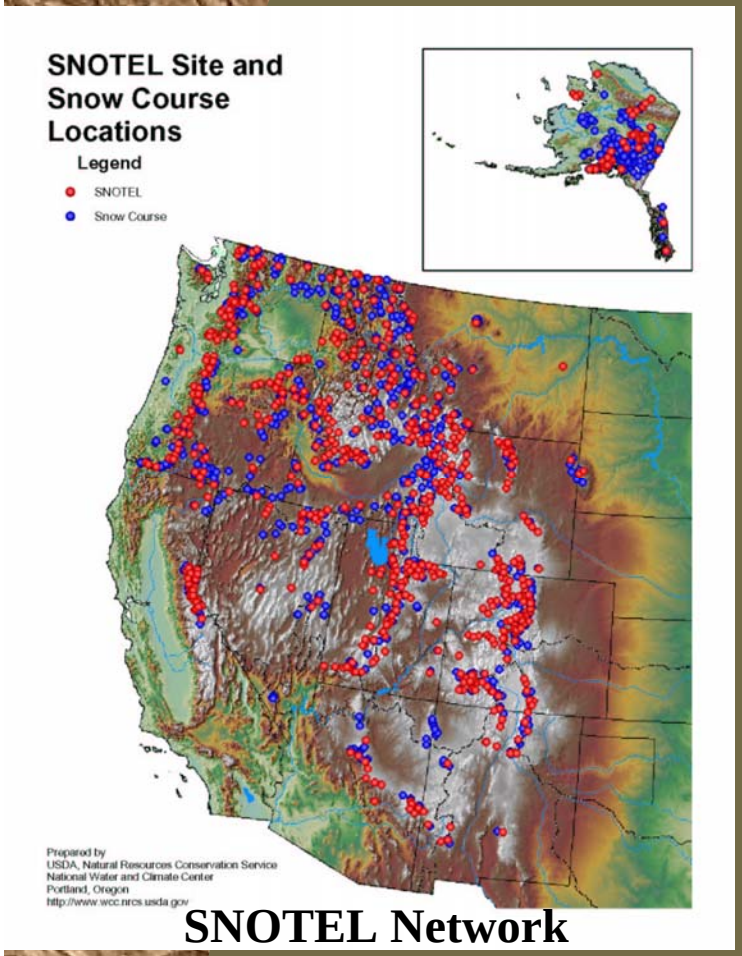
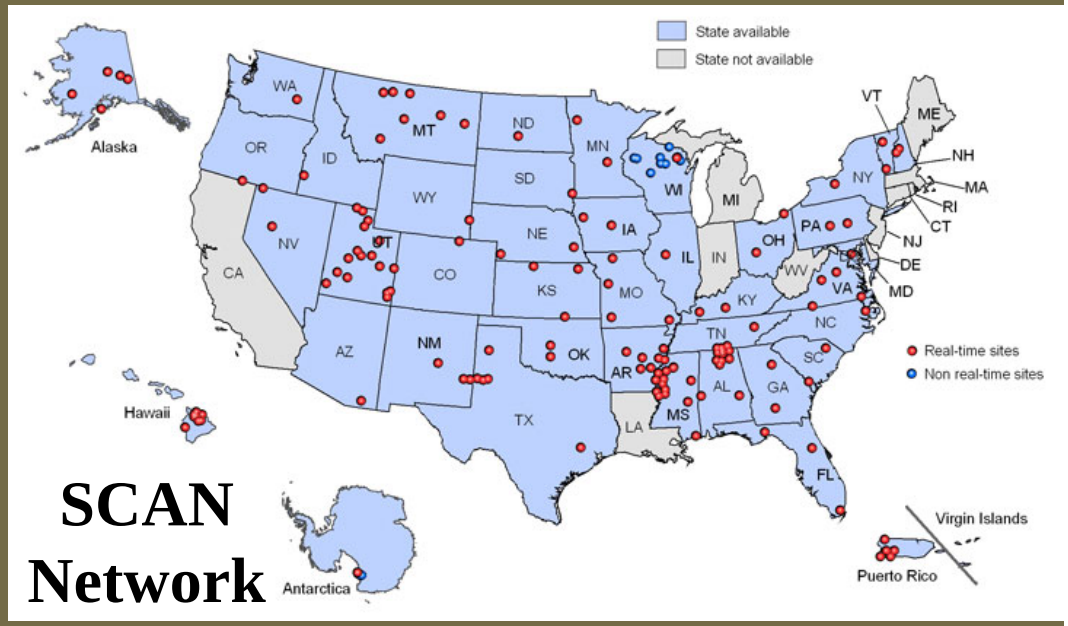
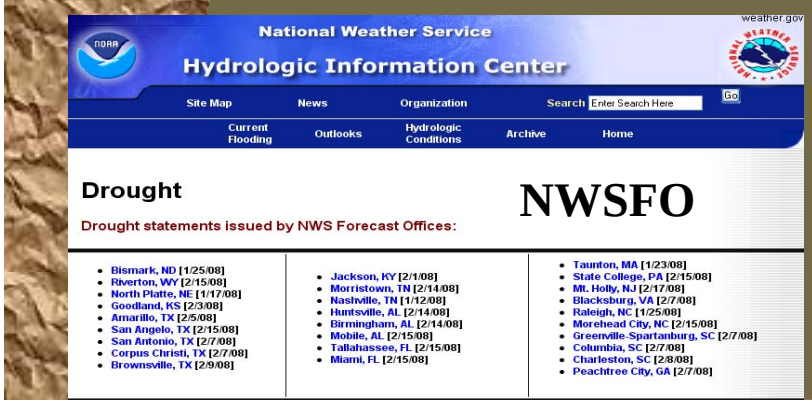


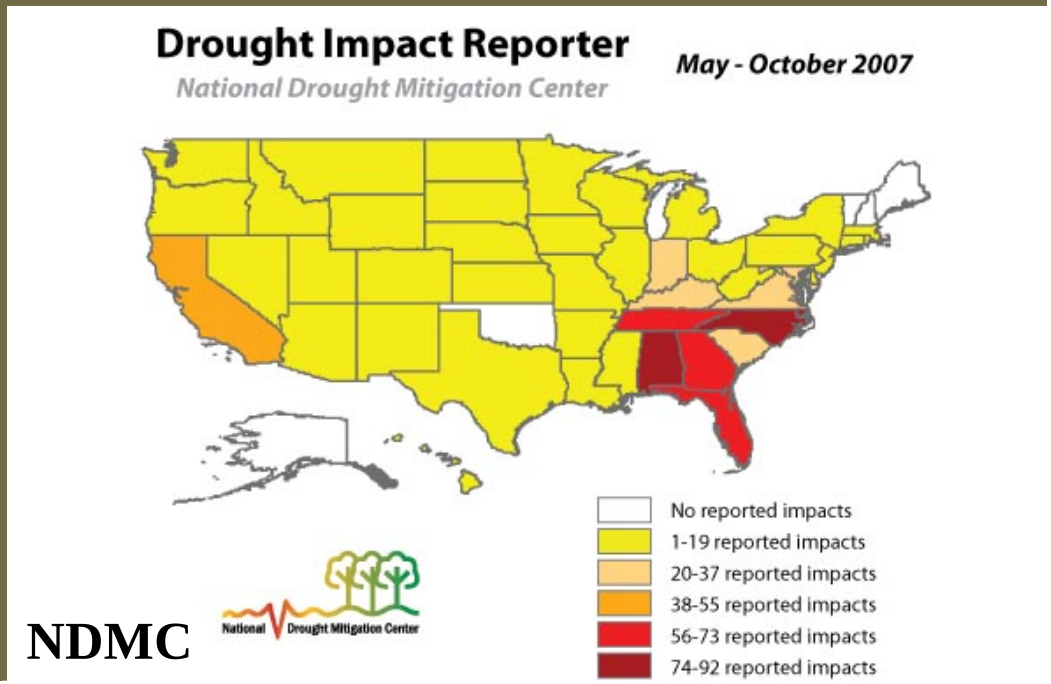
SNOTEL Network



SCAN Network

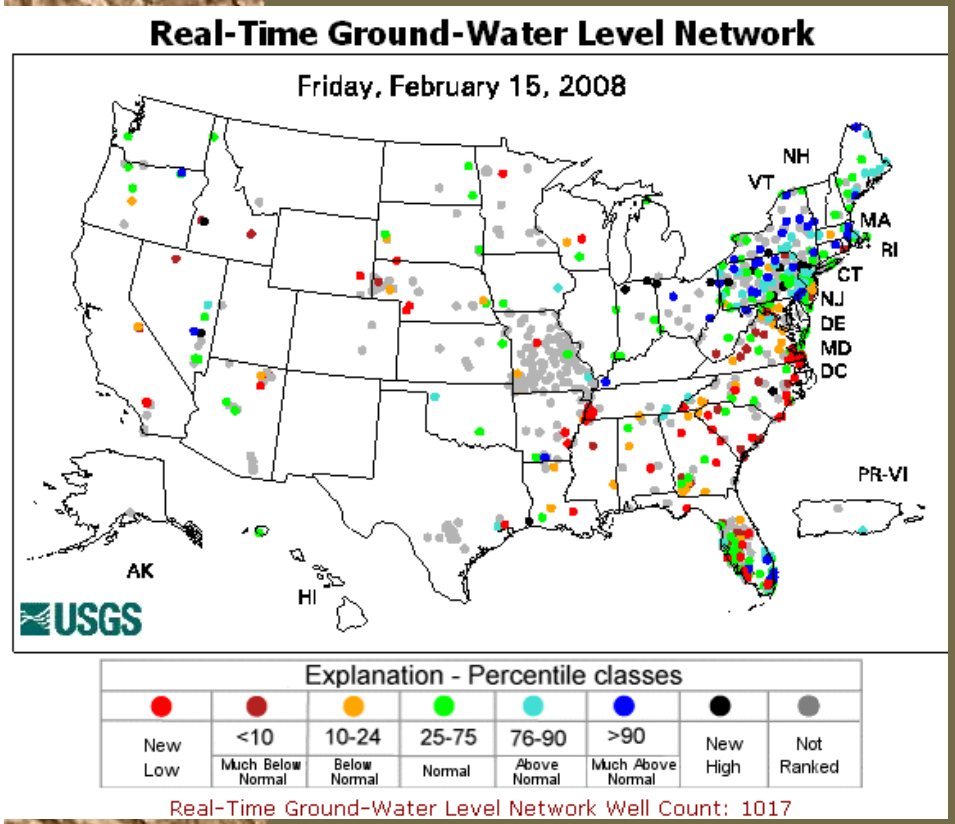


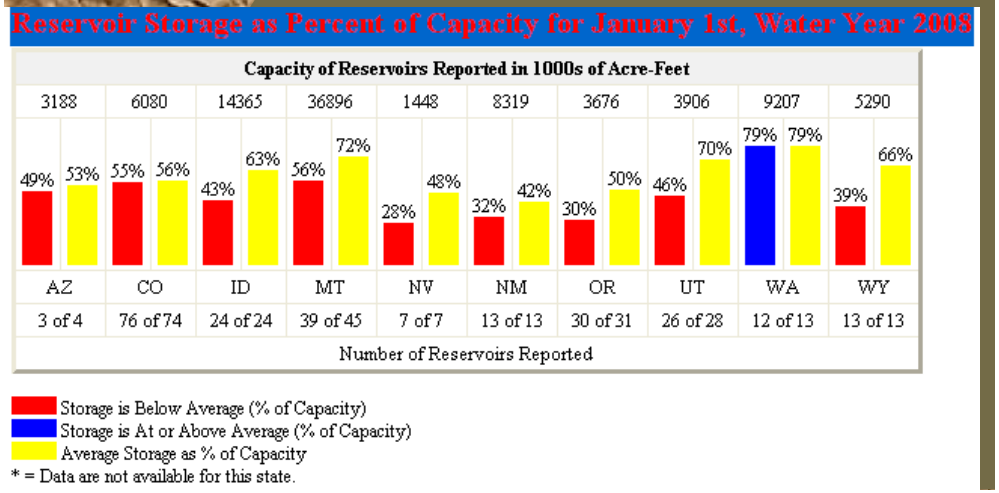
NWSFO



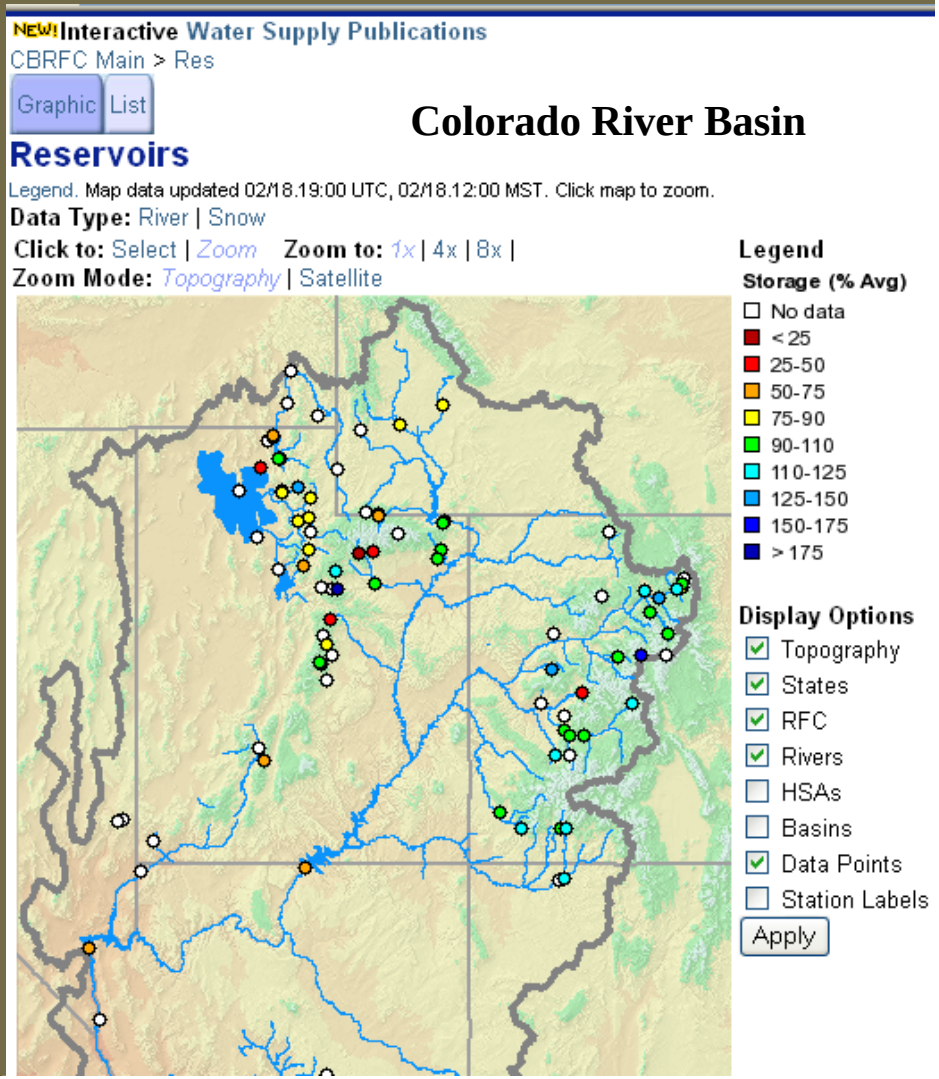
NDMC

1) Improving Input Data Quality & Quantity;





NWS RFC Reservoir Network



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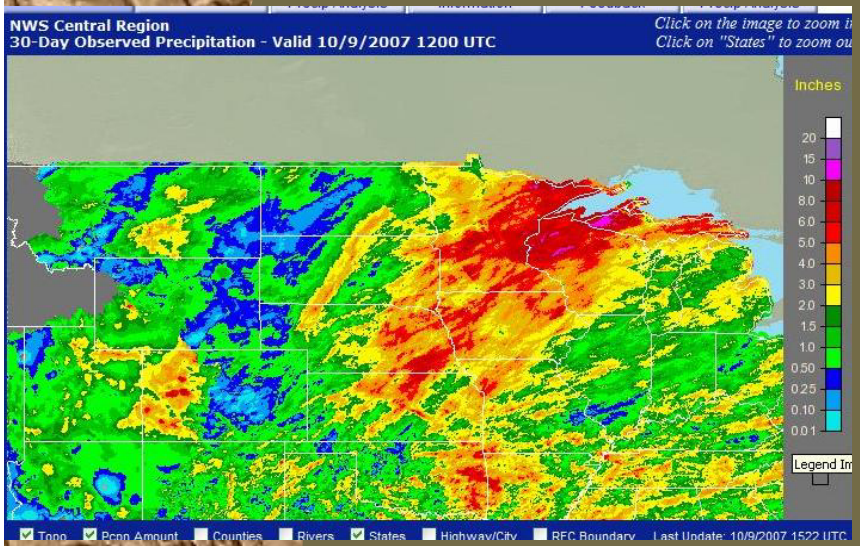
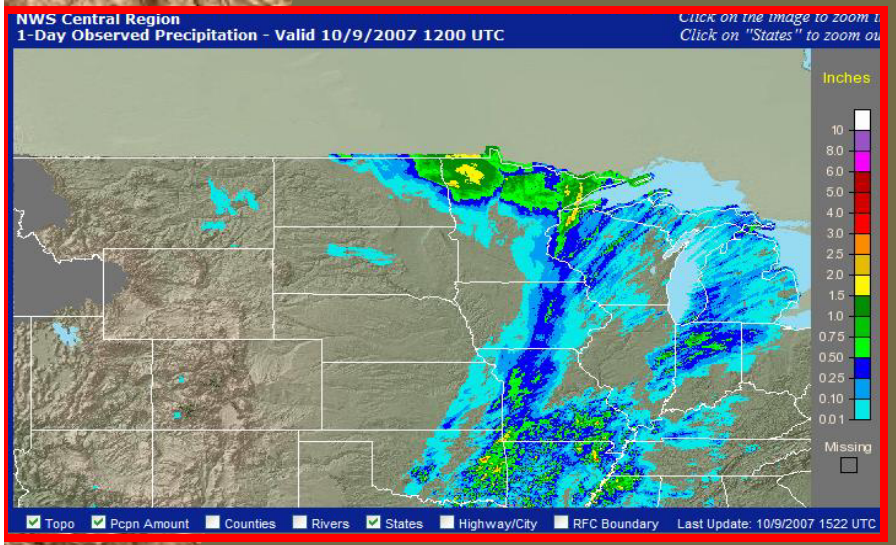
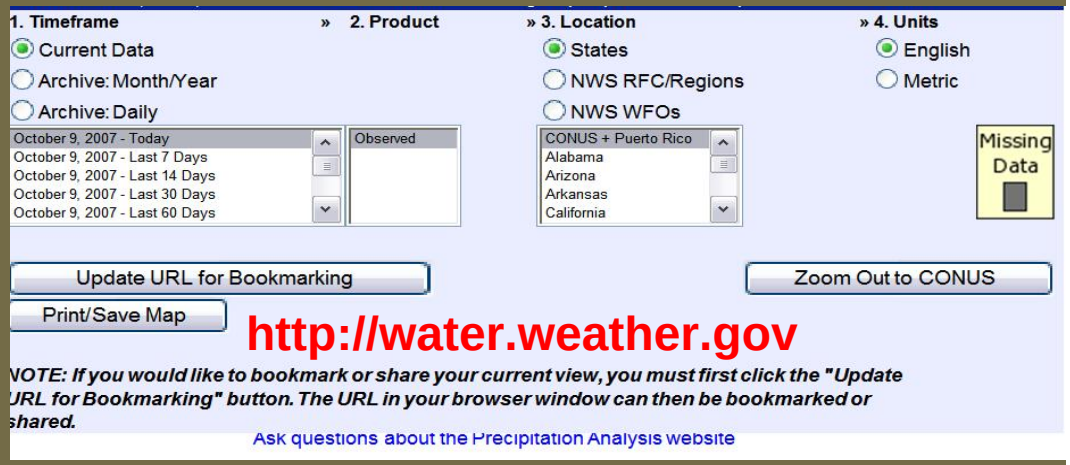
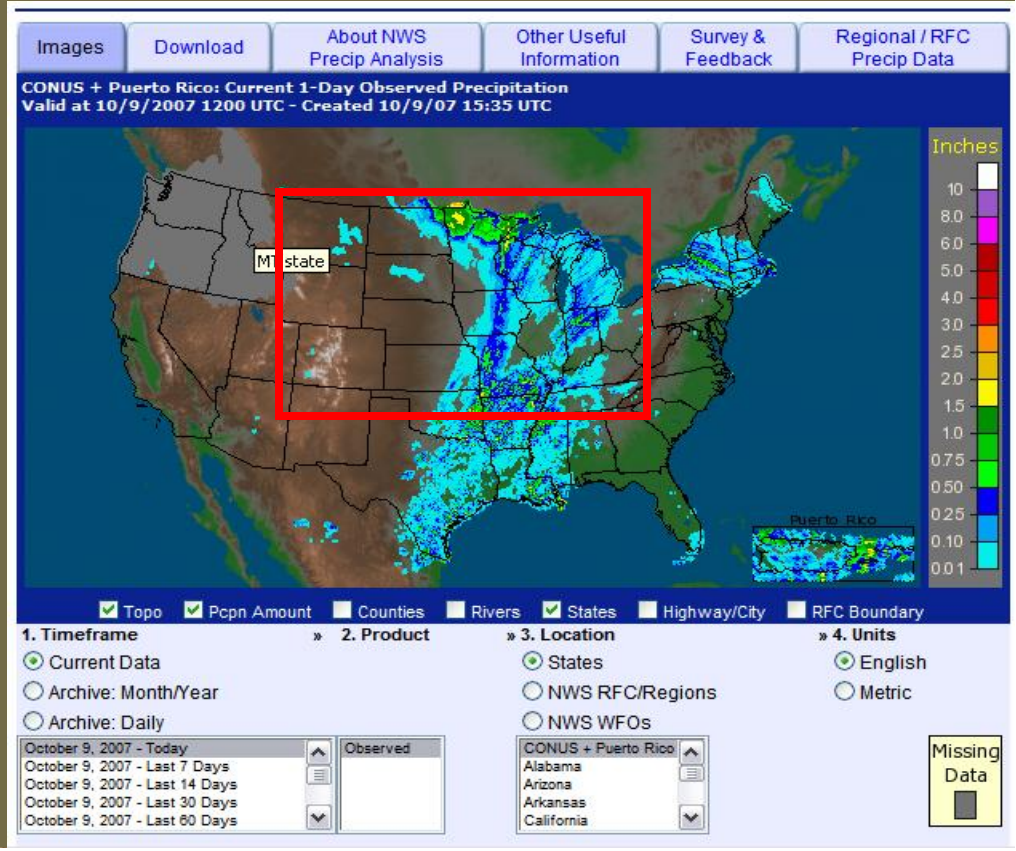
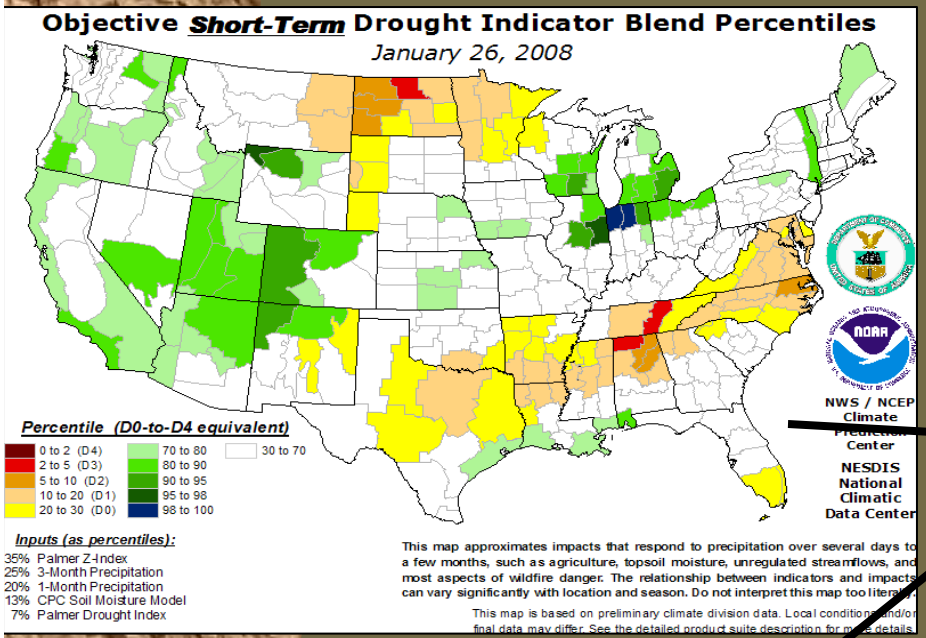


