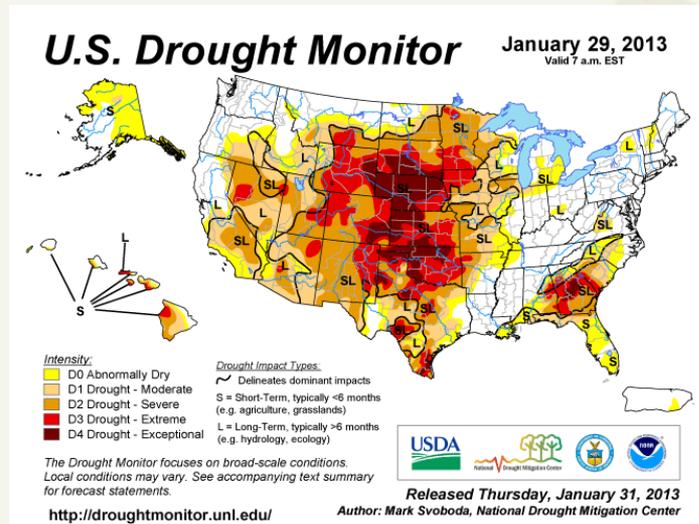


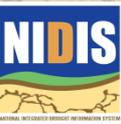
# Just How is the U.S. Drought Monitor Made?



Mark Svoboda, Climatologist  
Monitoring Program Area Leader

National Drought Mitigation Center  
School of Natural Resources  
University of Nebraska-Lincoln

USDM Forum, SFWMD-West Palm Beach, FL, April 16-18, 2013



# USDM (NADM) Annual Forums

- ▶ Lincoln, NE, November 2000
- ▶ Asheville, NC, April 2002
- ▶ **NADM, Asheville, June 2003**
- ▶ Cedar City, UT, October 2003
- ▶ **NADM, Regina, SK, October 2004**
- ▶ Washington, D.C., October 2005
- ▶ **NADM, Mexico City, October 2006**
- ▶ Portland, OR, October 2007
- ▶ **NADM, Ottawa, October 2008**
- ▶ Austin, TX, October 2009
- ▶ **NADM, Asheville, April 2010**
- ▶ Washington, D.C., April 2011
- ▶ **NADM, Cancun, Mexico, April 2012**
- ▶ West Palm Beach, FL, Spring 2013

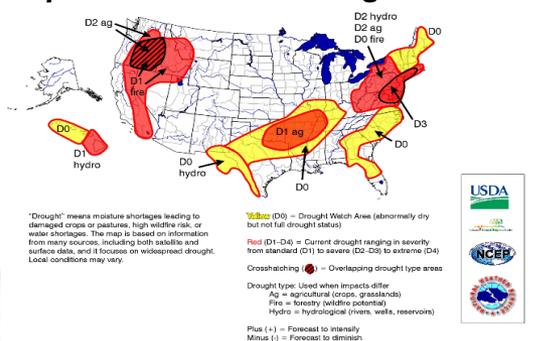


# The U.S. Drought Monitor

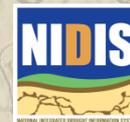
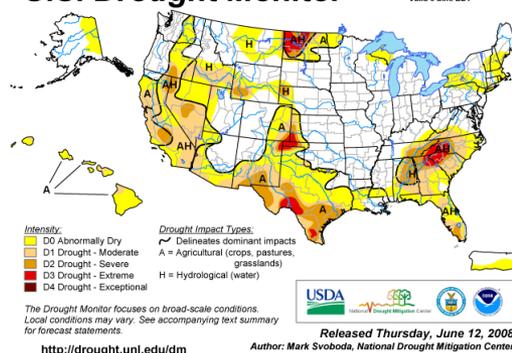
Since 1999, **NOAA (CPC, NCDC, WRCC), USDA, and the NDMC** have produced a weekly composite drought map -- the **U.S. Drought Monitor** -- with input from numerous federal and non-federal agencies

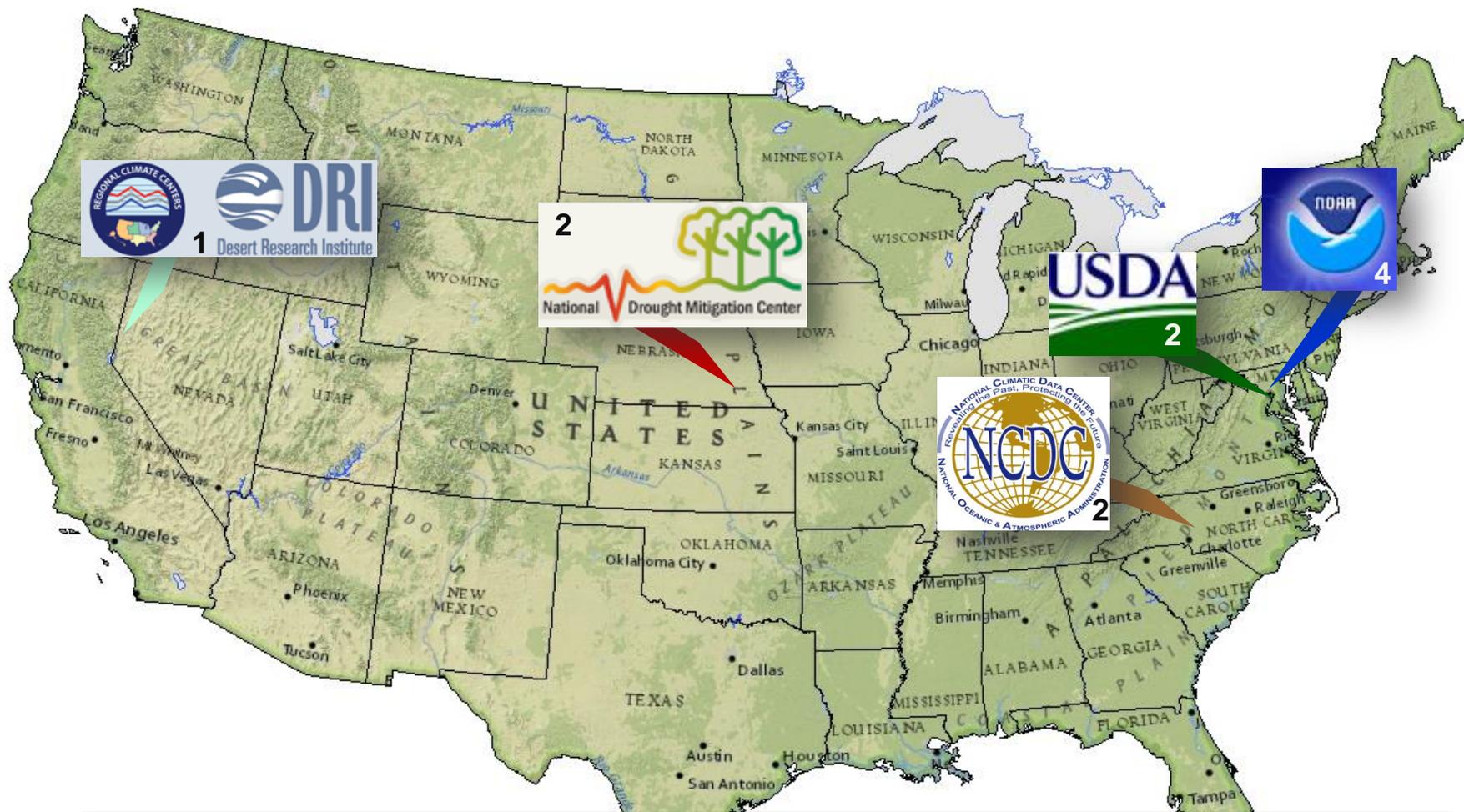
- **Western Region Climate Center** on board 2008
- **11** authors in all
- **Incorporate** relevant information and products from all entities (and levels of government) dealing with drought (RCC's, SC's, federal/state agencies, etc.) **(350+ experts)**

August 3, 1999  
**Experimental U.S. Drought Monitor**



**U.S. Drought Monitor** June 10, 2008  
Valid 8 a.m. EDT



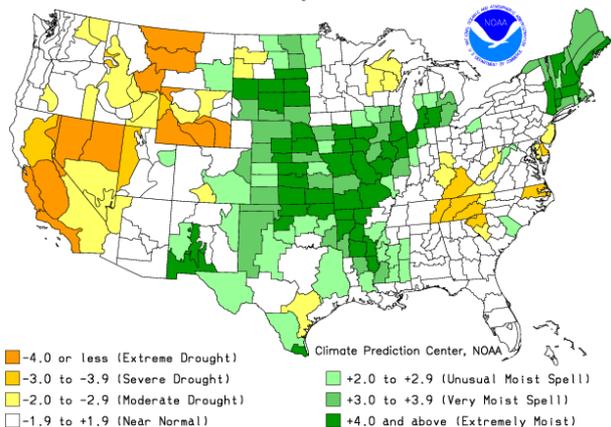


**Requirement: Authors must work at a regional or national “center”, government or academia/research**  
**There are currently 11 authors, and all are volunteers**

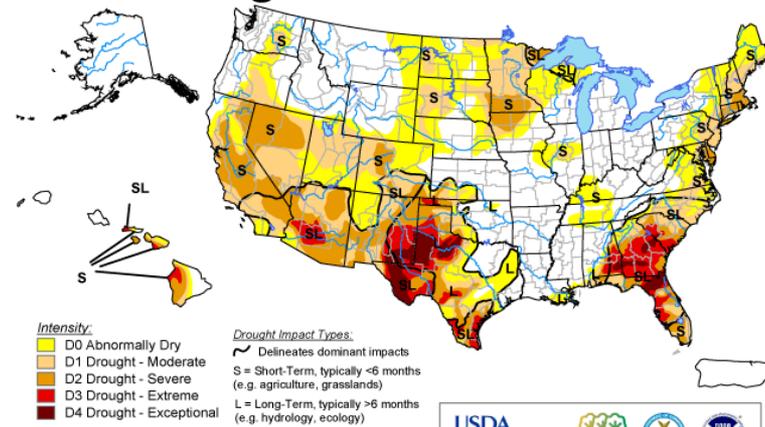
# Approaches to Drought Assessment

- ▶ Single index or indicator (parameter)
- ▶ Multiple indices or indicators
- ▶ **Composite (or "hybrid") Indicator**

Drought Severity Index by Division  
Weekly Value for Period Ending OCT 18, 2008  
Long Term Palmer



**U.S. Drought Monitor** April 10, 2012  
Valid 7 a.m. EDT

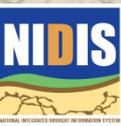


The Drought Monitor focuses on broad-scale conditions.  
Local conditions may vary. See accompanying text summary  
for forecast statements.

<http://droughtmonitor.unl.edu/>

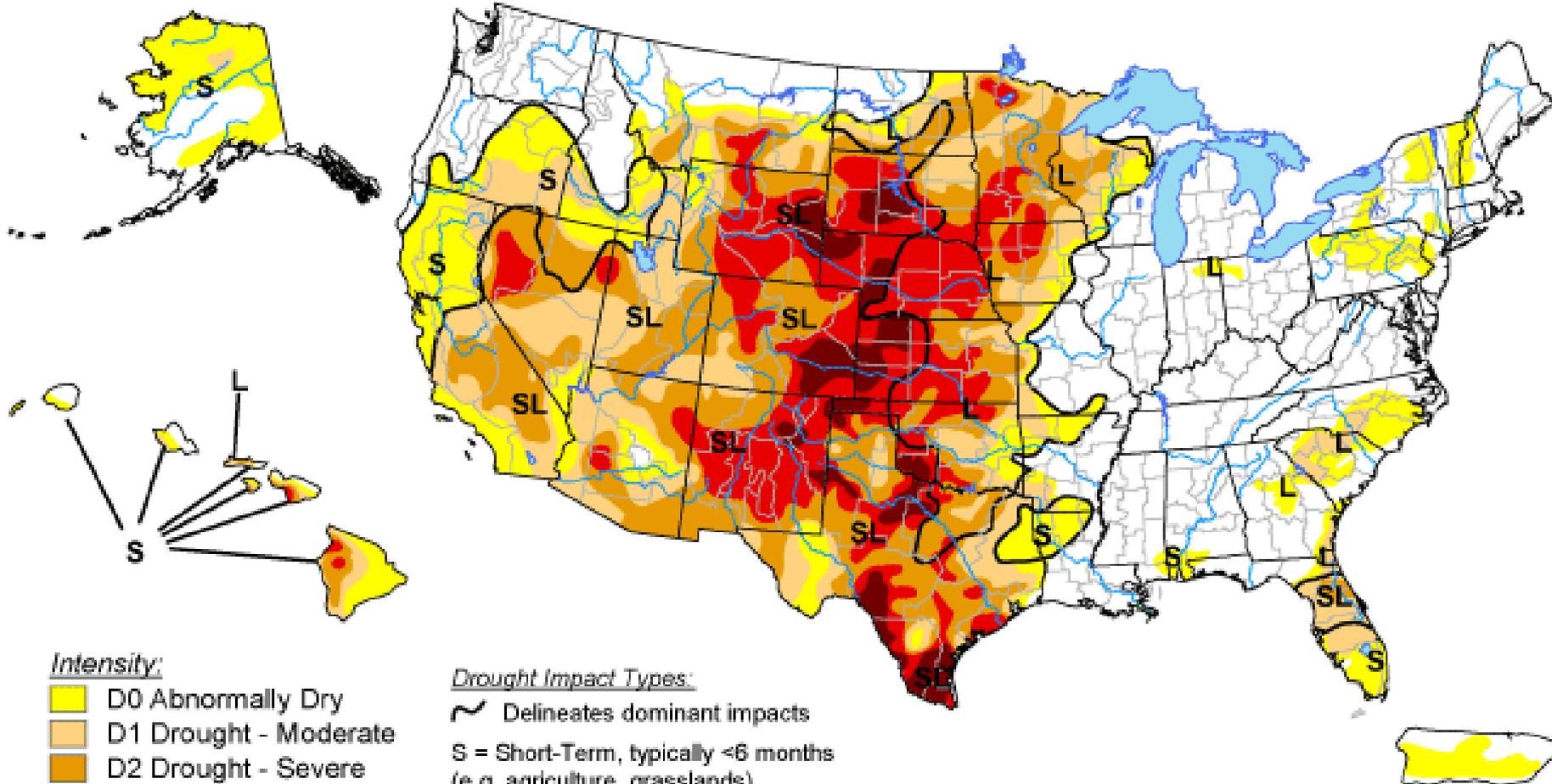


Released Thursday, April 12, 2012  
Author: David Miskus, NOAA/NWS/NCEP/CPC



# U.S. Drought Monitor

April 9, 2013  
Valid 7 a.m. EDT



## Intensity:

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

## Drought Impact Types:

- Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

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

<http://droughtmonitor.unl.edu/>



Released Thursday, April 11, 2013  
Author: David Miskus, NOAA/NWS/NCEP/CPC

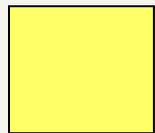
# Objectives



- ▶ “**Fujita-like**” scale
- ▶ **NOT** a forecast!
- ▶ **NOT** a drought declaration!
- ▶ Identify **impacts** (S, L)
- ▶ Assessment of **current** conditions
- ▶ Incorporate **local expert** input
- ▶ Be as **objective** as possible

# ***U.S. Drought Monitor Map***

## ***Drought Intensity Categories***



**D0 Abnormally Dry (30%tile)**



**D1 Drought – Moderate (20%tile)**



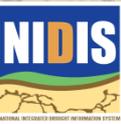
**D2 Drought – Severe (10%tile)**



**D3 Drought – Extreme (5%tile)**



**D4 Drought – Exceptional (2%tile)**



# 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
- Puts drought in historical perspective

The drought categories are associated with historical occurrence/likelihood (percentile ranking)

