Drought Information Services:
Activities and Tools at the National Drought Mitigation Center

Mark Svoboda, Climatologist

Monitoring Program Area Leader

National Drought Mitigation Center

University of Nebraska-Lincoln

NOAA CPAS Annual Workshop, San Diego, CA, Mar. 2-4, 2010

Outline

- The NDMC Approach
- NDMC Program Areas
  - Tools
    - Drought Monitor
    - Drought Impact Reporter v2
    - Low-flow impact studies
    - VegDRI
- Drought Planning
  - Drought Ready Communities
- NIDIS
- Summary

University of Nebraska Lincoln

National Drought Mitigation Center

National Drought Mitigation Center

Founded: **1995 at the University of Nebraska-Lincoln**

Mission: **To lessen societal vulnerability to drought by promoting planning and the adoption of appropriate risk management techniques.**

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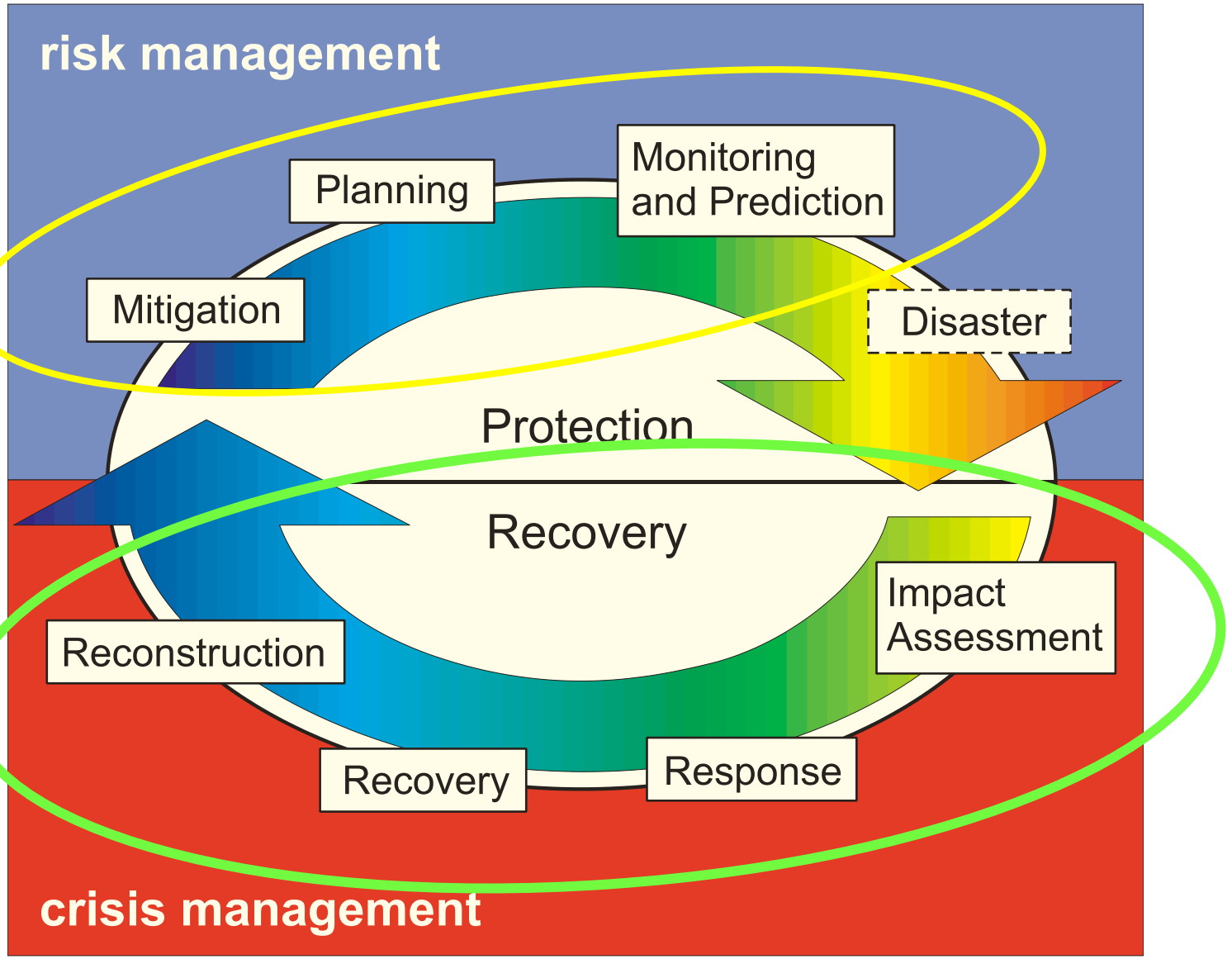
The Cycle of Disaster Management



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National Drought Mitigation Center

NDMC Program Objectives

- ***Improve the science*** of drought monitoring, planning, and mitigation
- Build ***awareness*** of drought and its ***impacts*** on society and the environment, and how human actions affect our vulnerability to drought
- Focus the attention of policy makers on the importance of ***drought policy and planning*** in the wise stewardship of natural resources

RESEARCH, OUTREACH, AND TRAINING

University of Nebraska Lincoln

National Drought Mitigation Center

1995

National Drought Mitigation Center

The National Drought Mitigation Center helps people and institutions develop and implement measures to reduce societal vulnerability to drought. The NDMC stresses prevention and risk management rather than crisis management. This approach promotes self-reliance to achieve greater resilience to drought.


Drought Watch

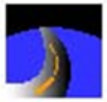

Drought Science


What's New


Climatology


Impacts


NDMC


Drought Links


Mitigation


Network


Search the Site


Methodologies


Why Plan?

http://enso.unl.edu/ndmc

Today

National Drought Mitigation Center

University of Nebraska–Lincoln

The National Drought Mitigation Center (NDMC) helps people and institutions develop and implement measures to reduce societal vulnerability to drought. The NDMC, based at the University of Nebraska–Lincoln, stresses preparation and risk management rather than crisis management.

What is Drought?	*An overview of drought • Climographs • Historical Palmer Drought Index maps and graphs • Drought and El Niño • The Dust Bowl*
Planning for Drought	*How (and why) to plan for drought • The 10-Step Planning Process • Directory of drought planning contacts*
Monitoring Drought	*How to select monitoring tools • The SPI, the U.S. Drought Monitor, and links to tools elsewhere on the web*
Understanding Your Risk	*Understanding drought's impacts • Current and historical drought impacts in the United States and around the world*
Mitigating Drought	*Putting a drought plan together • Existing drought plans and studies • Drought mitigation tools/initiatives • Water conservation*

About the NDMC
Contact Information
What's New
Site Map
Search the Site
Drought Network News
Publications

Quick Links!

For Media

Other Drought-related Sites

U.S. Drought Monitor

Interim National Drought Council

Spring 2010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News
Drought Basics
Monitoring Tools
Planning
Drought for Kids
Welcome to the website of the National Drought Mitigation Center.
The NDMC helps decision-makers reduce vulnerability to drought through monitoring, understanding impacts, and planning.
NDMC News
Scientists Agree on International Standard for Drought Monitoring
Researchers Document Effects of Drought on Bird Populations
NDMC to Help Colorado Revise Drought Plan
NDMC Helps Organize Building Sustainable Partnerships
Drought Impacts
Burn ban in Medina County
Drought waiver offered to those transporting hay and feed
Southwest Florida Water Management authorizes emergency measures to supply Tampa area water needs
Mandatory water restrictions in Central temporarily suspended
NDMC Gallery
Drought Plan Status
None
Plan emphasizes mitigation
Plan emphasizes response
Developing long-term plan
Delegates drought planning to local authorities
Current Drought Plan Status
The NDMC maintains a collection of state drought plans, contacts, agencies and other resources.
Contact Information
National Drought Mitigation Center
University of Nebraska–Lincoln
819 Hardin Hall
3310 Holdrege Street
P.O. Box 830988
NIDIS
My Computer

State Drought Planning Tool | NDMC - Windows Internet Explorer provided by School of Natural Resources

http://sucho.unl.edu/dotnetnuke/Planning/StateDroughtPlanningTool.aspx

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State Drought Planning T...

Page Tools

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About Us | News | Drought Basics | Monitoring Tools | Planning | Drought for Kids

Planning

- Why Plan for Drought?
- Monitoring
- Impacts
- Management Options
- Planning Processes
- U.S. Policy
- State Drought Planning Tool
- Tribal Drought Planning
- Resources by Sector

TEXAS State Drought Planning

Contacts

Cantrell, Johnna
State Coordinator for Preparedness and Operations
Texas Department of Public Safety
(512) 424-2453
johnna.cantrell@txdps.state.tx.us

State Climatologist

Nielsen-Gammon, John
Texas State Climatologist
Texas Office of the State Climatologist
(979) 845-5044
n-g@tamu.edu

See more contacts

State Drought Plan

Texas State Drought Preparedness Response Plan
Texas Drought Preparedness Council
See Plan

See more state and local plans

State Drought Website

Agricultural Drought Task Force: Resources on Drought Visit site

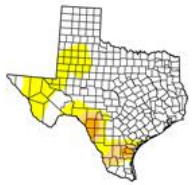
Lead Agency

Texas Water Development Board
info@twdb.state.tx.us
Visit site

State-wide Agencies and Organizations | Monitoring and Data | Local Organizations | Tribal | Farmers and Ranchers | Water Conservation

Association of Texas Soil and Water Conservation Districts	More Info	Visit site
NRCS Texas	More Info	Visit site
NWS Arkansas-Red Basin River Forecast Center	More Info	Visit site
NWS Lower Mississippi River Forecast Center	More Info	Visit site
NWS West Gulf River Forecast Center	More Info	Visit site
Office of the Texas State Climatologist	More Info	Visit site

Current U.S. Drought Monitor



Number of people currently affected by drought: 613,293

Drought Impacts

New pumps and generators to draw water from the depths of Lake Meredith
31 Dec 2009

Geese drawn to Lubbock lakes as area lakes dwindle
18 Dec 2009

Rebates offered for improving water efficiency in San Antonio yards
17 Oct 2009

Roughly $9 million in field crops lost to drought in Guadalupe County
01 Jan 2009

Internet 100%

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http://sucho.unl.edu/dotnetnuke/MonitoringTools.aspx

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U.S. Drought Monitoring

Climatological Drought Indicators

At the country scale, climatologists recommend that policymakers work with large-scale or nation-wide drought indicators. These include the:

- U.S. Drought Monitor
- Seasonal Drought Outlook
- Standardized Precipitation Index
  - Monthly suite of SPI maps produced by the NDMC
  - Daily gridded SPI
  - Monthly SPI maps and related products from the Western Regional Climate Center
  - SPI maps from the National Oceanic and Atmospheric Administration
- Palmer Drought Severity Index
- Crop Moisture Index
- Various Soil Moisture Indices

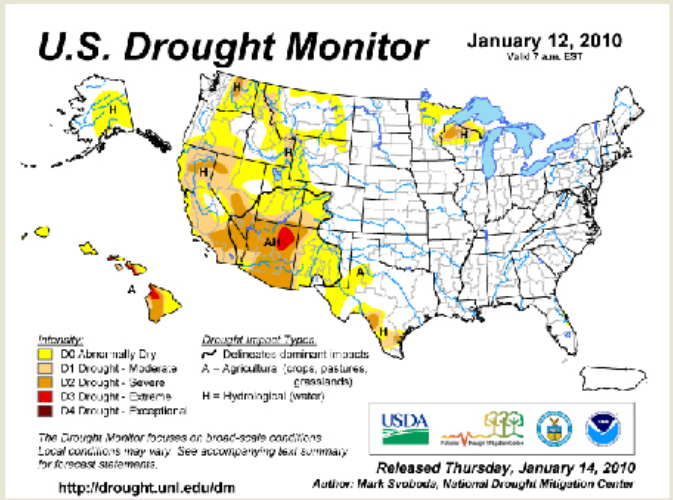
To compare the pros and cons of these climatological indices, please refer to A Comparison of Drought Indices .

Remote Sensing of Drought

Remote sensing – i.e., satellites – also provide useful data, at a variety of spatial scales. The NDMC is developing the Vegetation Drought Response Index, which shows how much of the dryness in farm and ranch land is due to drought. A collection of links to more drought monitoring information derived from remote sensing is on the U.S. Drought Portal.

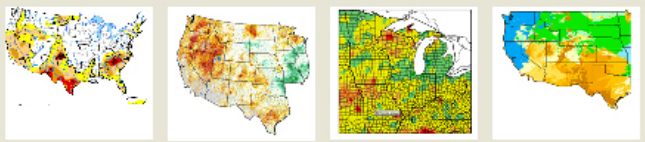
Hydrologic Indicators of Drought

Monitoring Tools



Drought Monitor

The U.S. Drought Monitor is a composite index, combining a variety of drought indicators into a single map.



Drought Monitor | VegDRI | Gridded SPI | Rain/Dry Days

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DroughtScape

The Newsletter of the National Drought Mitigation Center

Winter 2010

USDM Forum Highlights

The biennial U.S. Drought Monitor Forum is a chance for stakeholders and scientists to refine the weekly drought map. Read highlights from the October forum on pages 10 and 11.

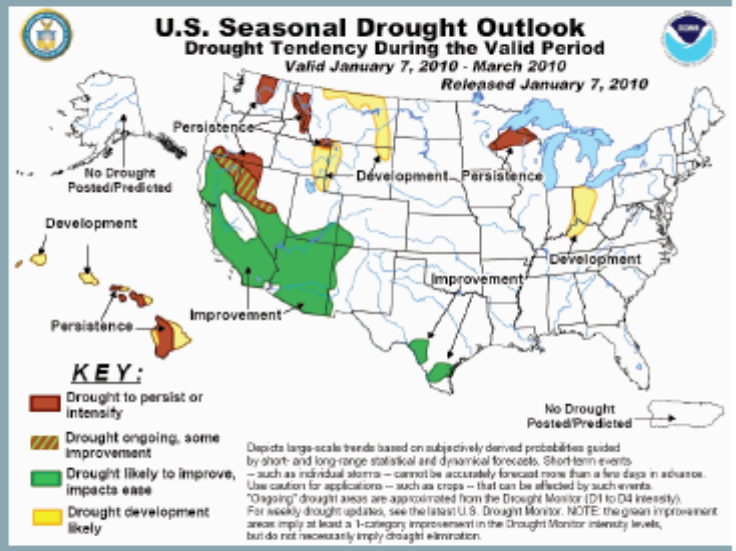
Research Shows Birds Vulnerable to Drought

© Bruce Rosenstiel

Brian Wardlow, GIScience program area leader at the NDMC, was part of a research team that detailed the effects of drought on various bird

Drought Likely to Ease

Drought conditions in the Southwest, along the Gulf Coast, and in south Texas are likely to improve this winter and spring, due to the El Niño pattern that will gradually return to normal by late spring.



For the full outlook and summary of October-December 2009 drought conditions, please see pages 2-3.

Drought Recedes in 2009

The area of the United States that was abnormally dry or in drought was at its lowest point in 10 years in October 2009. For a complete climatological overview of drought in 2009, please see pages 4-5.