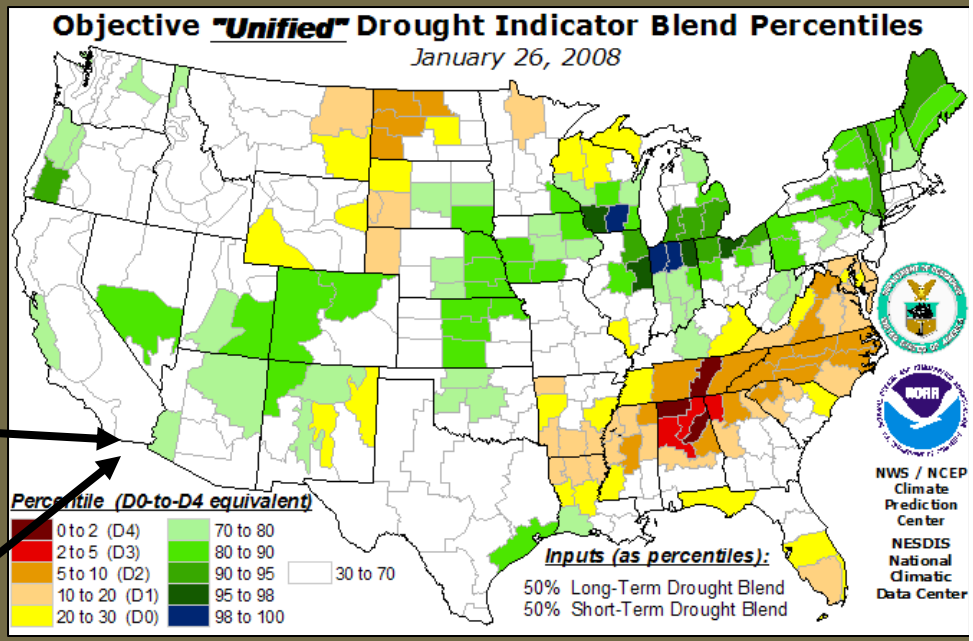


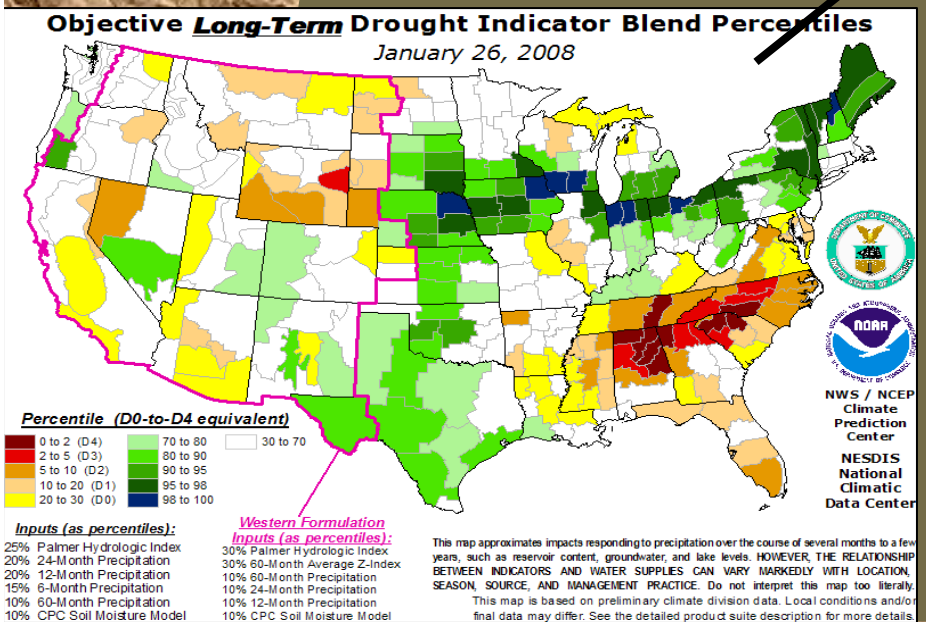


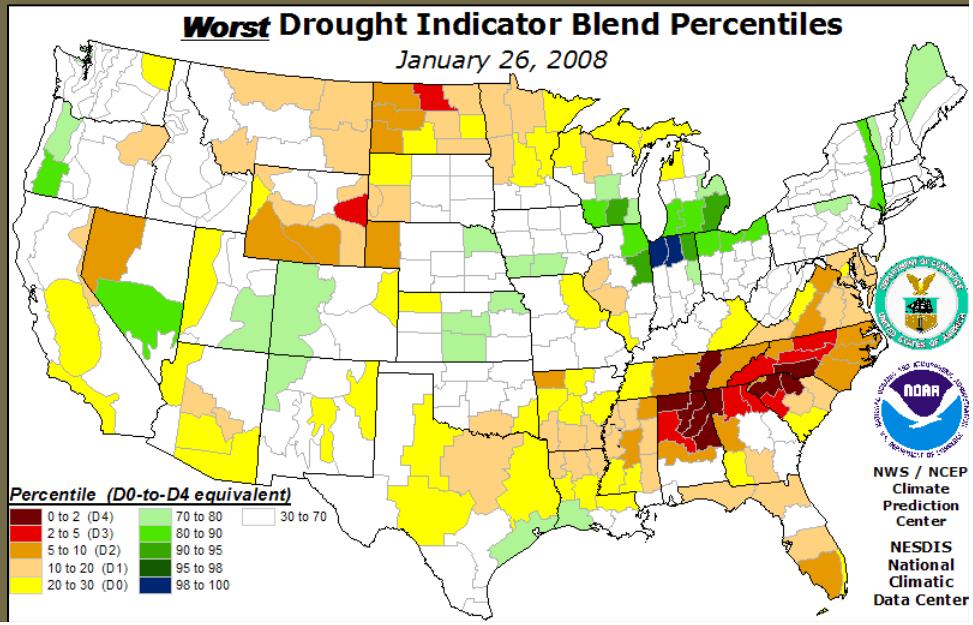


2) New Products, Indices, Blends for a more Objective Analyses, including Soil Moisture Models;









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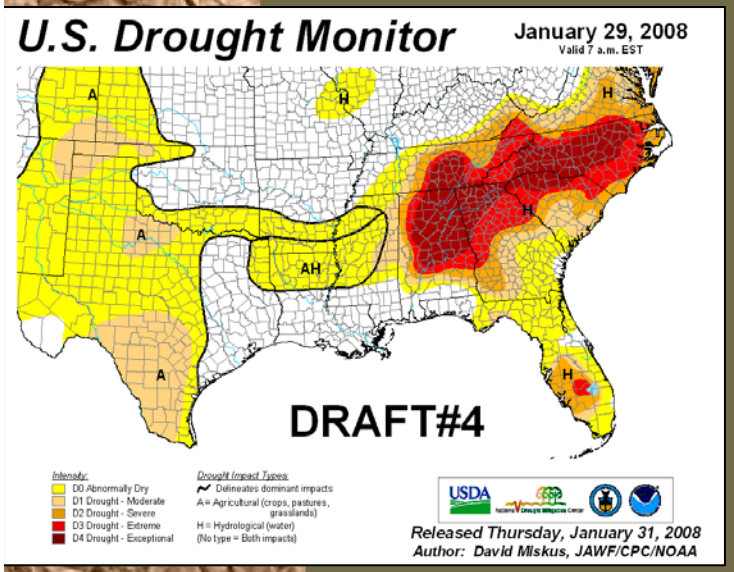
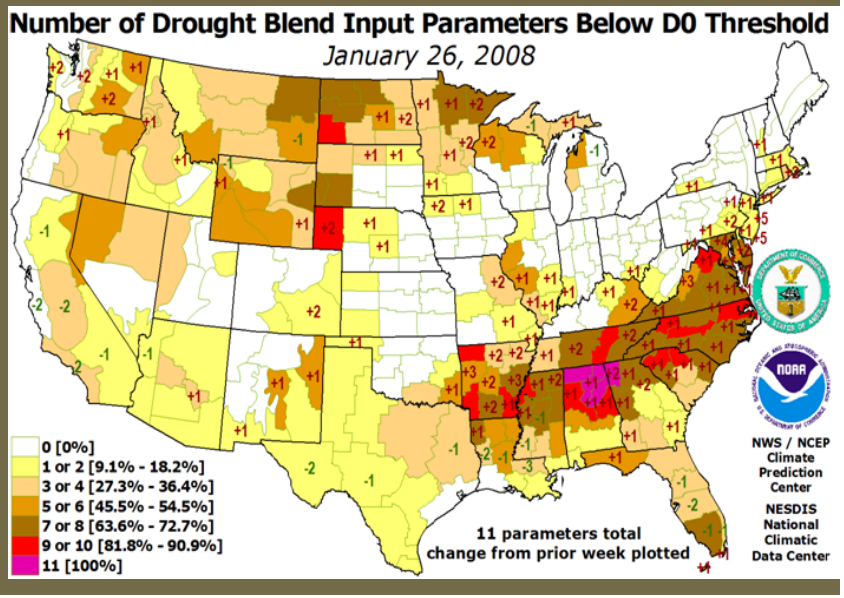
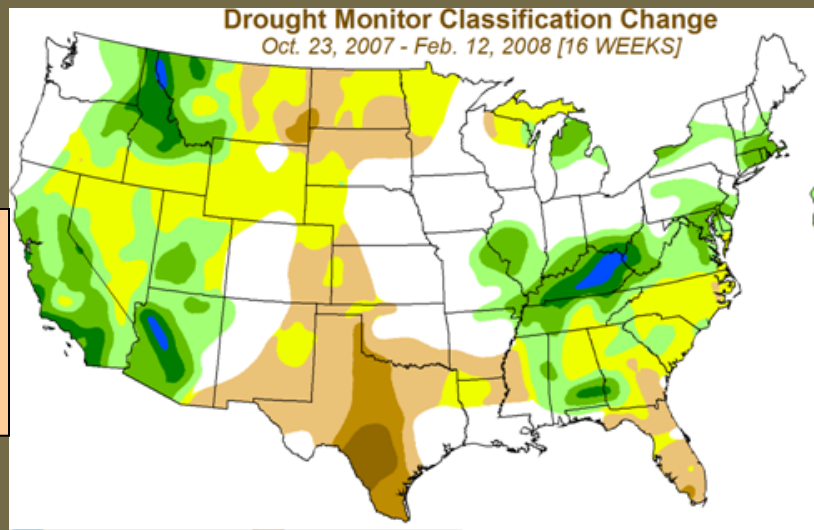


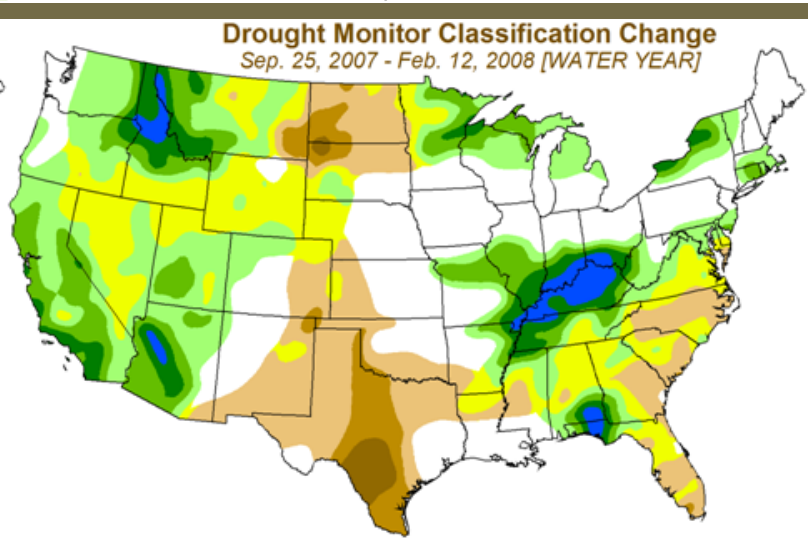
For D0-D4; 11 parameters & change from last week →

← Four regional draft maps with counties



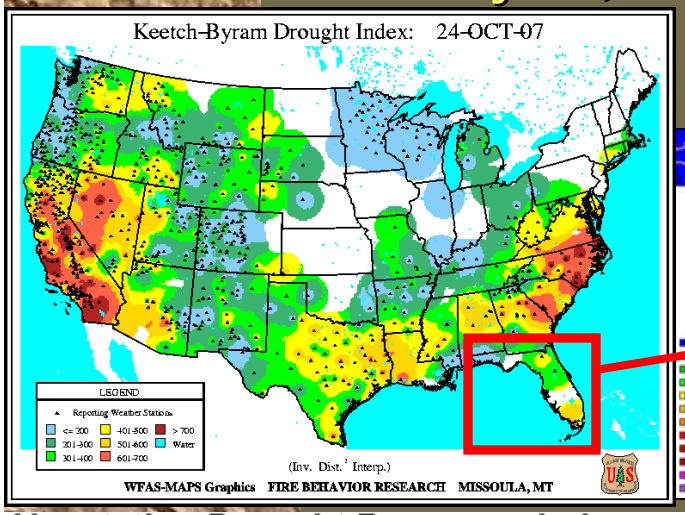
For 1-, 4-, 16-weeks & Water Year comparisons

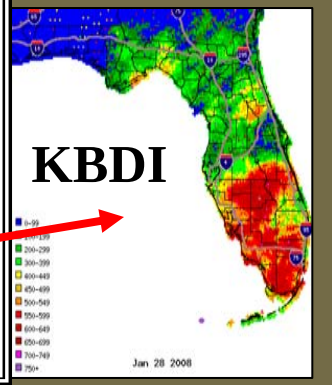


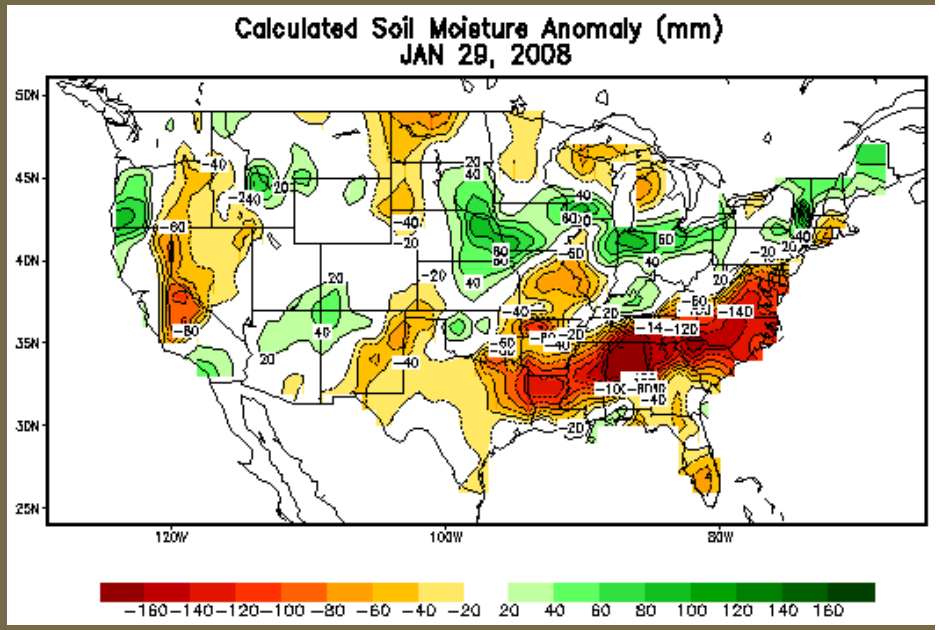


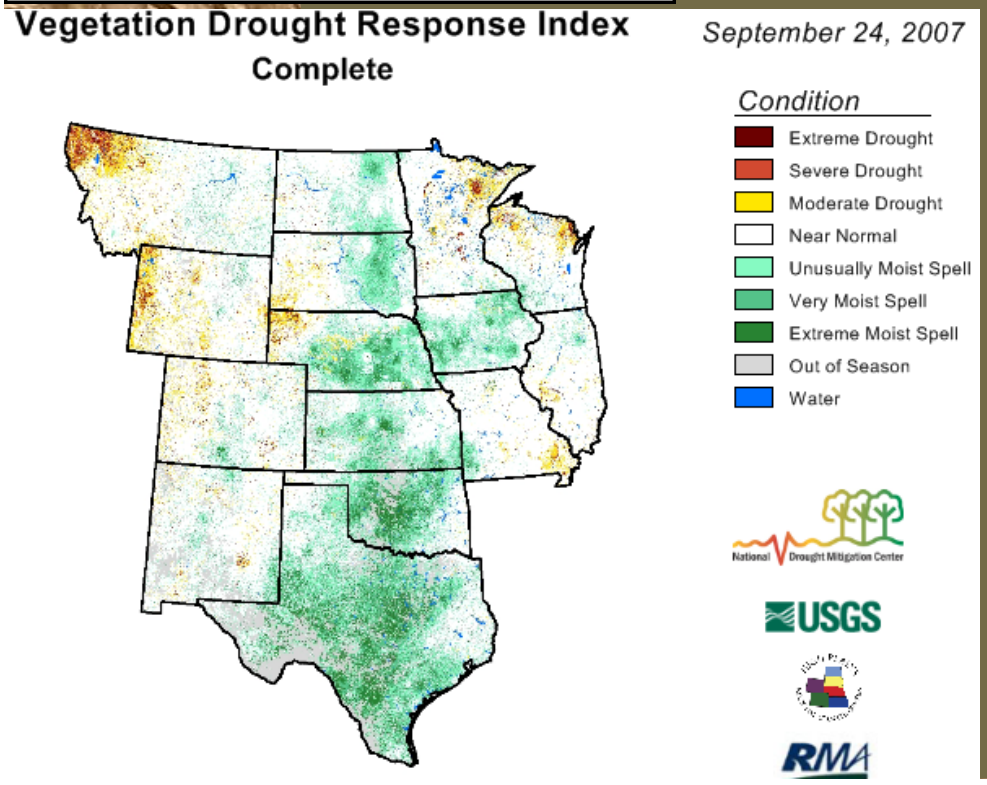
These maps depict approximate changes in drought intensity from selected initial times to the current week, with no consideration given to intervening weeks. The difference calculations are based on interpolated 4 km grids of Drought Monitor classifications, and as a result, will be smoother than would similar products based directly on the published versions of the Drought Monitor.