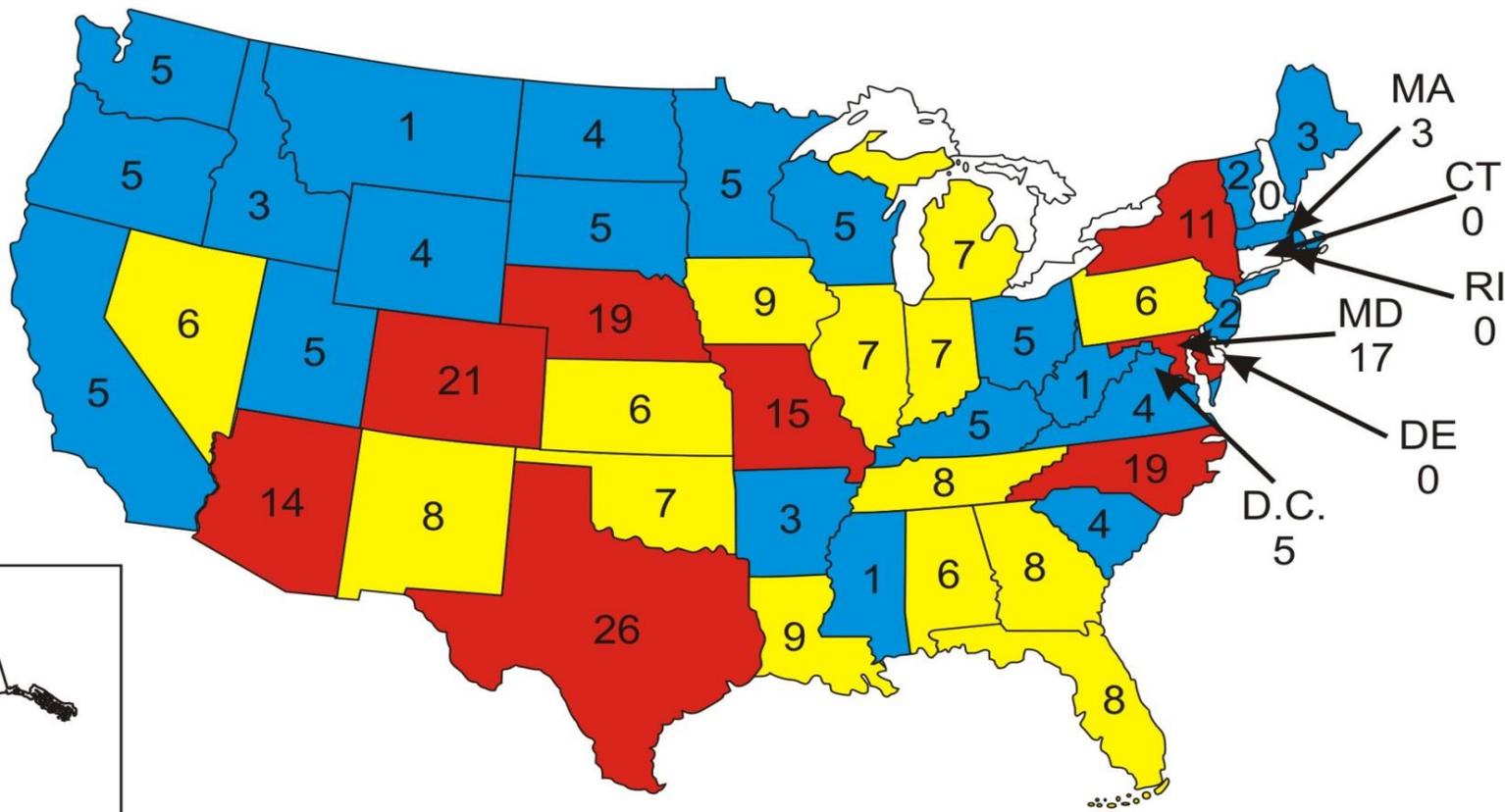
- It is not anecdotal or subjective, like “It’s really, really dry!!” .....or,
- “I don’t remember it ever being this dry, we have to be D4!!”
- D2, Severe Drought:  once per 10 to 20 years
- D1, Moderate Drought:  once per 5 to 10 years
- D0, Abnormally Dry:  once per 3 to 5 years



<b>Category</b>	<b>Description</b>	<b>Possible Impacts</b>
<b>D0</b>	<b>Abnormally Dry</b>	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered
<b>D1</b>	<b>Moderate Drought</b>	Some damage to crops, pastures; streams, reservoirs, or wells low, some water shortages developing or imminent; voluntary water-use restrictions requested
<b>D2</b>	<b>Severe Drought</b>	Crop or pasture losses likely; water shortages common; water restrictions imposed
<b>D3</b>	<b>Extreme Drought</b>	Major crop/pasture losses; widespread water shortages or restrictions
<b>D4</b>	<b>Exceptional Drought</b>	Exceptional and widespread crop/pasture losses; shortages of water in reservoirs, streams, and wells creating water emergencies

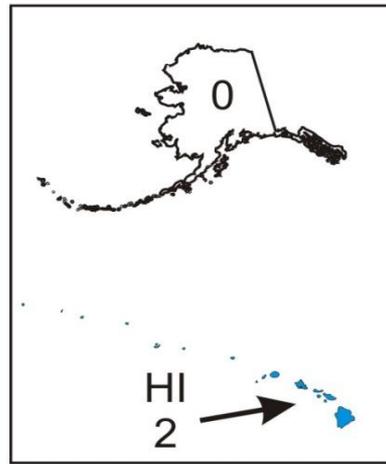
# USDM Listserve Subscribers

(as of August 10, 2012)



- 1-5 participants
- 6-10 participants
- 11+ participants

**Total: 335 (does not include 1 participant from Canada)**

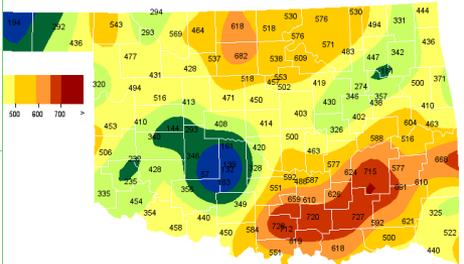
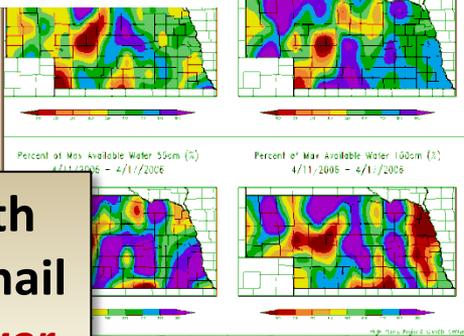
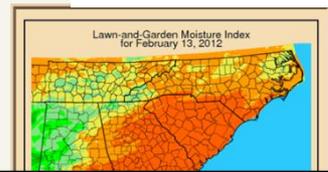
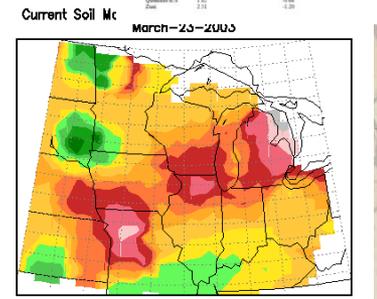
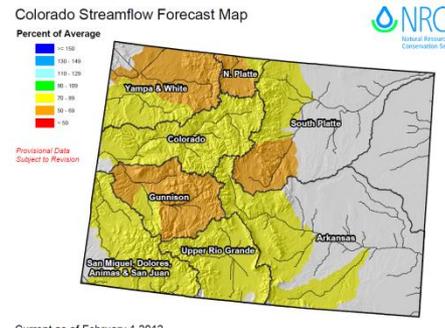
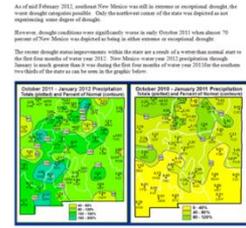
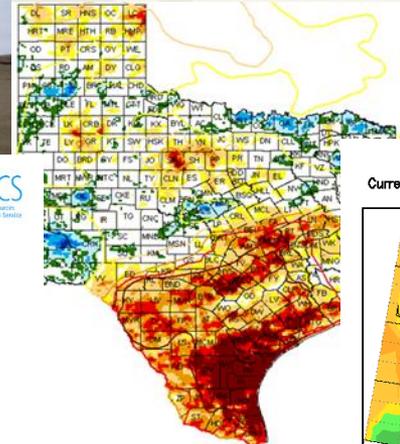


# The Importance of Local Expert Input

## ▶ The U.S. Drought Monitor Team Relies on Field Observation Feedback from the Local Experts for Impacts Information & "Ground Truth"

○ **Listserver (350+ Participants: 2/3 Federal, 1/3 State/Univ.)**

- Local NWS & USDA/NRCS Offices
- State Climate Offices
- State Drought Task Forces
- Regional Climate Centers



The primary means of communication with our "eyes in the field" is thru email; The email "Expert Group" is called the **USDM Listserver**

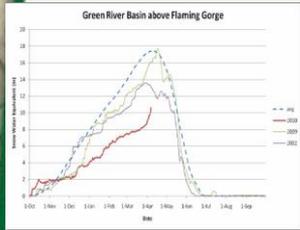
# Regional and Local Feedback/Input Process

- Various webinars/telecons/reports/products
- Regional Climate Centers and NOAA Regional Climate Coordinators
- State Climatologists
- National Integrated Drought Information System (NIDIS) Pilot DEWS basin webinars:
  - UCRB (Upper Colorado River Basin)
  - ACF (Apalachicola-Chattahoochee-Flint)
  - Southern Plains
  - California? Missouri River Basin?
- North Carolina, Hawaii, Oklahoma, Texas, New Mexico, Alabama, Florida, South Dakota, Kentucky, Arizona and Montana

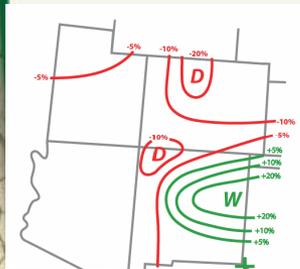
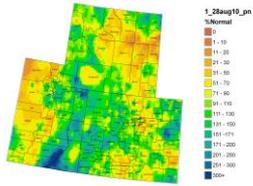


# UCRB Weekly Drought Assessment

<http://www.drought.gov/portal/server.pt/community/ucrb>



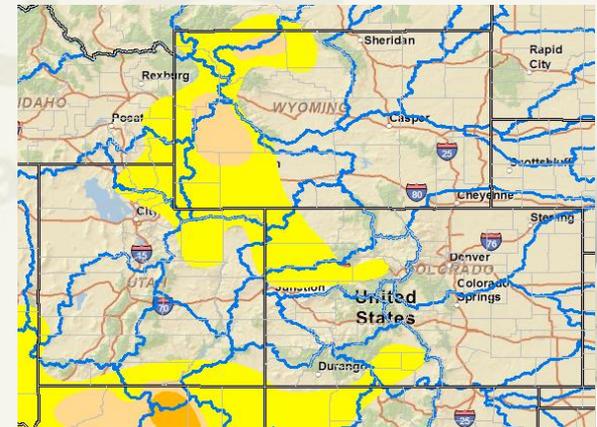
Colorado, Utah and Wyoming Month To Date Precipitation 1 - 28 August 2010 as Percentage of Normal



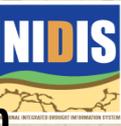
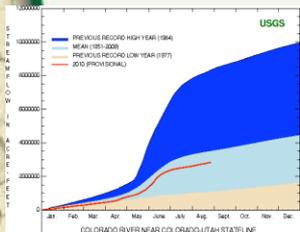
**NIDIS UCRB**

**INFORMATION**

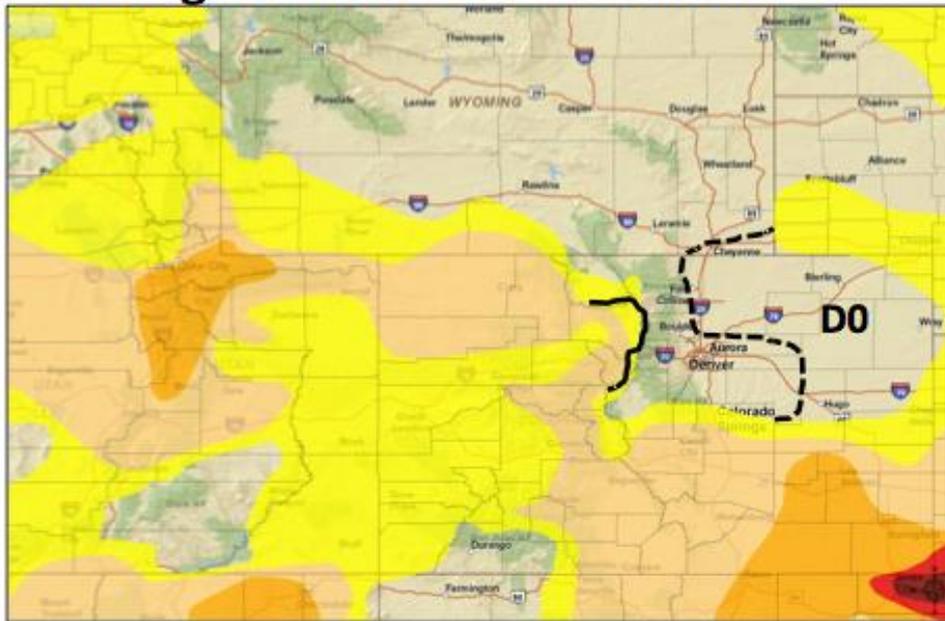
**Upper Colorado Basin Pilot Project**



**Consensus recommendation to USDM author**



# Drought and Water Discussion



Drought – Exceptional	0 to 2 (D4)
Drought – Extreme	2 to 5 (D3)
Drought – Severe	5 to 10 (D2)
Drought – Moderate	10 to 20 (D1)
Abnormally Dry	20 to 30 (D0)

Drought categories and their associated percentiles

**The Colorado group sends out a full ppt to back up their suggestions after their conference call.**

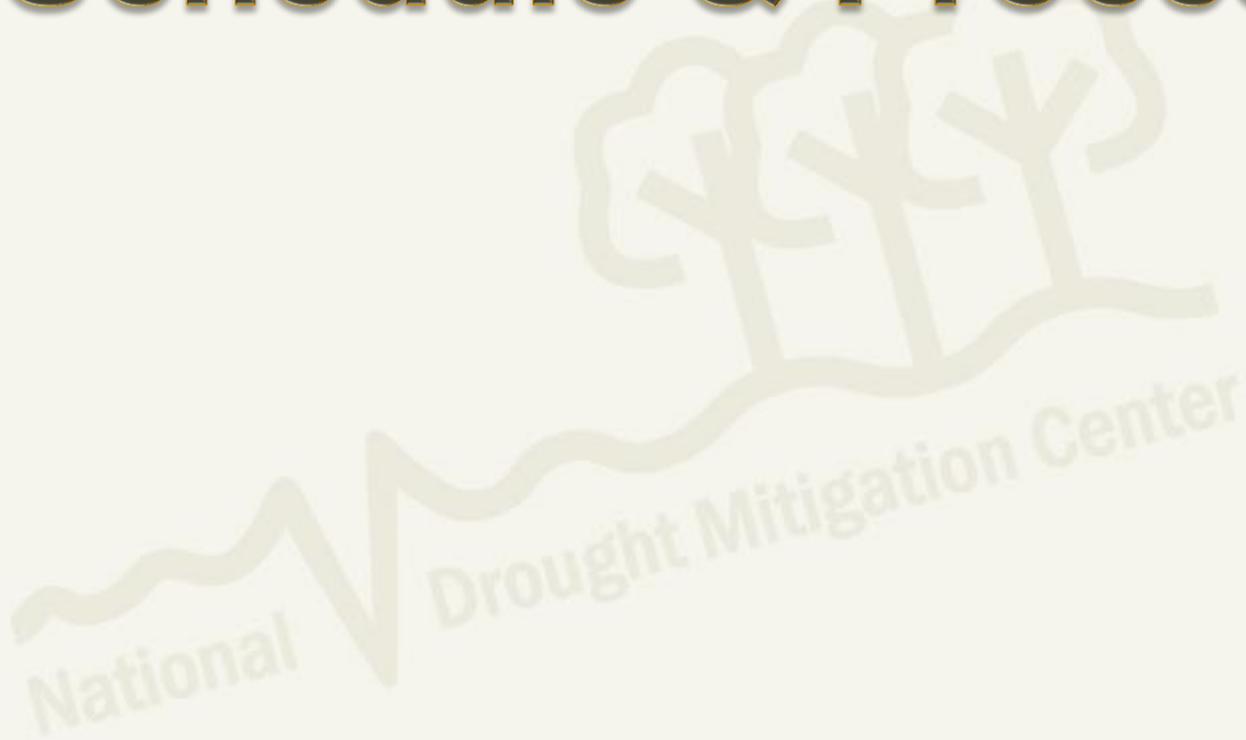
Fig. 9: March 13<sup>th</sup> release of U.S. Drought Monitor for the UCRB.

On the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9), the USDM author has decreased the area of D2 in the Wasatch range in the UCRB based on recent precipitation. In the northern CO mountains (Grand County), it is recommended that the D1 be adjusted slightly and expanded eastward along the Continental Divide (Fig. 9, solid black line). This will set up a very sharp gradient at and west of the Divide, which is representative of conditions in that area and will match better with SNOTEL precipitation percentiles.