Workshops on Drought Management Tools

- Building partnerships and trust
- Provide producers and advisors with easy-to-use tools and data to better understand the linkages between local climate/drought and decision making
- Obtain feedback on what information or tools are needed to better understand these linkages
  - Multiple feedback approaches
- Effectively plan and prepare for drought

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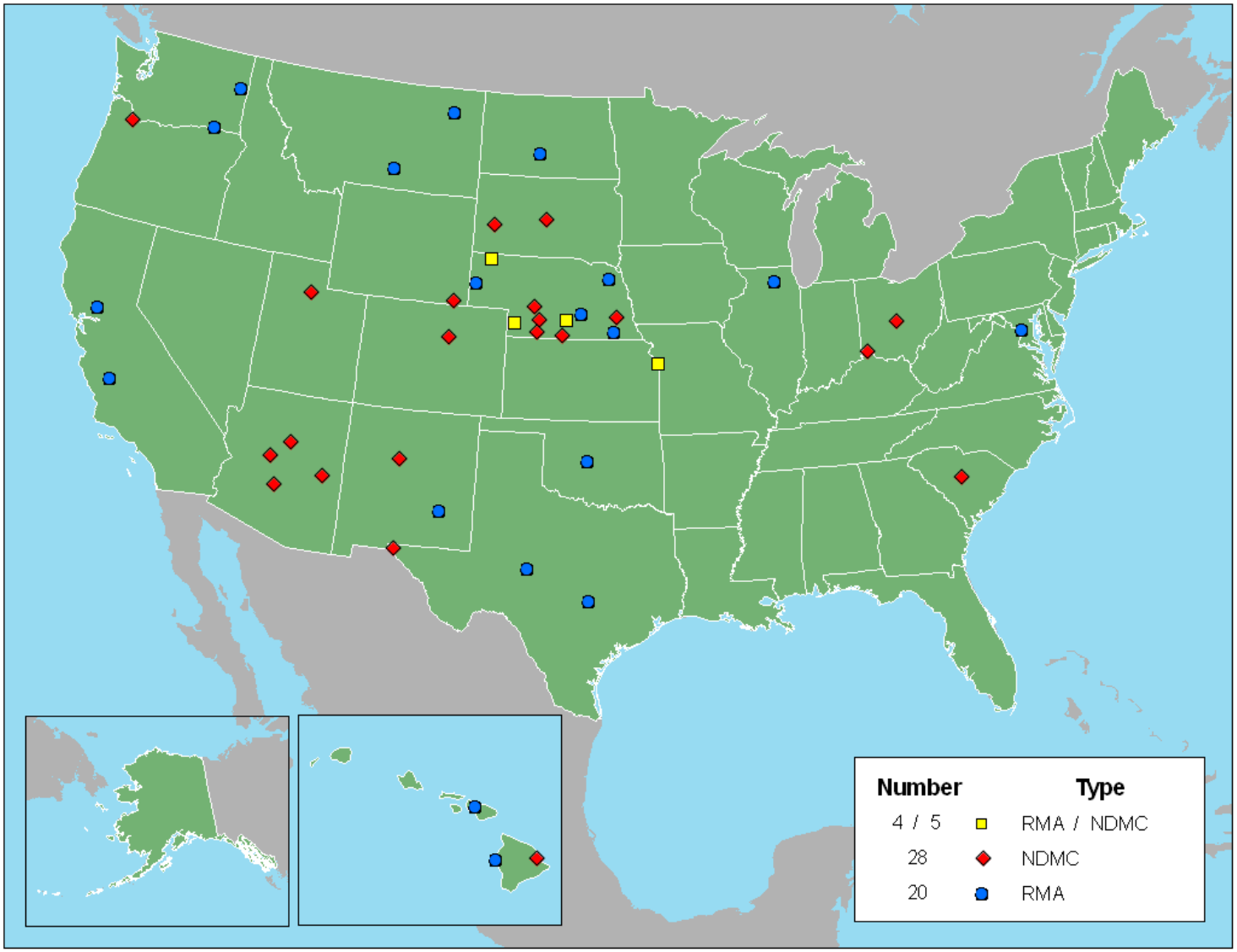
NDMC Stakeholder Workshops 1996-2009



Goal: Make NDMC tools so easy to use a Caveman can do it!

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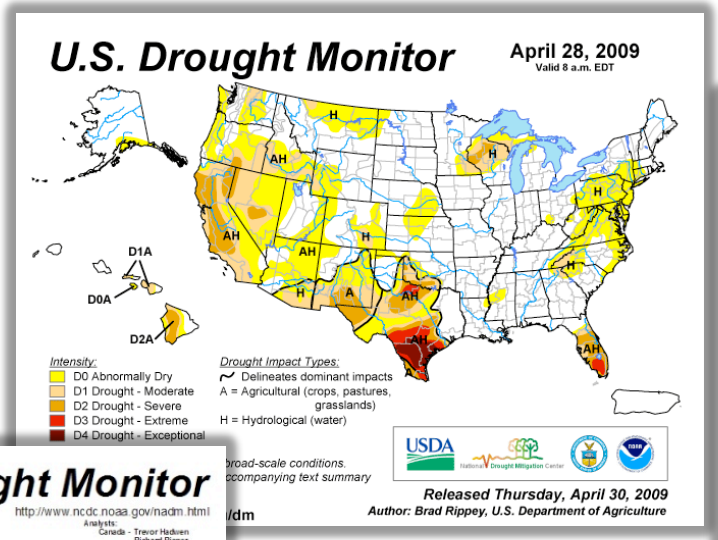
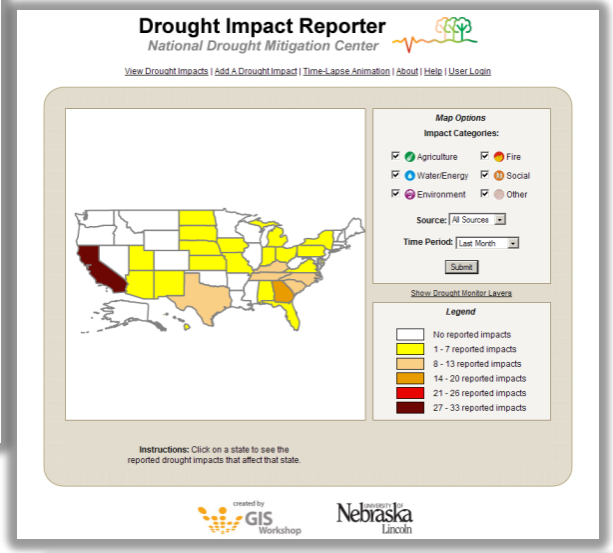
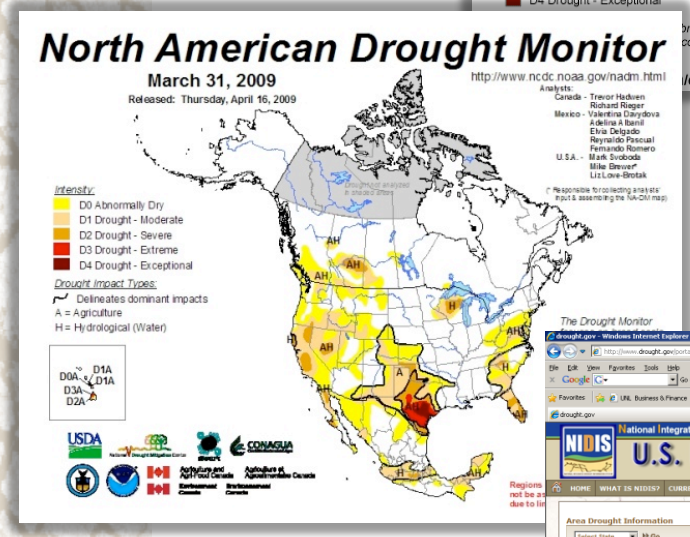
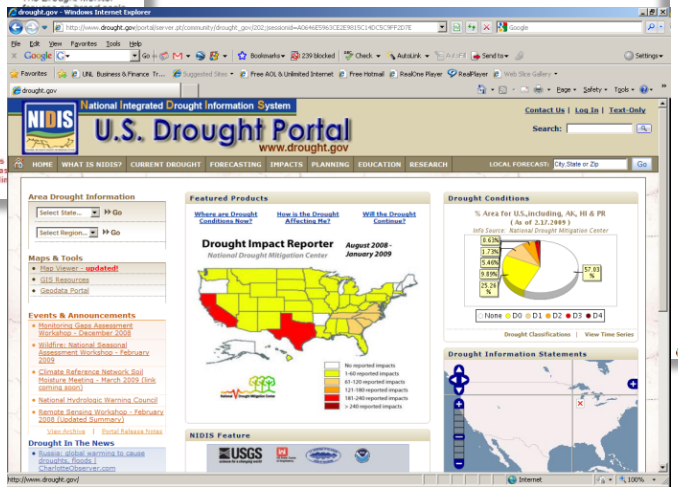
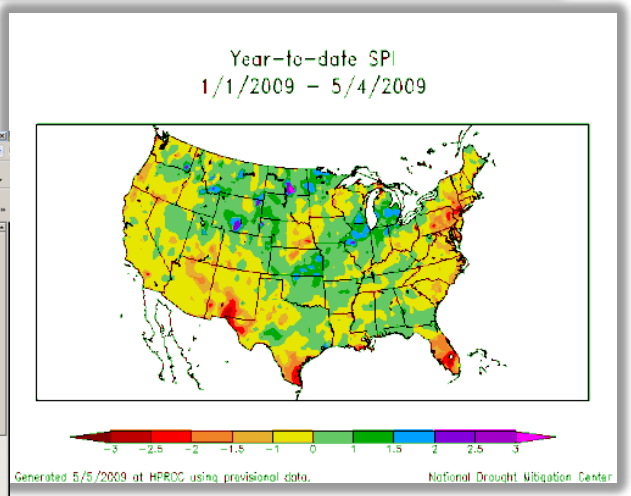
NDMC's Monitoring Program Area











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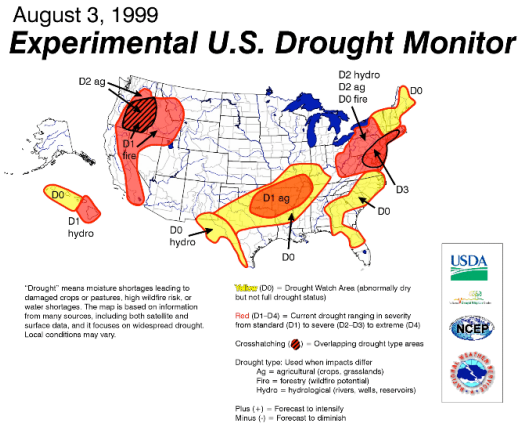
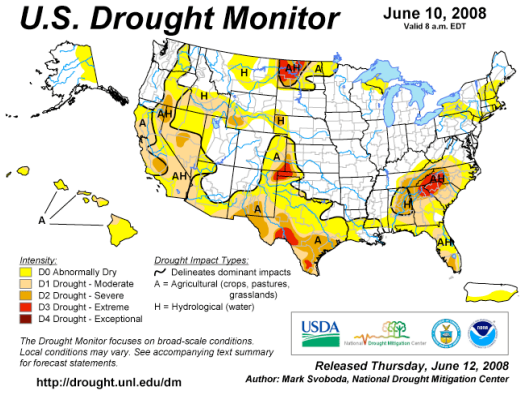
The U.S. Drought Monitor

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

- **Western Region Climate Center on board 2008**
  - **CalDry listserver hosted by CA DWR**
- **10 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.) *(~260 experts)***





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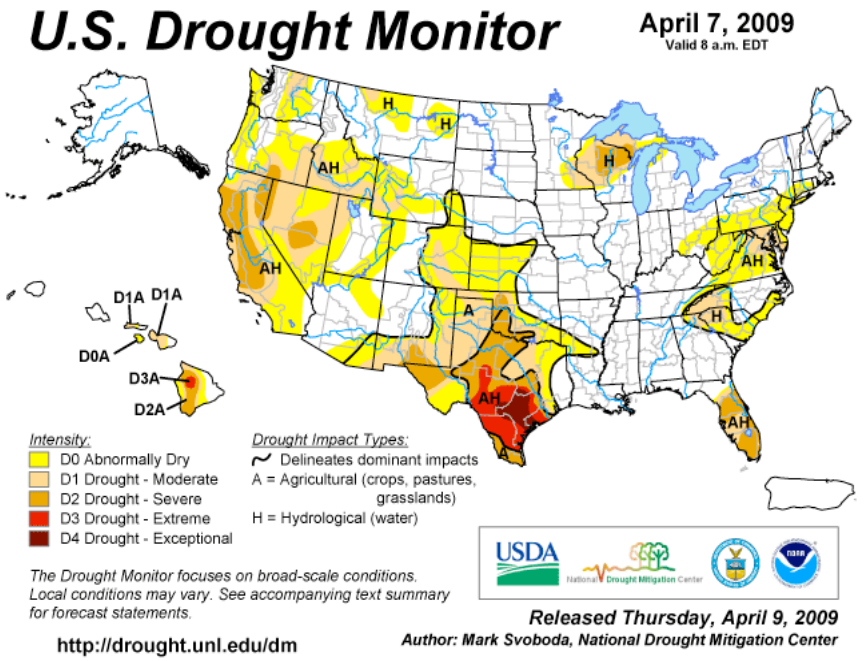
Some Drought Monitor Factoids

- Happy Birthday: 10 Years Old!
- Map #500 (4/7/09)
- Smallest D1-D4 extent: 6.64% on 2/9/10
- Largest D1-D4 extent: 45.64% on 9/10/02
- 20 states have never ha any D4 w/in their borders



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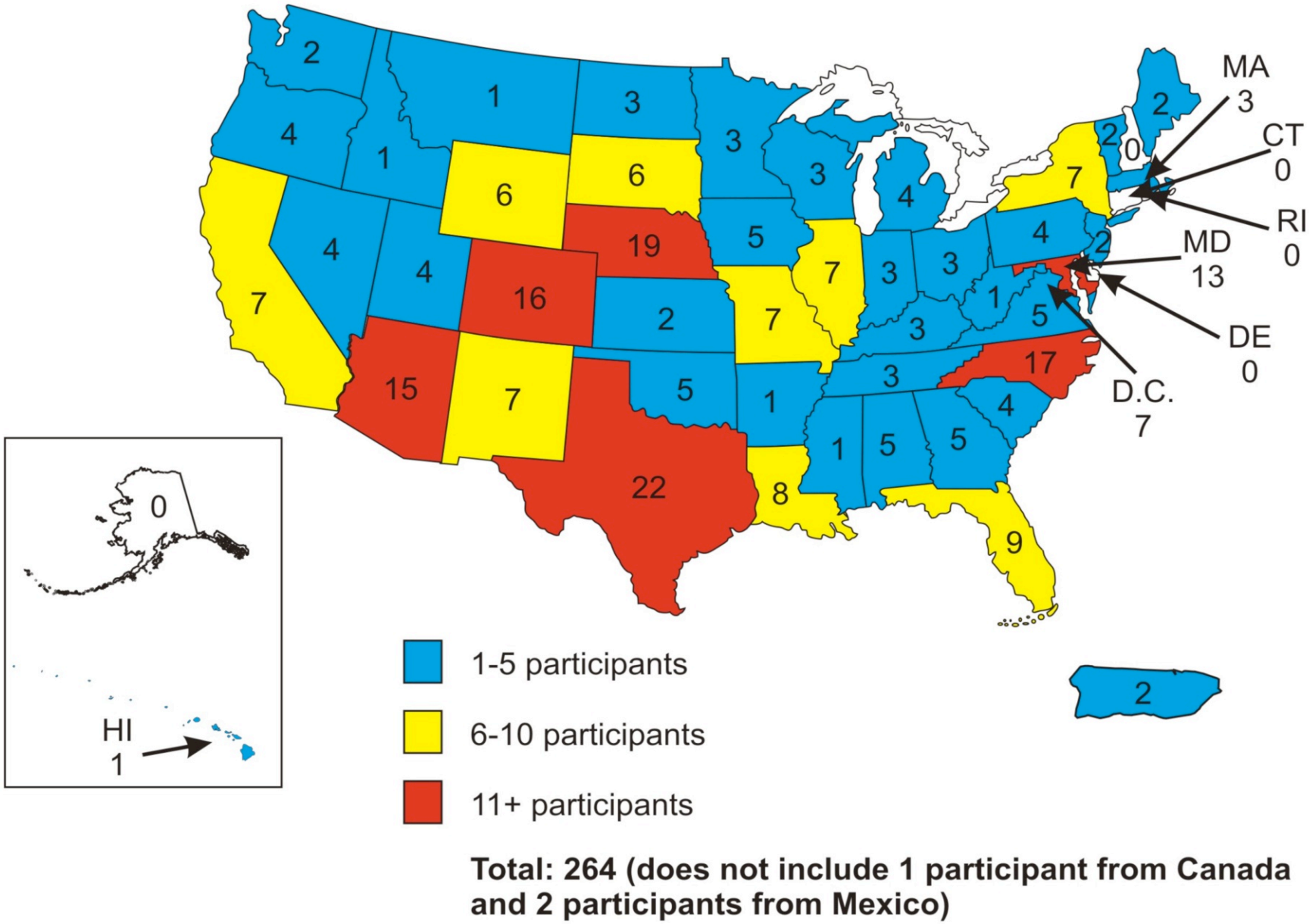
USDM Listserve Subscribers