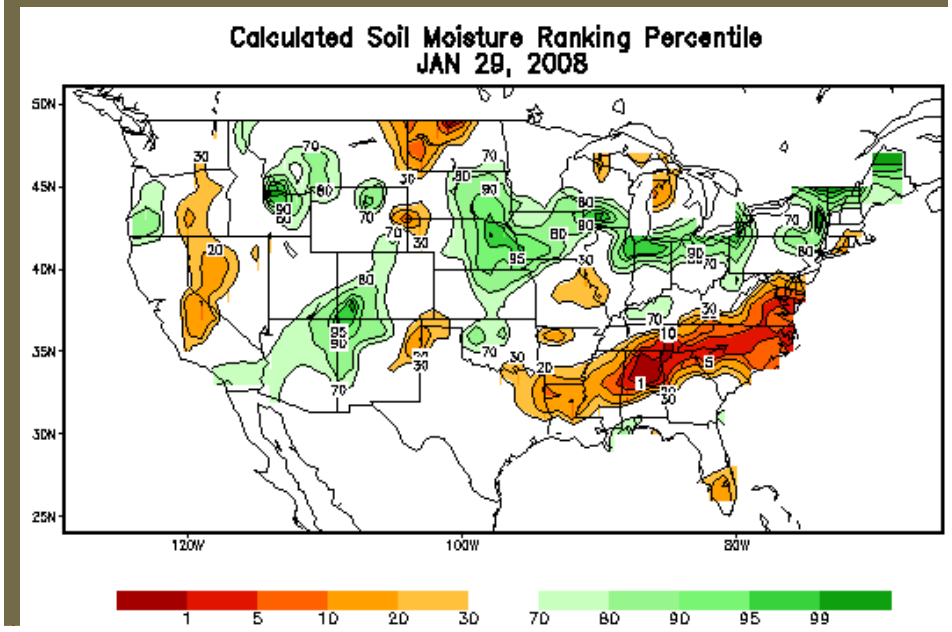
2) New Products, Indices, Blends for a more Objective Analyses, including Soil Moisture Models;



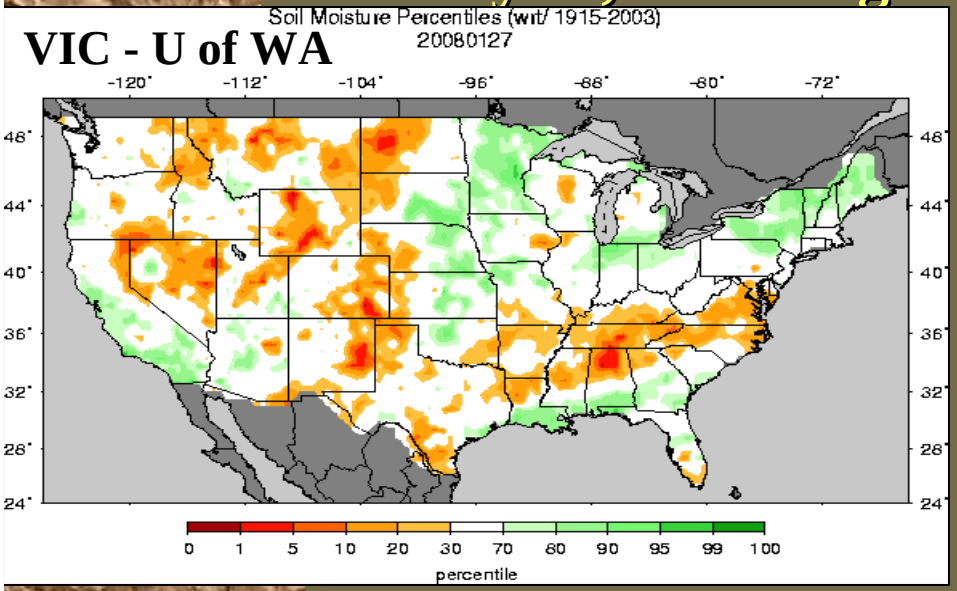


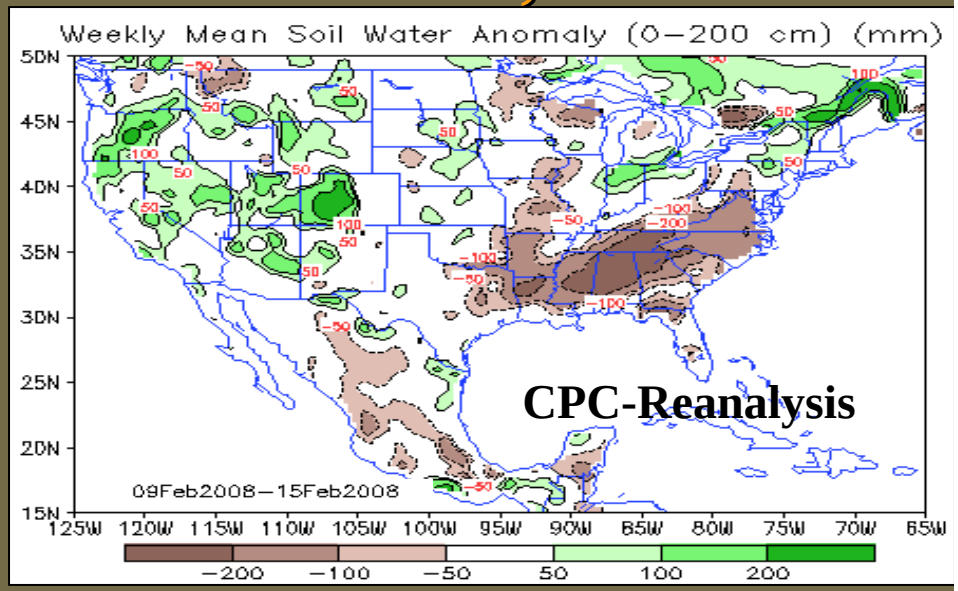


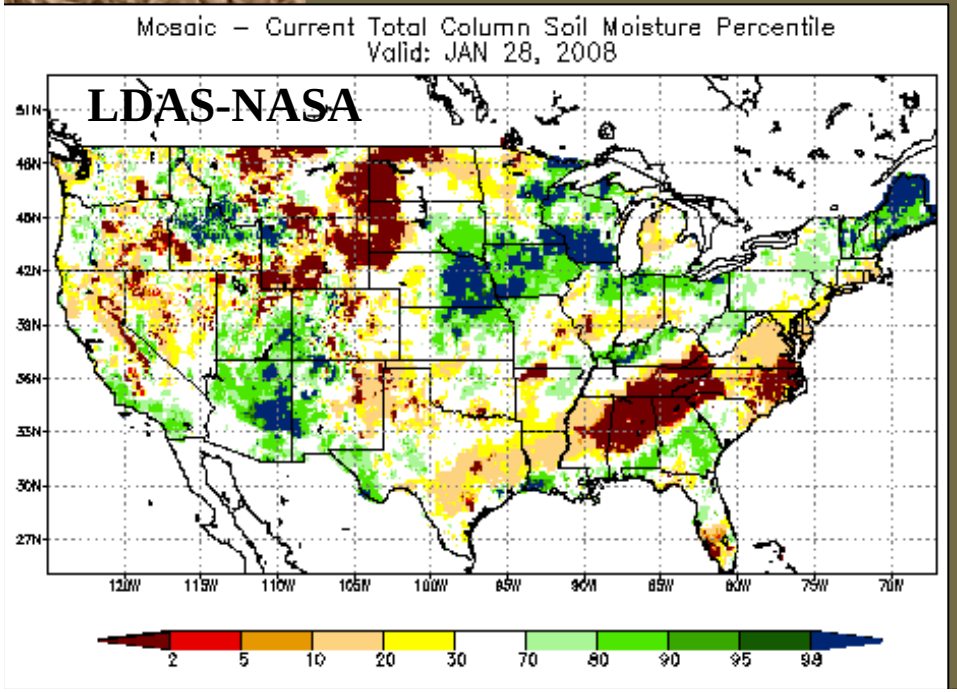


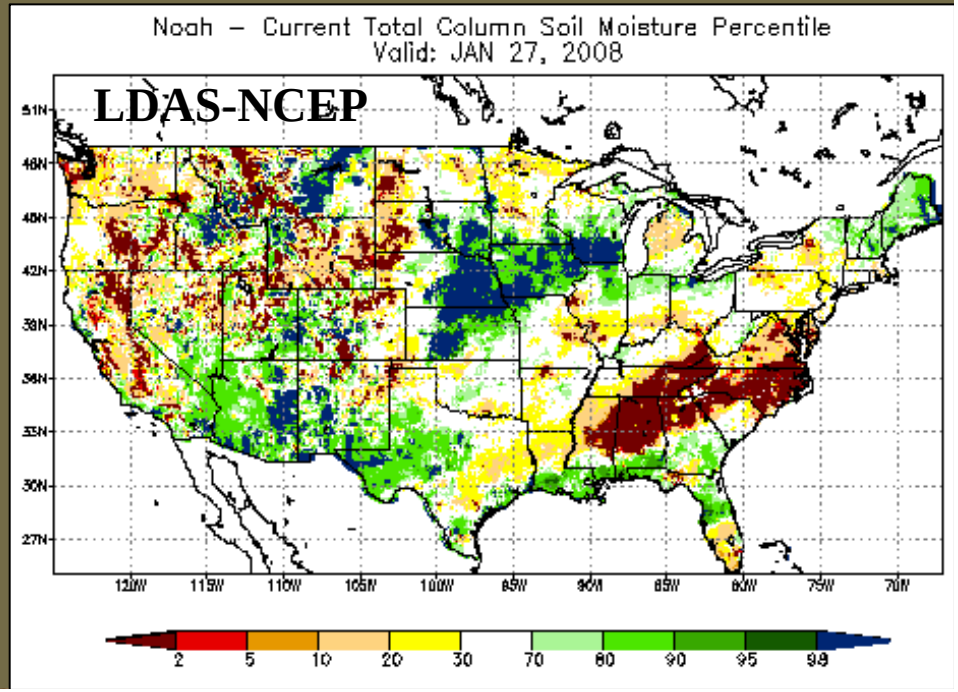


2) New Products, Indices, Blends for a more Objective Analyses, including Soil Moisture Models;

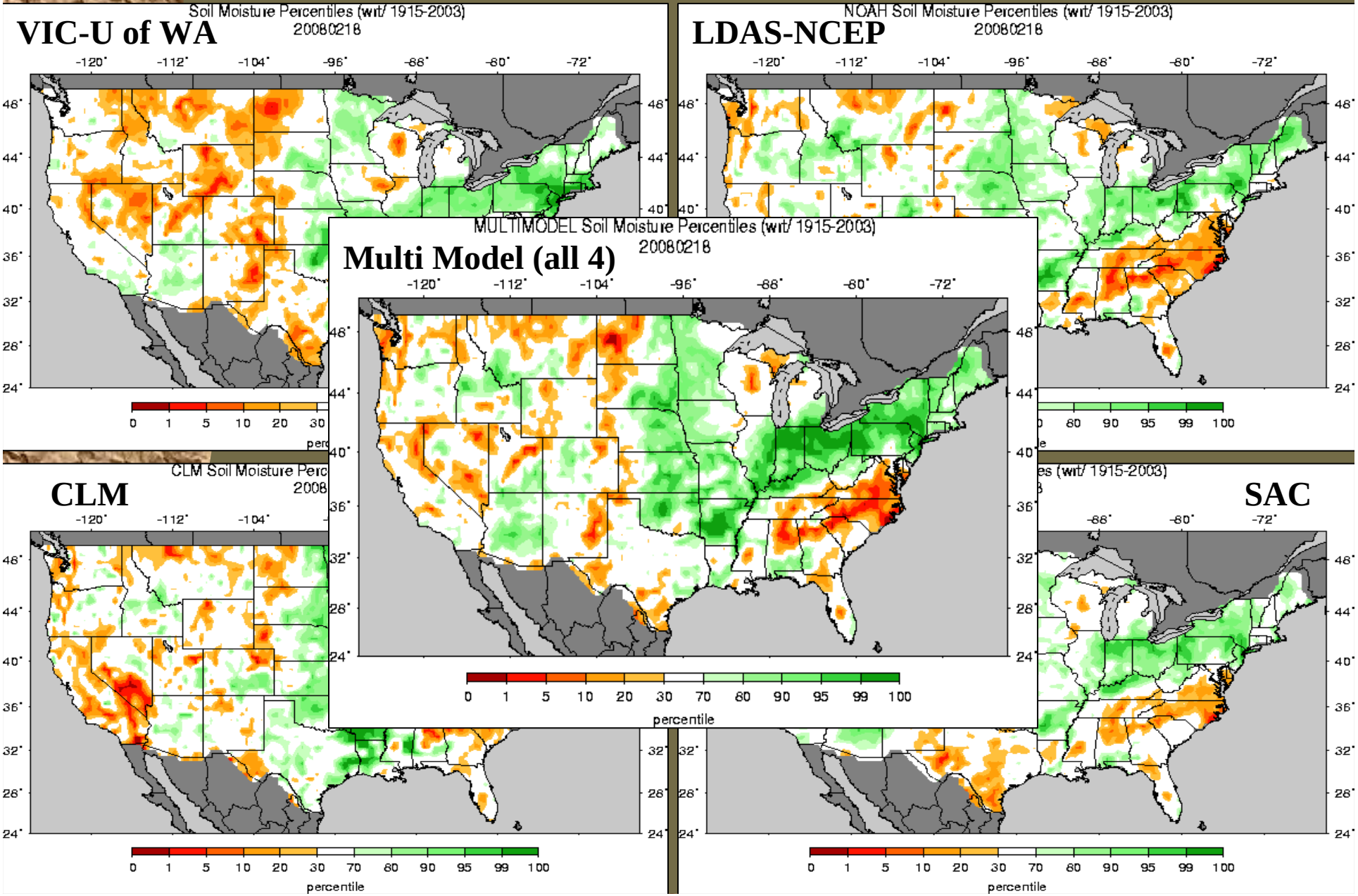






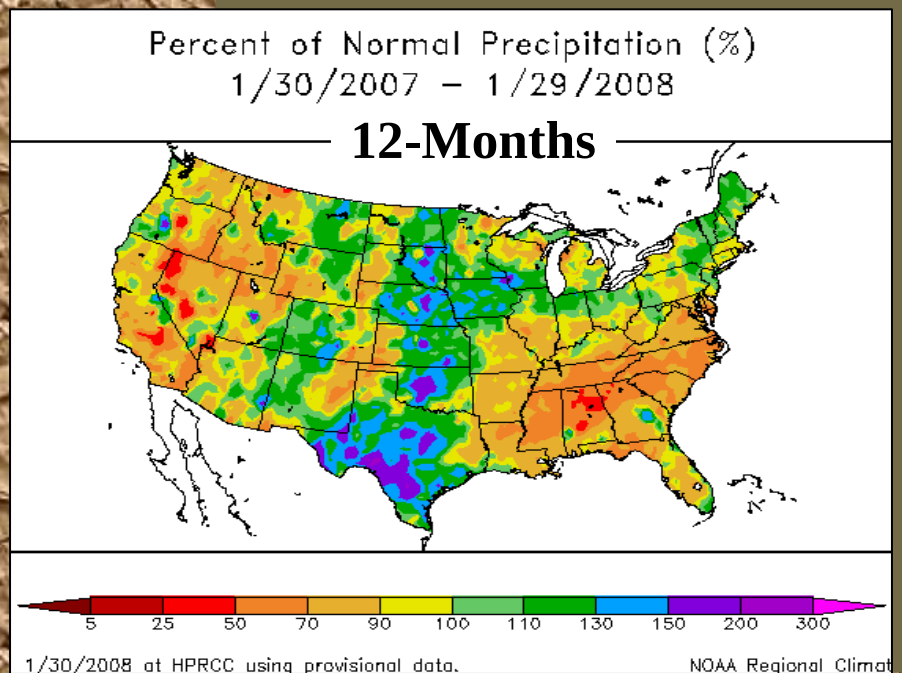


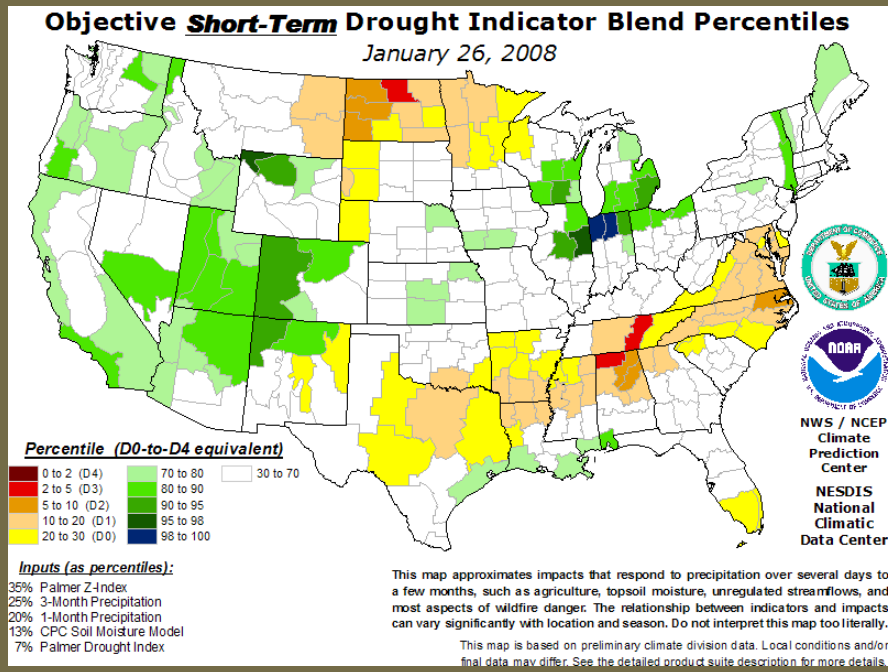
2) New Products, Indices, Blends for a more Objective Analyses, including Soil Moisture Models;

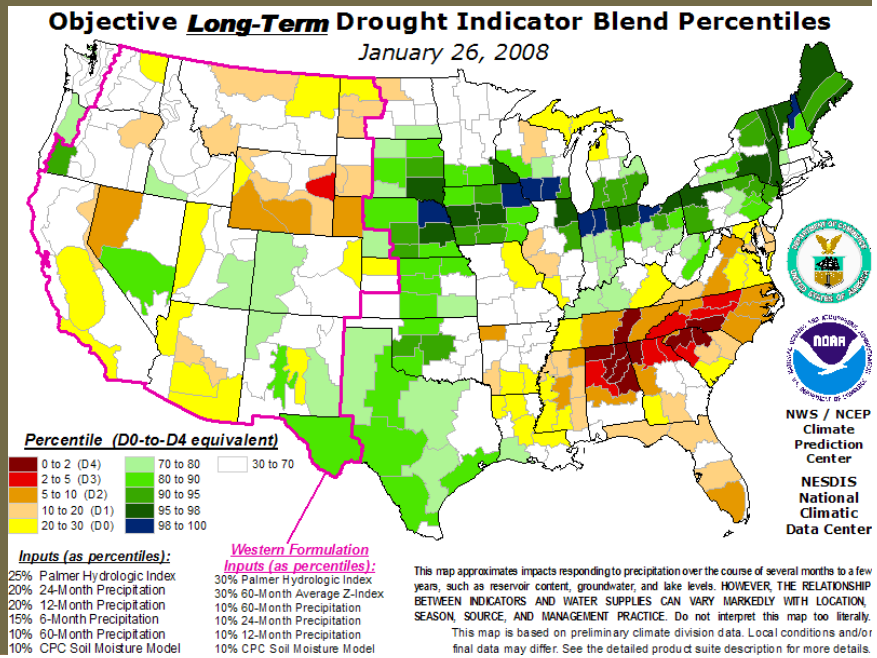


3) Temporal & Regional Drought Distinctions;

30-Days

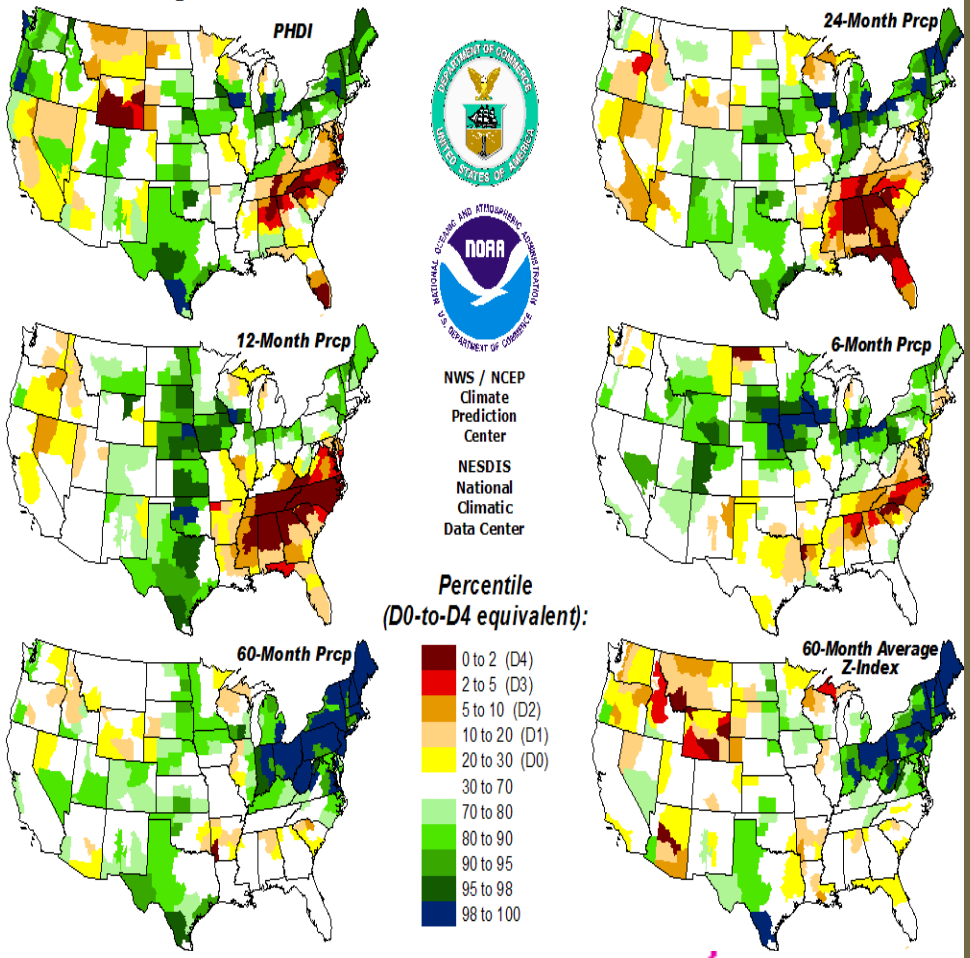






3) Temporal & Regional Drought Distinctions;

Objective *Long-Term* Drought Indicator Blend Percentiles -- *January 26, 2008*



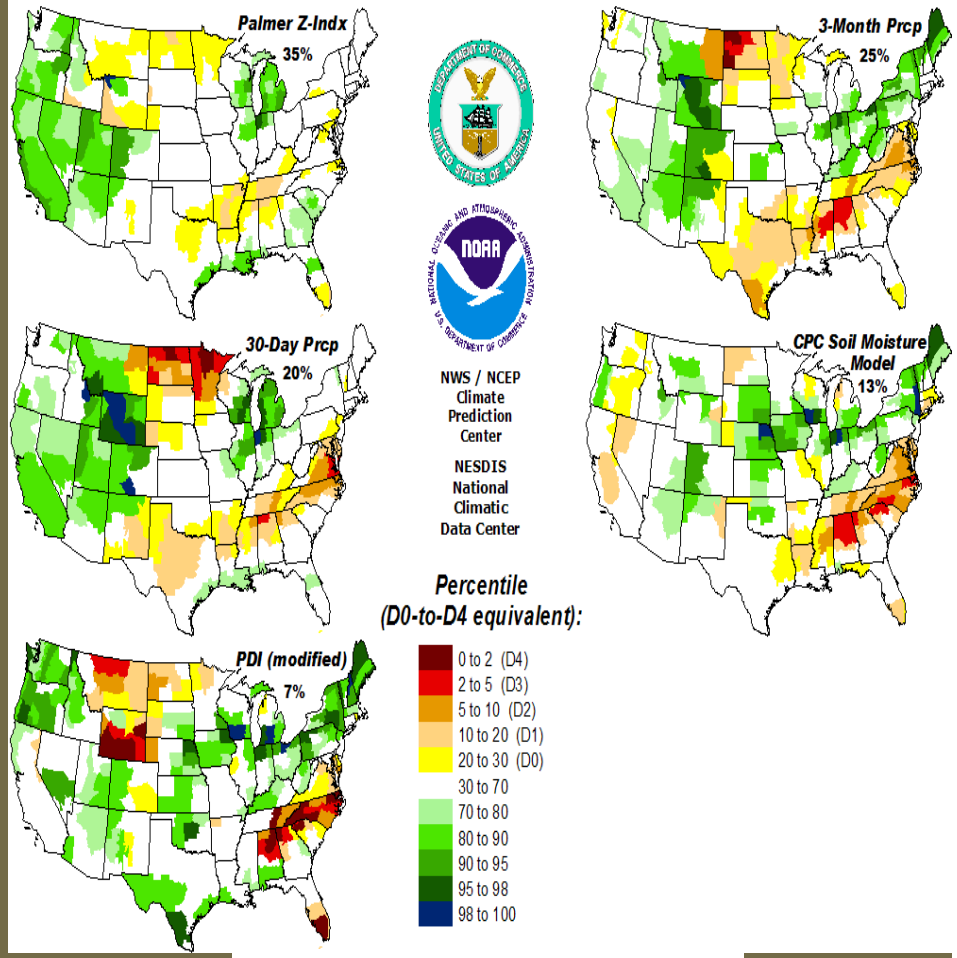
Inputs (as percentiles):