In northeast CO, a further expansion of D0 is recommended (Fig. 9, dashed black line). In the past 30 days, this area has experienced little to no precipitation, much warmer than average temperatures, low relative humidities, high winds, and wildfire dangers. 30-day SPIs are very low, VIC soil moisture shows drying, and D0 will better represent that short-term dryness being experienced there.

Status quo is recommended for the rest of CO and the rest of the UCRB.

# Schedule & Process





# Calendar for year 2013 (United States)

January						
Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

February						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March						
Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

April						
Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May						
Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

June						
Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

July						
Su	Mo	Tu	We	Th	Fr	Sa
7						
14						
21						
28						

August						
Su	Mo	Tu	We	Th	Fr	Sa

September						
Su	Mo	Tu	We	Th	Fr	Sa

**The authors usually takes 2-week turns, although cases arise where they do a 1-week or 3-week shift.**

**The reason: After two weeks, you are spent.**

**Each author typically has two 2-week shifts per year.**

6						
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

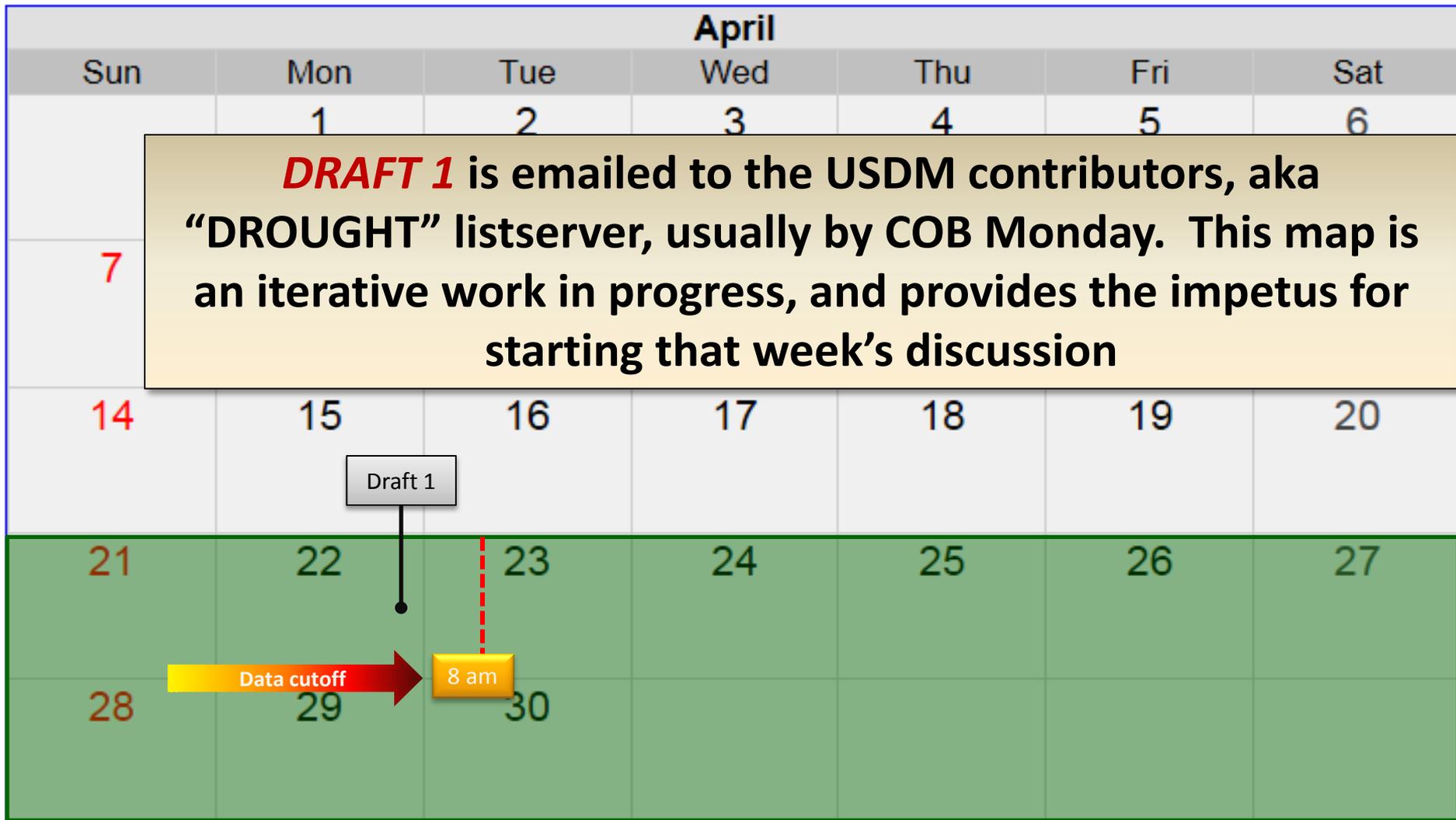


# Calendar for April 2013 (United States)

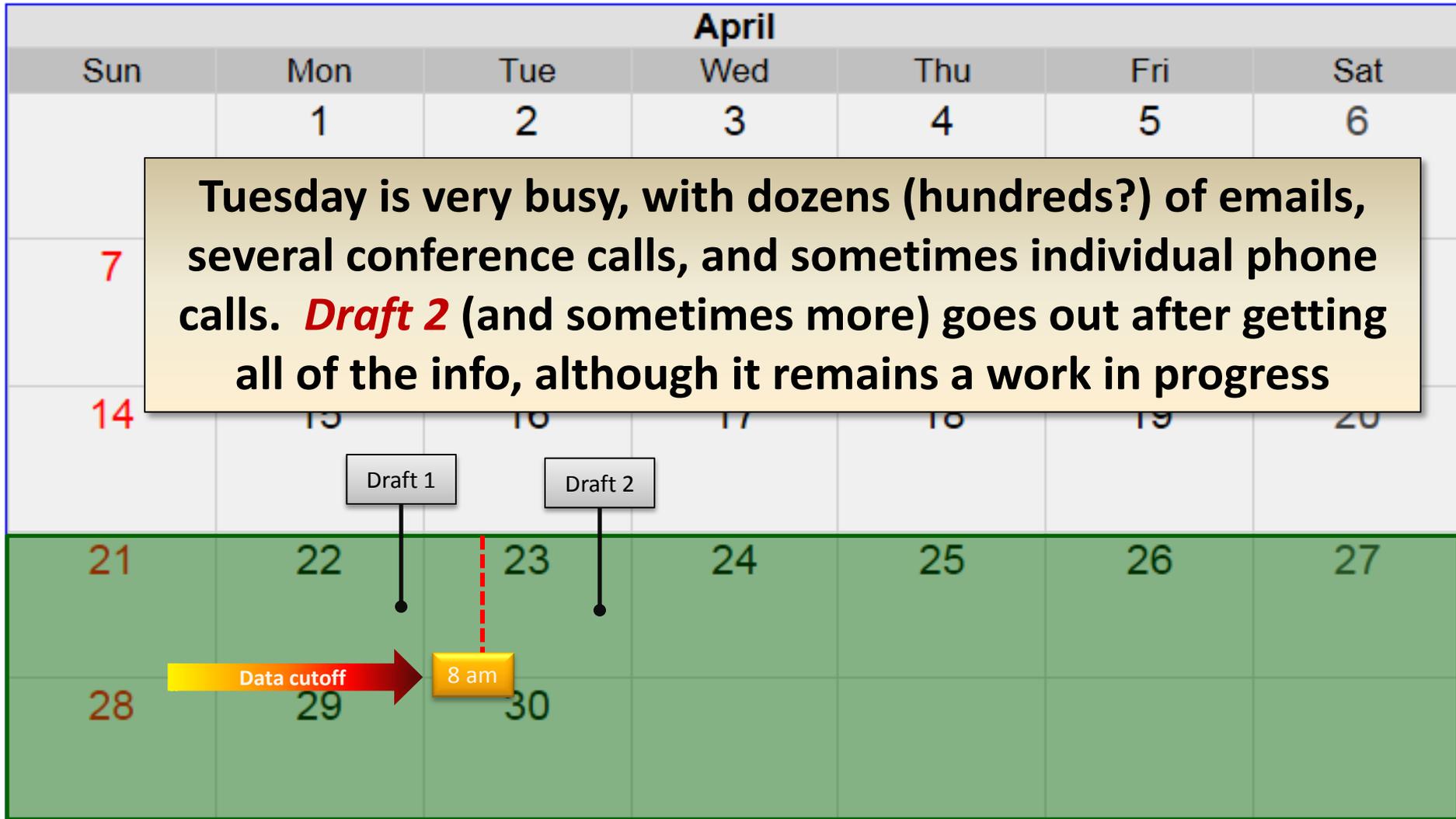
April						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
21	22	23	24	25	26	27
28	29	30				

The first and most important thing for the USDM community to know is the data “period”; *The data cutoff* – i.e. precipitation has to have fallen by this time to be included in the analysis – is **7 am EST, 8 am EDT, Tuesday morning**. This is done to (a) provide a consistent, week-to-week product and (b) provide the author a 24-hour window to assess the data and come up with a final map by Wed. evening.

# Calendar for April 2013 (United States)



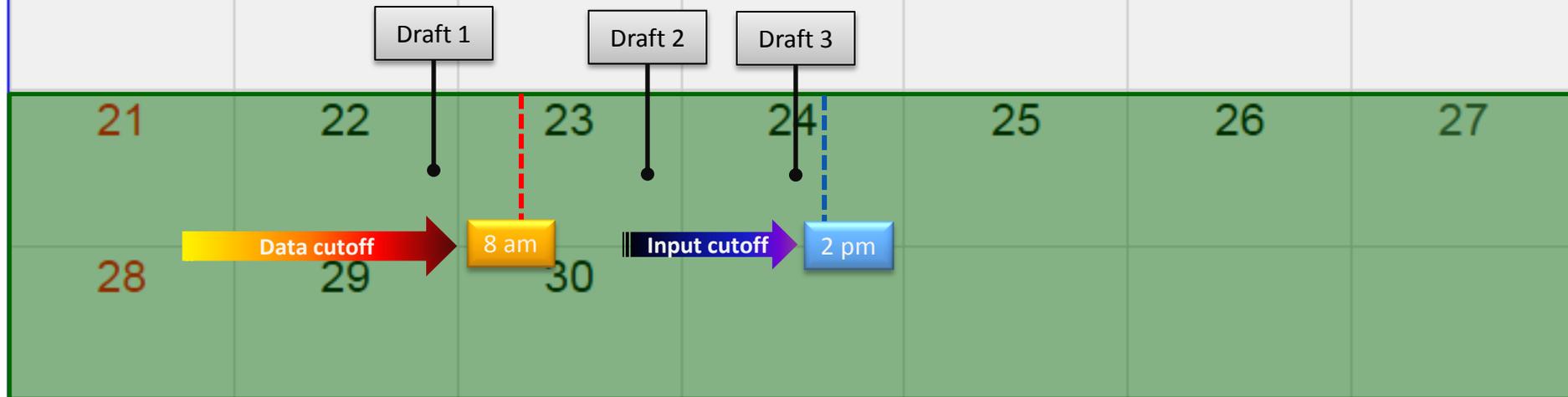
# Calendar for April 2013 (United States)



# Calendar for April 2013 (United States)

April						
Sun	Mon	Tue	Wed	Thu	Fri	Sat

By Noon, EST Weds, we send out a near-final draft (**DRAFT 3**), and we close the door on changes to the map ~ 2 pm, EST. Sometimes late, key input will make the cut...and before we finalize, we send out any updates in subsequent drafts, but 2 pm is our “it’ll have to wait until next week” deadline

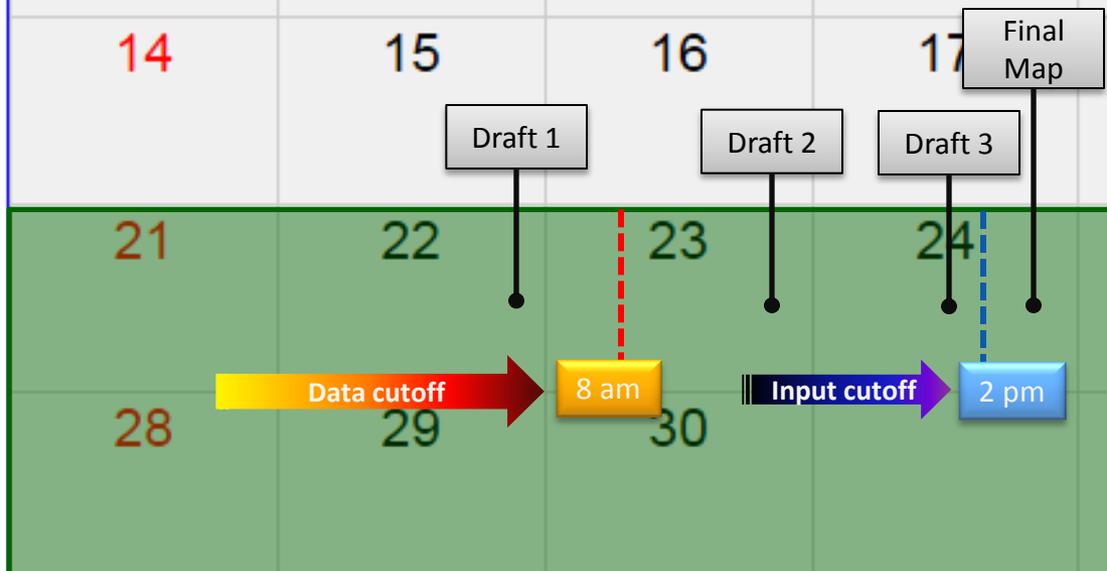


# Calendar for April 2013 (United States)

**April**

Sun	Mon	Tue	Wed	Thu	Fri	Sat
-----	-----	-----	-----	-----	-----	-----

A **FINAL** map is sent out ~3-4 pm to make sure there are no errors or other egregious mistakes. The author then composes a national narrative, broken down by regions, highlighting the past week's weather, impacts and USDM changes



National Drought Summary – March 19, 2013

*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 prog, 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/>*

**Weather Summary:** Over the course of the past week, the upper-air flow pattern featured a trough over the eastern contiguous U.S. and a ridge over the western U.S., followed by flattened east-west oriented flow, and ending with a developing trough over the Nation's midsection. Temperatures averaged several degrees below normal for the week across most of the Northeast and Florida, generally 4 to 8 degrees below normal across the Midwest, and near 15 degrees below normal in eastern North Dakota. Above normal temperatures prevailed from the southern Great Plains and Rockies westward to near the Pacific Coast. The largest positive departures were observed from central Nevada southeastward to western New Mexico, on the order of 10 to 14 degrees above normal. Several storm systems moved across the country during the period. Heavy precipitation (2 inches or more) fell across the northern Cascades and Olympic Peninsula of Washington, parts of the northern Rockies, southern Missouri and southern Illinois, the Ohio Valley, eastern Pennsylvania, and northern New Jersey. Light precipitation (less than 0.5-inch) was observed over California, the Southwest, the interior Pacific Northwest, most of the Great Plains, Louisiana, parts of the Corn Belt and Great Lakes, and much of Florida. Most other areas of the contiguous U.S. reported moderate precipitation (between 0.5 and 2 inches) during the past 7 days.

**The Northeast and Mid-Atlantic:** Widespread light to moderate precipitation (under 2 inches) amounts were noted over the region during the past 7-days. Eastern Pennsylvania and parts of northern New Jersey reported heavy precipitation (2-3 inches). Weekly temperatures averaged 2-4 degrees below average for most of this region, limiting evapotranspiration. With green-up still several weeks away for areas of higher terrain, it was decided not to modify the regional drought depiction this week.

**The Southeast:** Moderate rains (0.5 - 2 inches) fell across the Tennessee Valley, Georgia, much of the Carolinas, southeastern and far northern Alabama, and in very isolated locations across Florida. A 1-category improvement was made across extreme southwestern-, west-central-, and extreme east-central Georgia due to the recent rainfall, and Percent of Normal Precipitation (PNP) values ranging from 110-150 percent of normal over the past 3 months (Advanced Hydrologic Prediction System, AHPS). In contrast, there was expansion of abnormal dryness (D0) over southeastern North Carolina and extreme southern Alabama, based on increasing rainfall deficits and fairly low stream flows.