(as of January 13, 2010)



Total: 264 (does not include 1 participant from Canada and 2 participants from Mexico)

The Drought Monitor is widely used:

- ***Policy**: Farm Bill/IRS/USDA/NOAA DGT/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***
- ***NIDIS** portal/portlet*
- *A **model** of interagency/level collaboration*

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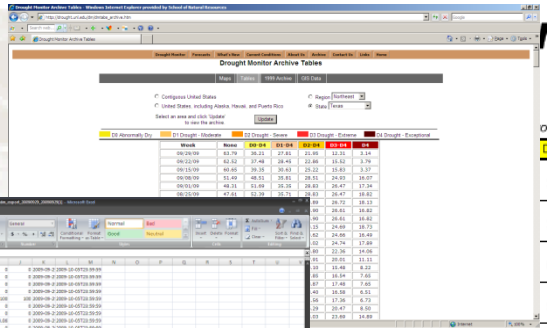
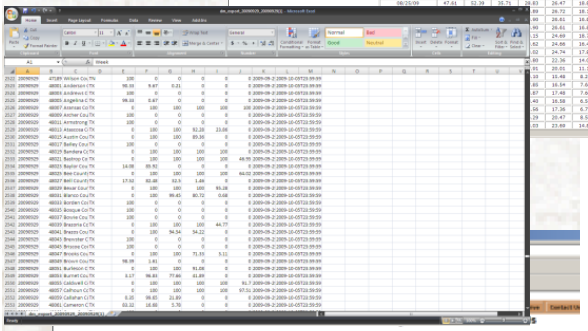




rought Monitor
Texas

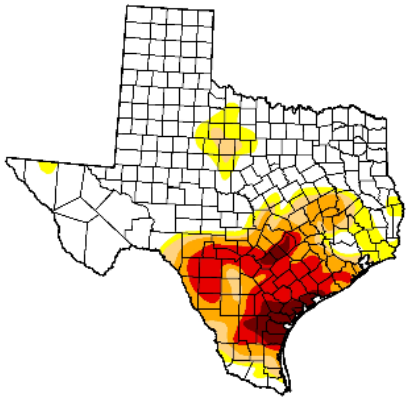
September 29, 2009
Valid 7 a.m. EST

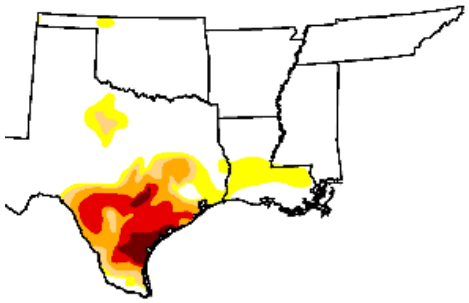
tor

September 29, 2009
Valid 7 a.m. EST

ought Conditions (Percent Area)

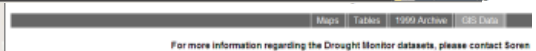
	D0-D4	D1-D4	D2-D4	D3-D4	D4
	36.2	27.8	21.9	12.3	3.1
	37.5	28.5	22.9	15.5	3.8
	62.3	39.4	28.8	22.4	14.1
	58.3	24.5	15.0	9.1	4.2
Start of Water Year (10/07/2008 map)	67.2	32.8	20.5	11.0	3.6	0.0
One Year Ago (09/30/2008 map)	67.0	33.0	20.1	9.5	3.6	0.0





Intensity:

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



For more information regarding the Drought Monitor datasets, please contact Soren mail or at [redacted].
View the most current Drought Monitor in Google Earth: Current Drought Monitor
View the most current Drought Monitor WMS service: Current Drought Monitor WMS
For more information regarding the file formats, click on the appropriate format: Drought Mon
GML files OGC WMS files Excel files
For more information regarding the Drought Monitor color scheme, please visit: DM Colors
Please cite the Drought Monitor by including the National Drought Mitigation Center (NDMC), Agriculture (USDA) and the National Oceanic and Atmospheric Association (NOAA).

2009 2008 2007 2006 2005 2004 2003 2002 2001 2000

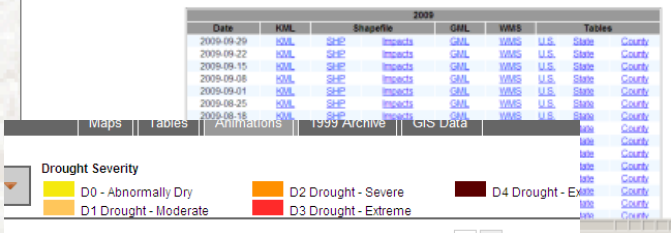
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, October 1, 2009

Author: D. Miskus, JAWF/CPC/NOAA



2009

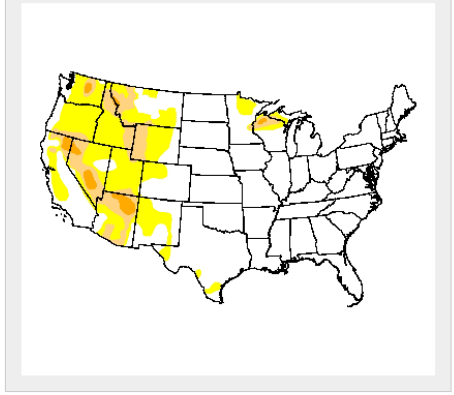
Date	KML	Shapefile		GML	WMS	Tables	
2009-09-29	KML	SHP	Impacts	GML	WMS	U.S.	State	County
2009-09-22	KML	SHP	Impacts	GML	WMS	U.S.	State	County
2009-09-15	KML	SHP	Impacts	GML	WMS	U.S.	State	County
2009-09-08	KML	SHP	Impacts	GML	WMS	U.S.	State	County
2009-09-01	KML	SHP	Impacts	GML	WMS	U.S.	State	County
2009-08-25	KML	SHP	Impacts	GML	WMS	U.S.	State	County
2009-08-18	KML	SHP	Impacts	GML	WMS	U.S.	State	County

Maps | Tables | Animations | 1999 Archive | GIS Data

Drought Severity

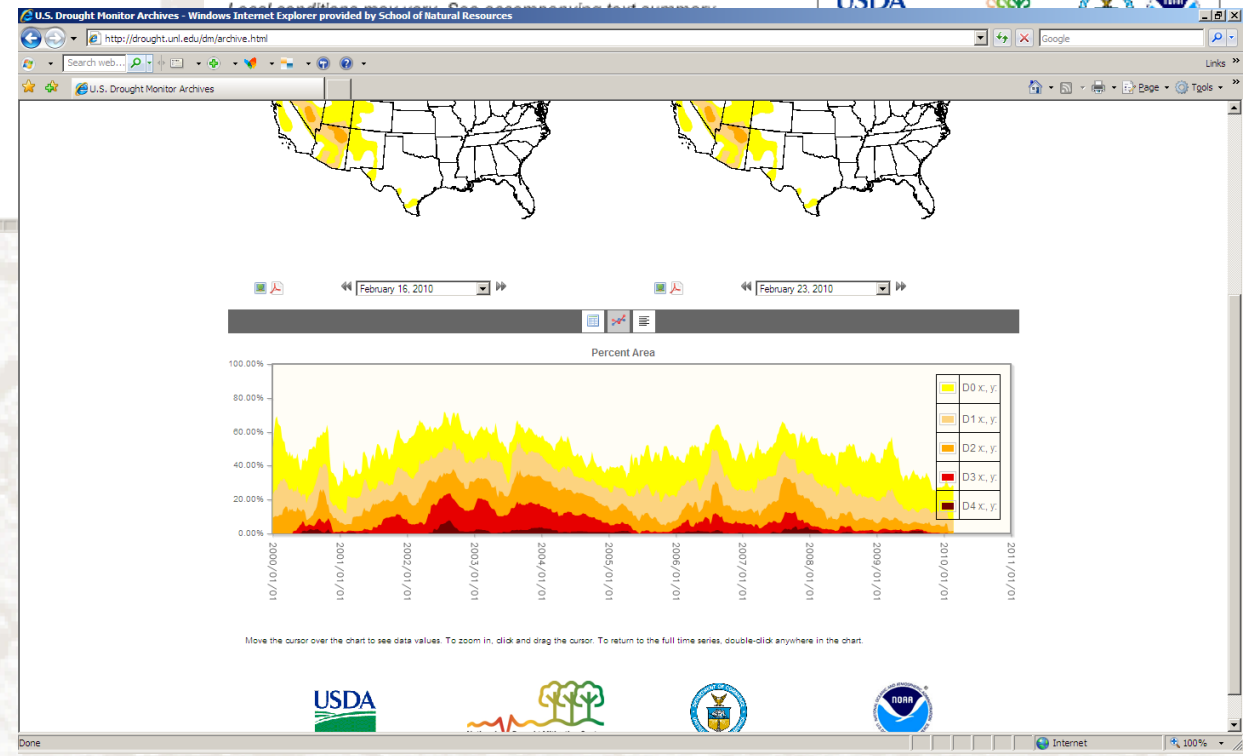
- D0 - Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Ex

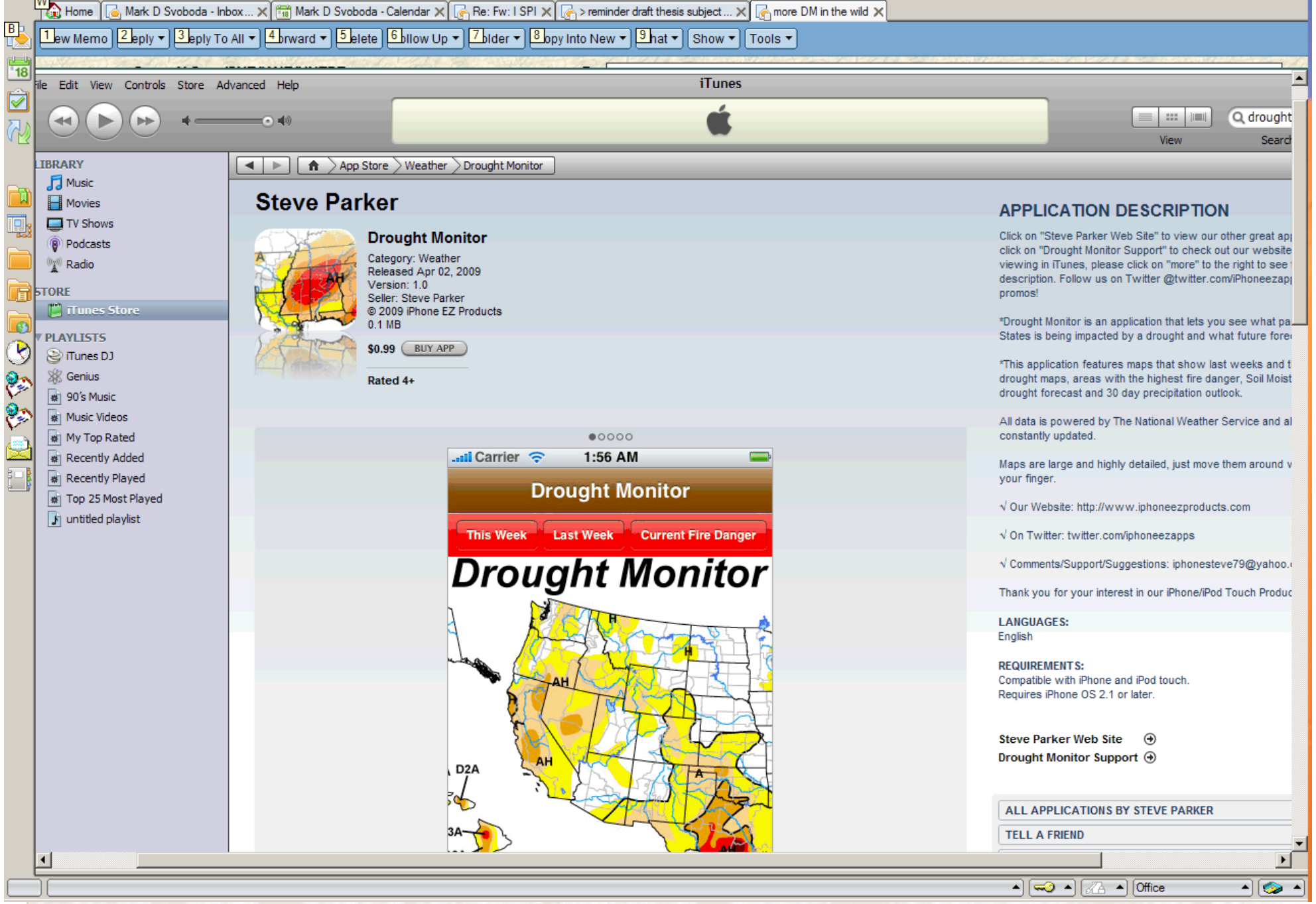
February 23, 2010



Previous Weeks: 4 | 12 | 24 | 52

Hover over the image to pause. Click the image to move to the next week.