25% Palmer Hydrologic Index
20% 24-Month Precipitation
20% 12-Month Precipitation
15% 6-Month Precipitation
10% 60-Month Precipitation
10% CPC Soil Moisture Model

Western Formulation Inputs (as percentiles):

30% Palmer Hydrologic Index
30% 60-Month Average Z-Index
10% 60-Month Precipitation
10% 24-Month Precipitation
10% 12-Month Precipitation
10% CPC Soil Moisture Model

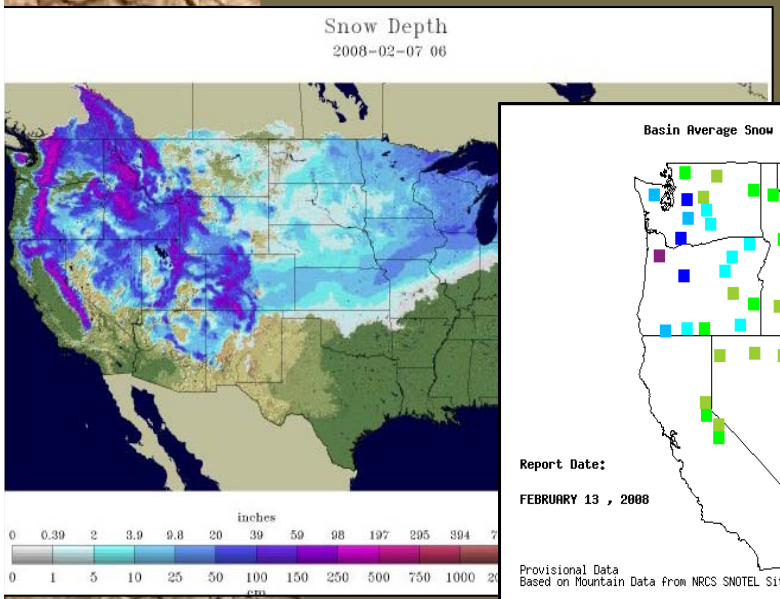
Objective *Short-Term* Drought Indicator Blend Percentiles -- *January 26, 2008*

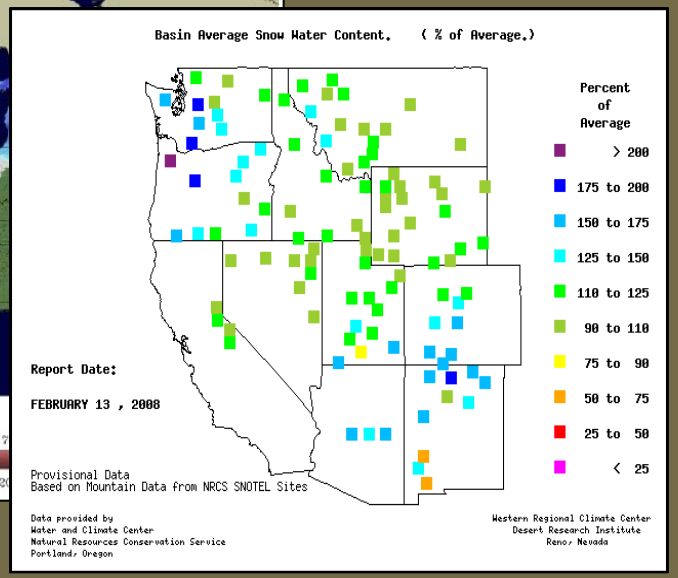


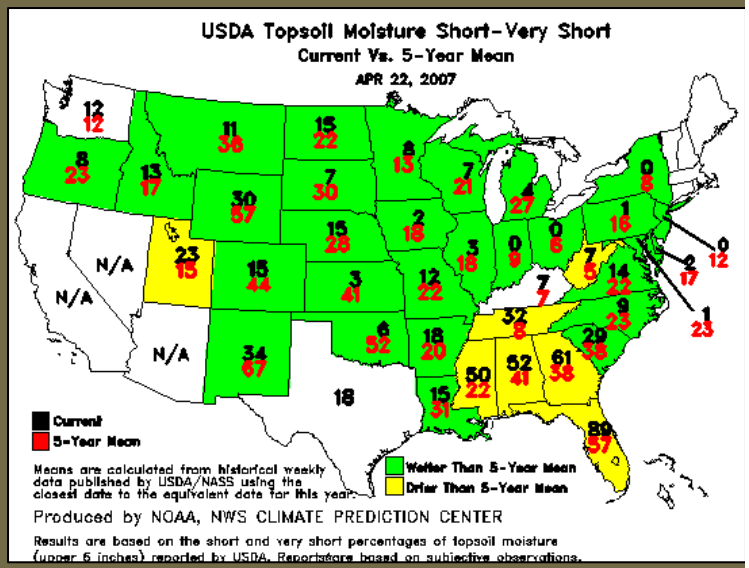
Inputs (as percentiles):

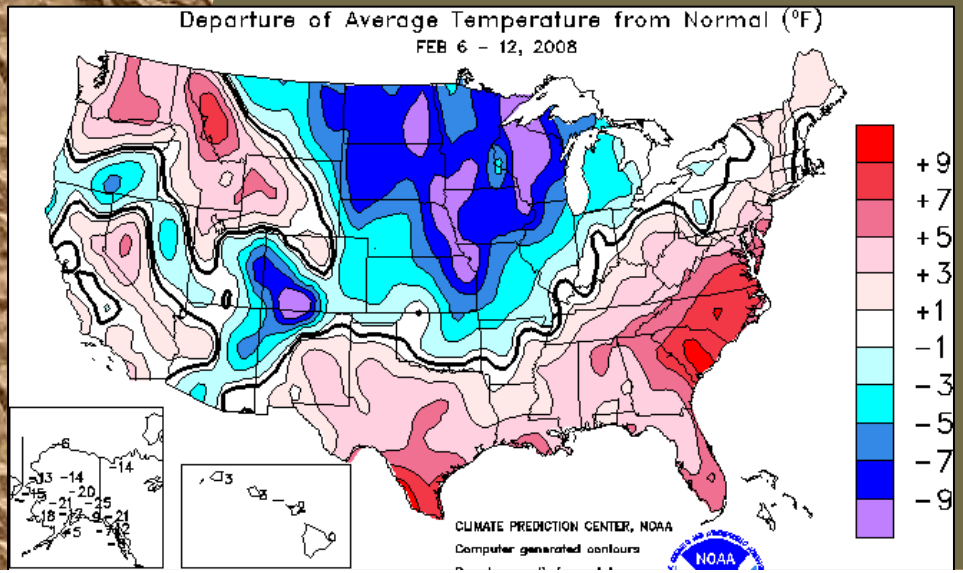
35% Palmer Z-Index
25% 3-Month Precipitation
20% 1-Month Precipitation
13% CPC Soil Moisture Model
7% Palmer Drought Index

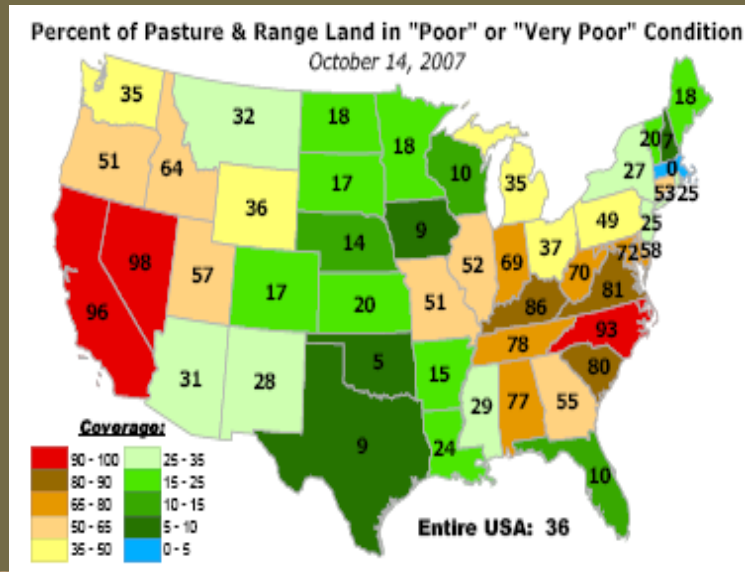
3) Temporal & Regional Drought Distinctions; Seasons … Winter vs. Summer





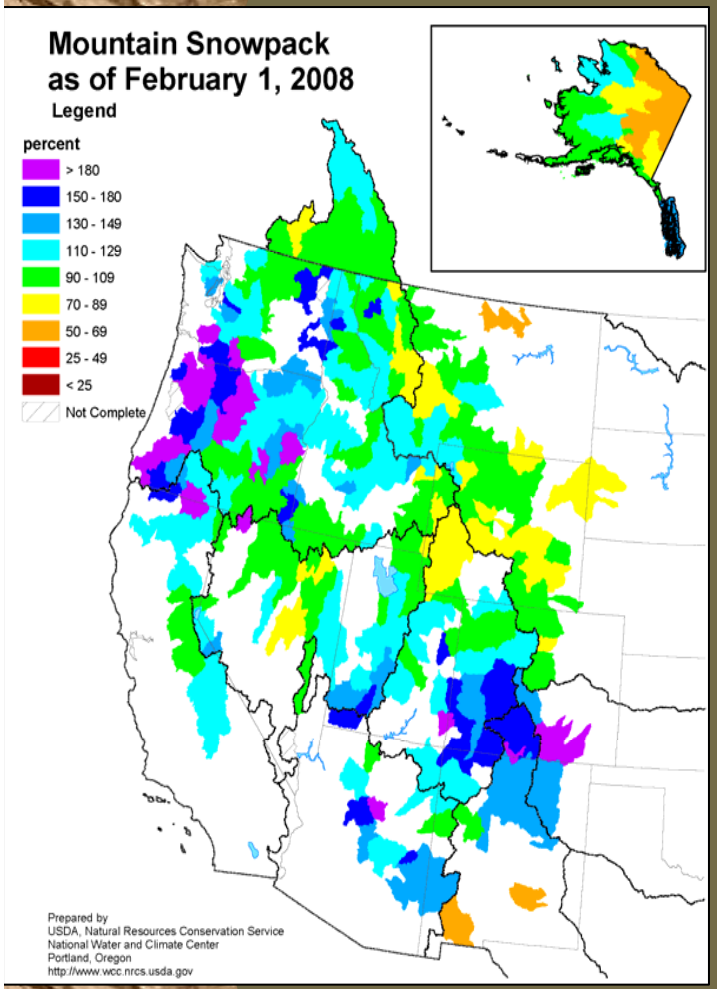






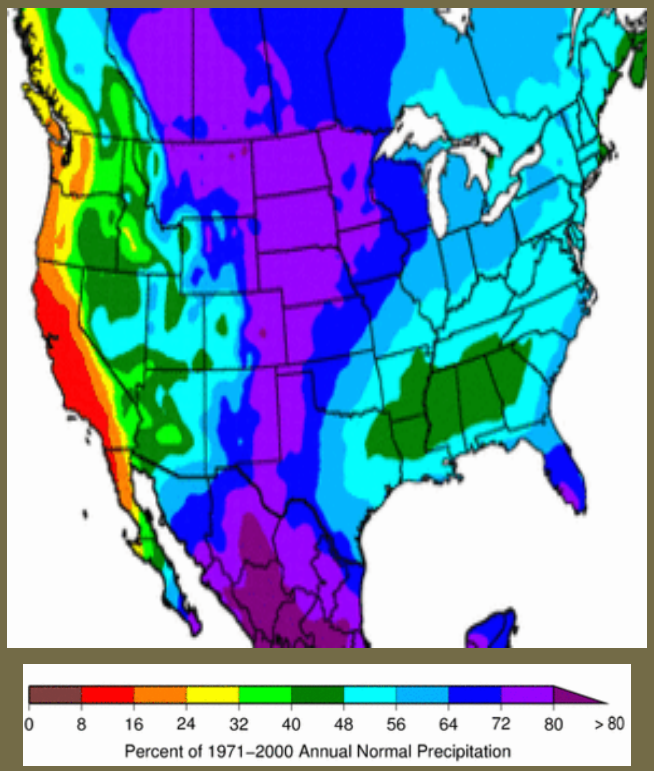
3) Temporal & Regional Drought Distinctions;

West



Winter Mountain Snowpack

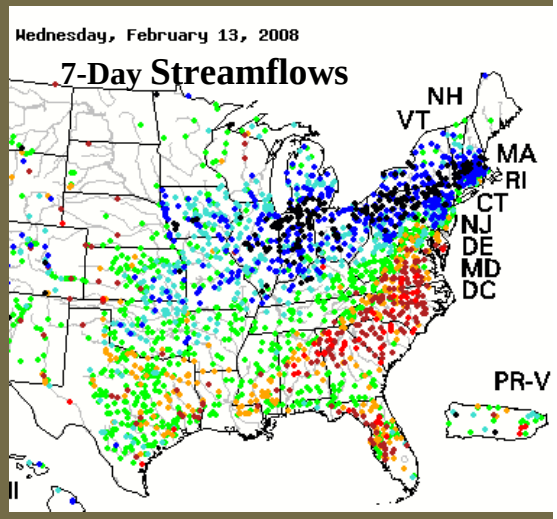
Plains

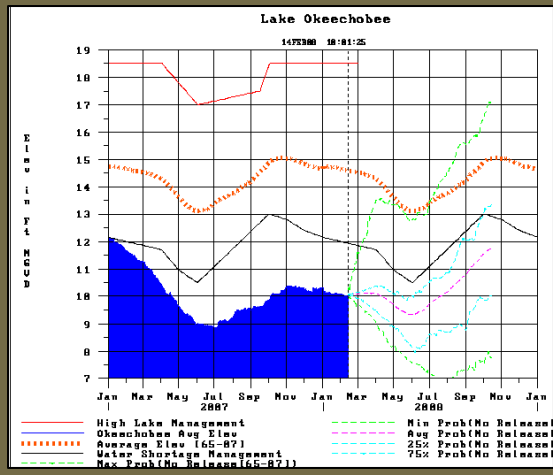


Percent of Normal Annual Precipitation (Apr-Sep)

Spring & Summer (Growing Season)

East & South

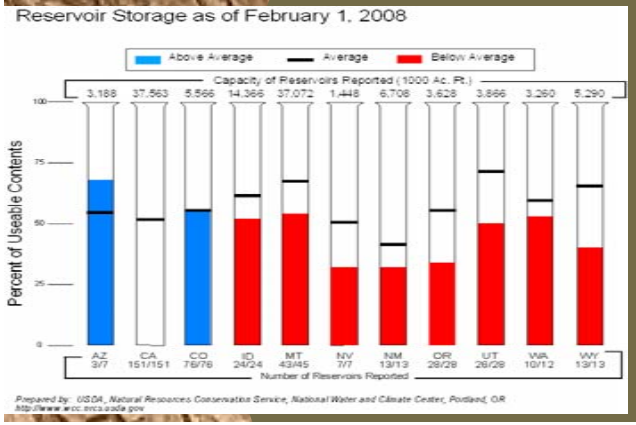


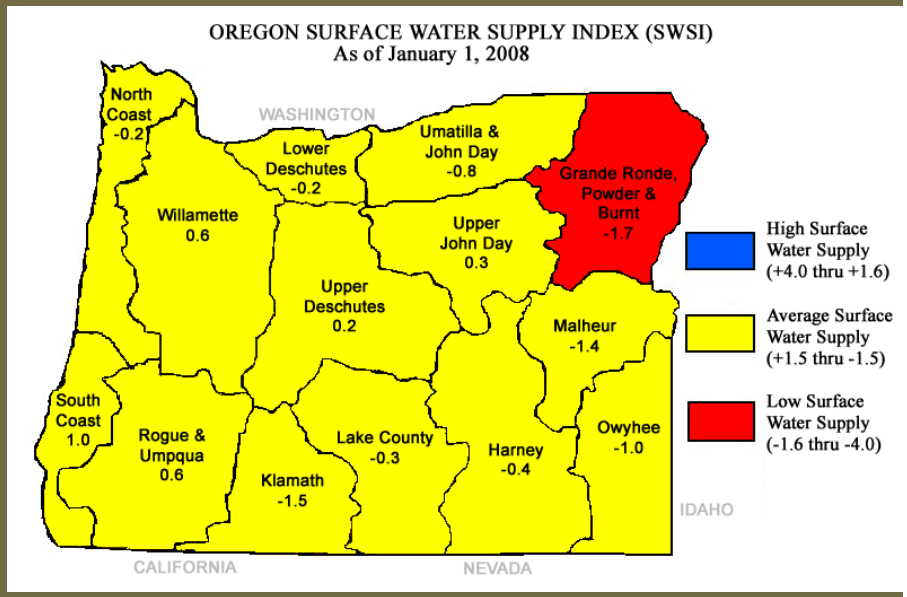


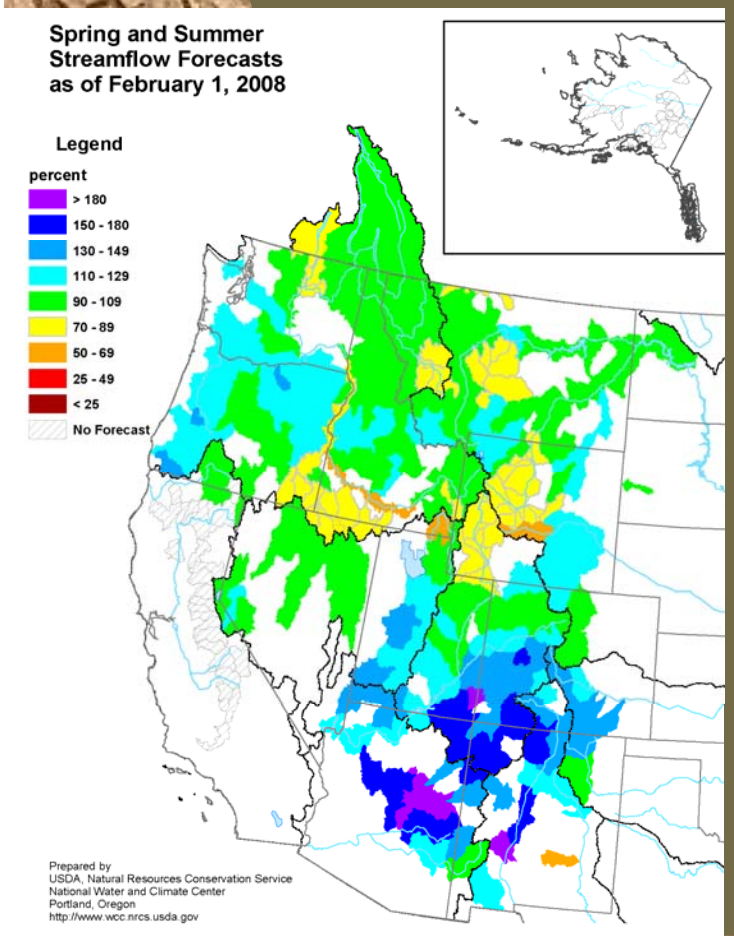
Year-Round (Even Precip Distribution)

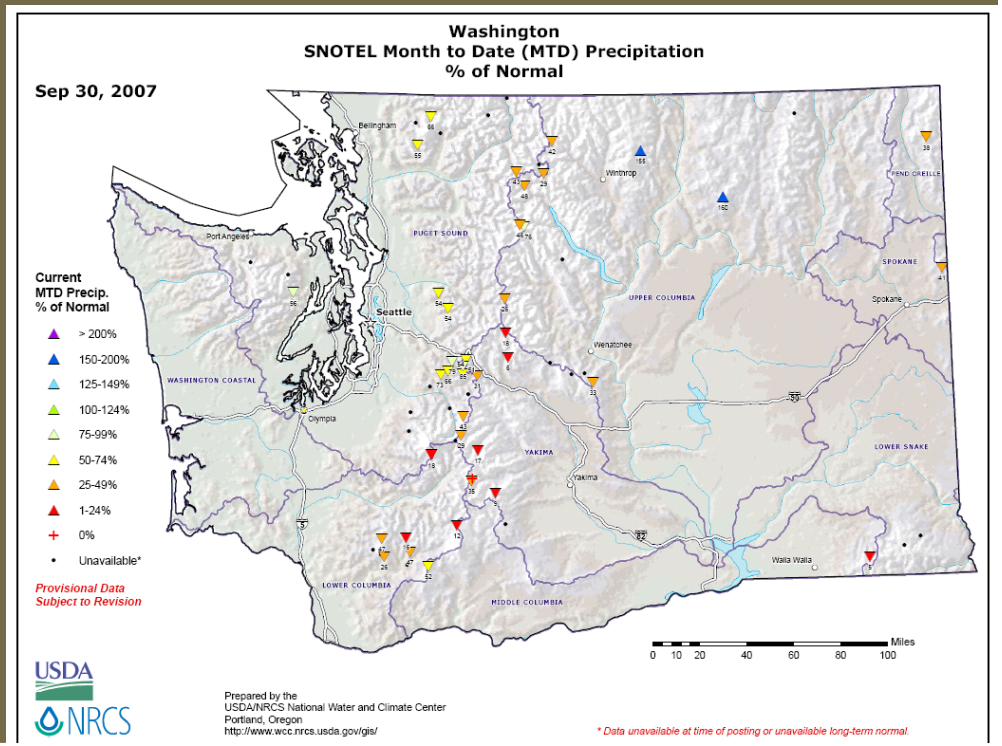
3) Temporal & Regional Drought Distinctions;