**For the Florida peninsula,** rainfall departures (Departure from Normal Precipitation – DNP) from AHPS for the past 90-days generally ranged from 4-6 inches (locally greater). The area of moderate drought (D1) in southern Florida was expanded northward to include eastern portions of both Miami-Dade and Broward counties.

**The Midwest:** Light precipitation (less than 1 inch) was noted over much of this region. A 1-category improvement (from D1 to D0) was made over northern Illinois to be consistent with surrounding areas that had approximately the same weather and soil conditions. In southern Wisconsin, a 1-category upgrade was made, warranted by DNPs (from 14-days to 180-days) in significant surplus, rivers running high with some minor flooding reported, and a wet, snowy winter overall. The remaining areas of the Midwest were left unchanged in the drought depiction, due to the continuing presence of frozen ground. Davenport, IA reported a frozen soil depth of 5 inches, with very slow thawing occurring.

**Lower Mississippi Valley/Delta region:** Significant precipitation deficits (AHPS PNP values of 25-75 percent of normal rainfall during the past 2 months) justified an eastward expansion of D0 conditions along and near the border between Arkansas and Louisiana. Stream flows in this region are down in the lowest 10 percent of the historical distribution. In addition, a one-category degradation was also made to extreme southwestern counties in Arkansas.

# Calendar for April 2013 (United States)

April

Sun

Mon

Tue

Wed

Thu

Fri

Sat

By 6 pm EST on Wed., all the files are compressed and sent to several different groups, most importantly the Drought Mitigation Center, who then confirms receipt before the author is free to go

14

15

16

17

Final Map

Final Files Sent

19

20

Draft 1

Draft 2

Draft 3

21

22

23

24

25

26

27

Data cutoff

8 am

Input cutoff

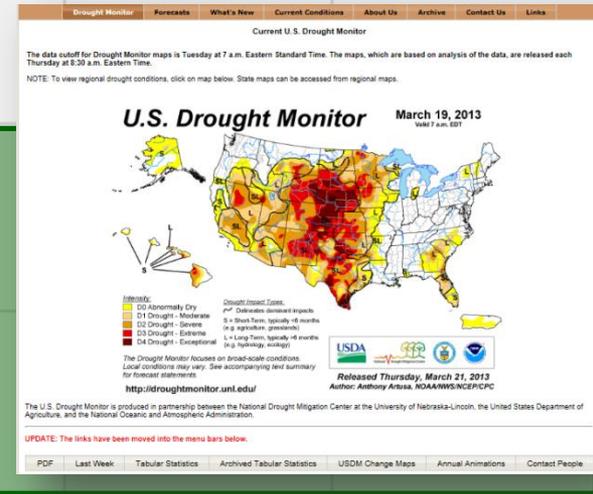
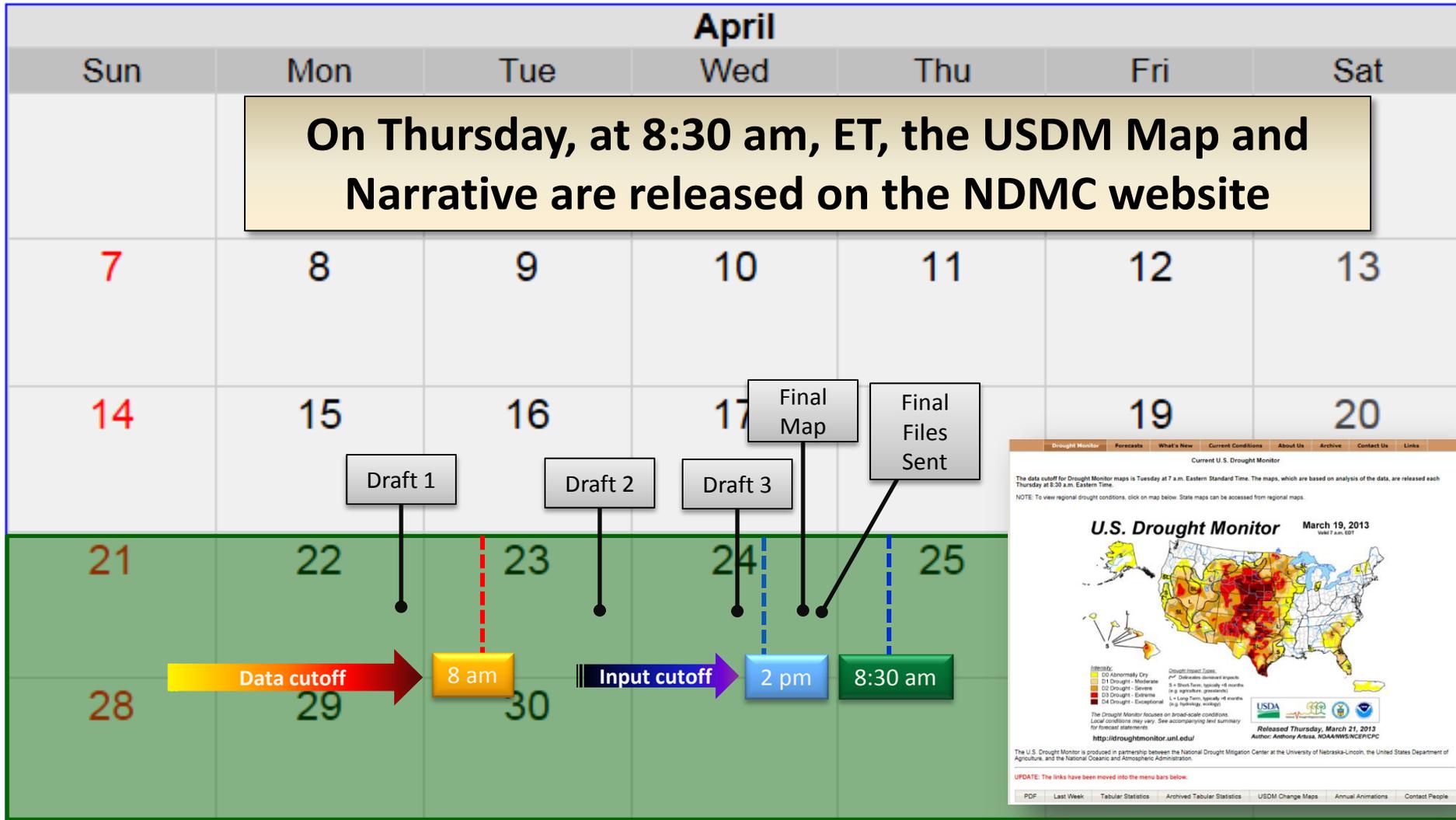
2 pm

28

29

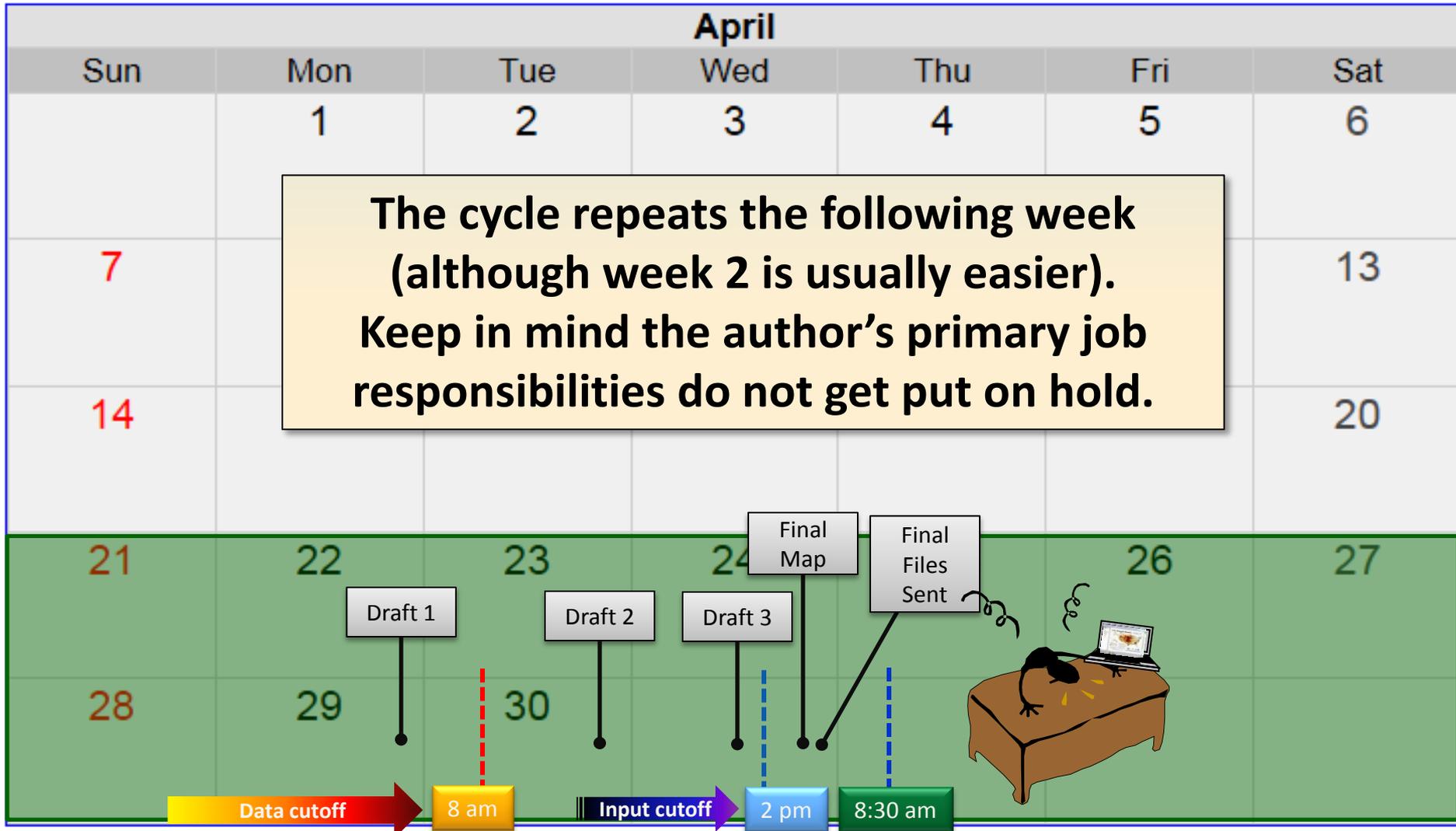
30

# Calendar for April 2013 (United States)



<http://droughtmonitor.unl.edu/>

# Calendar for April 2013 (United States)

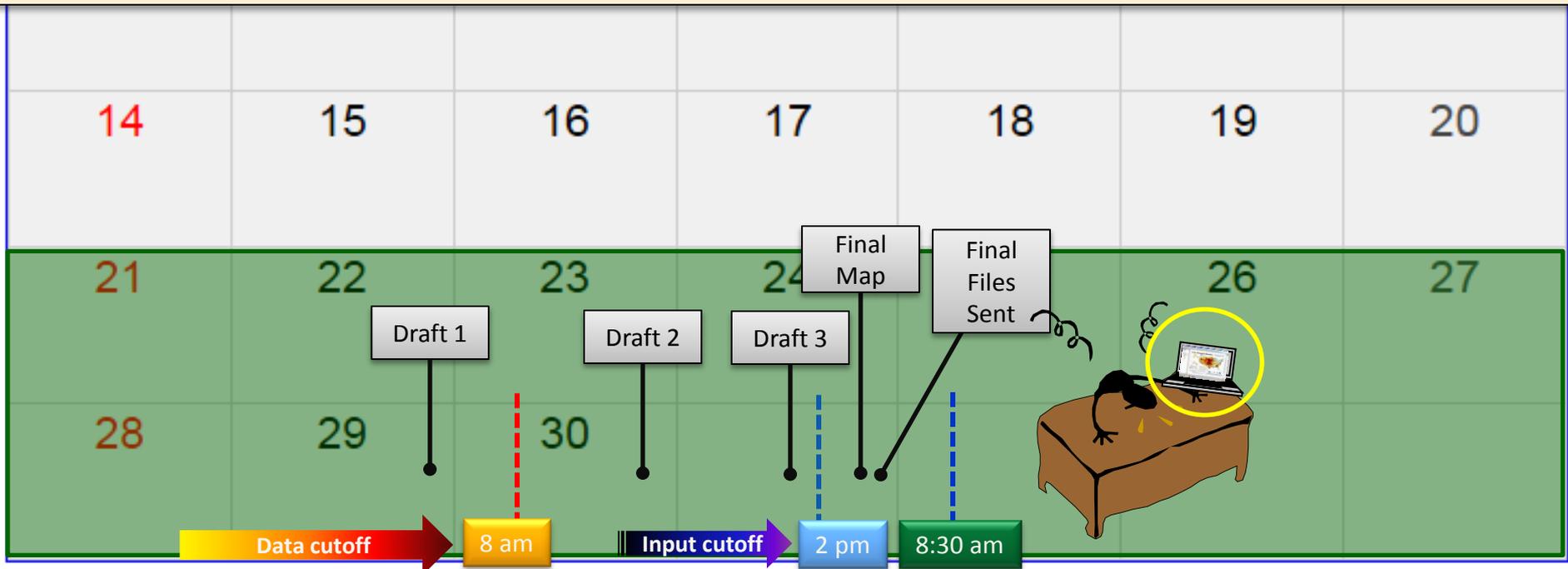


The cycle repeats the following week (although week 2 is usually easier). Keep in mind the author's primary job responsibilities do not get put on hold.

# Calendar for April 2013 (United States)

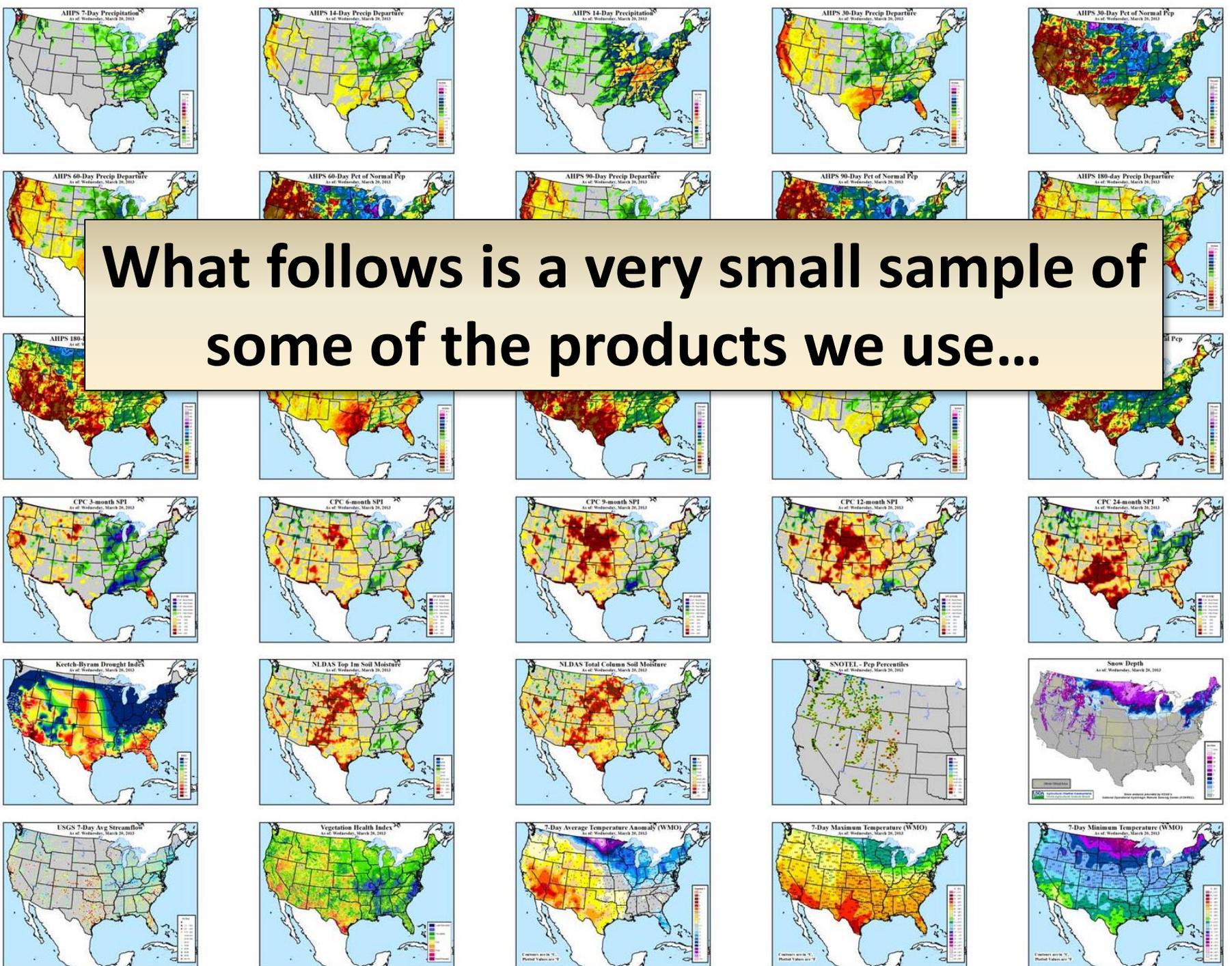
April						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6

So just how does the USDM get edited/created every week?