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Recently Added
Recently Played
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Drought Monitor
Steve Parker
Drought Monitor
Category: Weather
Released Apr 02, 2009
Version: 1.0
Seller: Steve Parker
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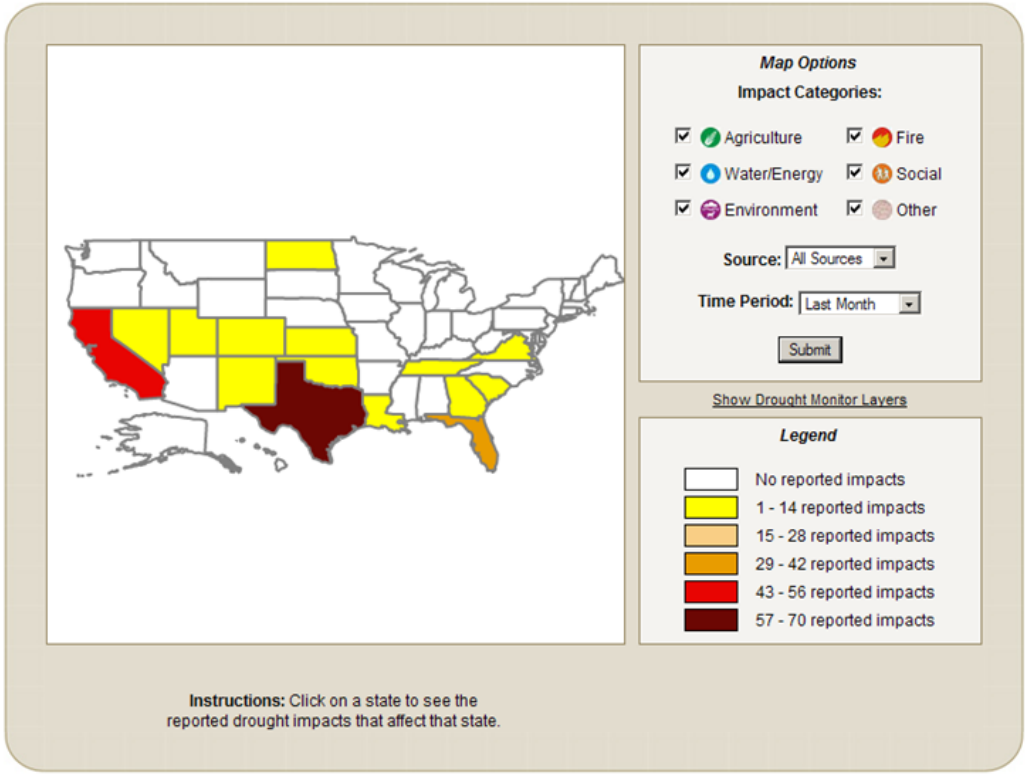
BUY APP
Rated 4+
Carrier
1:56 AM
Drought Monitor
This Week
Last Week
Current Fire Danger
Drought Monitor
AH
D2A
3A
APPLICATION DESCRIPTION
Click on "Steve Parker Web Site" to view our other great ap
click on "Drought Monitor Support" to check out our website
viewing in iTunes, please click on "more" to the right to see
description. Follow us on Twitter @twitter.com/iPhoneezap
promos!
*Drought Monitor is an application that lets you see what pa
States is being impacted by a drought and what future fore
*This application features maps that show last weeks and t
drought maps, areas with the highest fire danger, Soil Moist
drought forecast and 30 day precipitation outlook.
All data is powered by The National Weather Service and al
constantly updated.
Maps are large and highly detailed, just move them around v
your finger.
√ Our Website: http://www.iphoneezproducts.com
√ On Twitter: twitter.com/iphoneezapps
√ Comments/Support/Suggestions: iphonesteve79@yahoo.
Thank you for your interest in our iPhone/iPod Touch Produc
LANGUAGES:
English
REQUIREMENTS:
Compatible with iPhone and iPod touch.
Requires iPhone OS 2.1 or later.
Steve Parker Web Site
Drought Monitor Support
ALL APPLICATIONS BY STEVE PARKER
TELL A FRIEND
Office





The Drought Impact Reporter v2

http://droughtreporter.unl.edu



Sponsor: USDA-Risk Management Agency and National Oceanic and Atmospheric Administration's Transition of Research Applications to Climate Services Program (TRACS)

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Why Track Drought Impacts?

- Establish an impacts ***baseline*** for monitoring
  - Climate change
- To know where to direct ***relief***
- To reduce ***vulnerability*** in advance of the next drought
- ***"Ground truth"*** indices
- No single method exists for collecting and/or ***quantifying*** drought losses

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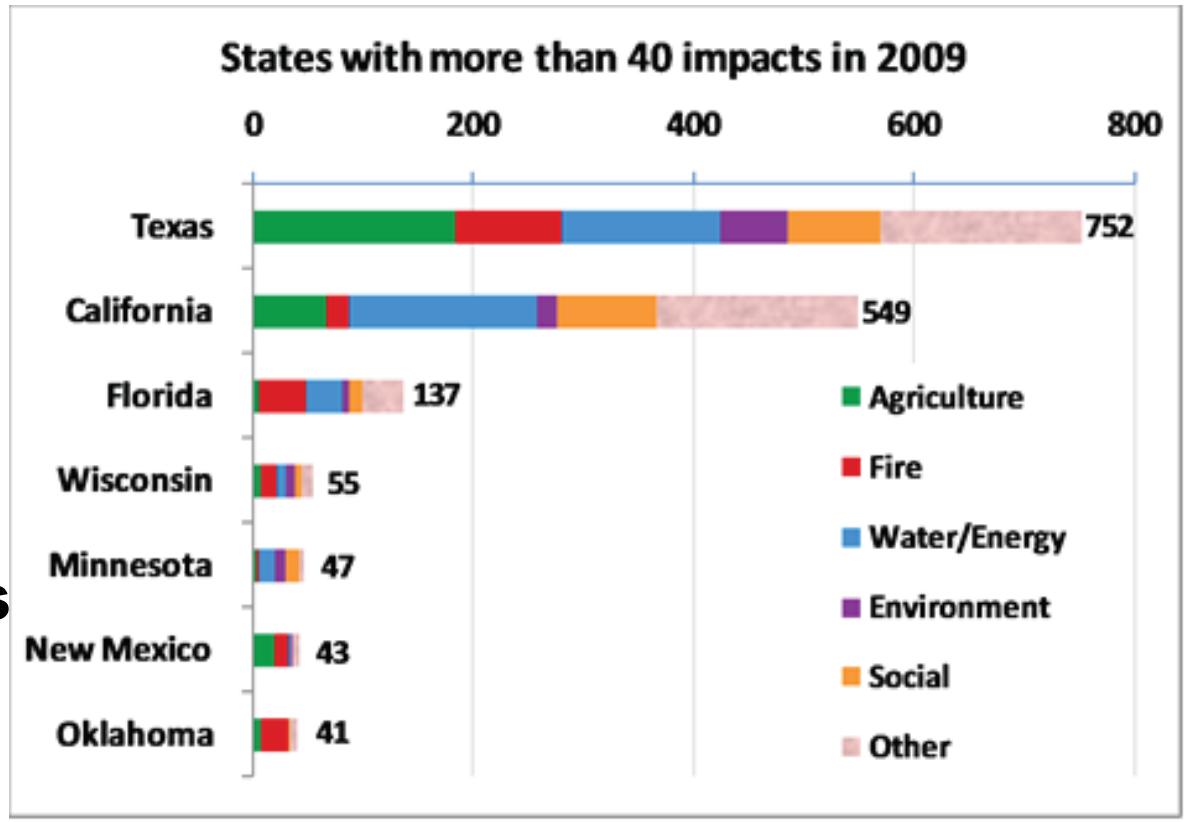
Some DIR Factoids

- Established in 2005
- DIR DB now contains ~11,000 impacts
- 1,891 impacts added in 2009



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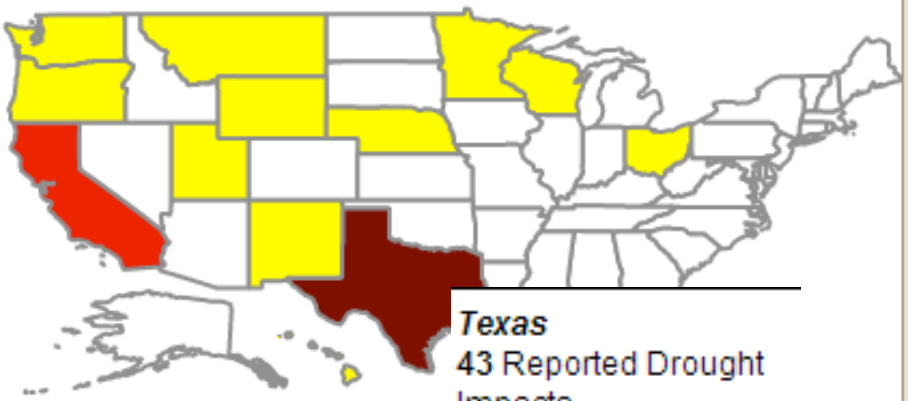
National Drought Mitigation Center

Drought Impact Reporter, October 5, 2009

View Drought Impacts | Add A Drought Impact | Time-Lapse Animation | About | Help | User Login



Texas
43 Reported Drought Impacts

- **6** Agriculture
- **4** Fire
- **10** Water/Energy
- **9** Environment
- **3** Social
- **11** Other

Instructions: Click or
reported drought impact

Map Options

Impact Categories:

- ☑ Agriculture
- ☑ Fire
- ☑ Water/Energy
- ☑ Social
- ☑ Environment
- ☑ Other

Source: All Sources

Time Period: Last Month

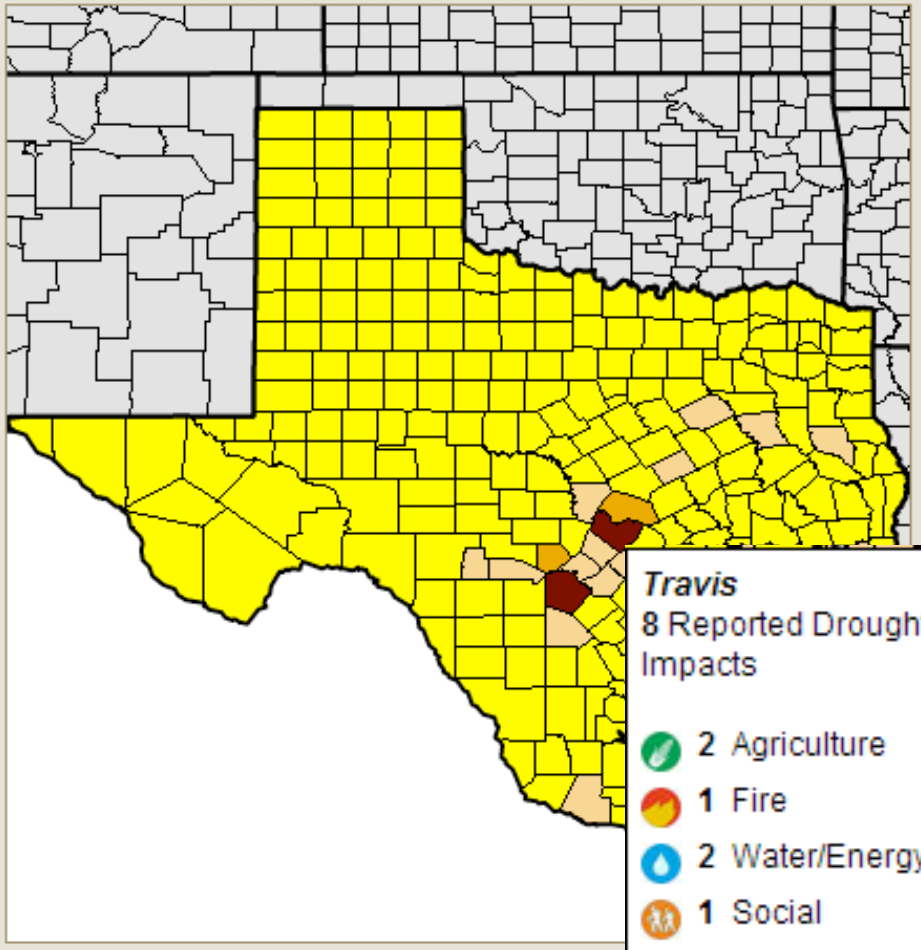
Submit

Show Drought Monitor Layers

Legend

- No reported impacts
- 1 - 9 reported impacts
- 10 - 17 reported impacts
- 18 - 26 reported impacts
- 27 - 34 reported impacts
- 35 - 43 reported impacts

View Drought Impacts | Add A Drought Impact | Time-Lapse Animation | About | Help | User Login



Travis
8 Reported Drought Impacts

- **2** Agriculture
- **1** Fire
- **2** Water/Energy
- **1** Social
- **2** Other

Map Options

Impact Categories:

- ☑ Agriculture
- ☑ Fire
- ☑ Water/Energy
- ☑ Social
- ☑ Environment
- ☑ Other

Source: All Sources

Time Period: Last Month

Submit

Show Drought Monitor Layers

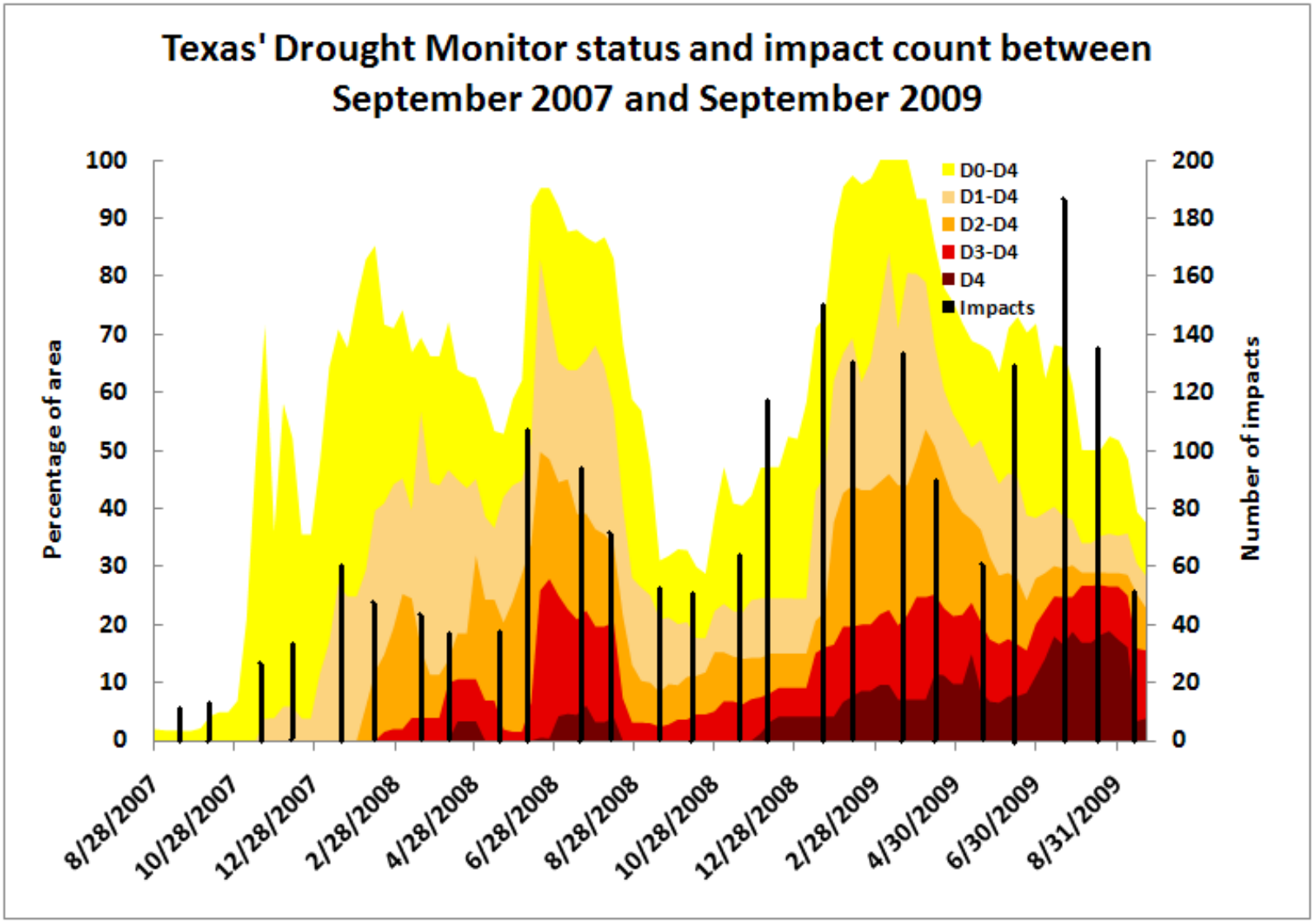
Legend

- No reported impacts
- 1 - 2 reported impacts
- 3 - 4 reported impacts
- 5 reported impacts
- 6 - 7 reported impacts
- 8 - 9 reported impacts

Zoom To Entire U.S.