West





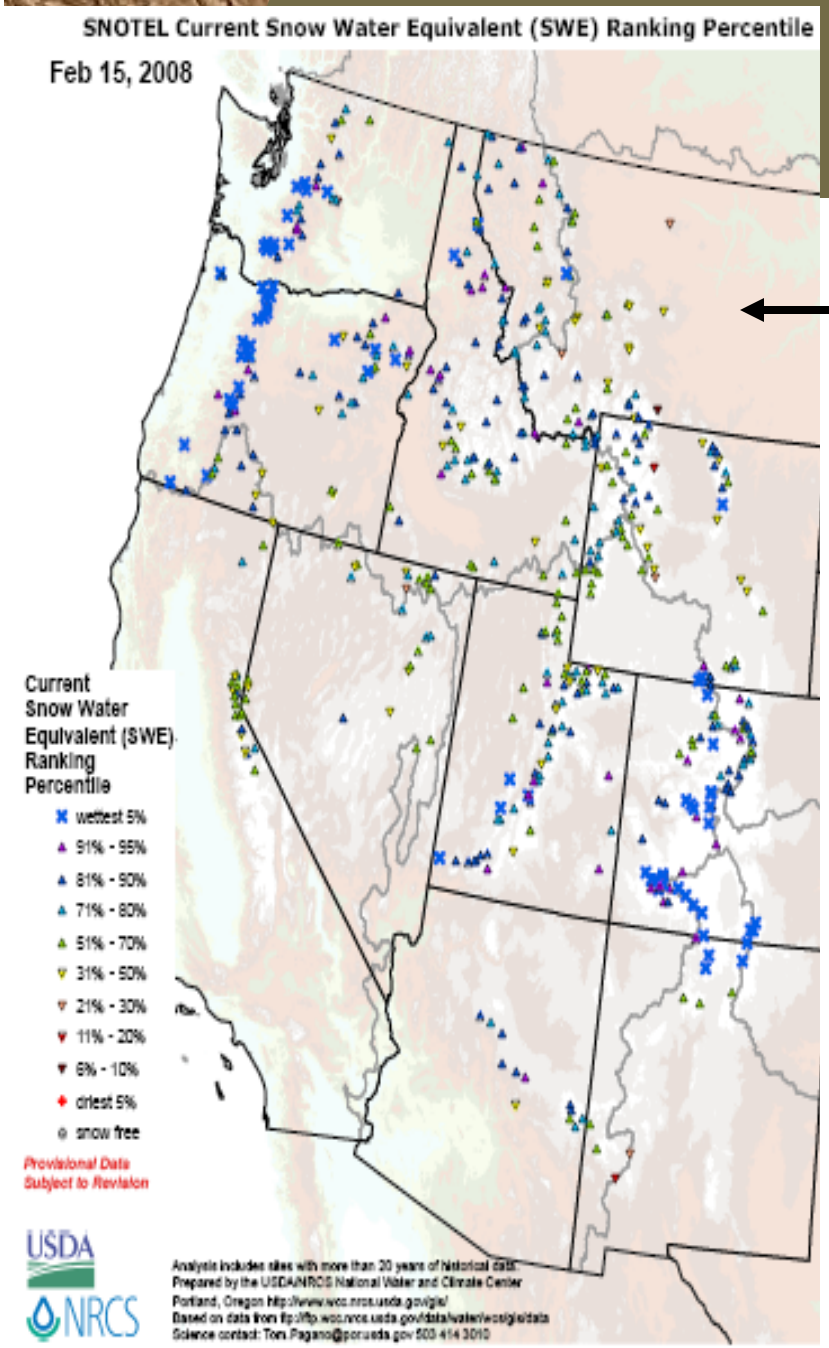




3) Temporal & Regional Drought Distinctions;

West

Snow



SNOTEL Snow Water Equivalent	Current	1st of Month	Change
West-wide maps	% of Normal Percentile Record % of Normal Peak	-	-
State maps NEW	% of Normal Select a State	-	-

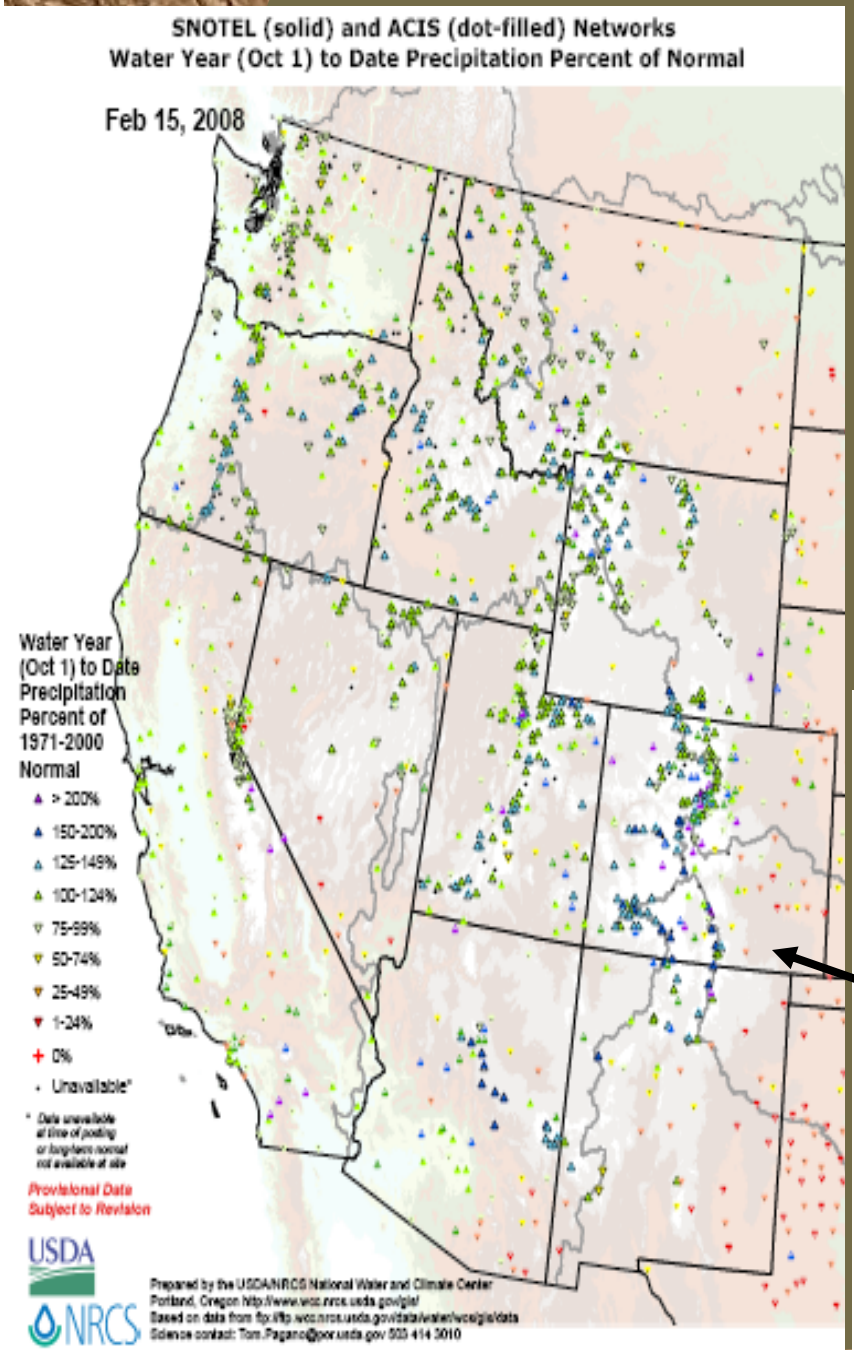
Select a State
Alaska
Arizona
California
Colorado
Idaho
Montana
Nevada
New Mexico
Oregon
Utah
Washington
Wyoming

SNOTEL & Snow Course Snow Water Equivalent		1st of Month	Change
West-wide maps		% of Normal	-
State/basin maps		% of Normal for Alaska % of Normal by River Basin: Arkansas, Colorado and Rio Grande Columbia Great Basin and California Missouri	-

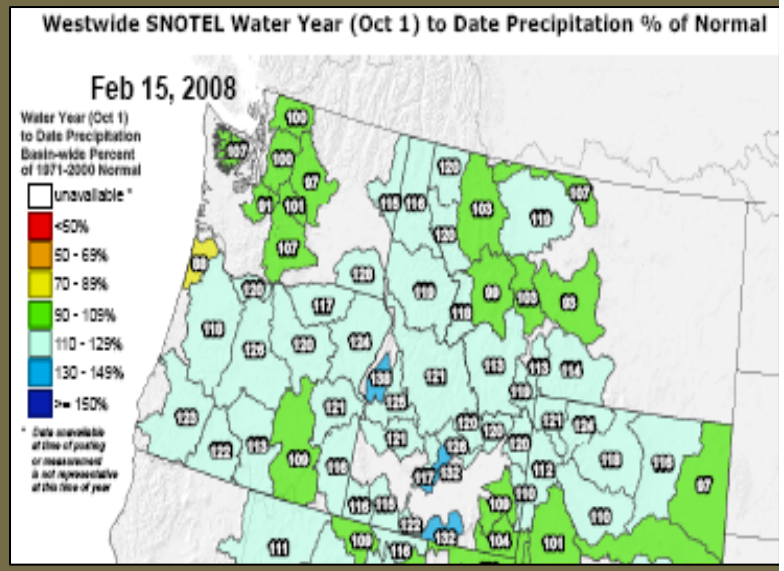
SNOTEL Snow Depth	Current	1st of Month	Change
West-wide maps	Snow Depth	-	1 Day 3 Day 7 Day
State maps NEW	Snow Depth Select a State	-	-

SNOTEL Snow Density	Current	1st of Month	Change
West-wide maps	Snow Density	-	-
State maps NEW	Snow Density Select a State	-	-

3) Temporal & Regional Drought Distinctions;



West



Precipitation

GIS Products

Precipitation

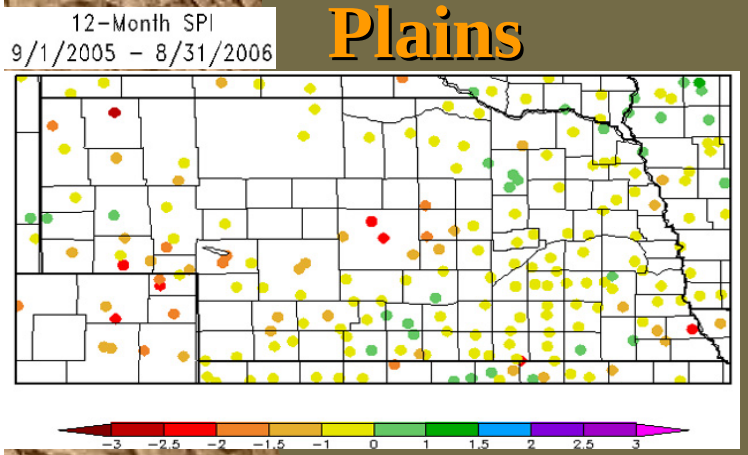
ACIS + SNOTEL data

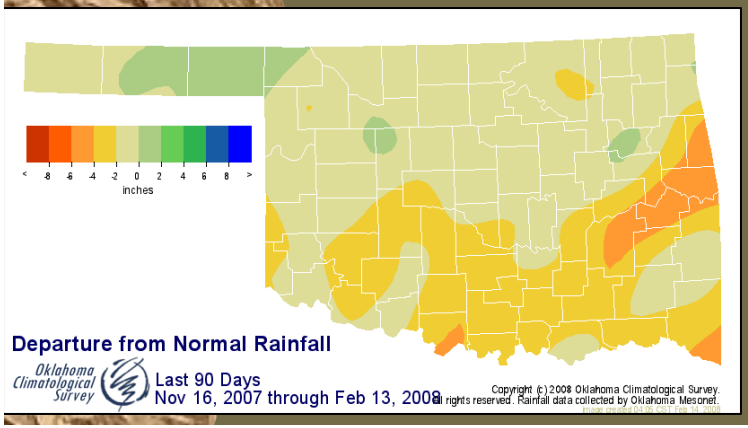
Note: Please manually reload .PDF files in internet browser to ensure you have the latest data.

SNOTEL Precipitation	Month to Date	Water Year to Date
West-wide Maps	% of Normal % of Monthly Total Normal	% of Normal % of Annual Total Normal Percentile Record
State Maps NEW	% of Normal Select a State	% of Normal Select a State
SNOTEL & ACIS Precipitation	**Month to Date**	**Water Year to Date**
West-wide Maps	% of Normal	% of Normal
PRISM Precipitation	**Month to Date**	**Water Year to Date**
U.S. Maps	Total Monthly Monthly % of Average	-

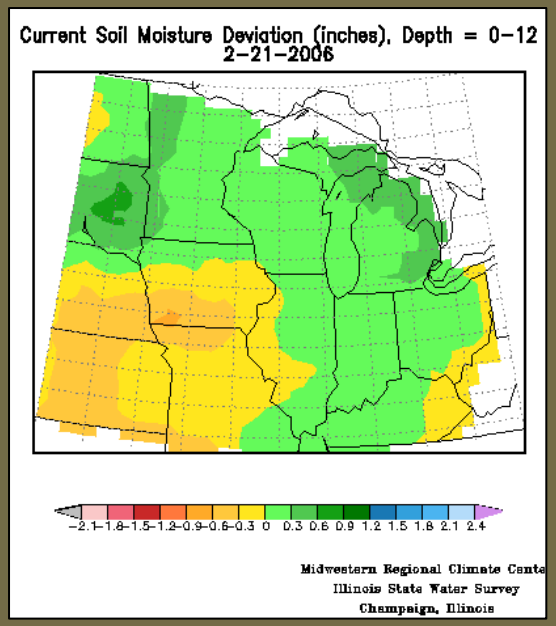
3) Temporal & Regional Drought Distinctions;

Plains

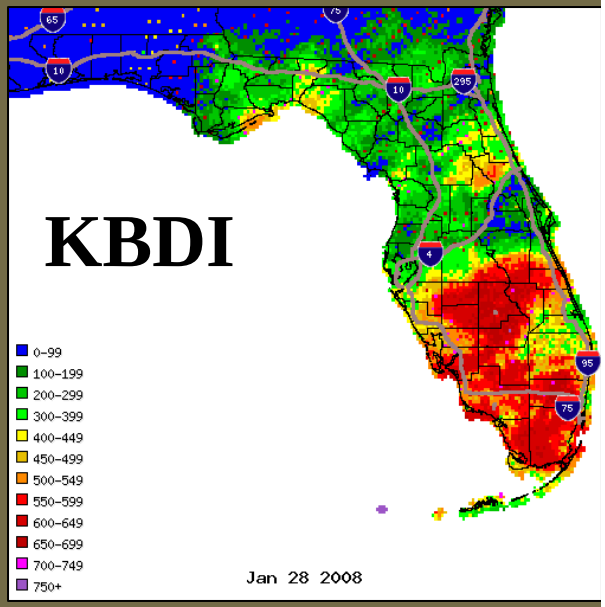




Midwest

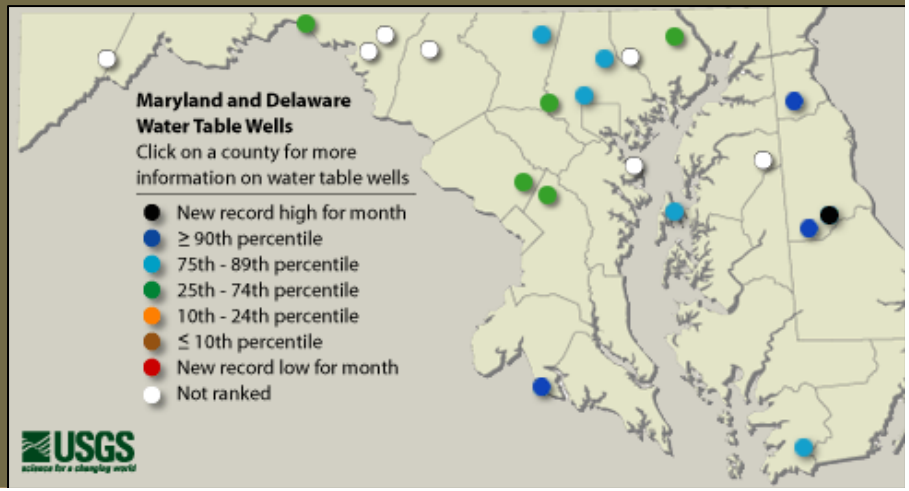


East & South

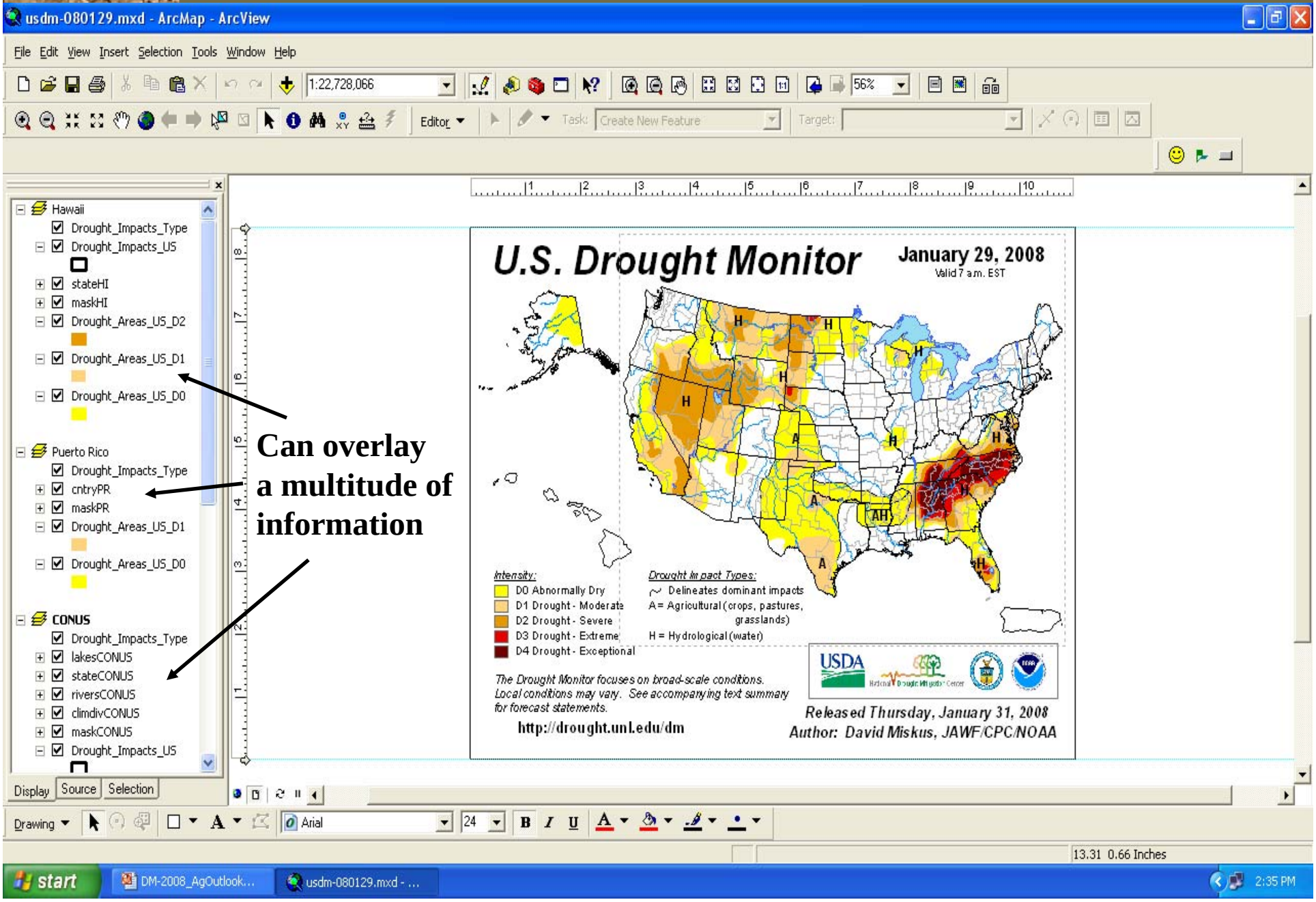


30-Day Precip for Texas
Jan 15, 2008 through Feb 13, 2008

Climate Division	Total Rainfall	Departure from Normal	Pct of Normal	Driest since	Wettest since	Rank of 55 such periods	Driest on Record	Wettest on Record	30-day SPI	Most Like (Arndt Score)
Texas Statewide	1.25"	-0.37"	77 %	2003 (0.71")	2006 (1.78")	12th driest D0	0.42" (1943)	4.74" (1992)	-0.70 D0	1929 (9.38)
TX-CD1 (High Plains)	0.06"	-0.52"	11 %	1942 (0.04")	2006 (0.25")	2nd driest D3	0.04" (1942)	2.57" (1968)	-1.93 D3	1942 (9.77)
TX-CD2 (Low Rolling Plains)	0.09"	-0.93"	9 %	--	2006 (1.61")	1st driest D4	0.24" (1963)	4.76" (1990)	-2.96 D4	1988 (9.16)
TX-CD3 (N. Central)	1.15"	-0.91"	56 %	2003 (0.82")	2006 (3.07")	9th driest D1	0.54" (1988)	6.20" (1990)	-1.24 D1	1967 (9.52)
TX-CD4 (East Texas)	3.46"	-0.25"	93 %	2003 (1.45")	2006 (4.96")	19th wettest	0.62" (1943)	7.43" (2004)	+0.49	1966 (9.15)
TX-CD5 (Trans Pecos)	0.29"	-0.17"	63 %	1996 (0.24")	2006 (0.90")	4th driest D2	0.14" (1943)	3.96" (1992)	-1.64 D3	1962 (9.86)
TX-CD6 (Edwards Plateau)	0.32"	-0.84"	28 %	1996 (0.23")	2006 (1.48")	2nd driest D3	0.23" (1996)	6.23" (1992)	-2.20 D4	1943 (9.54)
TX-CD7 (S. Central)	2.06"	-0.16"	93 %	2006 (1.02")	2005 (2.94")	25th wettest	0.29" (1996)	7.14" (1992)	+0.13	1930 (9.27)
TX-CD8 (Upper Coast)	6.29"	+2.69"	175 %	2006 (2.40")	2004 (6.69")	3rd wettest	0.69" (1999)	8.20" (1992)	+1.75	1980 (8.22)
TX-CD9 (South)	0.92"	-0.26"	78 %	2006 (0.20")	2005 (1.52")	22nd driest	0.04" (1996)	4.94" (1941)	-0.20	1985 (9.44)
TX-CD10 (Lower Valley)	1.90"	+0.50"	136 %	2006 (0.19")	2001 (2.00")	18th wettest	0.02" (1943)	4.40" (1988)	+0.58	1989 (8.97)