# Inputs





# U.S. Drought Monitor

## Integrates Key Drought Indicators:

- Palmer Drought Index
- SPI
- KBDI
- Modeled Soil Moisture
  - NLDAS
- 7-Day Avg. Streamflow
- Precipitation Anomalies

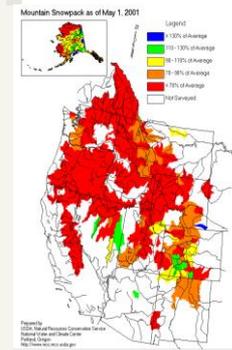
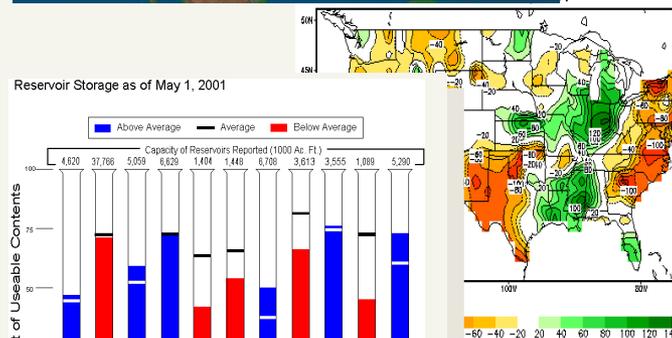
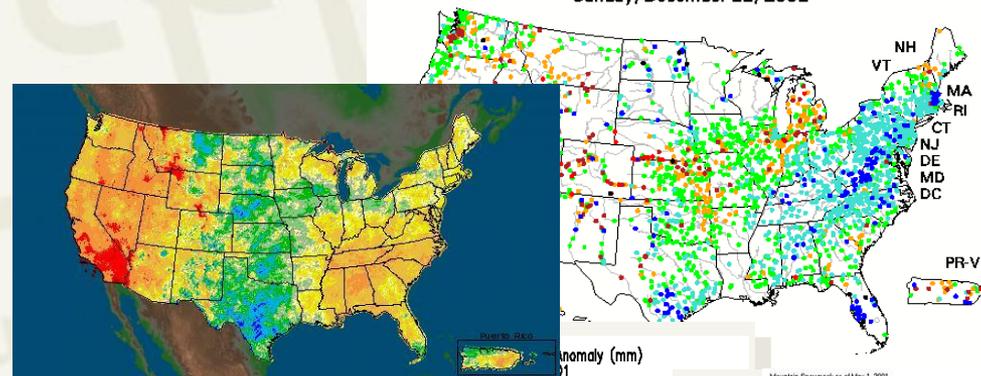
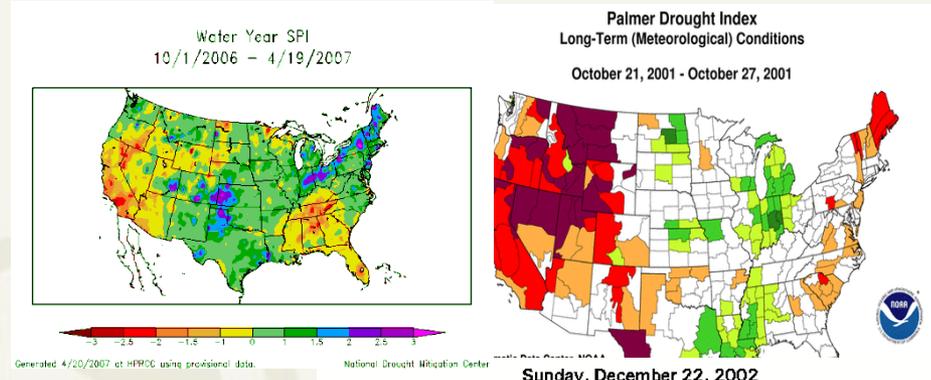
## Growing Season:

- Crop Moisture Index
- Sat. Veg. Health Index
- VegDRI/ESI/etc.
- Soil Moisture
- Mesonets
- State/Regional

## In The West:

- SWSI
- Reservoir levels
- Snowpack (SNOTEL)
- SWE
- Streamflow

Created in ArcGIS



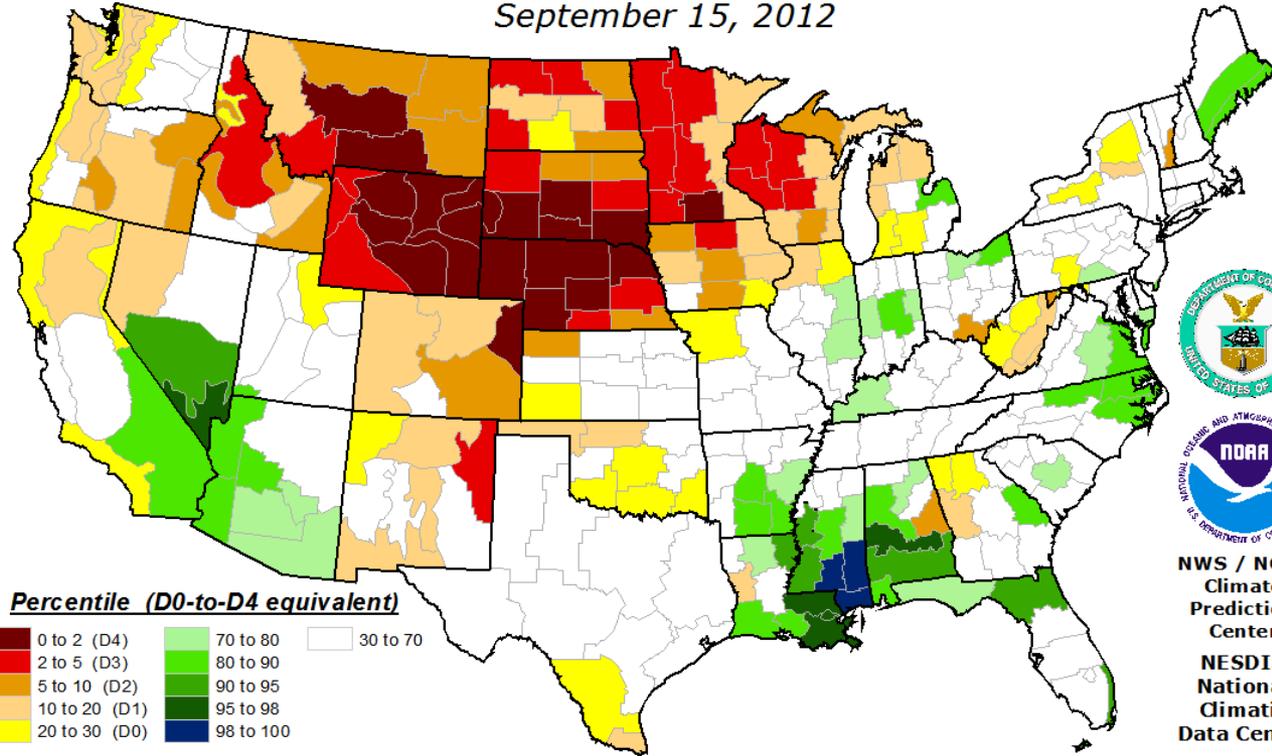
Prepared by: USDA, Natural Resources Conservation Service, National Water and Climate Center, Portland, OR  
<http://www.wcc.nrcs.usda.gov>

# Objective Blends

## ➤ Short-Term Blend

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

**Objective *Short-Term* Drought Indicator Blend Percentiles**  
September 15, 2012



**Inputs (as percentiles):**

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

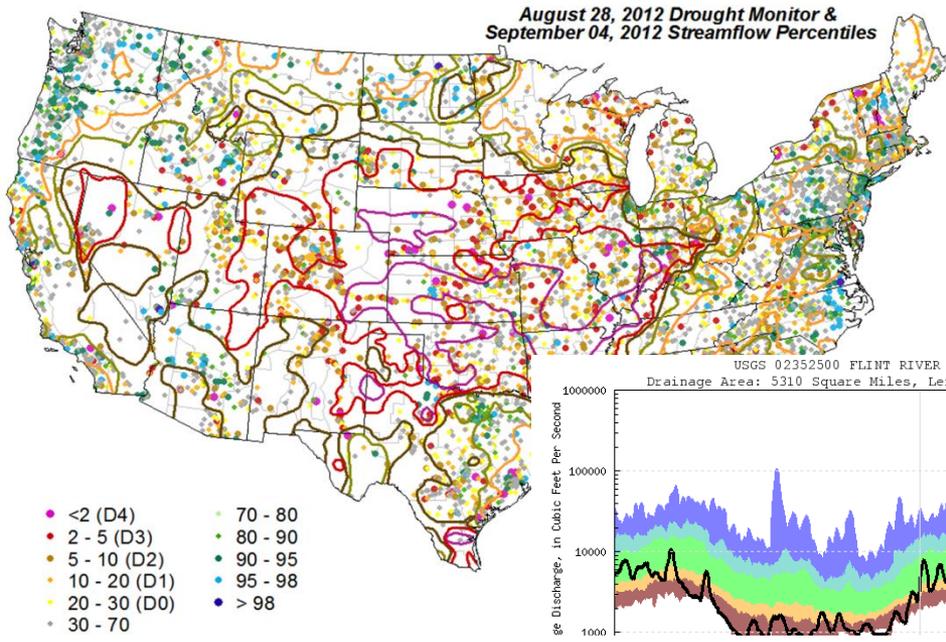
This map approximates impacts that respond to precipitation over several days to a few months, such as agriculture, topsoil moisture, unregulated streamflows, and most aspects of wildfire danger. The relationship between indicators and impact can vary significantly with location and season. Do not interpret this map too literally.

This map is based on preliminary climate division data. Local conditions and/or final data may differ. See the detailed product suite description for more details.

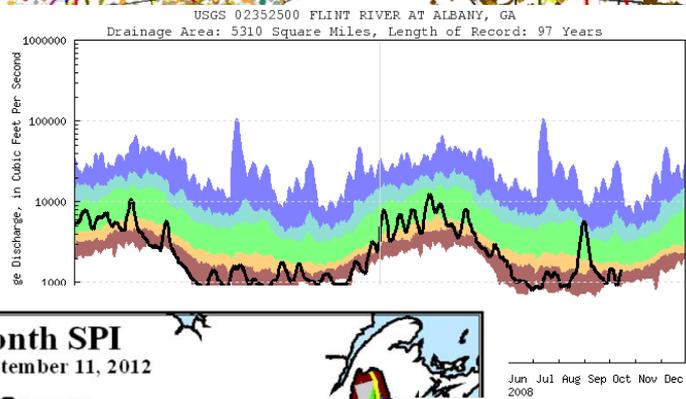
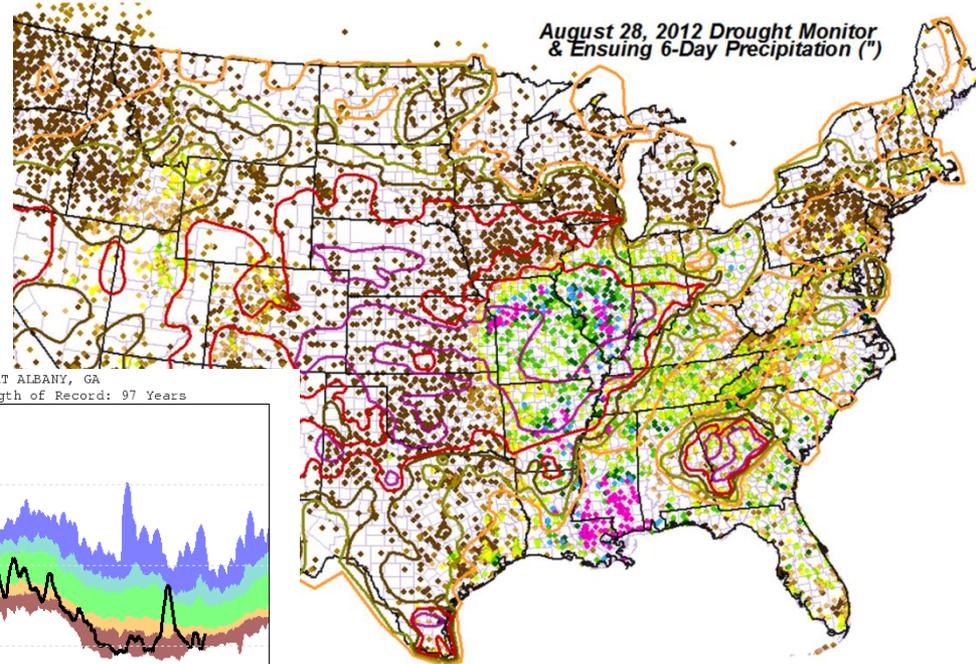


NWS / NCEP  
Climate  
Prediction  
Center  
NESDIS  
National  
Climatic  
Data Center

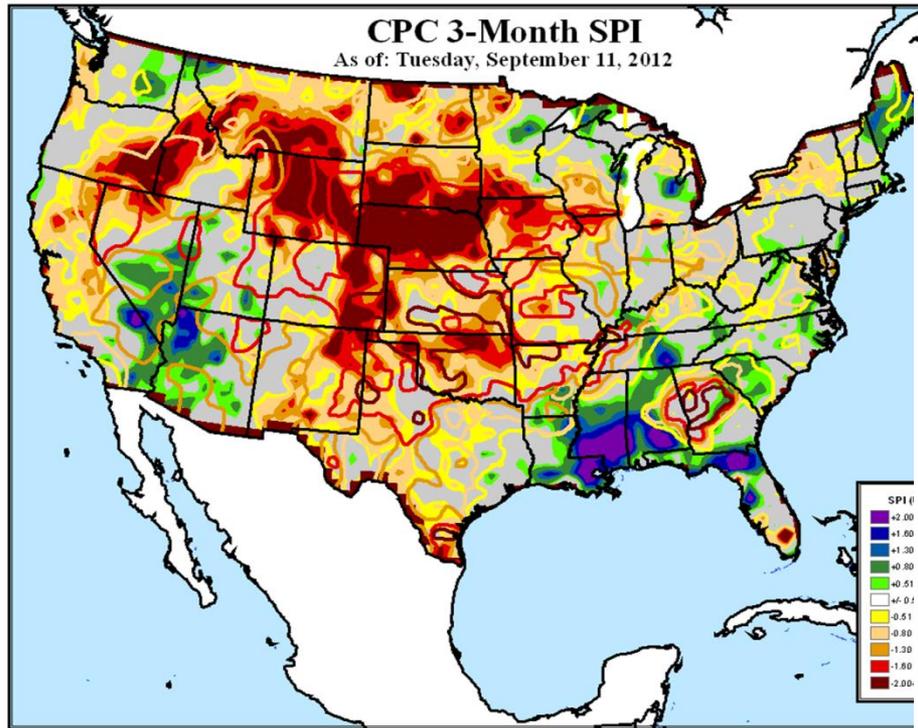
August 28, 2012 Drought Monitor & September 04, 2012 Streamflow Percentiles