Instructions: Click on a county to list the reported drought impacts that affect it.

Drought Status & Impacts, TX



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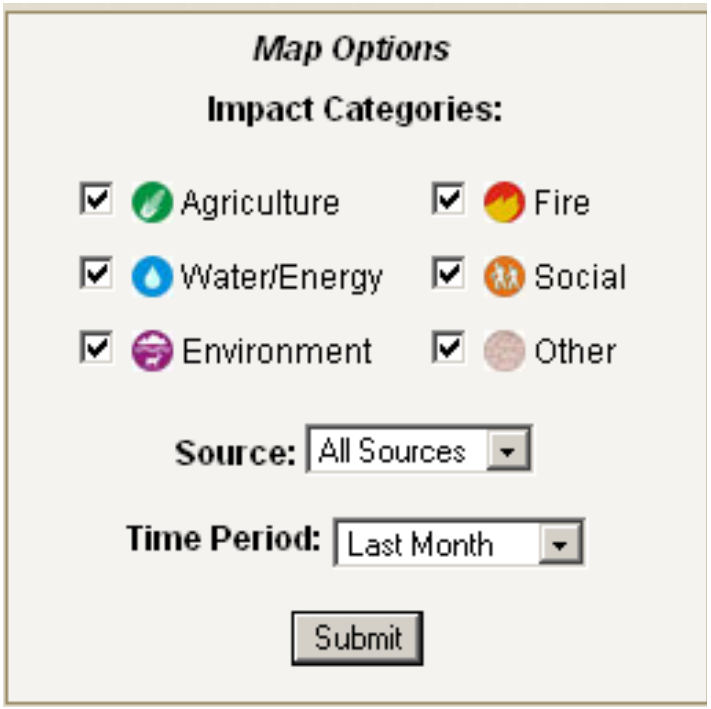
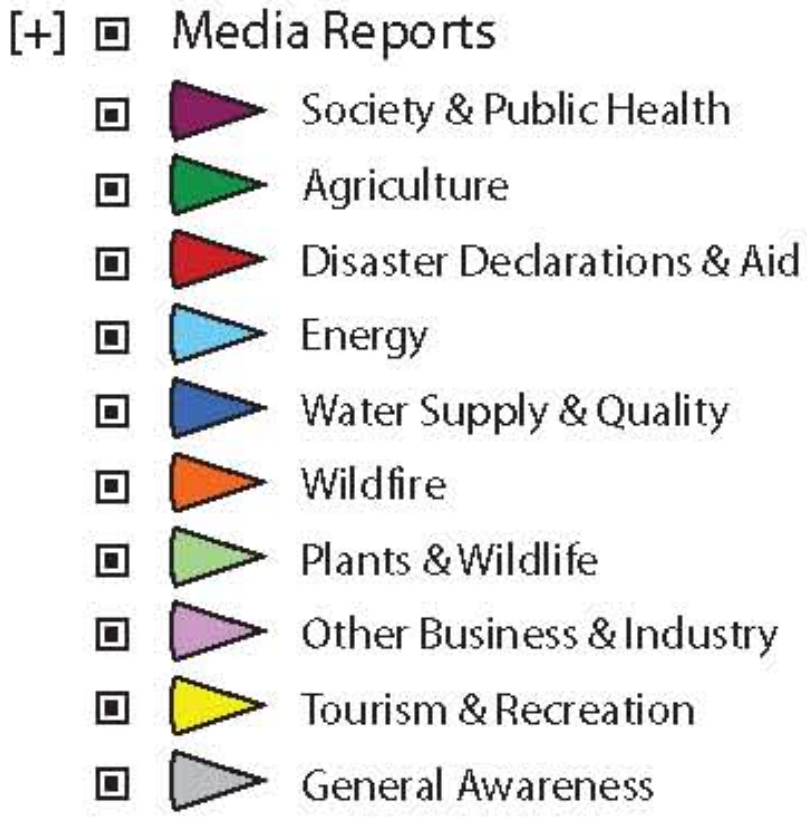
What We've Learned: Refine Categories

Current



Planned



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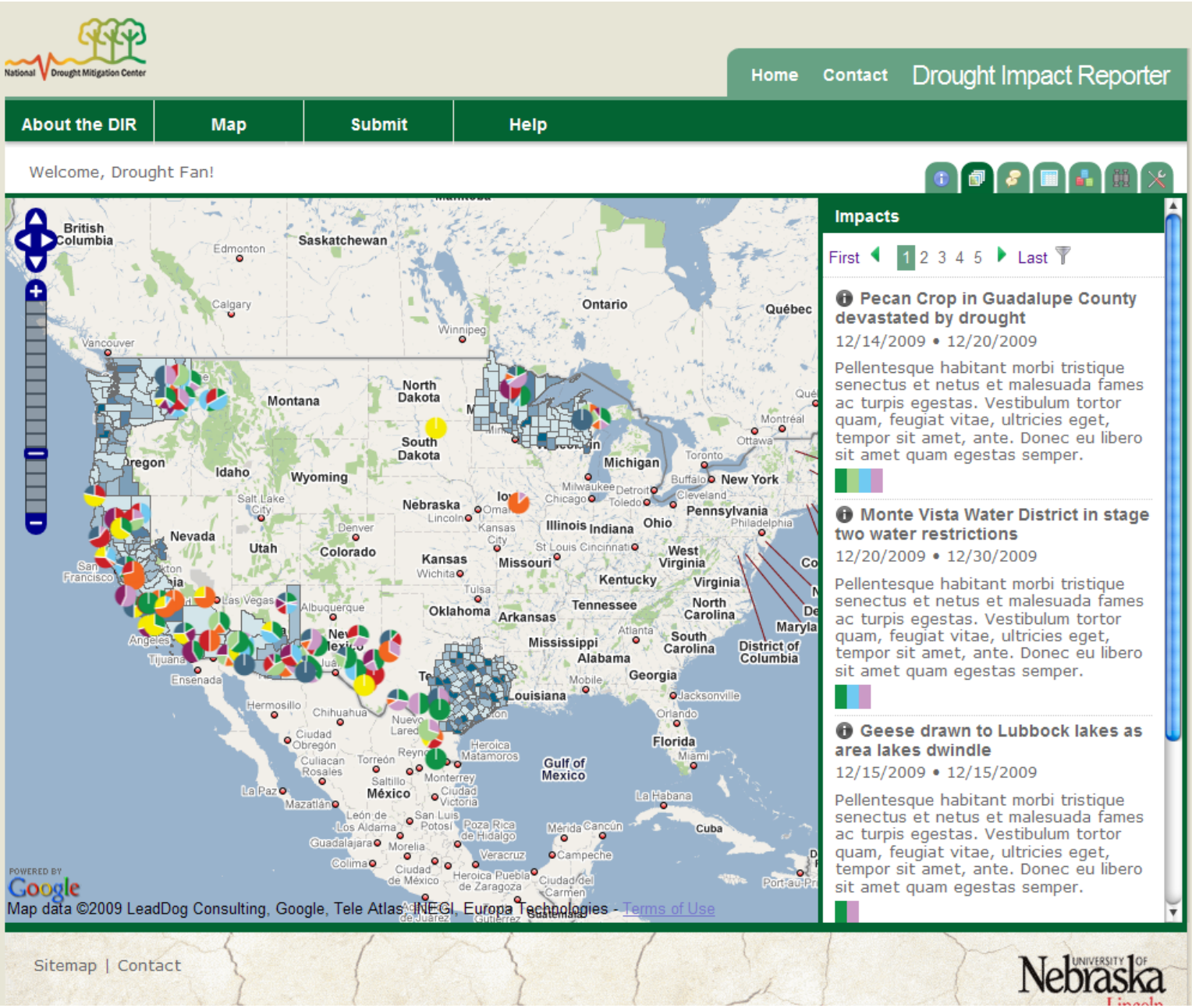

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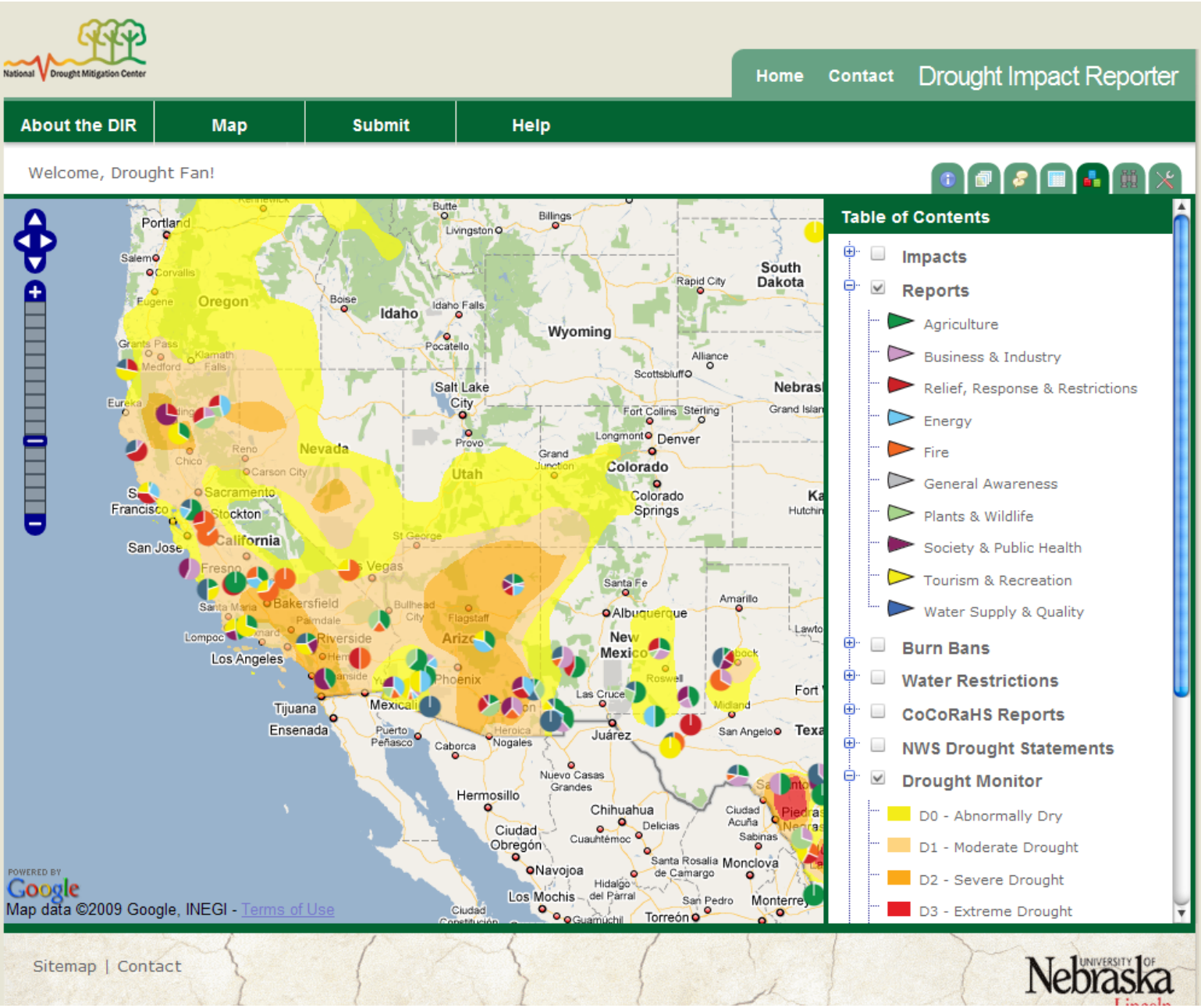

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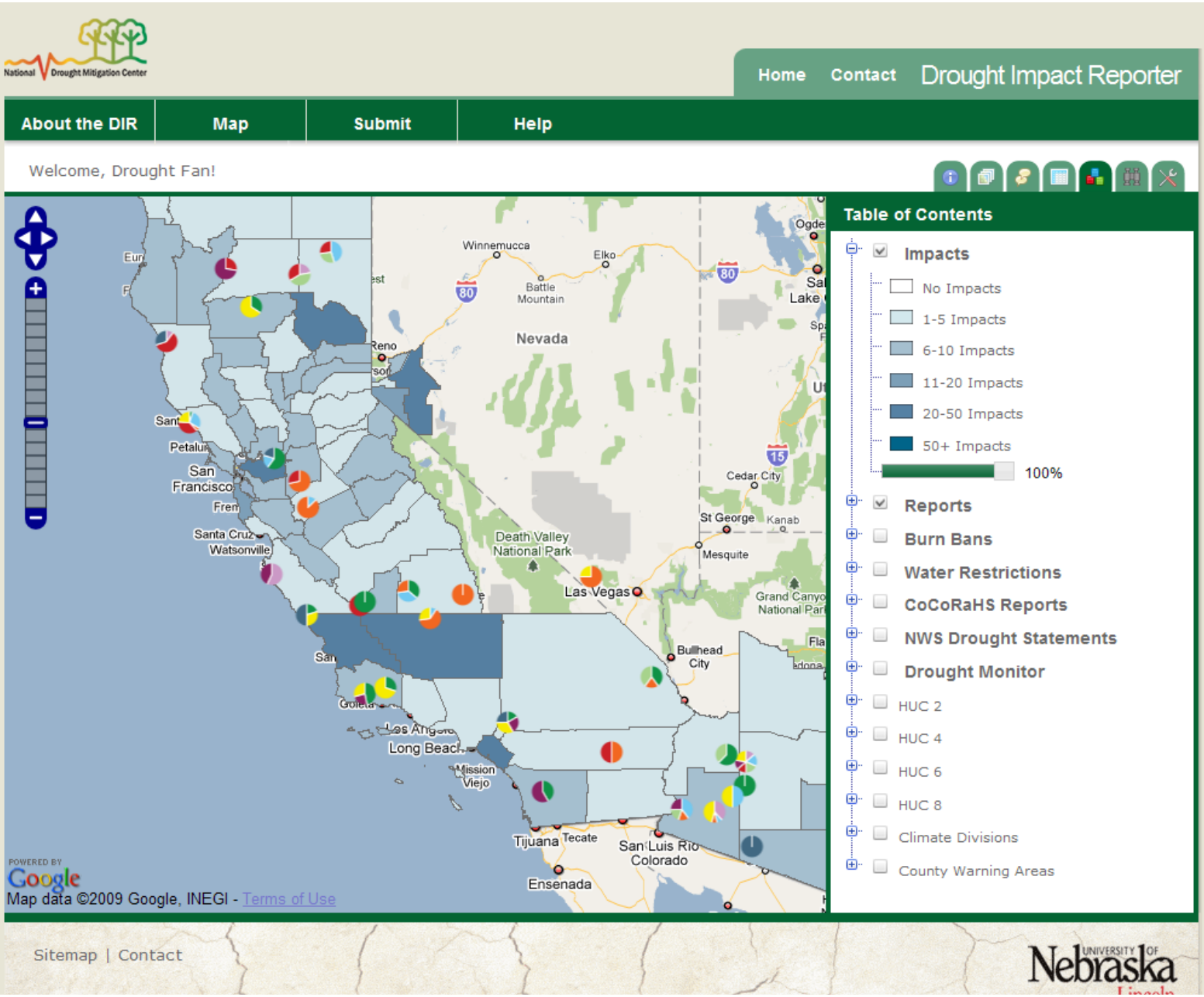