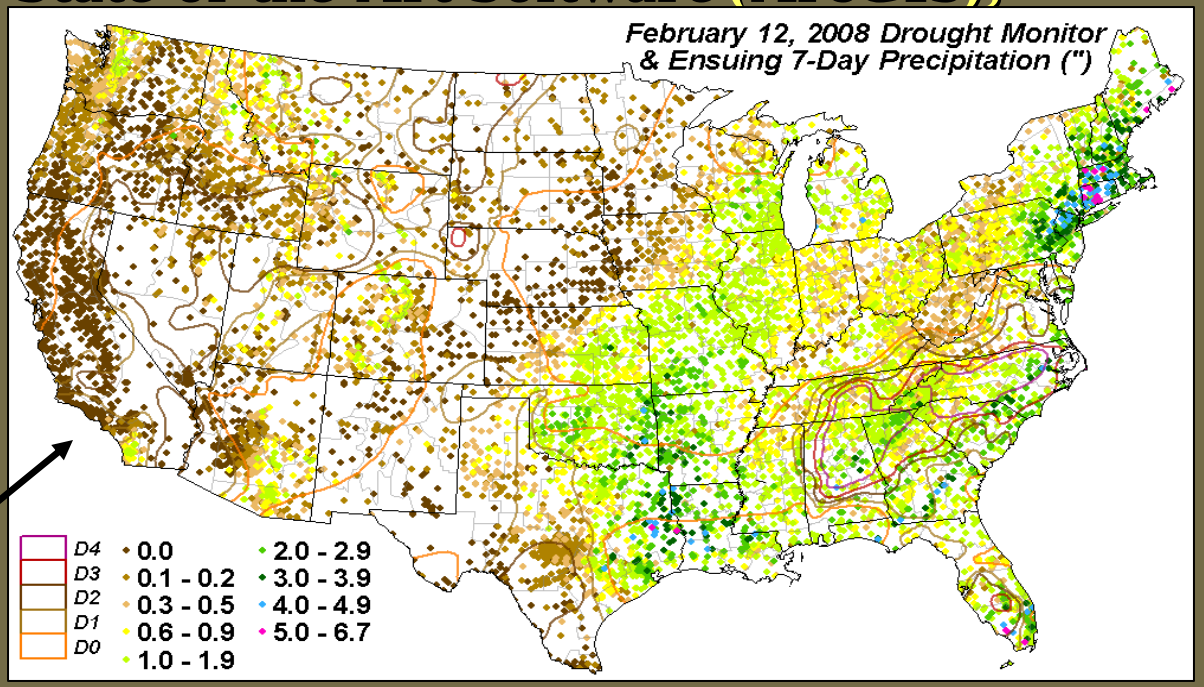
4) Utilizing State-of-the-Art Software (ArcGIS);

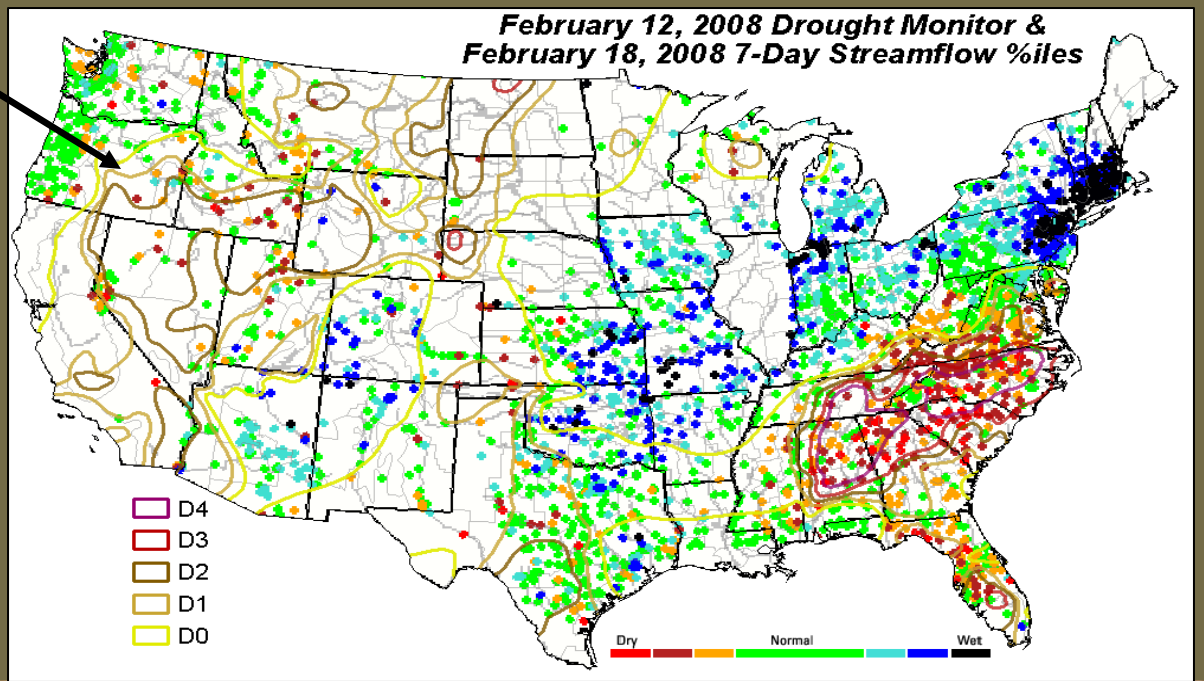


4) Utilizing State-of-the-Art Software (ArcGIS);

Some of our routine weekly GIS overlay products includes the past week's D0-D4 contours on the 7-day precipitation dot plot & on the 7-Day USGS stream flow percentiles

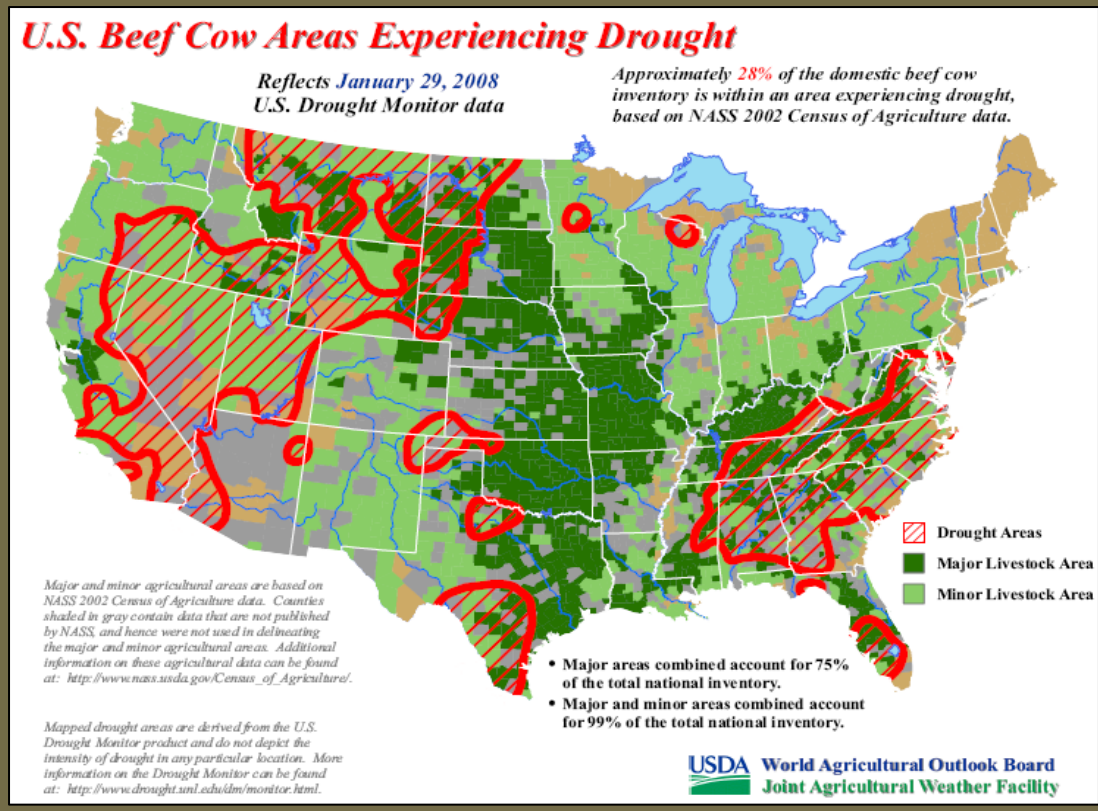
The same could be done to many of these other new USDM tools.

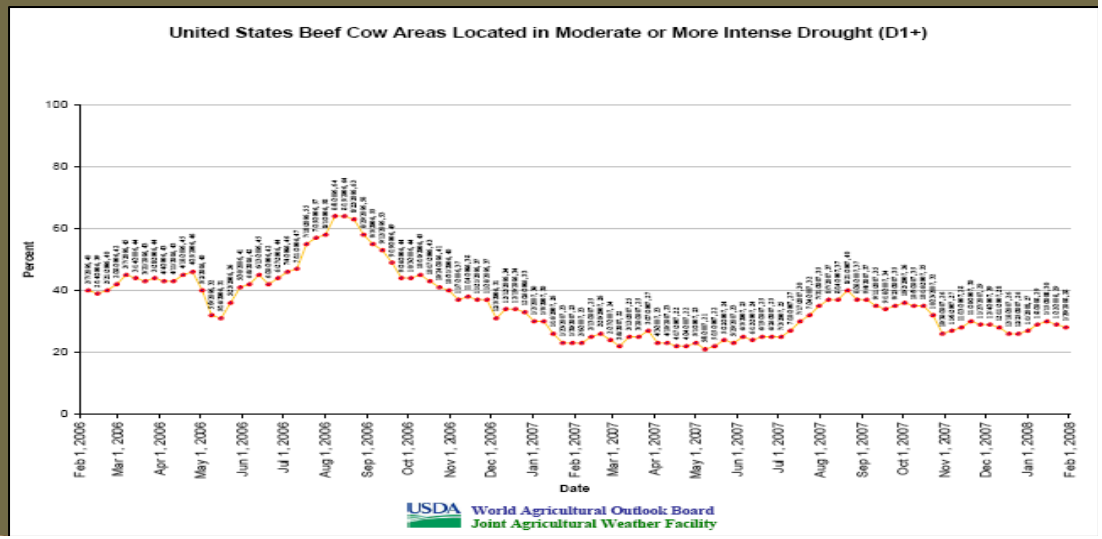




4) Utilizing the USDM with ArcGIS Applications;

Shapefiles of the weekly USDM where drought ≥D1 are overlaid on U.S. Beef Cow area shapefiles, and weekly statistics are made.





5) One-Stop Drought Shopping = NIDIS;

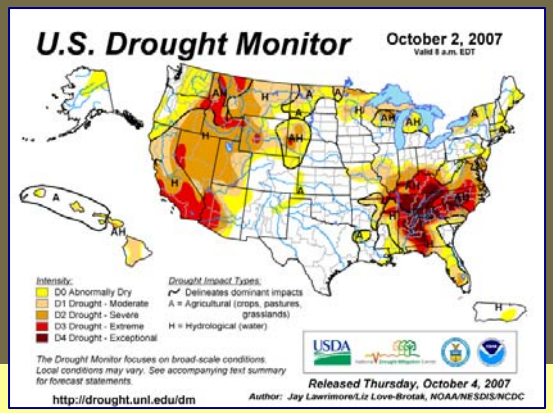
What is NIDIS?

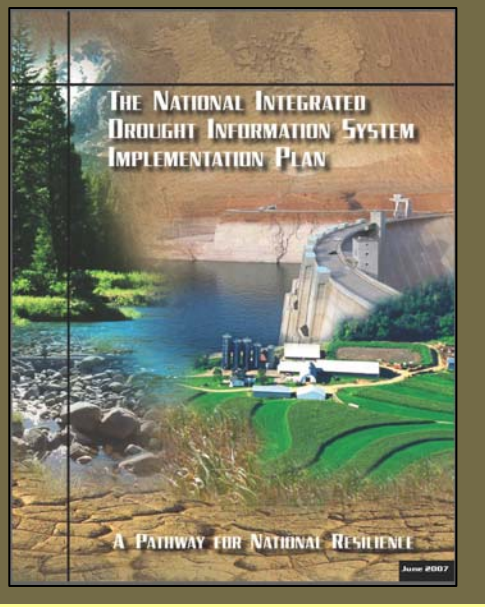
A National Integrated Drought Information System (NIDIS)

National Integrated Drought Information System

NIDIS: An integrated, interagency national drought monitoring and forecasting system that provides:

- An **early warning & forecast system** for drought.
- Drought impact and causation **education.**
- Information for drought **mitigation**.
- An interactive, web-based **drought portal**.
- Improved **observational** capabilities.





NIDIS Builds Upon Collaborative Successes!

NIDIS Interagency Partners

Federal Level

U.S. Department of Agriculture (USDA): Agricultural Research Service, Cooperative State Research, Education, Farm Service Agency, Forest Service, National Agricultural Statistics Service, Natural Resources Conservation Service, Risk Management Agency

U.S. Department of Commerce (DoC): International Trade Administration, National Oceanic and Atmospheric Administration

U.S. Department of Energy (DoE): Office of Electricity Delivery and Energy Reliability, Office of Energy Efficiency & Renewable Energy, Office of Science

U.S. Department of Homeland Security (DHS): Federal Emergency Management (FEMA) Directorate

U.S. Department of the Interior (DoI): Bureau of Indian Affairs, Bureau of Land Management, Bureau of Reclamation, National Park Service, U.S. Fish and Wildlife Service, U.S. Geological Survey,

U.S. Department of Transportation (DoT): Federal Aviation Administration, Federal Highway Administration, Surface Transportation Board

Environmental Protection Agency (EPA)

Farm Credit Administration (FCA)

Federal Energy Regulatory Commission (FERC)

Internal Revenue Services

International Trade Commission (USITC)

National Aeronautics and Space Administration (NASA)

National Science Foundation (NSF)

Small Business Administration (SBA)

NIDIS Interagency Partners

Regional, State, Tribal, and Local Levels

Western Governors' Association – a key sponsor of early NIDIS development efforts and ongoing concerns representing drought in the Western States;

Western States Water Council – represents water managers in the Western United States;

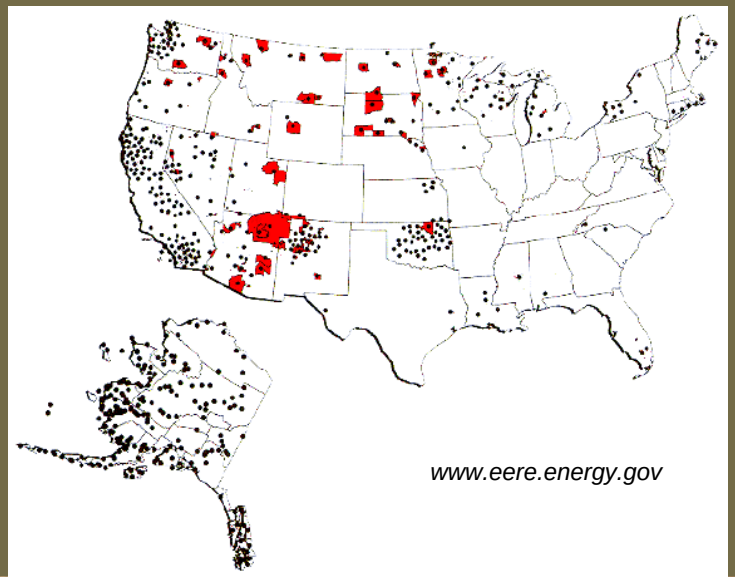
National Conference of State Legislatures – drought monitoring and mitigation activities will require state support, much of which require state legislative involvement

National League of Cities – water availability and quality issues

American Association of State Climatologists – an organization state-appointed individuals, many of whom are active participants in the Drought Monitor or serve on drought monitoring committees within their respective states. Most are housed at universities and also conduct applied climate research;

National Drought Mitigation Center – A national clearinghouse for drought-related information, research, mitigation measures, and operational home of the Drought Monitor and operational home of the Drought Monitor and Drought Impact Reporter;

Native American tribal governments – mostly located in arid regions in which water is a vital concern:



www.eere.energy.gov

5) One-Stop Drought Shopping = Drought Portal;

NIDIS – U.S. Drought Portal

drought.gov: *A Window on Drought Information*

Why a Portal?

A Web site and services that improve the access, processing, and sharing of structured and unstructured information within and across a given "enterprise" through:

Portlets - Components of a portal web site that provide aggregated, reusable access to specific information sources or applications (e.g., remote web services, search engines). Access is standardized and reusable (using APIs [application programming interfaces]).

Web Services - Applications and utilities that allow data exchange in a highly interoperable, standardized language/vendor/platform-neutral manner. Crawlers and other content aggregation are supported.

Communities - A virtual workspace of a portal for collaboration, communication, and information dissemination/collection. Communities contain portlets and projects.

Projects - Workspaces within a community that involves subsets of Portal membership. Projects contain portlets and can be part of one or more communities, facilitating collaboration via overviews, discussions, and document/project management.

Wildberry Client Review - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Search Favorites

Address http://www.wildberrygroup.com/Client/NIDIS/web_mockup_rd4_2.html

Google EROS Go Bookmarks 200 blocked Check AutoLink AutoFill Send to EROS Settings

Search Web Mail My Yahoo! Fantasy Sports Football Games Music Answers Personals

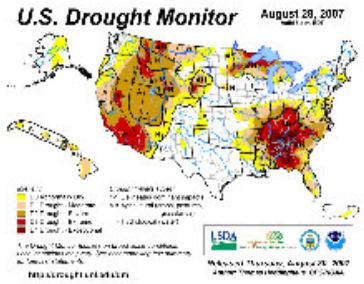
NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM DROUGHT.GOV

NIDIS

Search: Everywhere

What is N | 1. | Current Drought | Drought-Related For | 2. | Impacts | Planning | Educational Resource | 3. | ght-Related Research | Contact Us | Log In

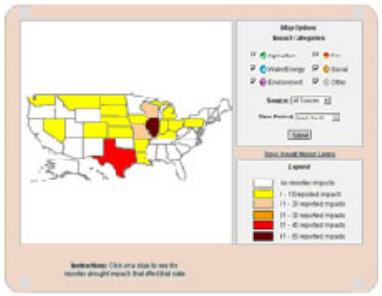
Current Drought



Where are Drought Conditions Now?

The U.S. Drought Monitor integrates many types of data into a single map each week. It shows drought's location and intensity. Drought trackers look at climate and water data, satellite imagery, and reported impacts. Local resource managers establish their own criteria for stages of drought.

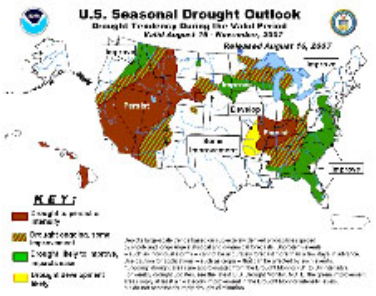
Impacts



How is the Drought Affecting Me?

Drought affects many activities, like agriculture, water supply and quality, energy, tourism, ecosystems, and communities. The Drought Impact Reporter compiles accounts from different sources, such as media, extension agents, the National Weather Service, and agricultural producers.

Forecast



Will the Drought Continue?

Forecasting drought in the continental United States is still highly experimental. The U.S. Seasonal Drought Outlook is released each month, looking three months ahead. The Drought Outlook identifies areas where forecasters expect drought to appear, continue, get better or get worse.

What's New

The U.S. Drough
provide comprehe
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Information Syste
in 2004 and enac

More about NIDIS

The NIDIS Implementation Plan, published in June 2007, provides a detailed overview of the NIDIS initiative (pdf version).