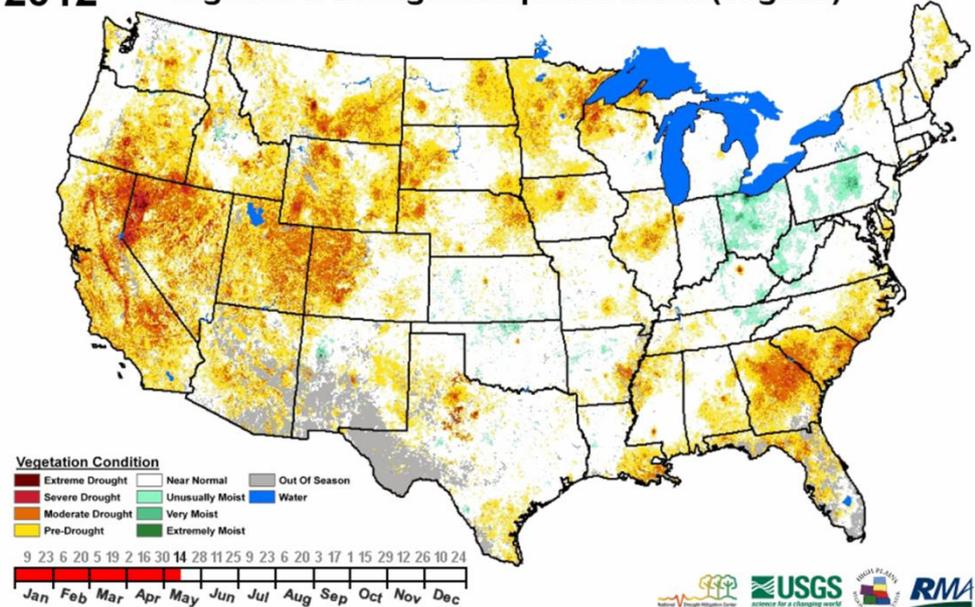
August 28, 2012 Drought Monitor & Ensuing 6-Day Precipitation (")



CPC 3-Month SPI  
As of: Tuesday, September 11, 2012

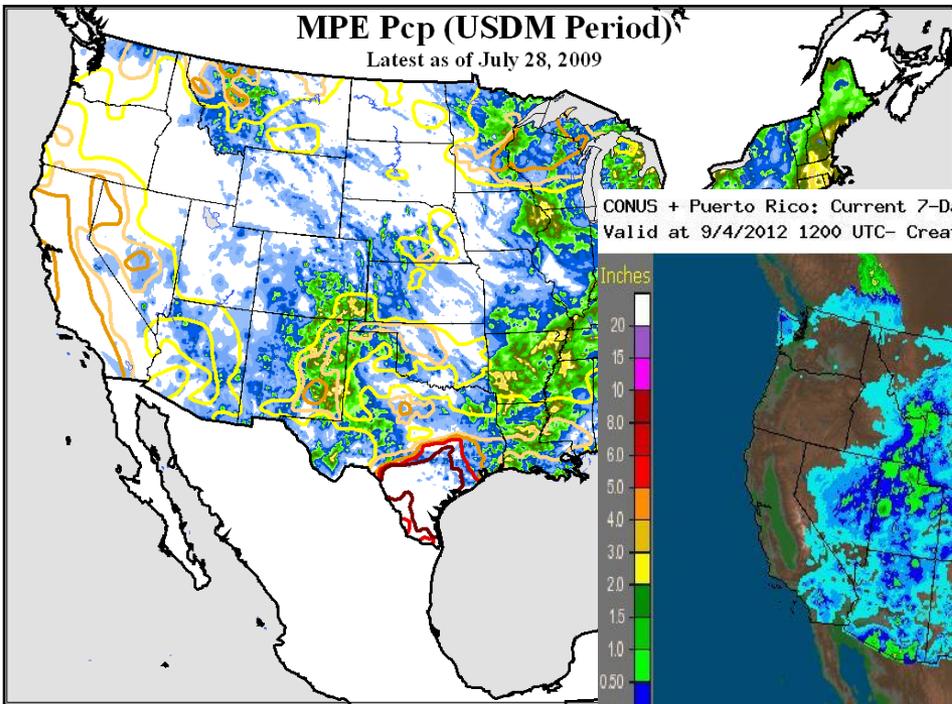


2012 Vegetation Drought Response Index (VegDRI)

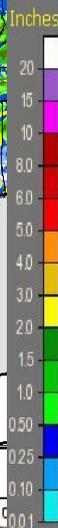


# MPE Pcp (USDM Period)

Latest as of July 28, 2009

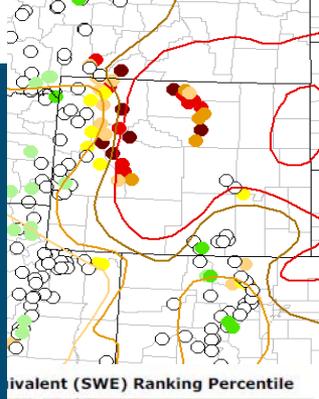
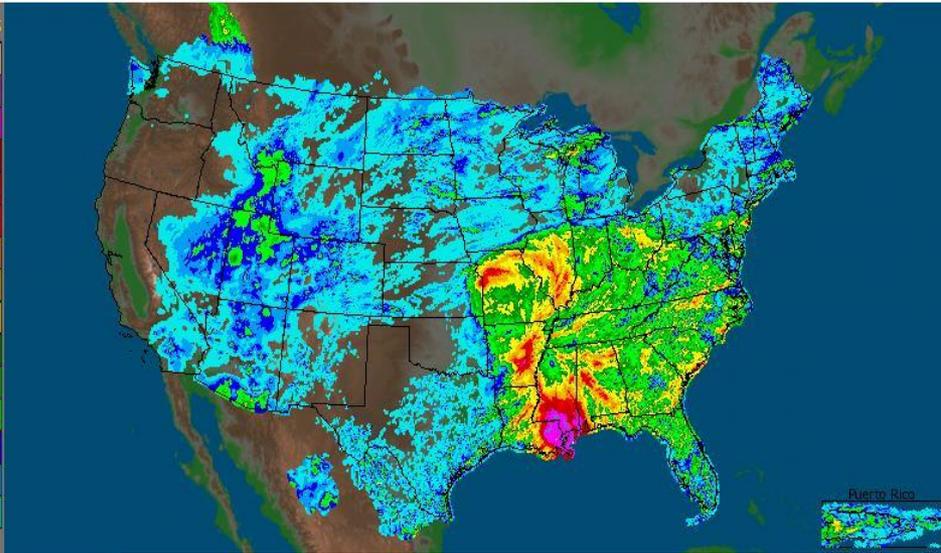
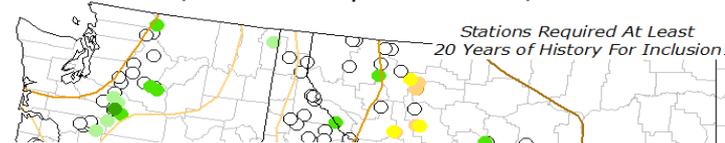


CONUS + Puerto Rico: Current 7-Day Observed Precipitation  
Valid at 9/4/2012 1200 UTC- Created 9/4/12 19:38 UTC

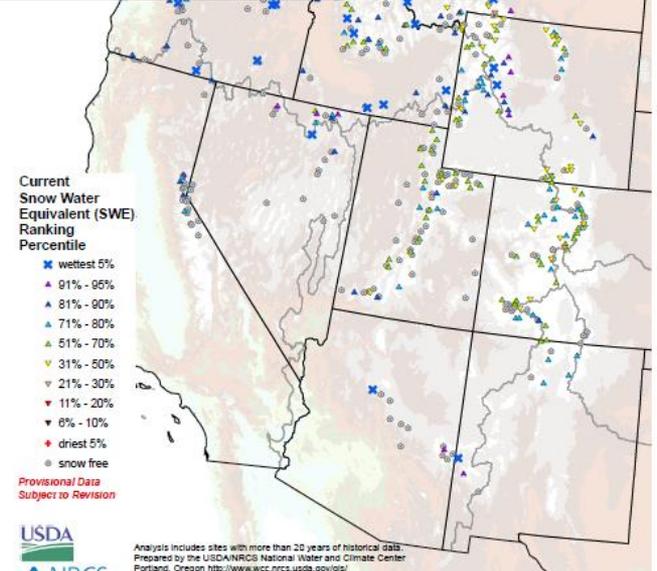
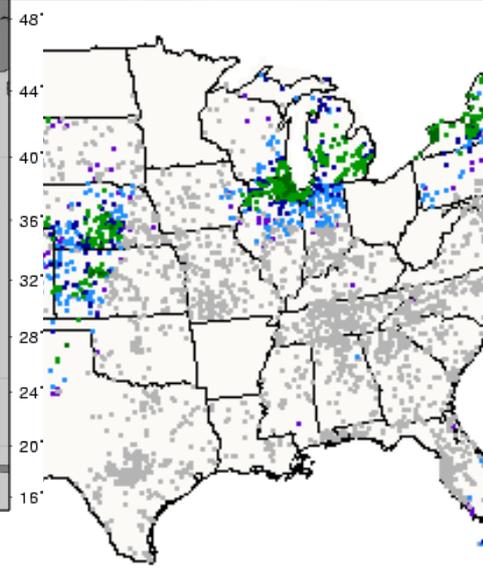
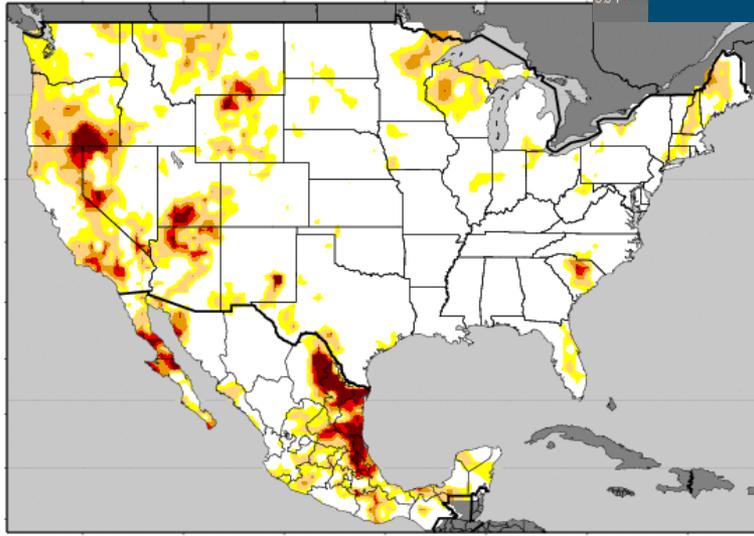


# SNOTEL Water Year Precipitation Percentiles

October 1, 2005 - September 12, 2006



ivalent (SWE) Ranking Percentile



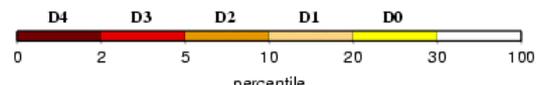
Current Snow Water Equivalent (SWE) Ranking Percentile

- ★ wettest 5%
- ▲ 91% - 95%
- ▲ 81% - 90%
- ▲ 71% - 80%
- ▲ 61% - 70%
- ▼ 31% - 50%
- ▼ 21% - 30%
- ▼ 11% - 20%
- ▼ 6% - 10%
- driest 5%
- snow free

Provisional Data  
Subject to Revision

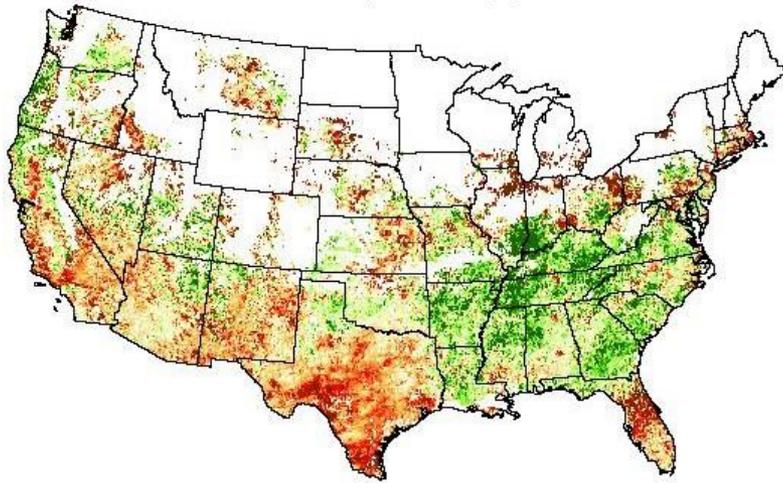


Analysis includes sites with more than 20 years of historical data.  
Prepared by the USDA/NRCS National Water and Climate Center  
Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
Based on data from <http://ftp.wcc.nrcs.usda.gov/data/water/wcc/gis/data>  
Science contact: Tom Pagano [tpagano@nrcs.usda.gov](mailto:tpagano@nrcs.usda.gov) 503 434 3010