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Promoting the "drought impacts reporting" idea to their volunteers

* **14,000+ volunteers covering all 50 states!!**

* **CoCoRaHS "Message of the Day"**

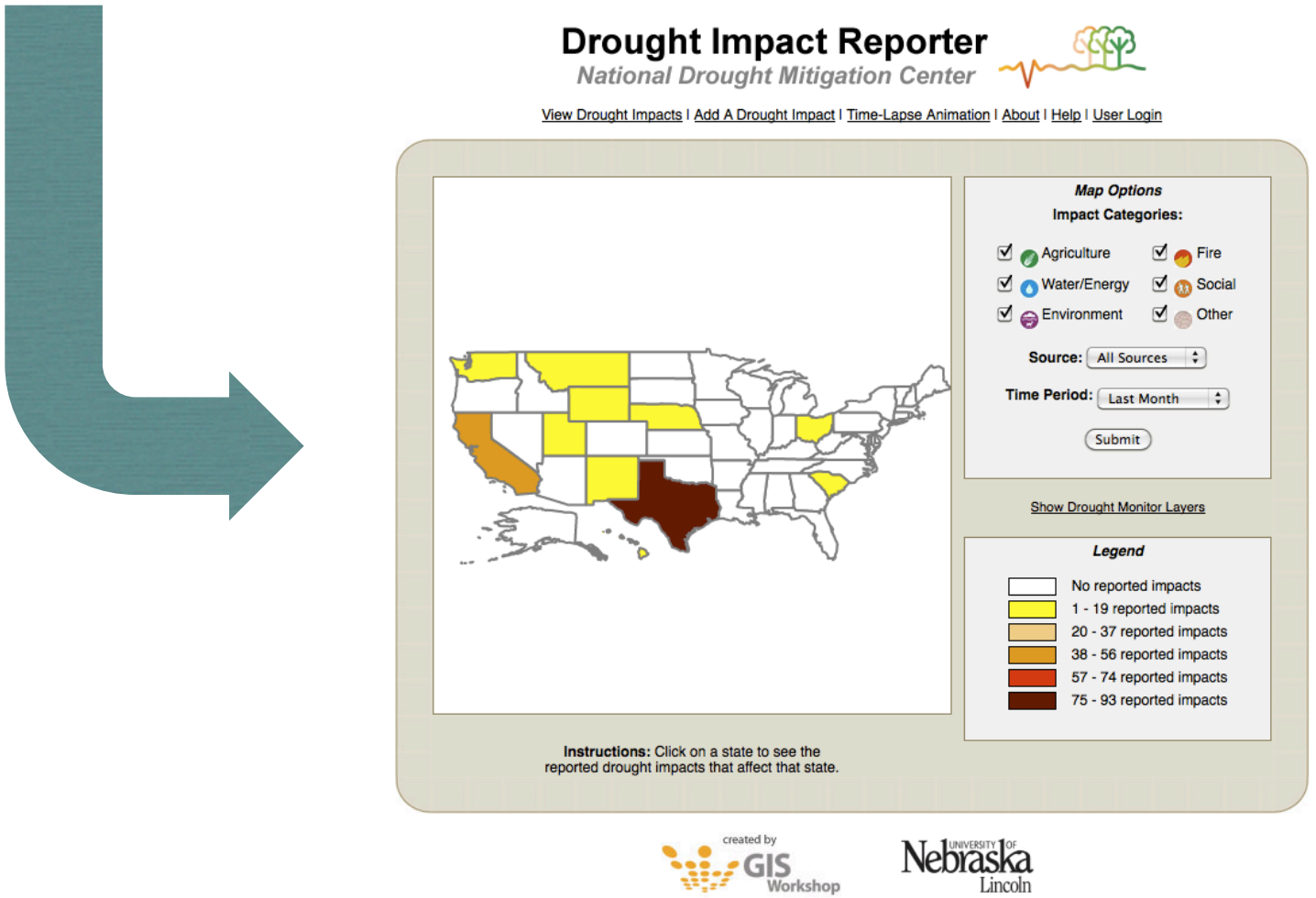
* **Monthly e-mail reminders**

* **Emphasis in training sessions**

* **Banners on the Web site**

Courtesy: Henry Reges, Colorado State University

CoCoRaHS drought impact reports



Courtesy: Henry Reges, Colorado State University

Enhancing the Advanced Hydrologic Prediction Service:

A Program to Develop A Low-Flow/Stage Database for Selected NWS Forecast Points in the Upper Colorado River Basin

Mark Svoboda, Climatologist, Monitoring Program Area Leader, NDMC

Dr. Donna L. Woudenberg, Drought Management Specialist, NDMC

Dr. Cody L. Knutson, Water Resources Scientist, NDMC

Doug Kluck, NOAA-NWS CRHQ

Development of a low flow/stage impacts database for AHPS forecast points

Objective 1: Identify low flow/stage related impacts near NWS forecast points

Objective 2: Use impact information to establish low flow/stage warning triggers (drought stages)

Objective 3: Develop low flow/stage river forecasts

Incorporate data into the NWS National Hydrologic Database and the AHPS system

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Low-flow / Drought Impacts

- Economic
  - Costs and losses to agricultural and livestock producers
  - Loss from timber production
  - Loss from fishery production
  - Loss to recreation and tourism industry
  - Energy-related effects
  - Water Suppliers
  - Transportation Industry / navigation
  - Decline in food production/disrupted food supply
- Environmental
  - Damage to animal species
  - Hydrological effects
  - Damage to plant communities
  - Increased number and severity of fires
  - Wind and water erosion of soils, reduced soil quality
  - Air quality effects (e.g., dust, pollutants)
  - Visual and landscape quality (e.g., dust, vegetative cover, etc.)

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Low-flow / Drought Impacts

- Social
  - Health
  - Increased conflicts (“water wars”)
  - Reduced quality of life, changes in lifestyle
  - Disruption of cultural belief systems (e.g., religious and scientific views of natural hazards)
  - Reevaluation of social values (e.g., priorities, needs, rights)
  - Public dissatisfaction with government drought response
  - Perceptions of inequity in relief, possibly related to socioeconomic status, ethnicity, age, gender, seniority
  - Loss of cultural sites
  - Increased data/information needs, coordination of dissemination activities
  - Recognition of institutional restraints on water use

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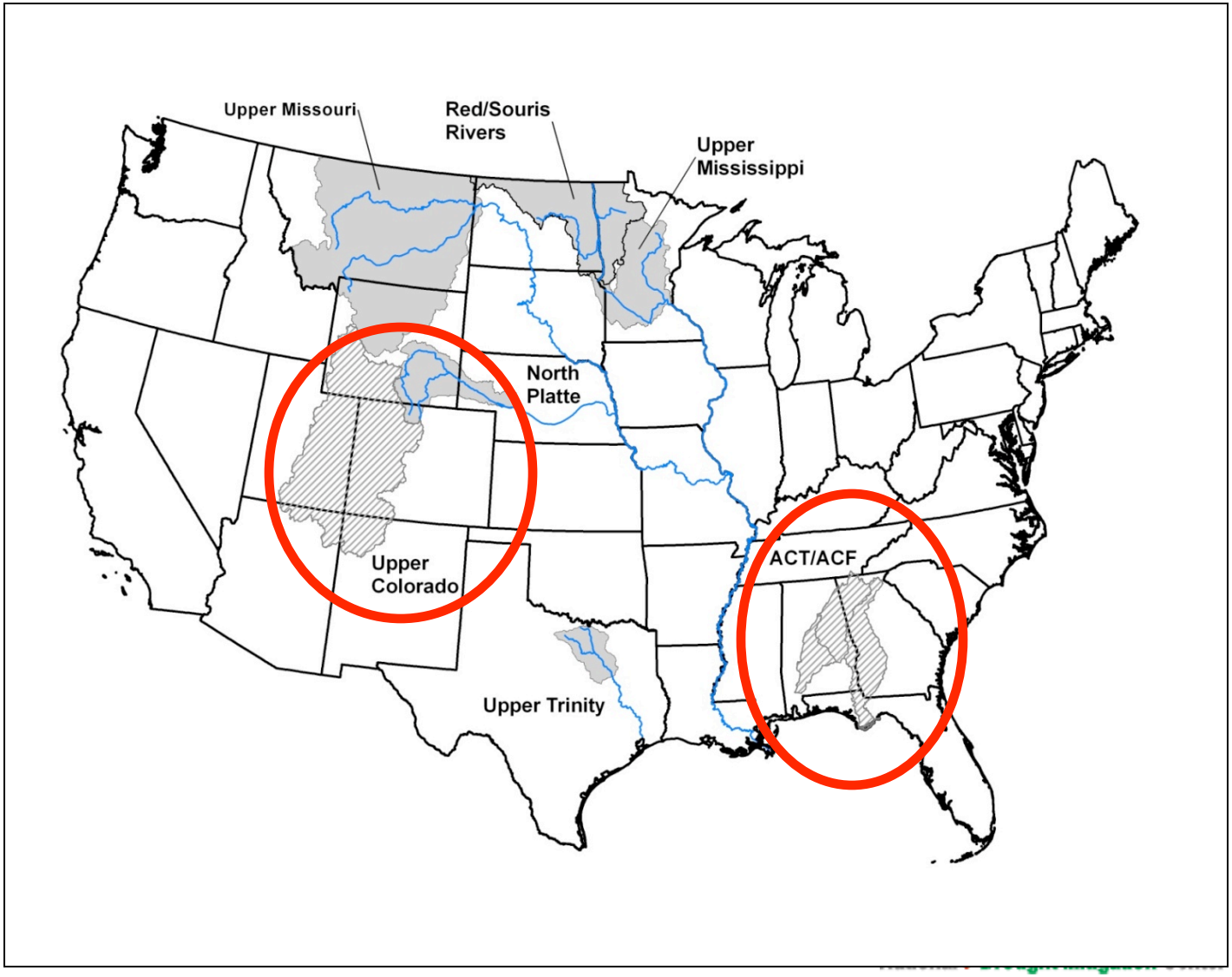
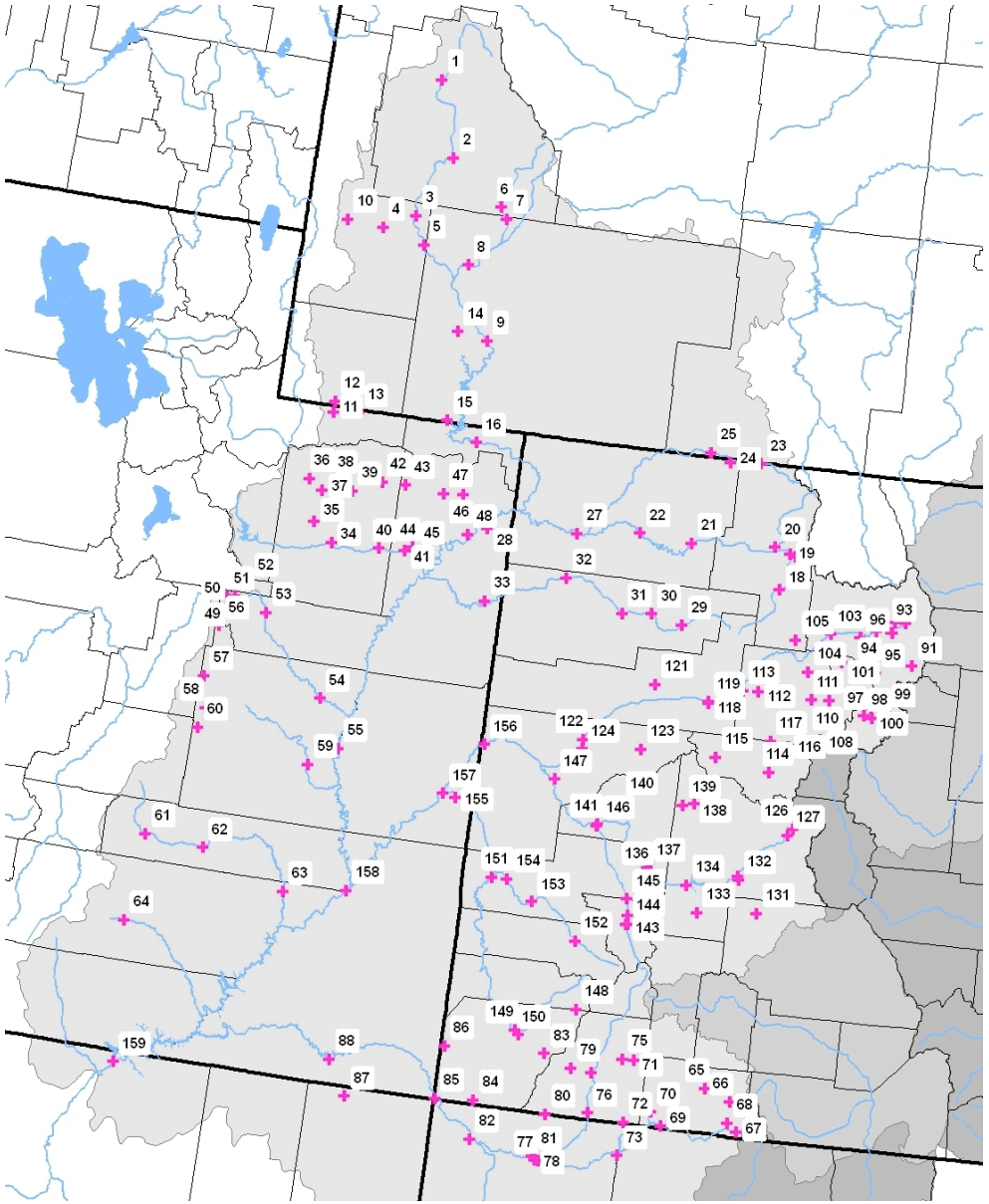
NWS-NIDIS Low-flow Projects

2009-2010: Upper Colorado (164) & ACT-ACF (58)



2008-2010 Upper Colorado River Low-Flow Project

Identify potential low flow/stage impacts near 164 forecast



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Low-Flow Related Impacts in the Upper Colorado River Basin
National Weather Service / National Drought Mitigation Center
Station ID: 14 – SLRW4 (Smiths Fork at Stateline Reservoir, WY)

Flow (cfs)	Stage (ft)	Impacts	Timing/Other Considerations	Submitted by
	9163.2	**Top of Active Conservation for Stateline Dam**		Source – U.S. Bureau of Reclamation – Data web http://www.usbr.gov/dataweb/dams/ut82904.htm
	9096.5	**Top of Inactive Conservation for Stateline Dam**		Source – U.S. Bureau of Reclamation – Data web http://www.usbr.gov/dataweb/dams/ut82904.htm
	9062	**Top of Dead Storage for Stateline Dam**		Source – U.S. Bureau of Reclamation – Data web http://www.usbr.gov/dataweb/dams/ut82904.htm
2.2 -2.8 cfs		**Advise water restrictions for residents in the town of Valley. Only allowed to water trees and shrubs, and watering only to be performed every other day.**		Rocky Irick – Bridger Valley Joint Powers Board (personal communication)
2.6 – 2.8 cfs		**Restrict farmer's use of irrigation water to maintain adequate water supply for residents of . Water diversion from Smiths Fork to Blacks Fork for longer period than normal.**	** is in the process of changing water rights so this may not be a problem in the future**	Rocky Irick – Bridger Valley Joint Powers Board (personal communication)
7.0 cfs		**Instream flow recommendation for a 4.6 mile stretch of the East Fork of Smith's Fork Creek (below Stateline Dam)**	**Application on file, but permit not yet granted.	Source – Green River Basin Water Planning Process (Final Report, 2001) – Technical Memoranda (Instream Flows in Wyoming), prepared for Wyoming Water Development Commission Basin Planning Program

Photos, Maps, Flood Stages, and Historical Data: How about low flows?