Showcase Portlets:

1.) U.S. Drought Monitor (NOAA, USDA, NDMC)

2.) Drought Impacts Reporter (NDMC)

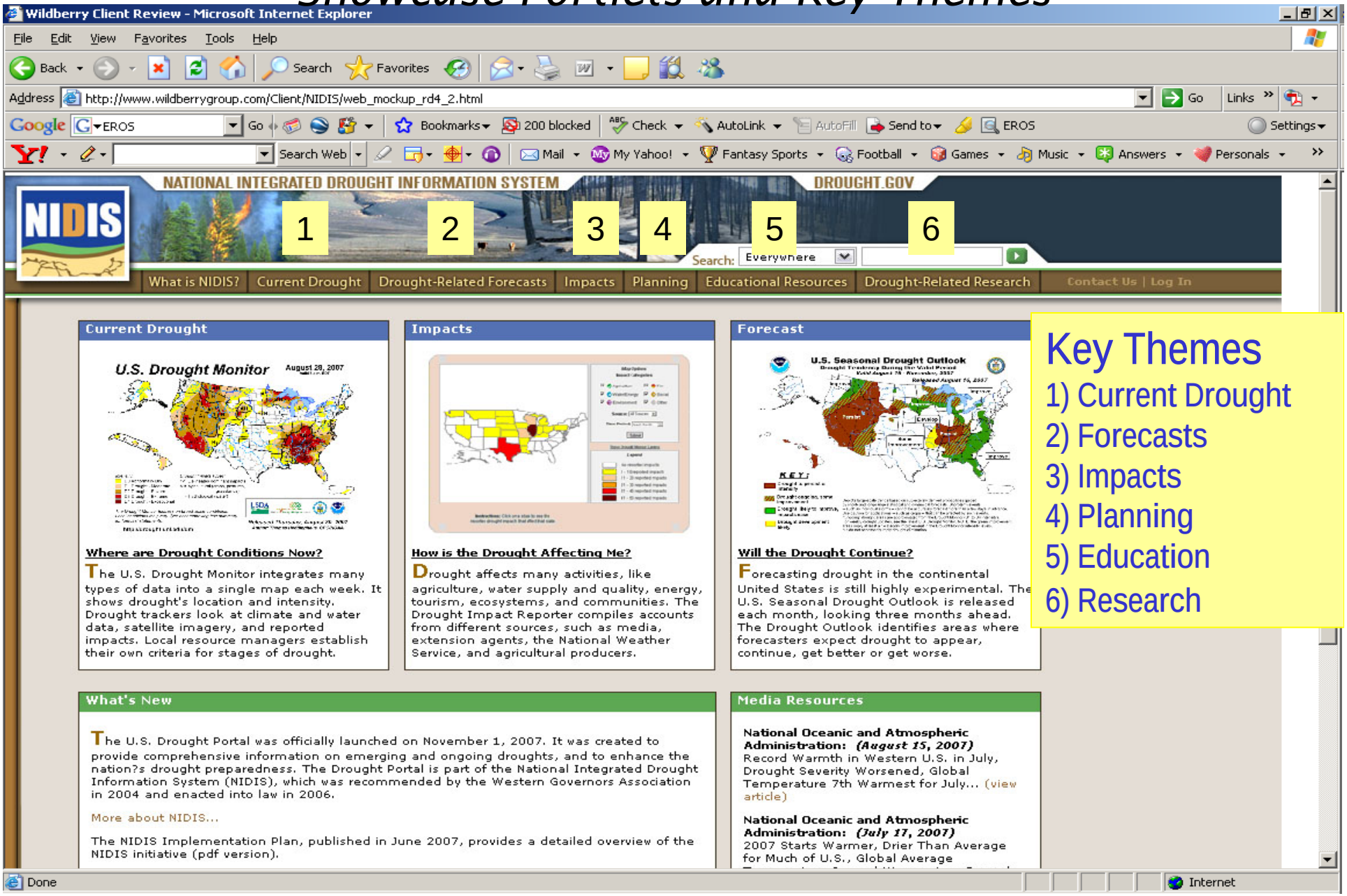
3.) Climate Prediction Center Seasonal Drought Outlook (NOAA)

Administration: ***(July 17, 2007)***
2007 Starts Warmer, Drier Than Average for Much of U.S., Global Average

Done Internet

U.S. Drought Portal Home Page

Showcase Portlets and Key Themes



Key Themes

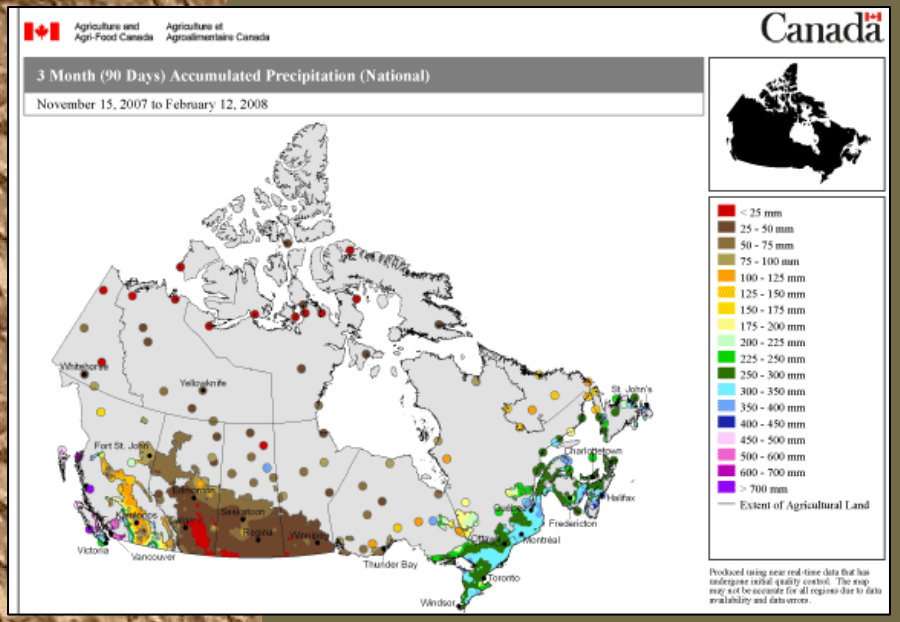
1) Current Drought
2) Forecasts
3) Impacts
4) Planning
5) Education
6) Research

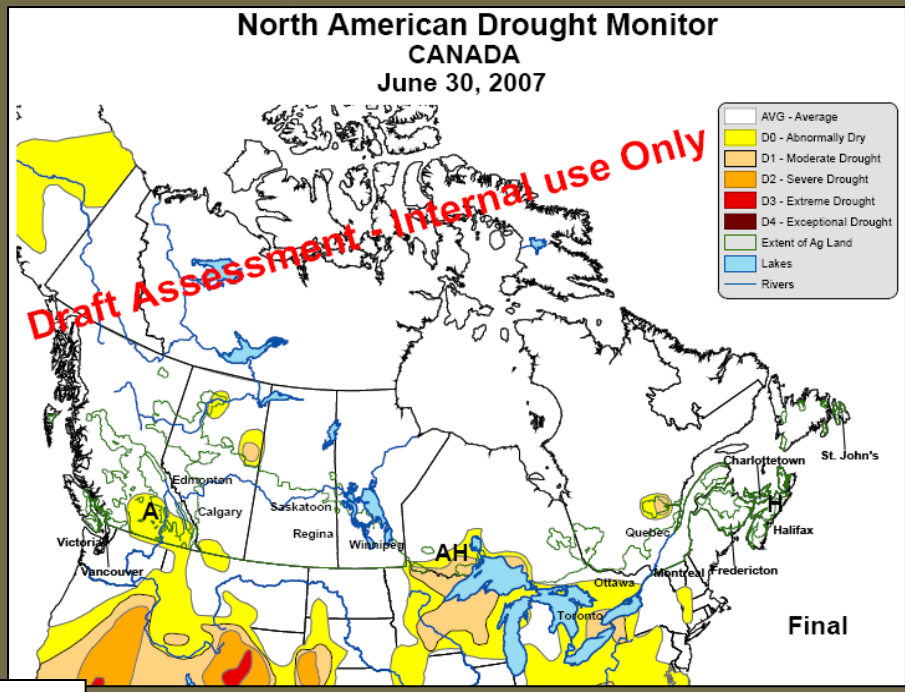
U.S. Drought Portal Key Theme Example

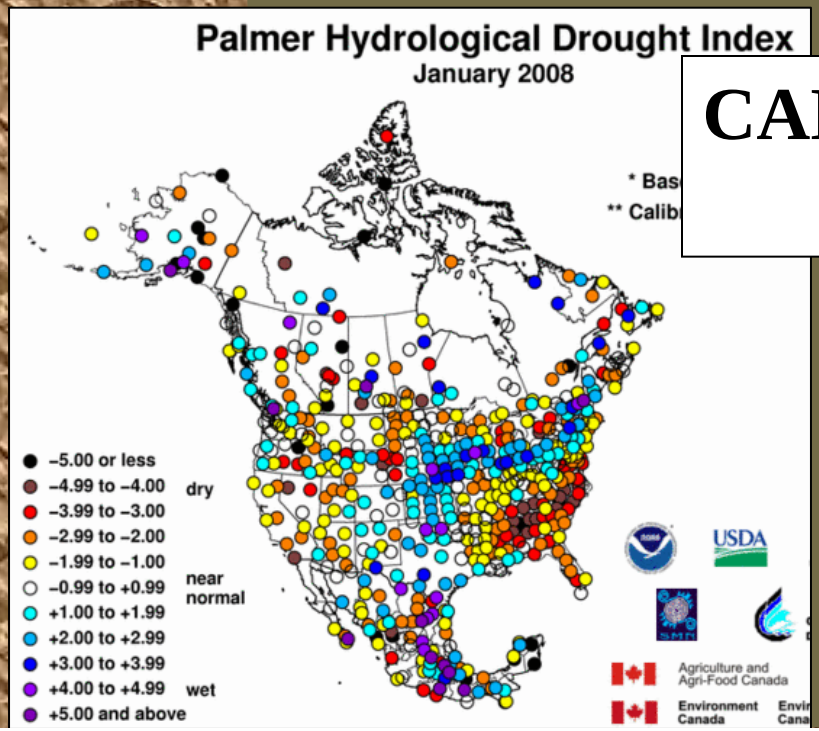
Current Drought

Plenty of related info to view

6) Expanding Drought Monitoring Beyond the U.S.;

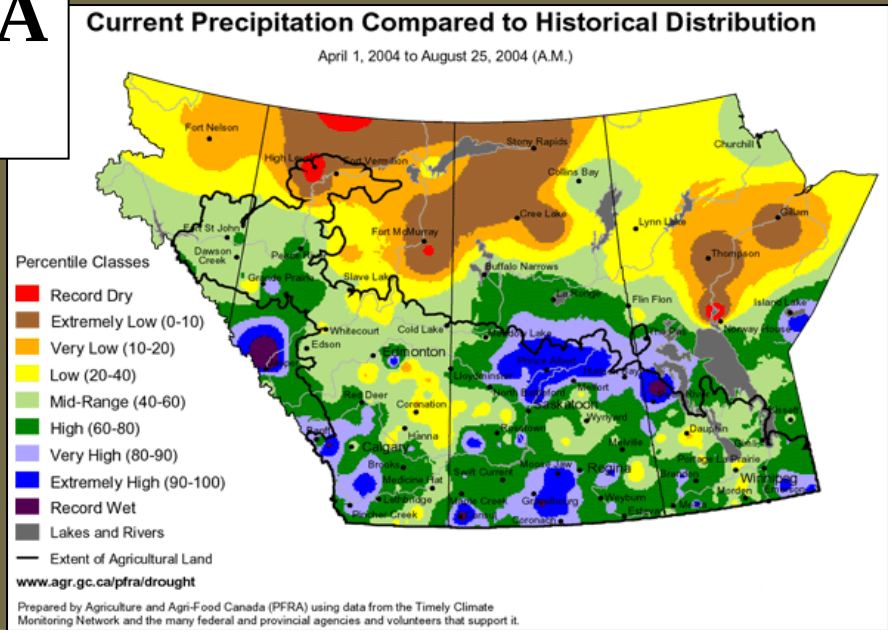




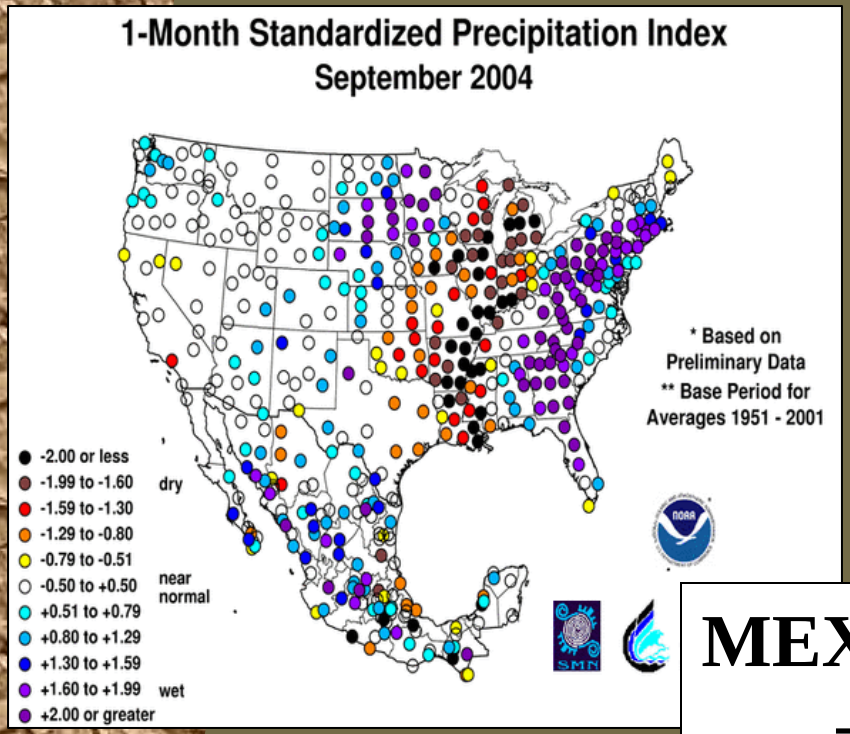


CANADA

+

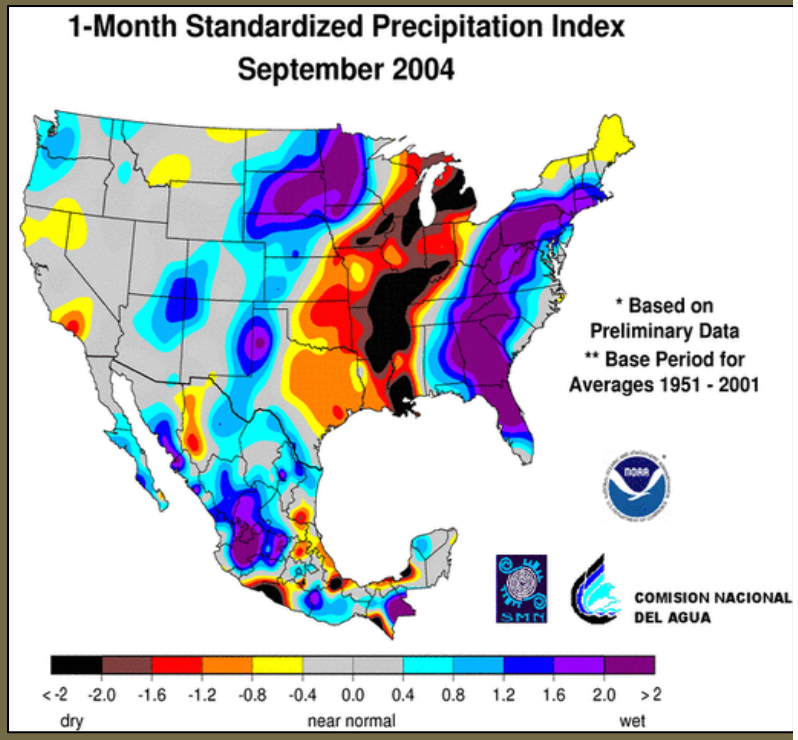


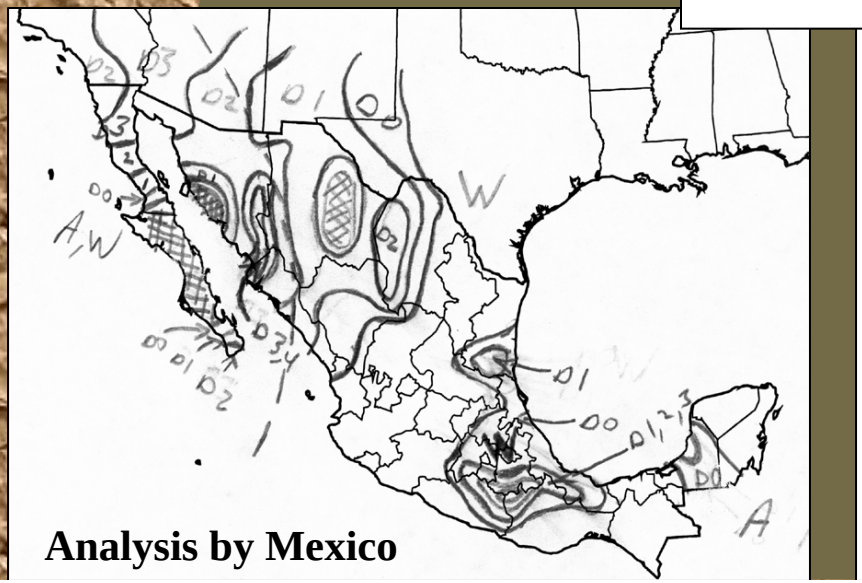
6) Expanding Drought Monitoring Beyond the U.S.;

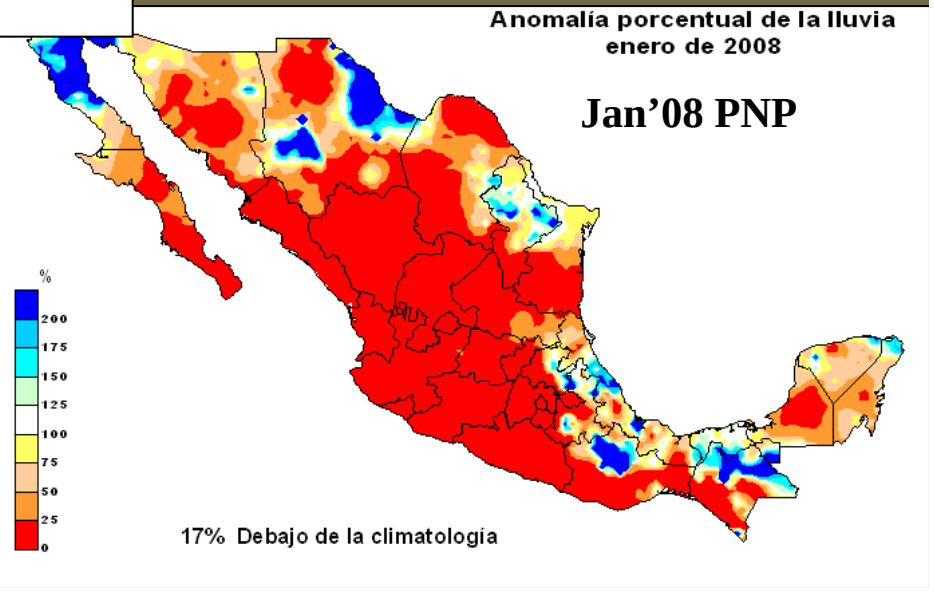


MEXICO

+

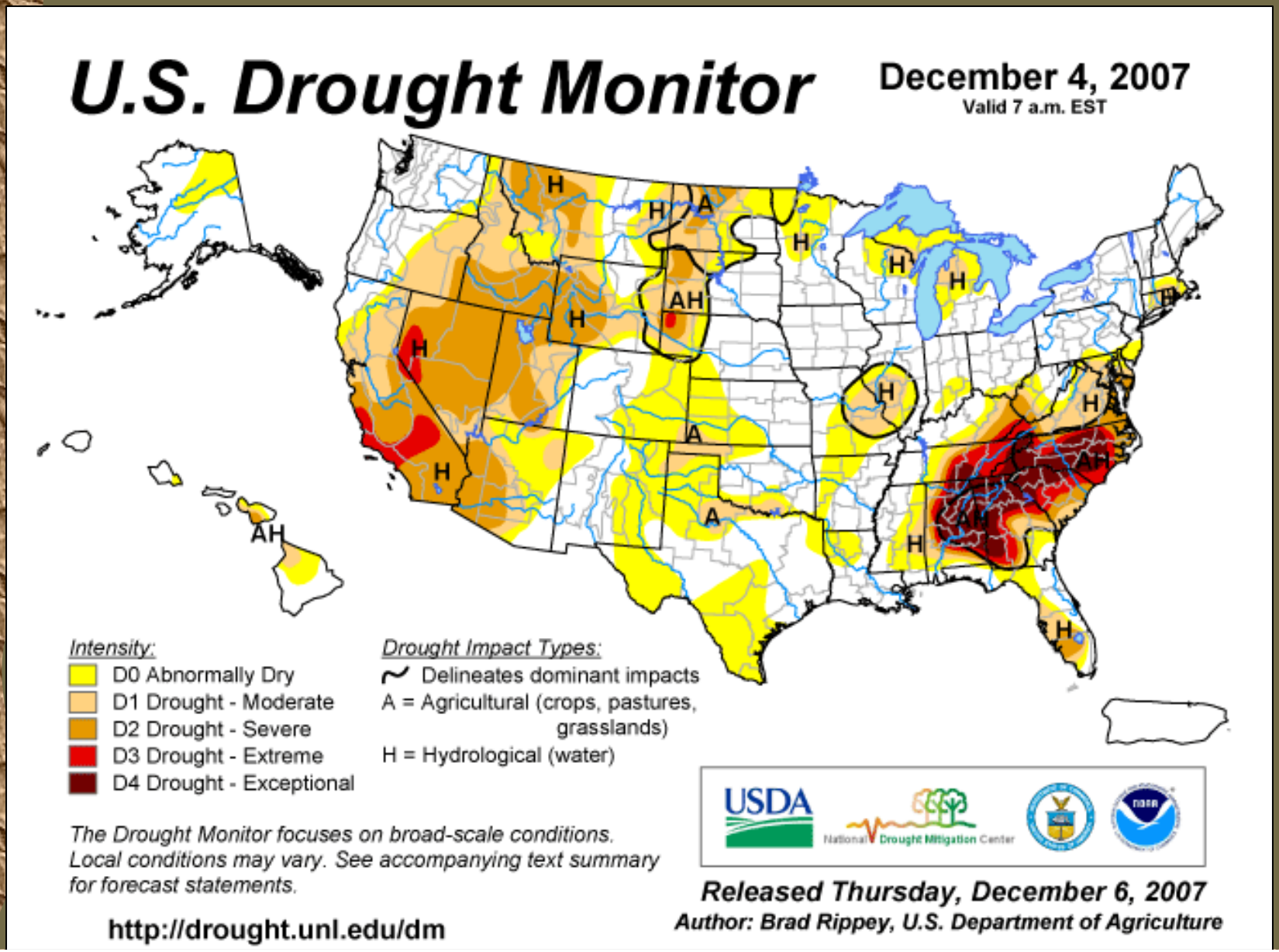






United States
=

(USDM: end of month or start of next month)