# Evaporative Stress Index

1 month composite ending April 9, 2013

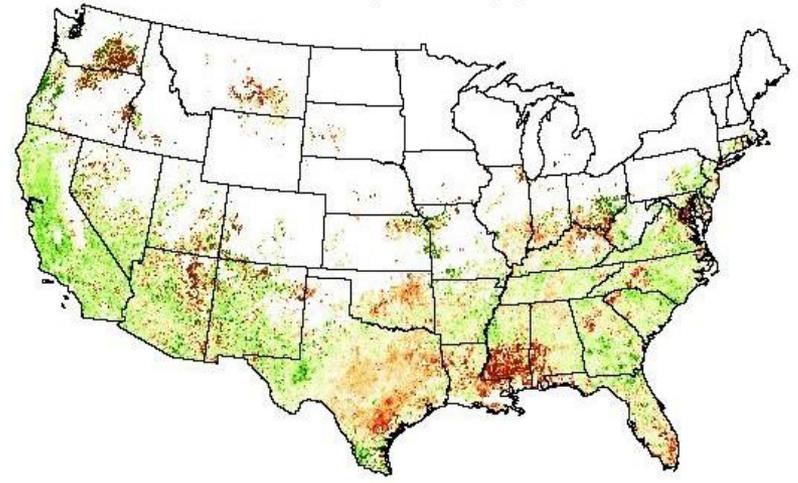


Standardized ET/PET anomalies

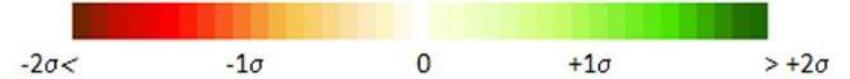


# ESI Change

1 month composite ending April 9, 2013

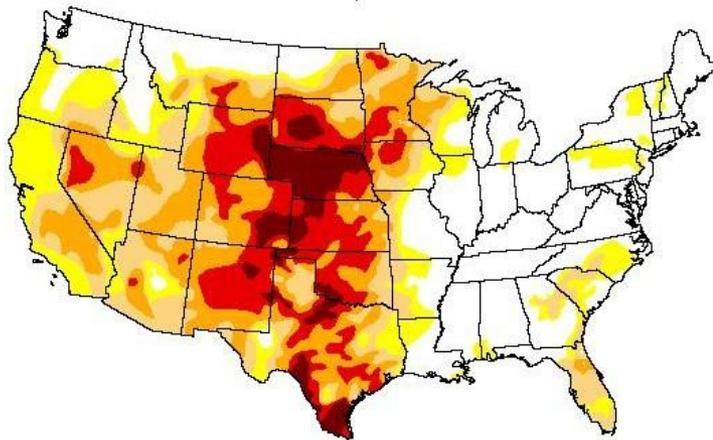


Standardized ESI change anomalies



# U.S. Drought Monitor

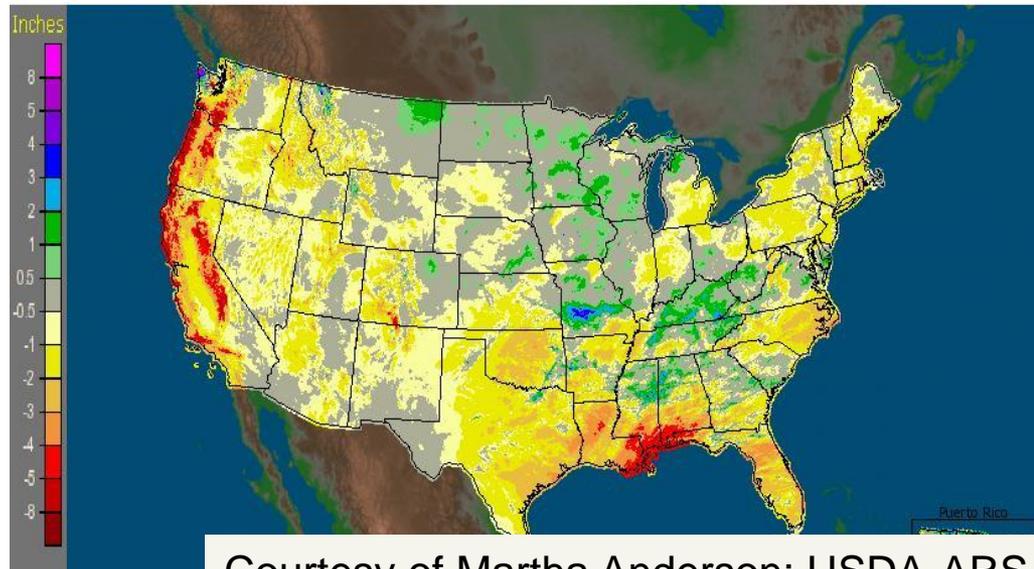
April 4, 2013



Drought class



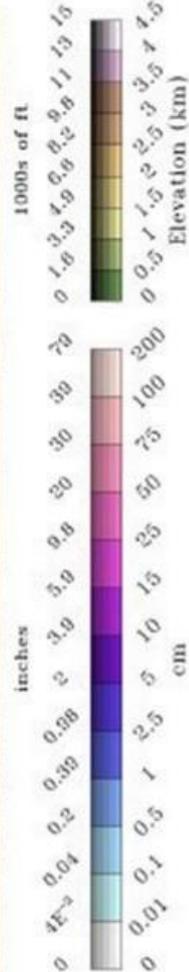
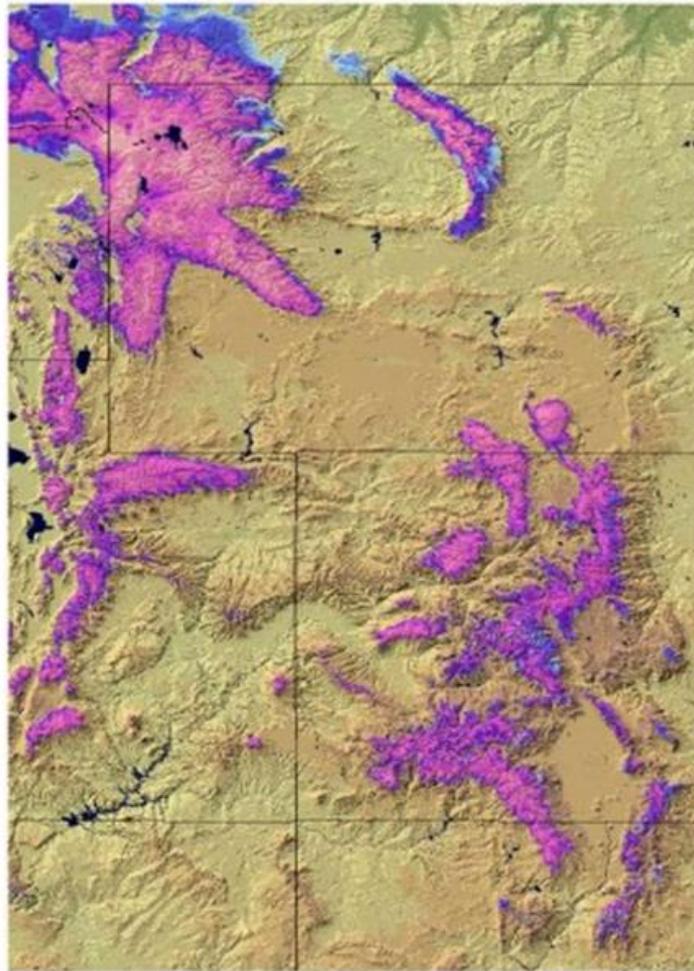
CONUS + Puerto Rico: March, 2013 Monthly Departure from Normal Precipitation  
Valid at 4/1/2013 1200 UTC- Created 4/3/13 19:33 UTC



Courtesy of Martha Anderson: USDA-ARS

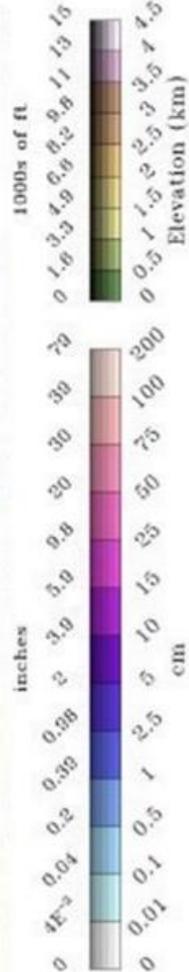
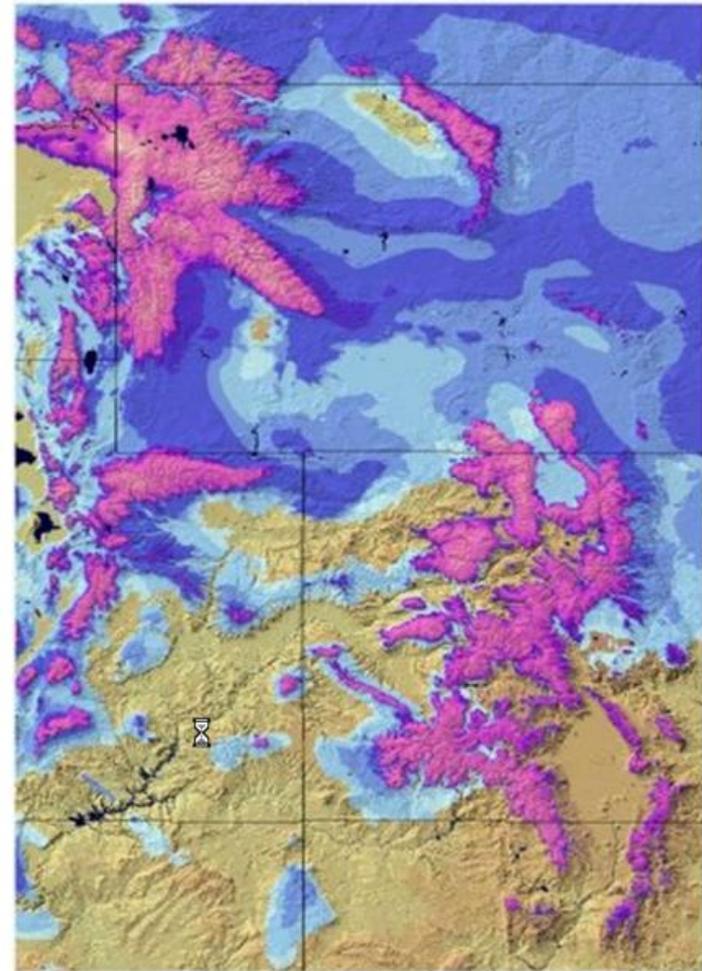
# Snow Water Equivalent

2012-04-09 06



# Snow Water Equivalent

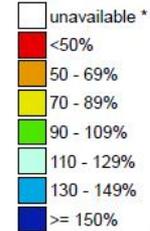
2013-04-09 06



# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Apr 12, 2013

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



\* Data unavailable at time of posting or measurement is not representative at this time of year

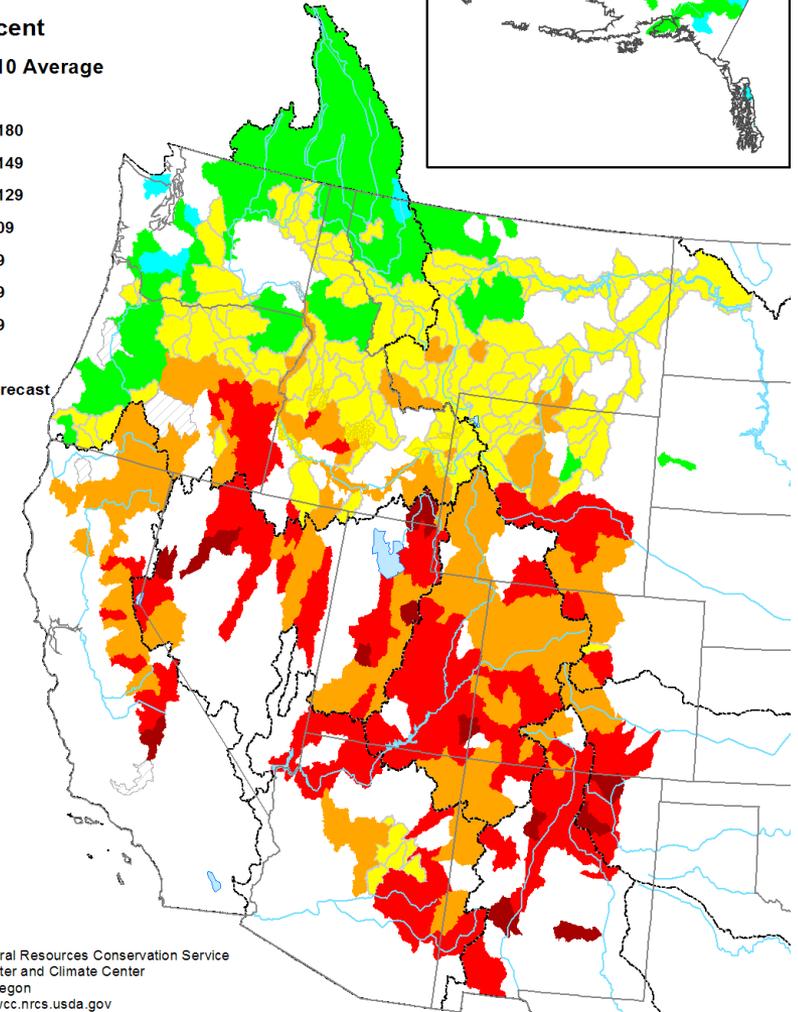
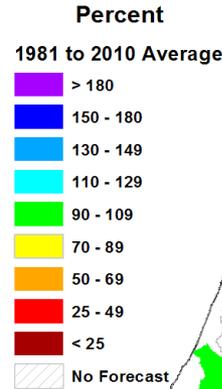
Provisional data subject to revision



The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center  
 Portland, Oregon <http://www.wcc.nrcs.usda.gov/gis/>  
 Based on data from <http://www.wcc.nrcs.usda.gov/reports/>  
 Science contact: Jim.Marron@por.usda.gov 503 414 3047

# Spring and Summer Streamflow Forecasts as of April 1, 2013



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

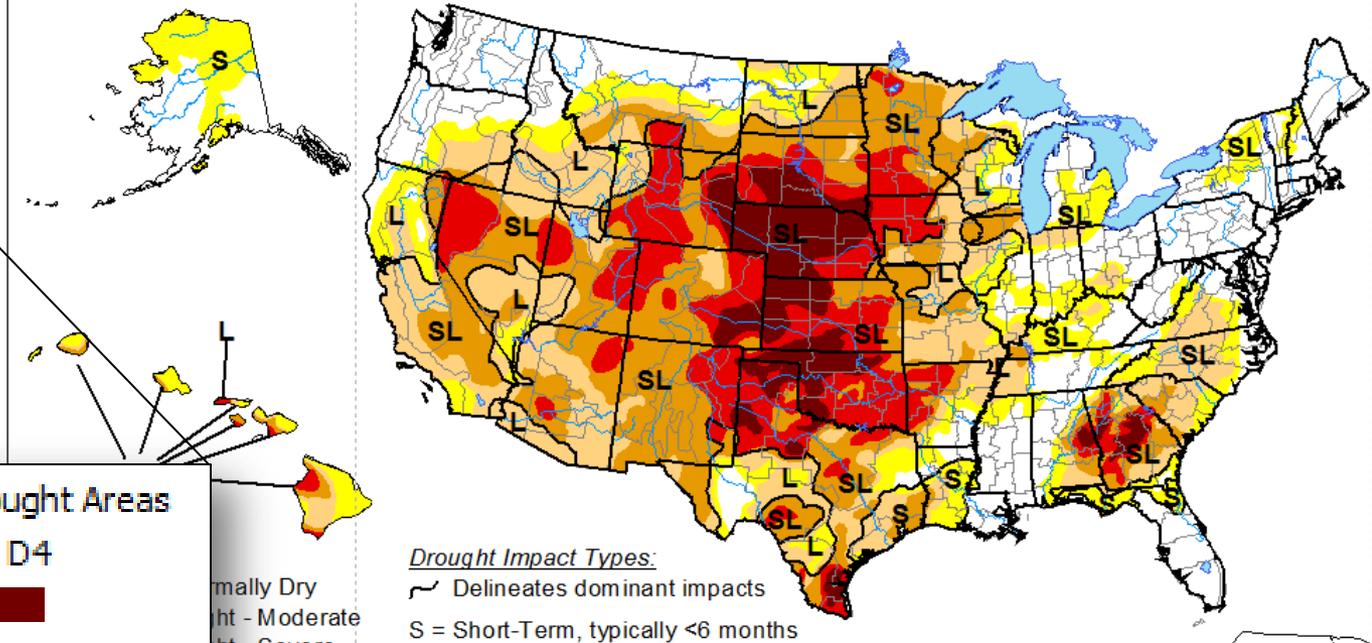


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- Alaska
- Hawaii
- Puerto Rico
- CONUS
  - Drought\_Impacts\_Type
  - Drought\_Impacts\_Callout
  - Base Maps
  - Drought\_Impacts\_US
  - Drought Areas
    - D4
    - D3
    - D2
    - D1
    - D0

# U.S. Drought Monitor

November 27, 2012  
 Valid 7 a.m. EST



Drought Areas

- D4
- D3
- D2
- D1
- D0

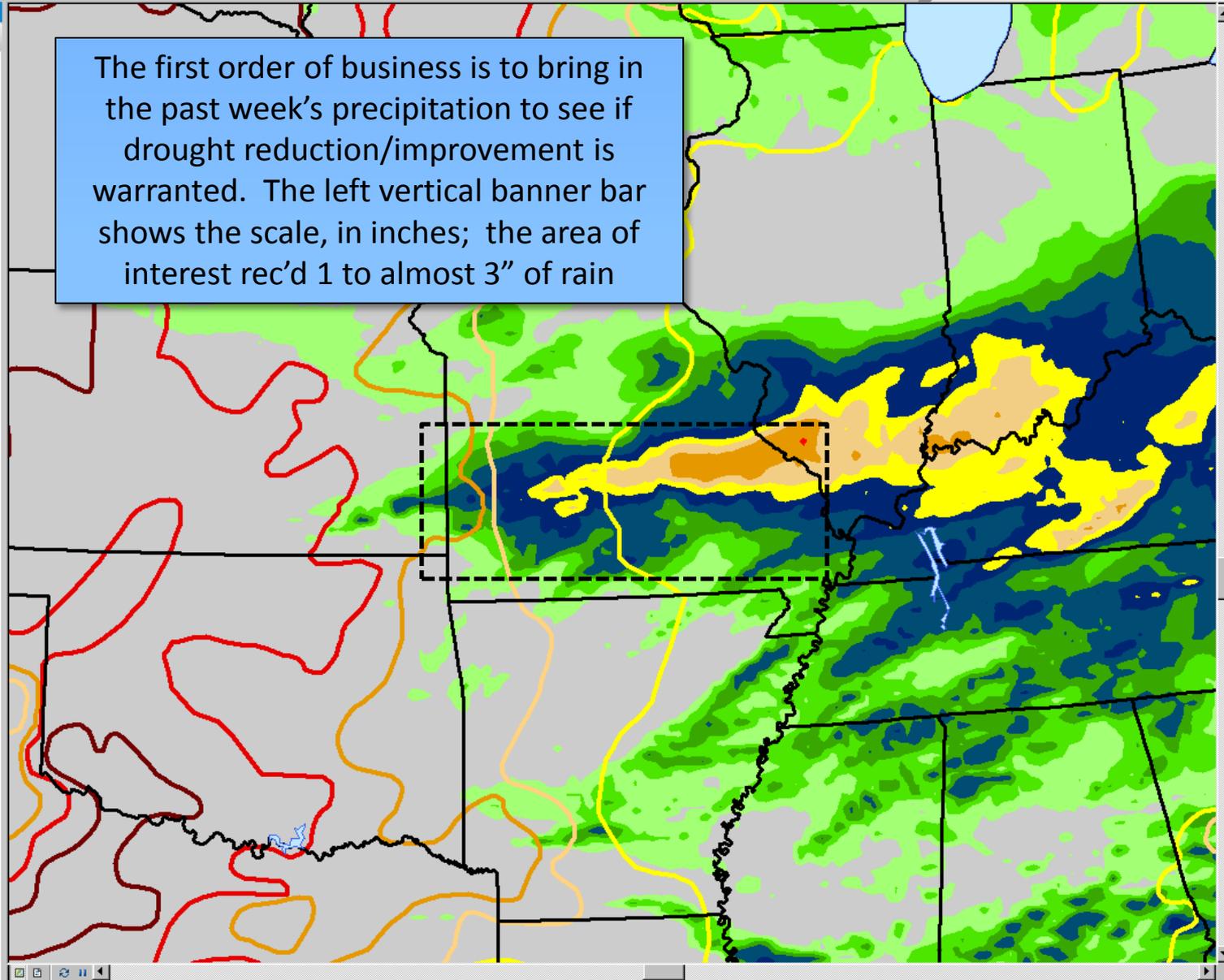
Drought Impact Types:  
 ~ Delineates dominant impacts  
 S = Short-Term, typically <6 months  
 (e.g. agriculture, grasslands)

One big advantage of editing the drought areas in GIS is there is a wealth of weather and hydrological data also available in GIS format; we can bring the data directly into the "Drought Monitor" and line up the drought depiction with the observations.  
More on this later.