Flood Categories (in feet)

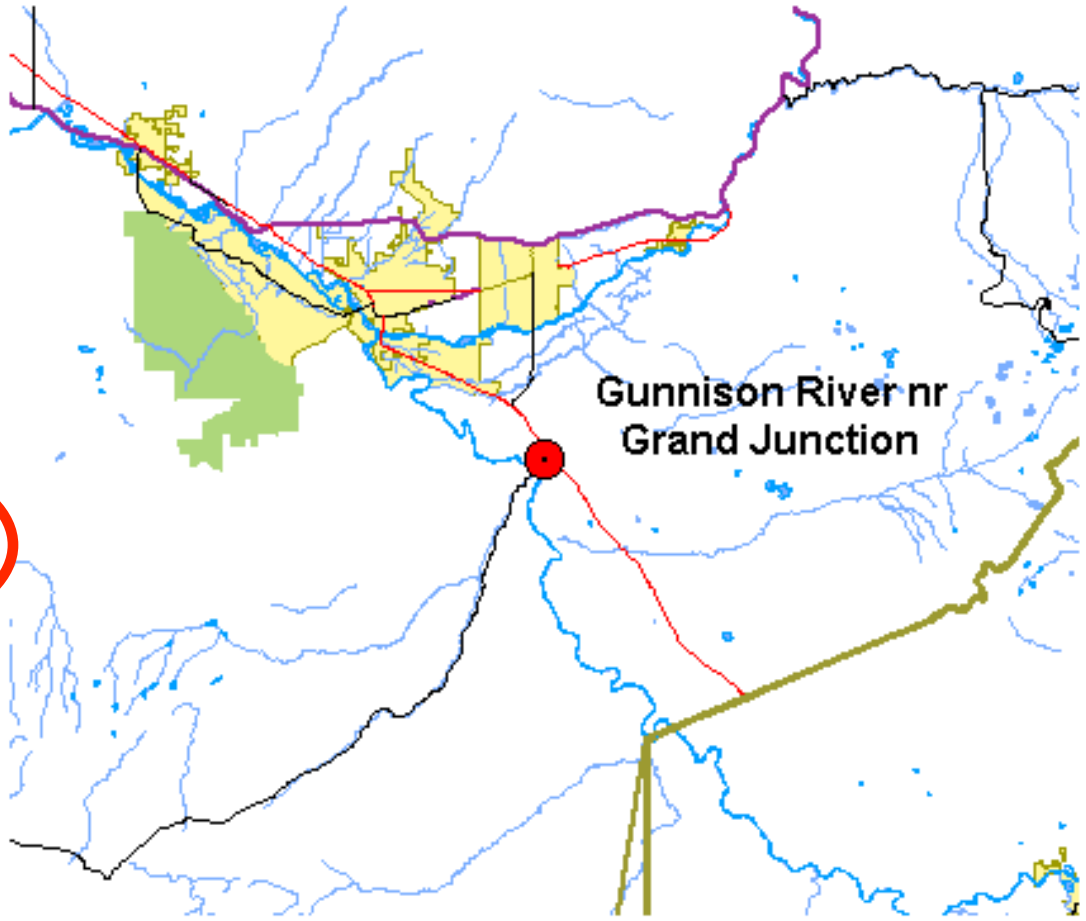
Major Flood Stage:	16
Moderate Flood Stage:	15
Flood Stage:	13
Action Stage:	10

Historical Crests

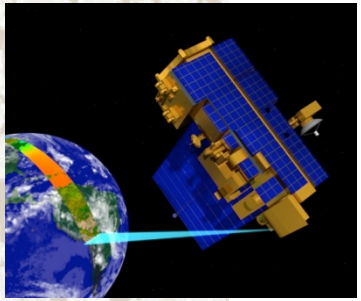
(1) 19.00 ft on 05/23/1920
(2) 17.40 ft on 06/15/1921
(3) 17.10 ft on 06/09/1905
Show More Historical Crests

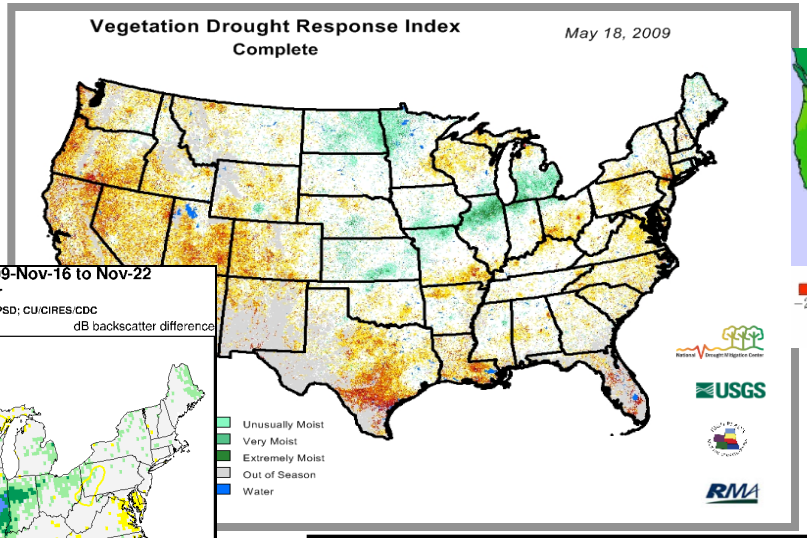
Low Water Records

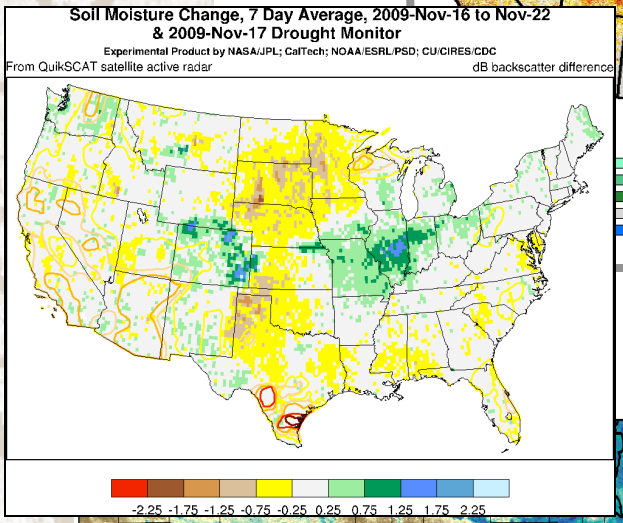
(1) 1.5 ft on 07/20/1934
Show More Low Water Records

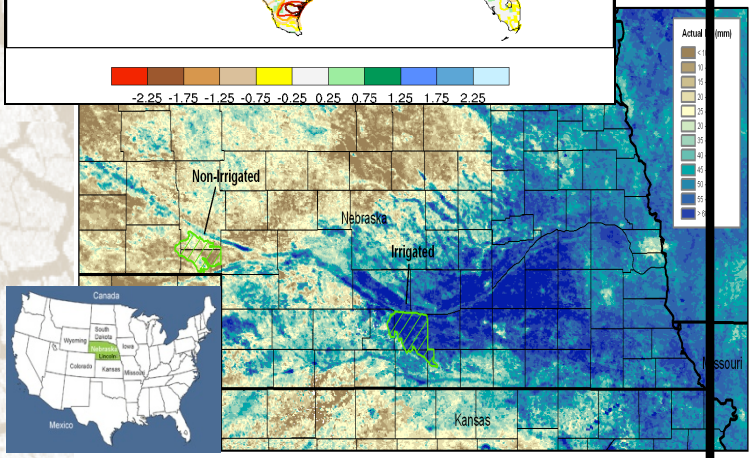


NDMC's GIScience Program Area





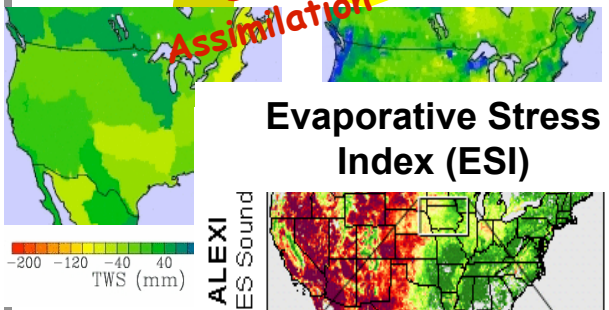




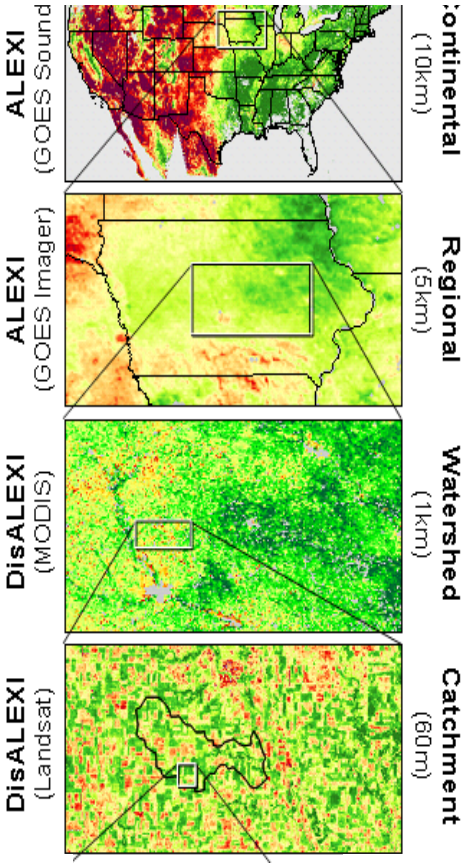
GRACE Observed TWS

GRACE + LDAS Modeled TWS

-Data Assimilation



Evaporative Stress Index (ESI)



* *Remote Sensing*
* *GIS*
* *Partnerships (USGS-EROS, NASA-JPL, GSFC, USDA-ARS, NOAA)*

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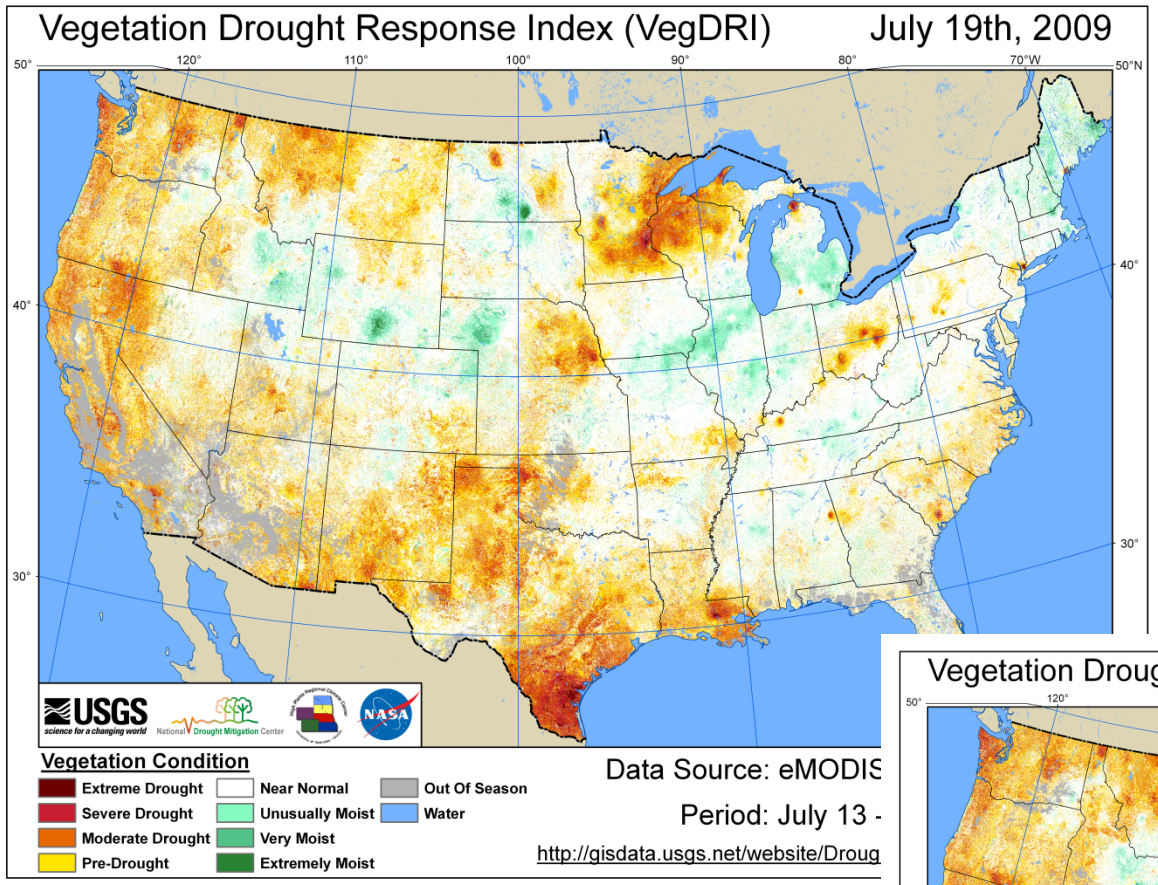