North American Drought Monitor

December 31, 2007

Released: Wednesday, January 16, 2008

http://www.ncdc.noaa.gov/nadm.html

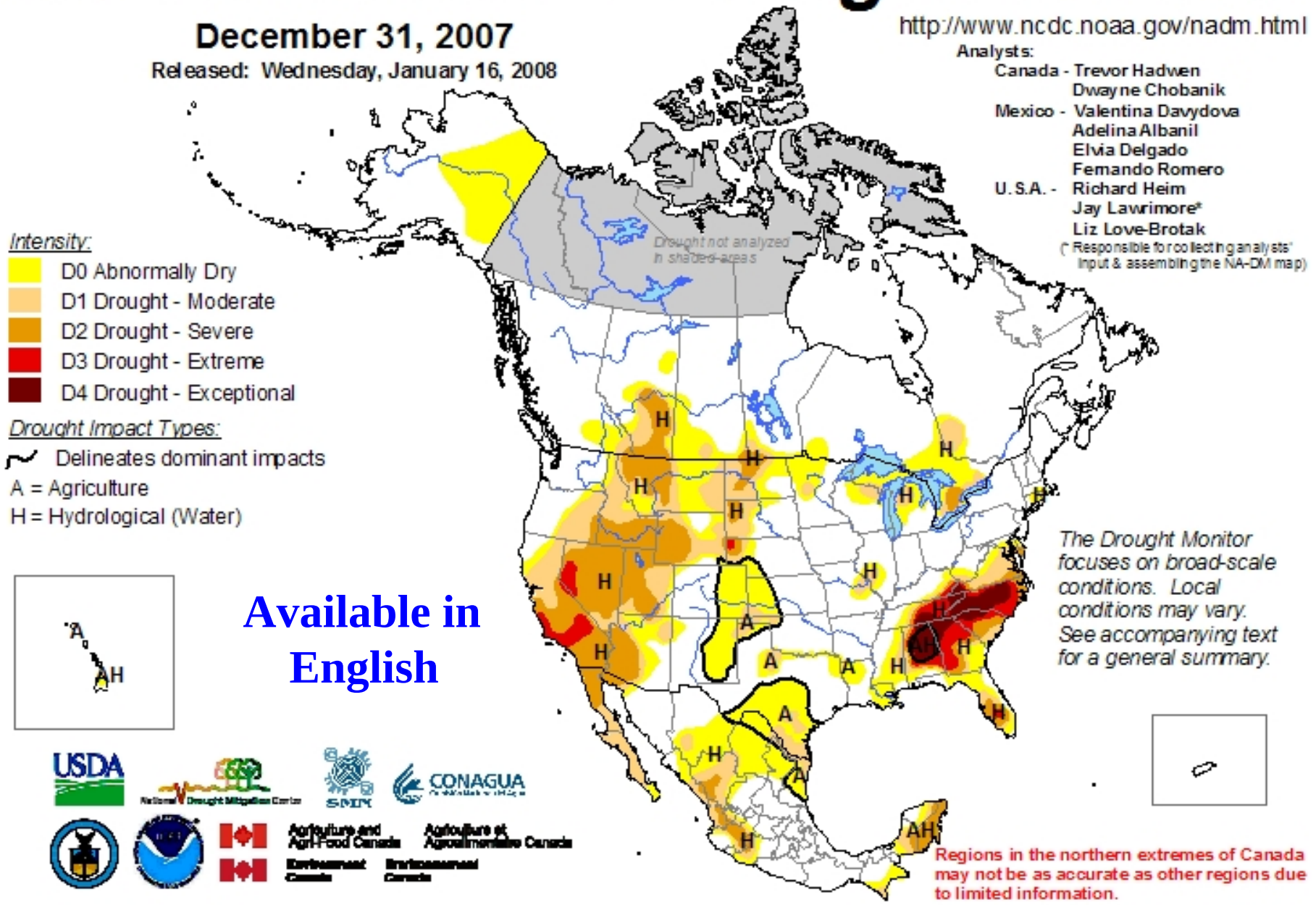
Analysts:

Canada - Trevor Hadwen
Dwayne Chobanik

Mexico - Valentina Davydova
Adelina Albanil
Elvia Delgado
Fernando Romero

U.S.A. - Richard Heim
Jay Lawrimore*
Liz Love-Brotak

(* Responsible for collecting analysts' input & assembling the NA-DM map)



Intensity:

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

Drought Impact Types:

Delineates dominant impacts

A = Agriculture

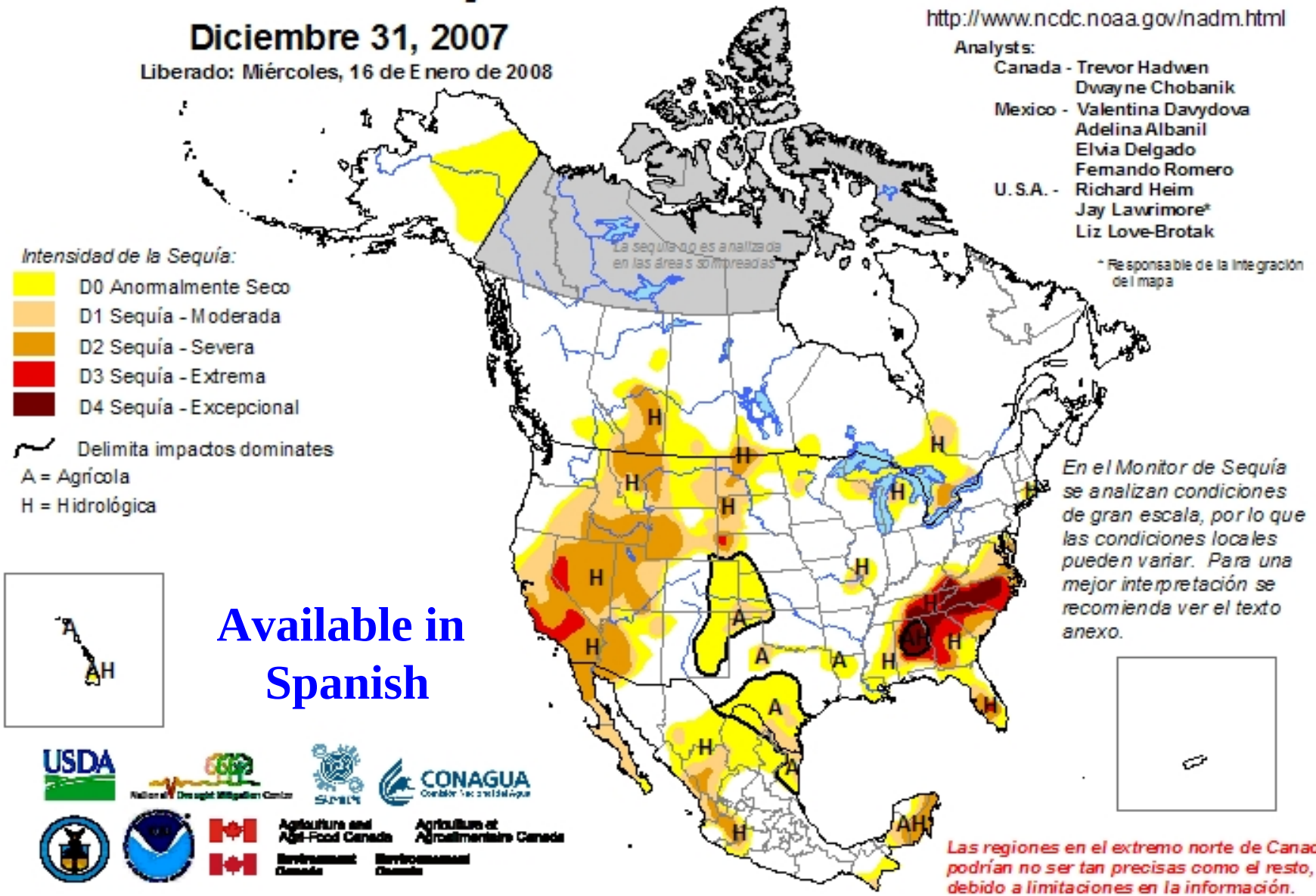
H = Hydrological (Water)

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

Available in English

Regions in the northern extremes of Canada may not be as accurate as other regions due to limited information.

Monitor de Sequía de América del Norte



Available in Spanish

Outil de surveillance des sécheresses à l'échelle nord-américaine

http://www.ncdc.noaa.gov/nadm.html

31 Décembre 2007

Parution : Mercredi, le 16 Janvier, 2008

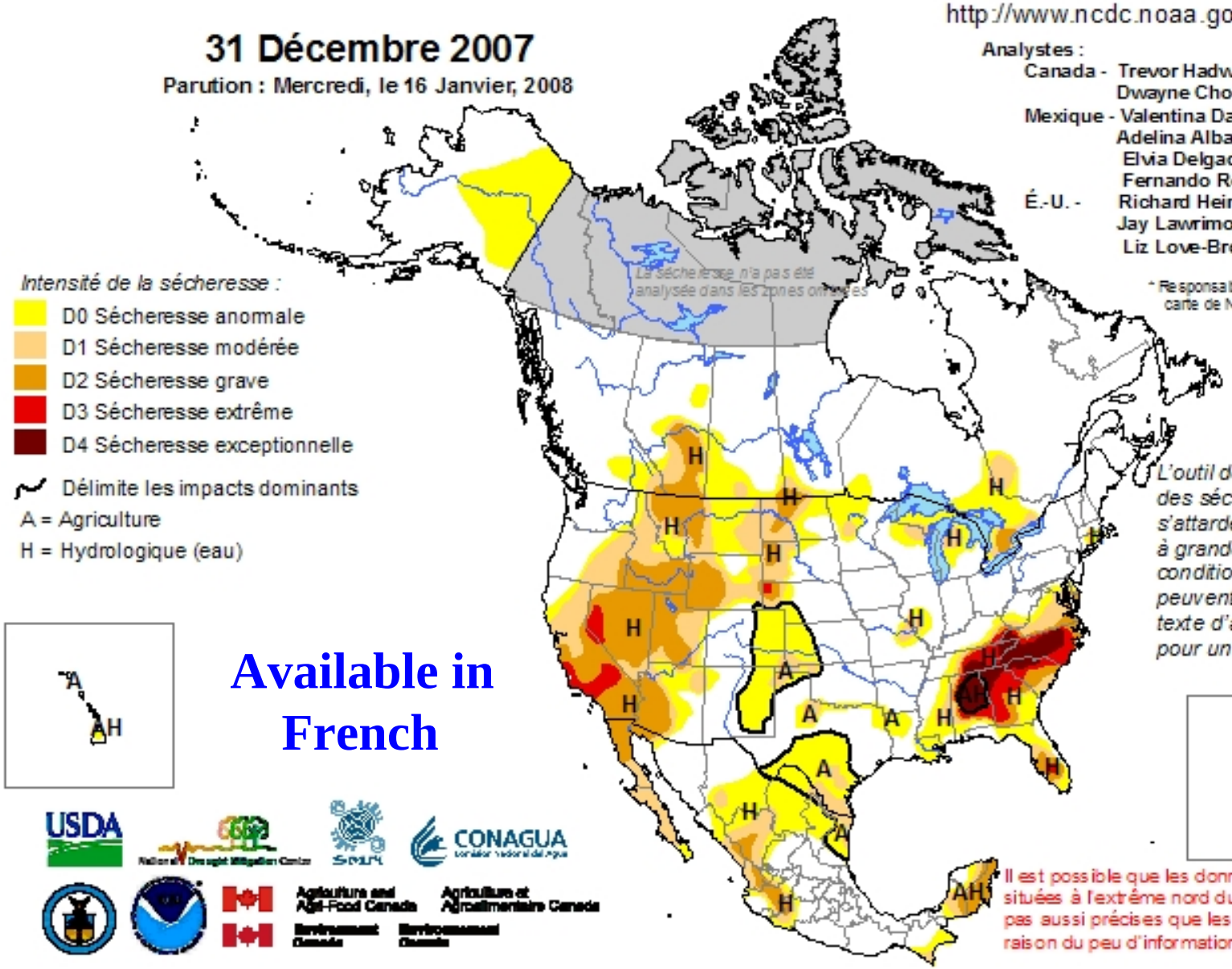
Analystes :

Canada - Trevor Hadwen
Dwayne Chobanik

Mexique - Valentina Davydova
Adelina Albanil
Elvia Delgado
Fernando Romero

É.-U. - Richard Heim
Jay Lawrimore*
Liz Love-Brotak

* Responsable d'assembler la carte de NA-DM et le texte



Intensité de la sécheresse :

- D0 Sécheresse anormale
- D1 Sécheresse modérée
- D2 Sécheresse grave
- D3 Sécheresse extrême
- D4 Sécheresse exceptionnelle

Délimite les impacts dominants

A = Agriculture

H = Hydrologique (eau)

L'outil de surveillance des sécheresses s'attarde aux conditions à grande échelle. Les conditions locales peuvent varier. Voir le texte d'accompagnement pour un sommaire général.

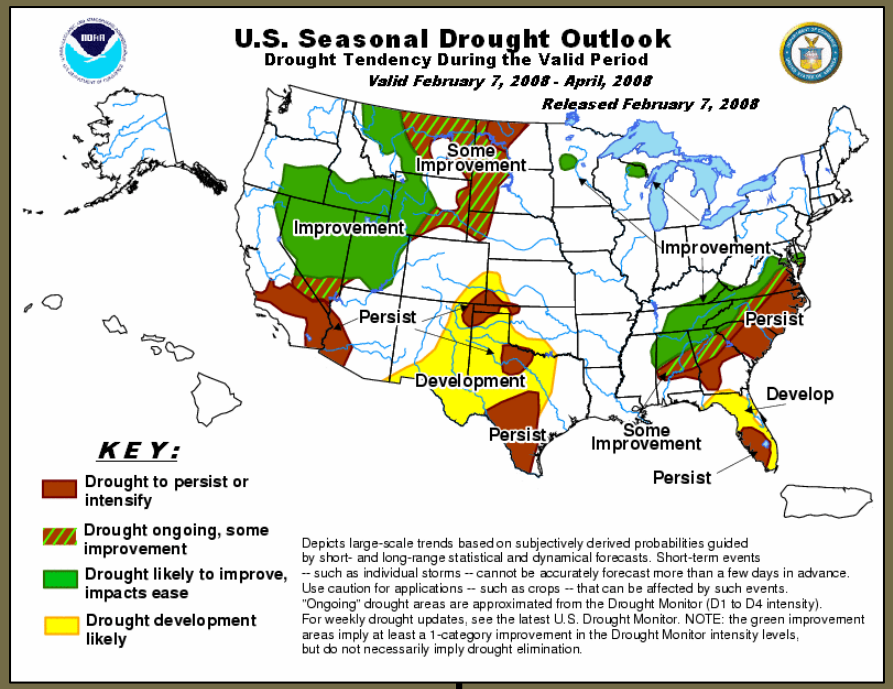
Available in French

Il est possible que les données sur les régions situées à l'extrême nord du Canada ne soient pas aussi précises que les autres régions en raison du peu d'information disponible.

7) Drought Forecasts;

Short and Long-Term Forecast Contributions

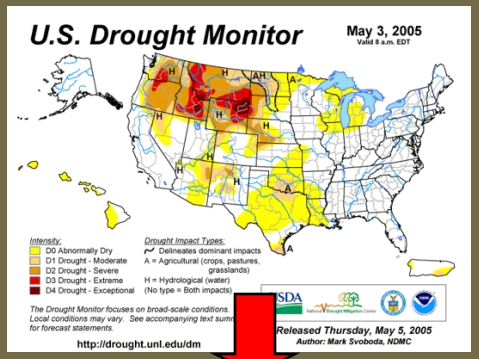
(see Douglas LeComte for more information)



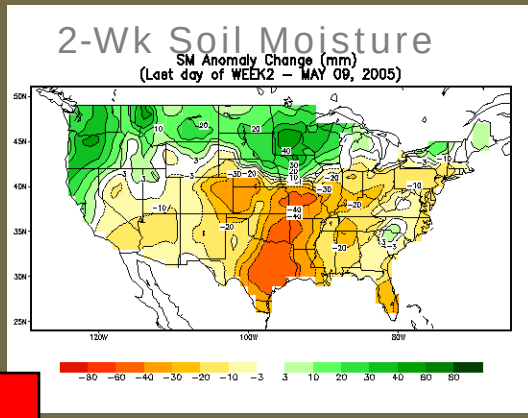
Start with latest U.S. Drought Monitor D1 areas + **2-week Soil Moisture Forecasts** + **3-month Precipitation and Temperature Outlooks**

7) Drought Forecasts;

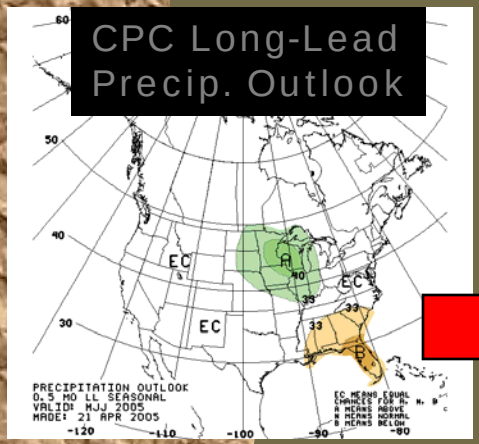
Principal Drought Outlook Inputs

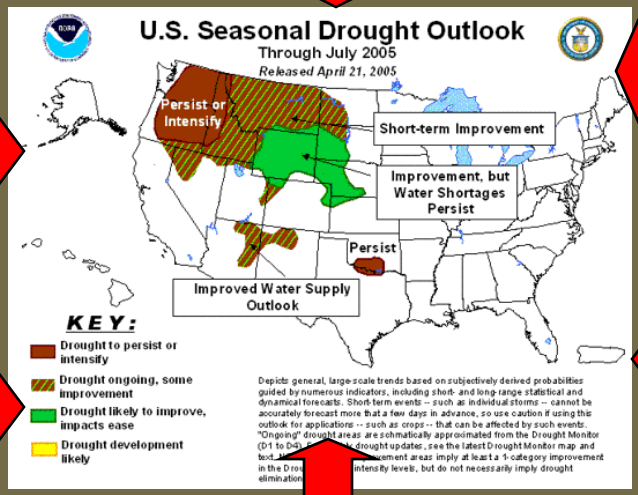


2-Wk Soil Moisture

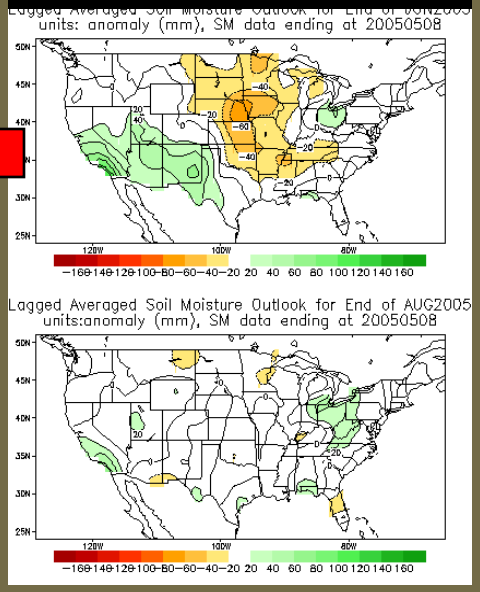


CPC Long-Lead Precip. Outlook

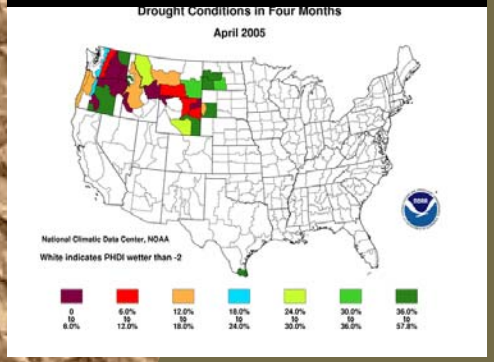




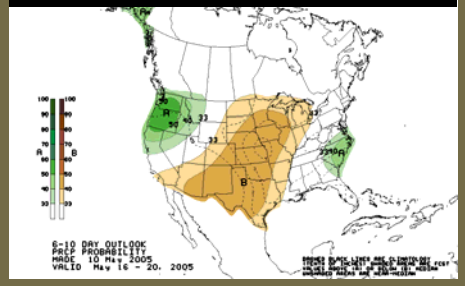
Constructed Analogue Soil Model



Palmer 4-mo Probabilities

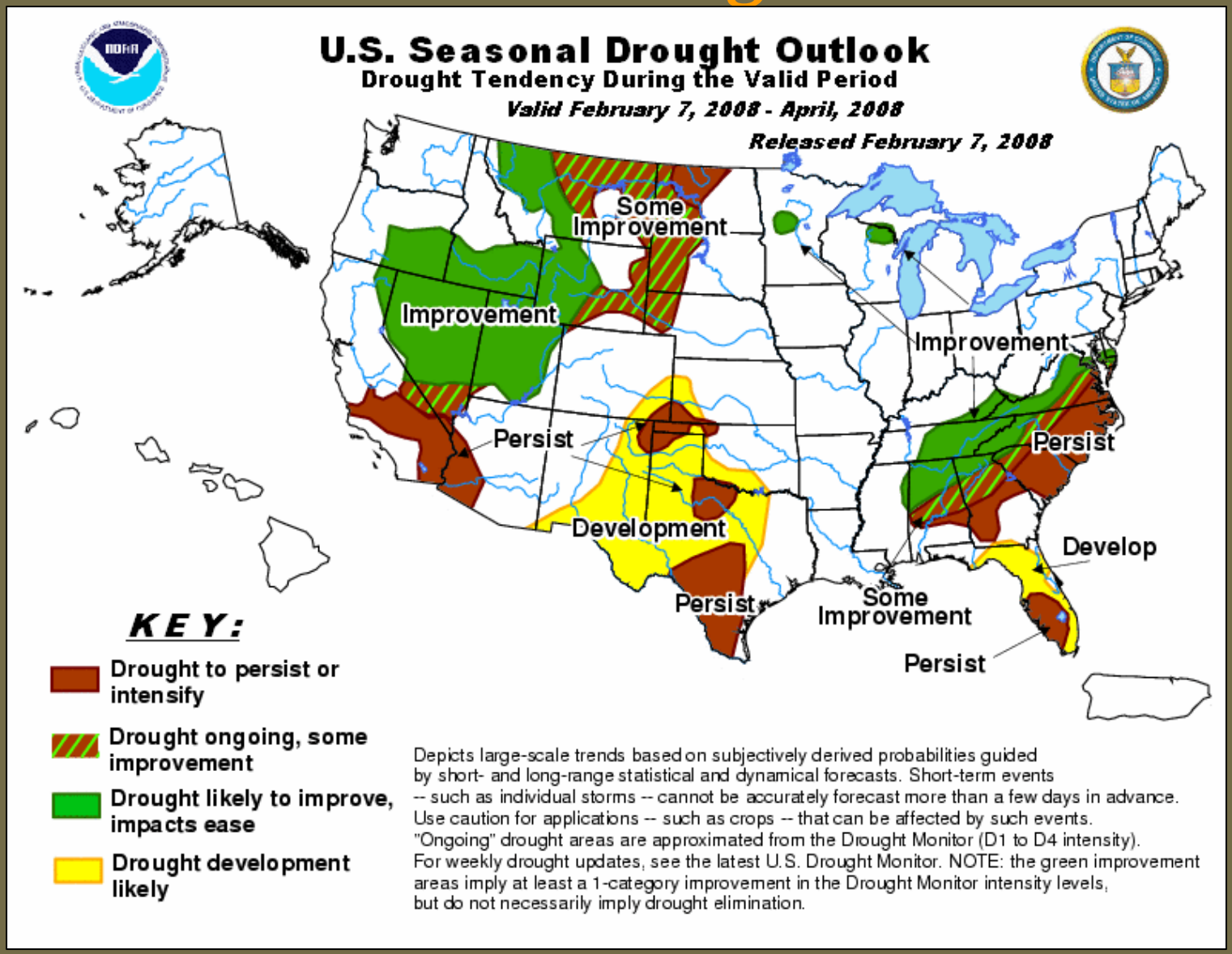


Medium-Range Fcst



7) Drought Forecasts;

Latest Seasonal Drought Outlook



http://www.cpc.ncep.noaa.gov/products/expert_assessment/seasonal_drought.html

Thank You!

and to the many contributors of this presentation