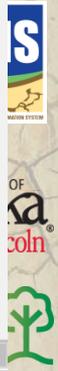
Table Of Contents

- BASE MAPS
- ### DROUGHT FILE
  - !!!! DROUGHT E
  - IMPACTS
  - Drought Area
    - D4
    - D3
    - D2
    - D1
    - D0
  - DM Week0
  - DM Week1
  - DM SHADING
  - RADAR WMS Base Re
  - RADAR WMS Storm T
  - GFS
  - !! NRCS PCP Percent
  - BASE MAPS - WMS
  - MPE Weekly###
  - ELEV CONTOURS
  - SPI-PRISM
  - SPI-CPC
  - SOIL MOISTURE
  - KBDI
  - AHPS-INTERP
    - PCP
      - Pcp - 14 Day
      - Pcp - 07 Day
- Inches
  - 14
  - 12
  - 10
  - 8
  - 6
  - 4
  - 3
  - 2.5
  - 2.0
  - 1.5
  - 1.0
  - 0.75
  - 0.50
  - 0.25
  - <0.25
- Pcp - 14 Day
- PDEP
- PNP

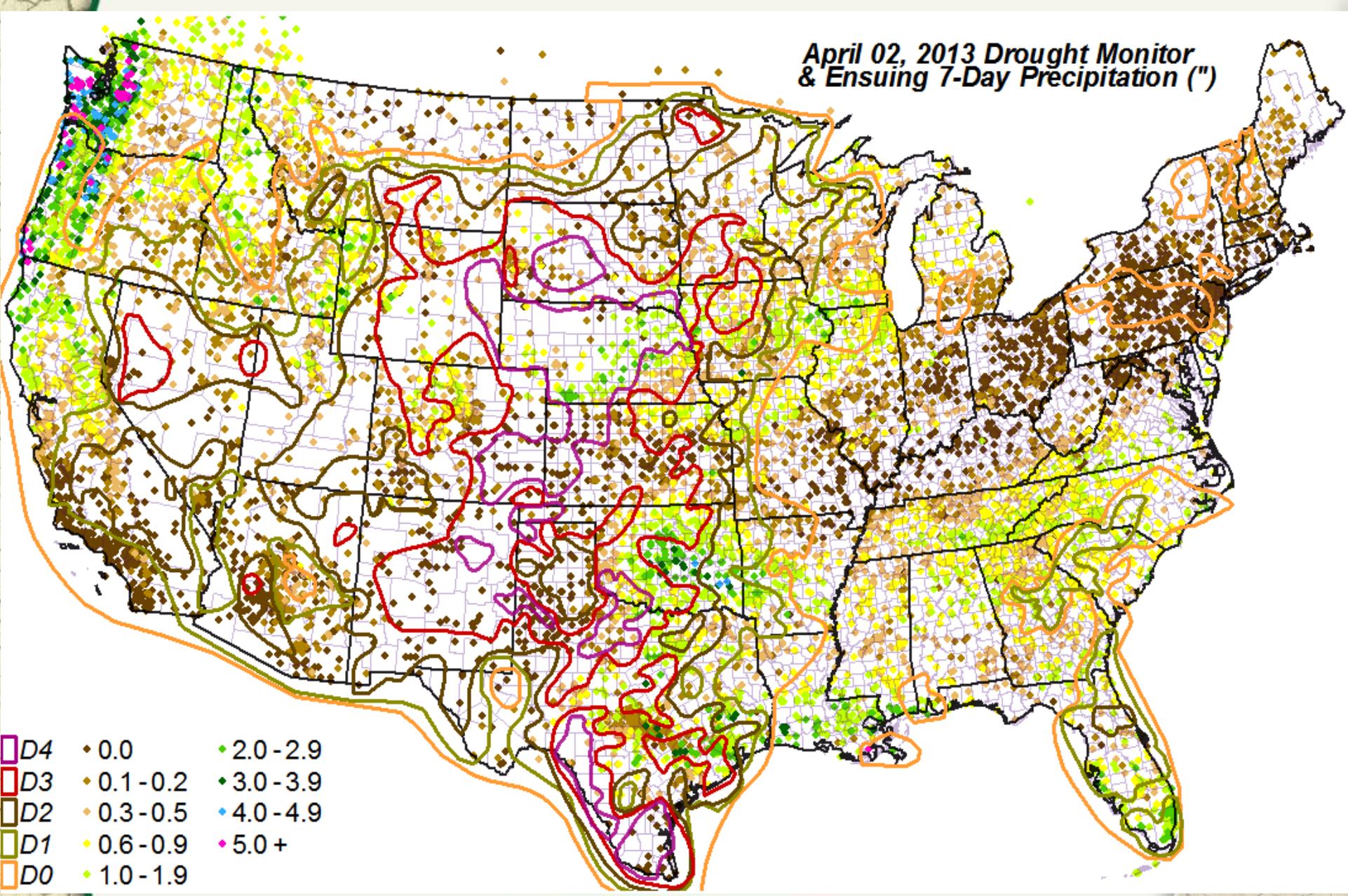
The first order of business is to bring in the past week's precipitation to see if drought reduction/improvement is warranted. The left vertical banner bar shows the scale, in inches; the area of interest rec'd 1 to almost 3" of rain



Catalog



# April 02, 2013 Drought Monitor & Ensuing 7-Day Precipitation (")

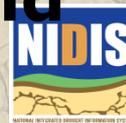


D4	• 0.0	• 2.0-2.9
D3	• 0.1-0.2	• 3.0-3.9
D2	• 0.3-0.5	• 4.0-4.9
D1	• 0.6-0.9	• 5.0+
D0	• 1.0-1.9	

# Some Examples of Decision Making Using the DM

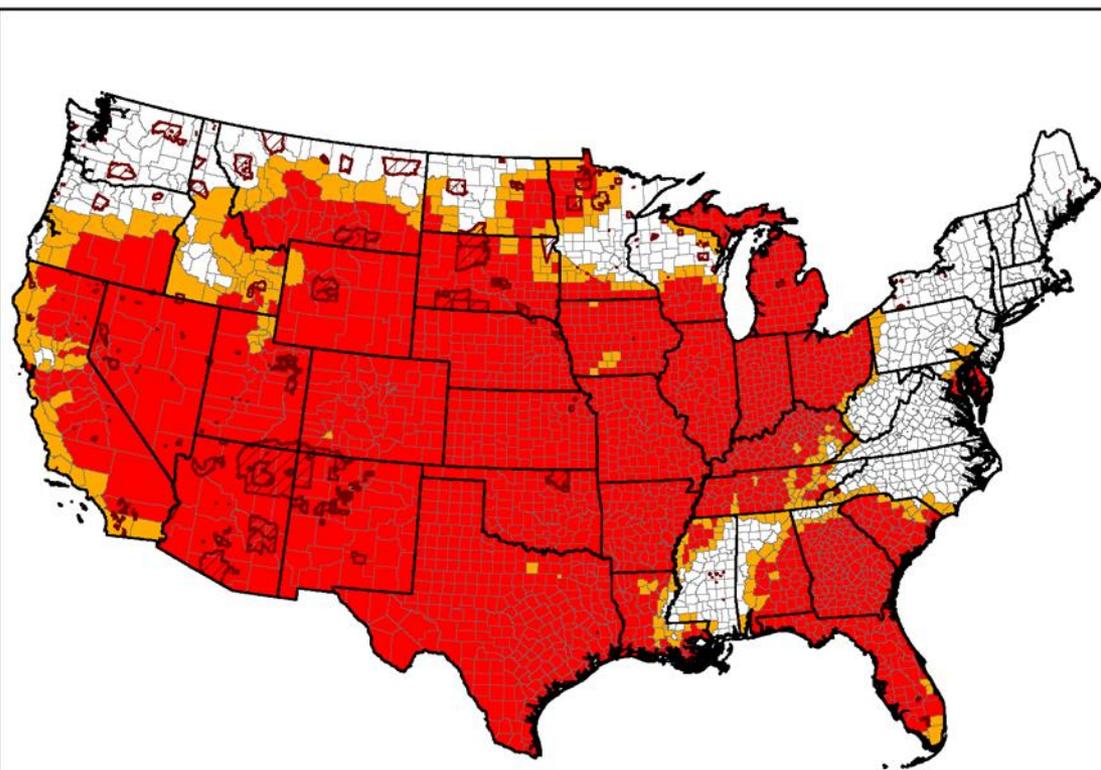
## (Science before Policy)

- ▶ **Policy:** 2008 Farm Bill/Internal Revenue Service/US Department of Agriculture (Secretarial "**Fast Track**" Disaster Designations, FSA + NRCS programs)/NOAA National Weather Service/Environmental Protection Agency/State drought plan triggers
- ▶ **~3.5M+** page views and **~2M+** visitors/year
- ▶ **Media:** The Weather Channel/USA Today and all major newspapers/Internet Media/Network News/ CNN/NPR/etc.
- ▶ Presidential/Congressional **briefings**



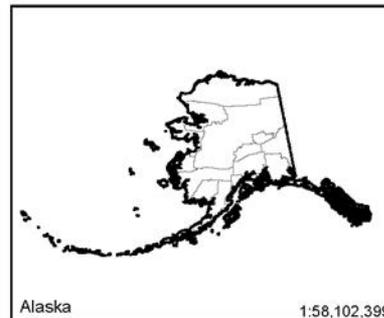
# 2012 Drought Impacts: "Fast Track" Secretarial Disaster Designation Process

## 2012 Secretarial Drought Designations - All Drought



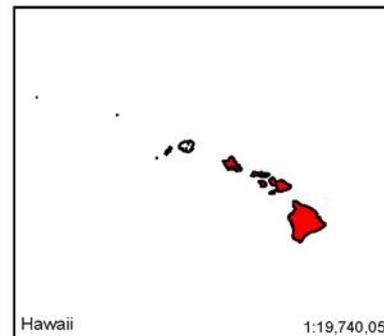
All Drought Disaster Incidents as of 9/12/2012

-  State Boundary
-  County Boundary
-  Tribal Lands
-  Primary Counties: 2,038
-  Contiguous Counties: 303



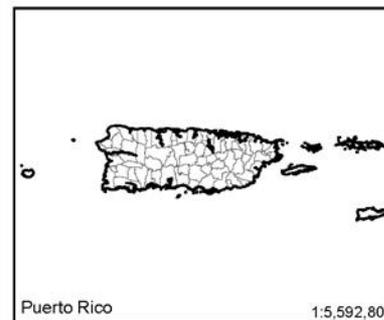
Alaska

1:58,102,399



Hawaii

1:19,740,053



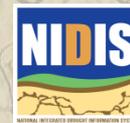
Puerto Rico

1:5,592,808



USDA Farm Service Agency  
Production, Emergencies and Compliance Division  
Washington, D.C.  
September 12, 2012

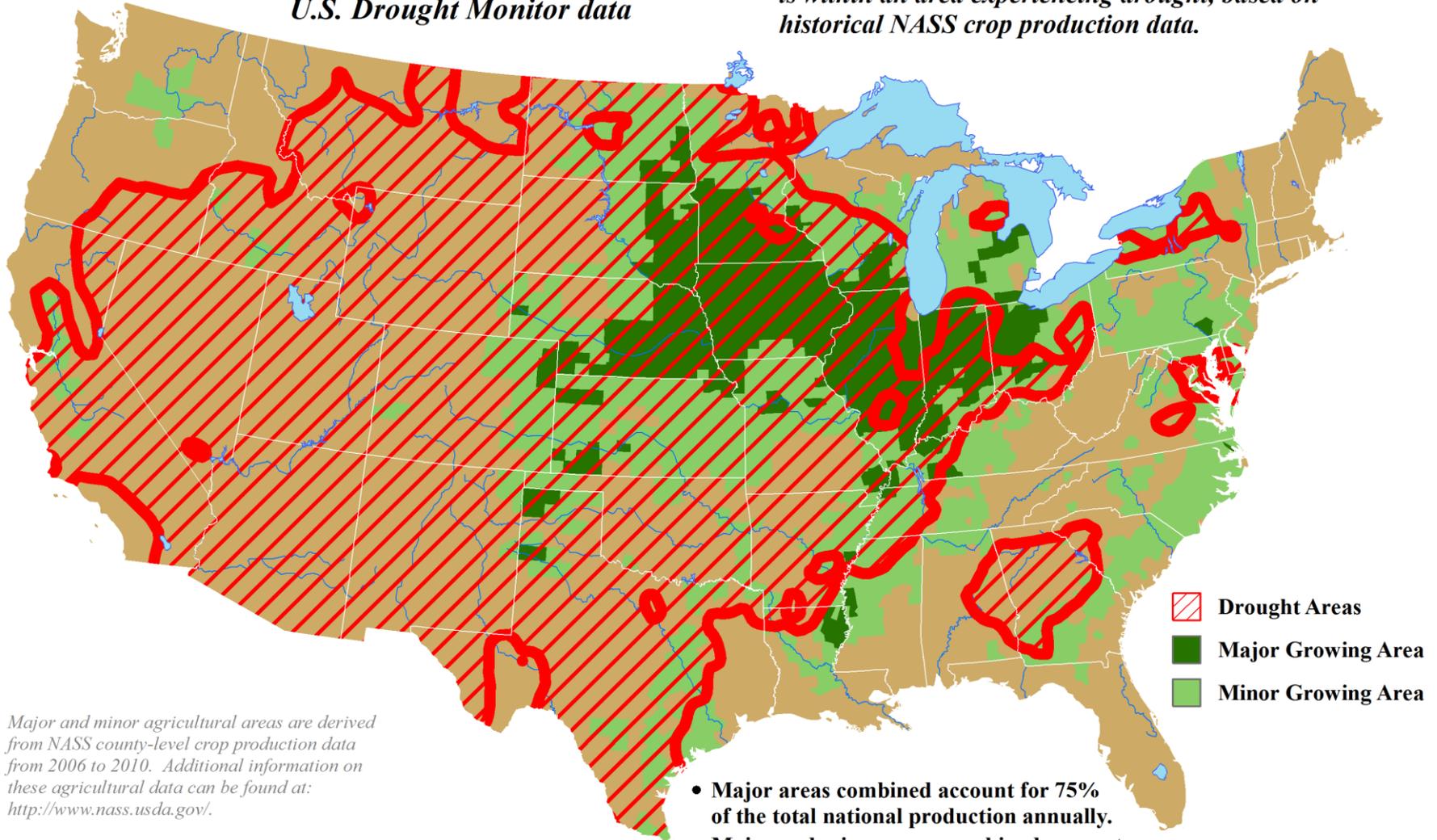
1:23,520,203



# U.S. Corn Areas Experiencing Drought

Reflects September 25, 2012  
U.S. Drought Monitor data

Approximately 84% of the corn grown in the U.S.  
is within an area experiencing drought, based on  
historical NASS crop production data.



-  Drought Areas
-  Major Growing Area
-  Minor Growing Area

Major and minor agricultural areas are derived from NASS county-level crop production data from 2006 to 2010. Additional information on these agricultural data can be found at: <http://www.nass.usda.gov/>.

- Major areas combined account for 75% of the total national production annually.
- Major and minor areas combined account for 99% of the total national production annually.

Mapped drought areas are derived from the U.S. Drought Monitor product and do not depict the intensity of drought in any particular location. More information on the Drought Monitor can be found at: <http://www.drought.unl.edu/dm/monitor.html>.

# Next Steps



- ▶ **Continue interactions with local drought task forces, State Climate Offices, WFOs/RFCs, Regional Climate Centers**
  - Foster new basin/state interactions
  - NIDIS RDEWS basin briefings...more coming
    - ▶ S.Plains/California/MO Basin/Carolinas/Chesapeake/others??
- ▶ **Continue to encourage and incorporate new/enhanced/innovative products via GIS tools:**
  - ACIS gridded SPI-SPEI/sc-PDSI,
  - Augment with remote sensing products
  - NLDAS, etc...
- ▶ **Taking the Objective Blends from a climate division base to a **station-based/gridded** layer**



# Contact Information:

**Mark Svoboda**  
**msvoboda2@unl.edu**

**National Drought Mitigation Center**  
**<http://drought.unl.edu>**  
**School of Natural Resources**  
**University of Nebraska-Lincoln**