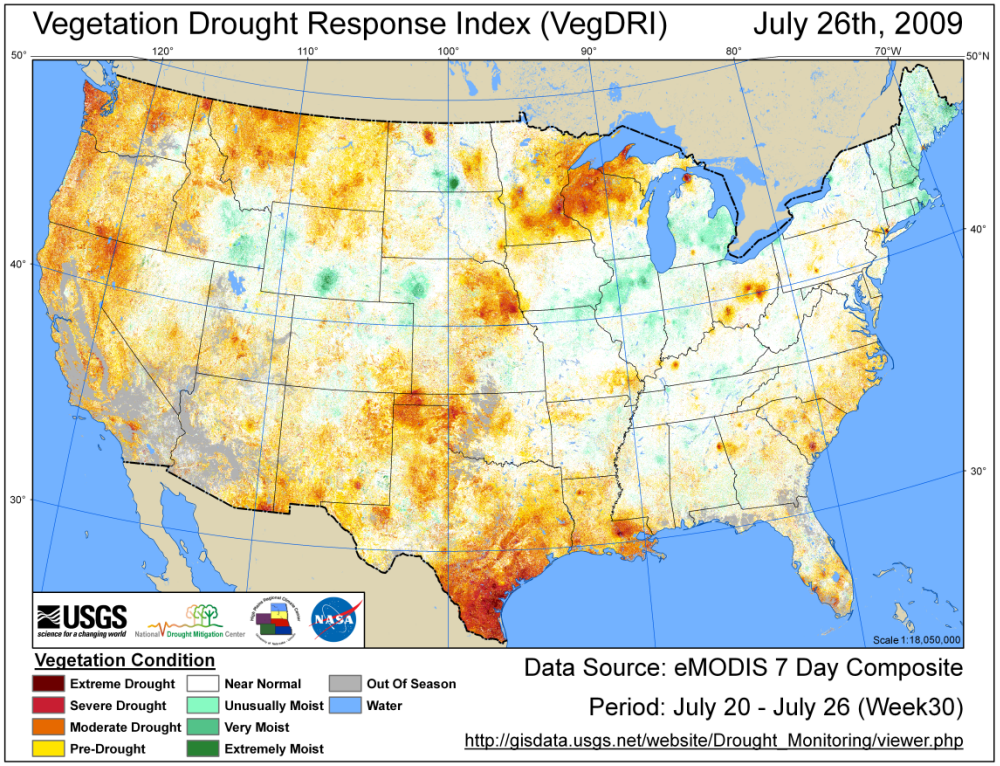

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NDMC's Planning and Social Science Program Area

Western Drought Coordination Council

How to Reduce Drought Risk

*Guides

*Plans

*Impacts

*Strategies

*Education

*Stakeholders

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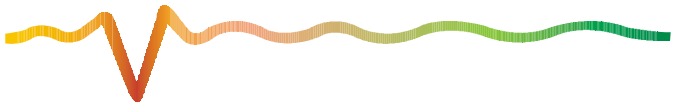
Drought Planning Progress



- Federal level
- State level
- Tribal
- Local level
  - Municipalities ***(NOAA-SARP "Drought Ready Communities": drought planning kit and certification based on community/stakeholder input)***
  - River Basins
  - Counties
  - Producers

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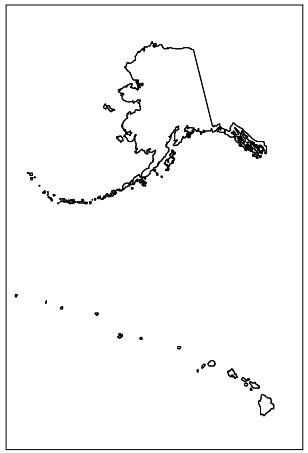
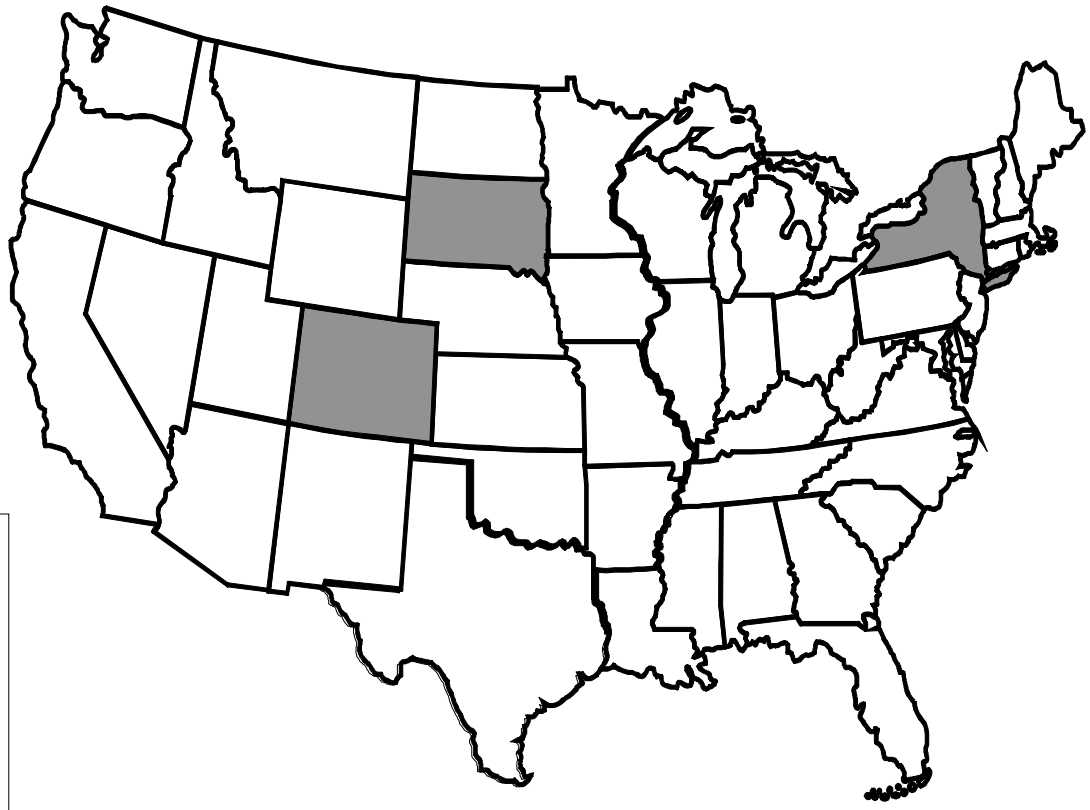
Status of State Drought Planning

1982





States with plans

States without drought plans

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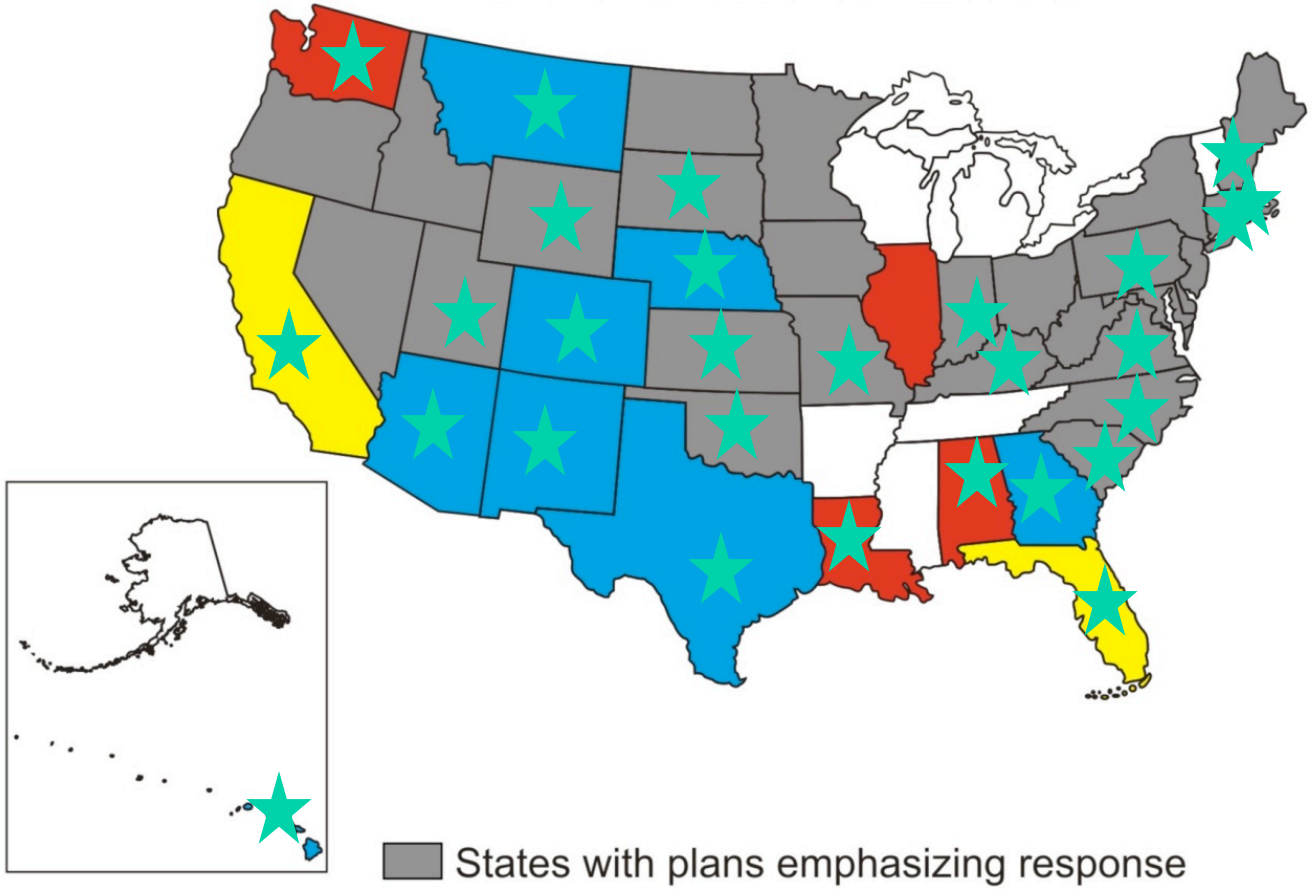
Status of Drought Planning

December 2009



States with plans emphasizing response
States with plans emphasizing mitigation
States developing long-term plans
States delegating drought planning to local authorities
States without drought plans

Developing "Drought Ready Communities"

NOAA-SARP Program: Drought in Support of the NIDIS
Award Number: NA08OAR4310696

Mark Svoboda (Lead P.I.), Kelly Smith, Cody Knutson, Melissa Widhalm, Donna Woudenberg, and Tonya Bernadt
National Drought Mitigation Center, University of Nebraska-Lincoln

Lower Platte River Corridor Alliance (Meghan Sittler)
University of Illinois (Jim Angel and Michael Spinar)
University of Oklahoma (Mark Shafer, Renee McPherson, and Heather Lazarus)

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DRC Project Overview

- "Developing a ***community-driven process*** in integrating ***place-based planning*** to reduce vulnerability to drought"
- Develop a ***"drought resources kit"*** of educational, public awareness, climatological, planning and mitigation resources ***incorporating community feedback***
- Define what a community needs to do to be certified as ***"Drought Ready"***
- Wrap-up community workshops ***Spring 2010***

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DRC Project Partners

- Nebraska City, NE (~7,000)
- Decatur, IL (~82,500)
- Ada, OK (~16,000)
- Cordell, OK (~3,000)
- Norman, OK (~100,000+)
- **University of Illinois**
- **University of Oklahoma**
- **University of Nebraska**

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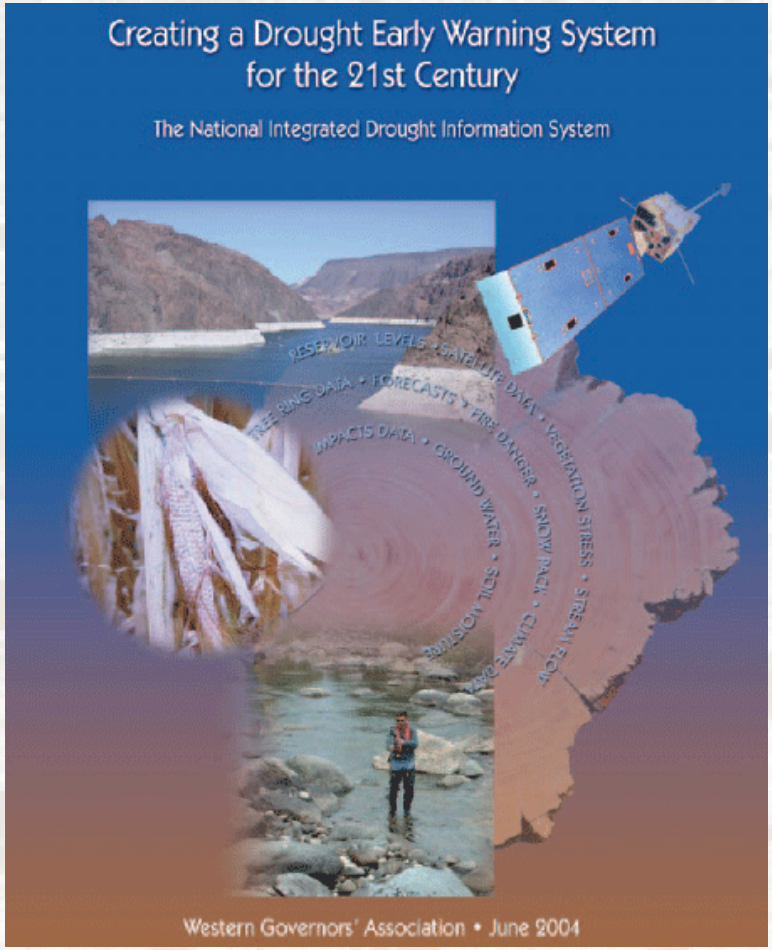
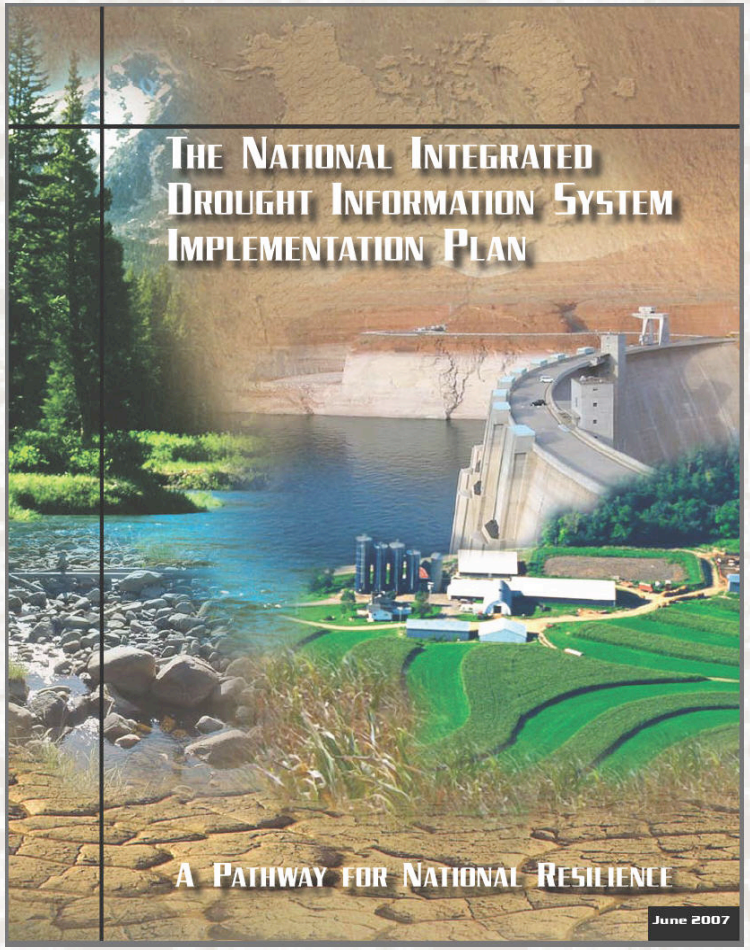
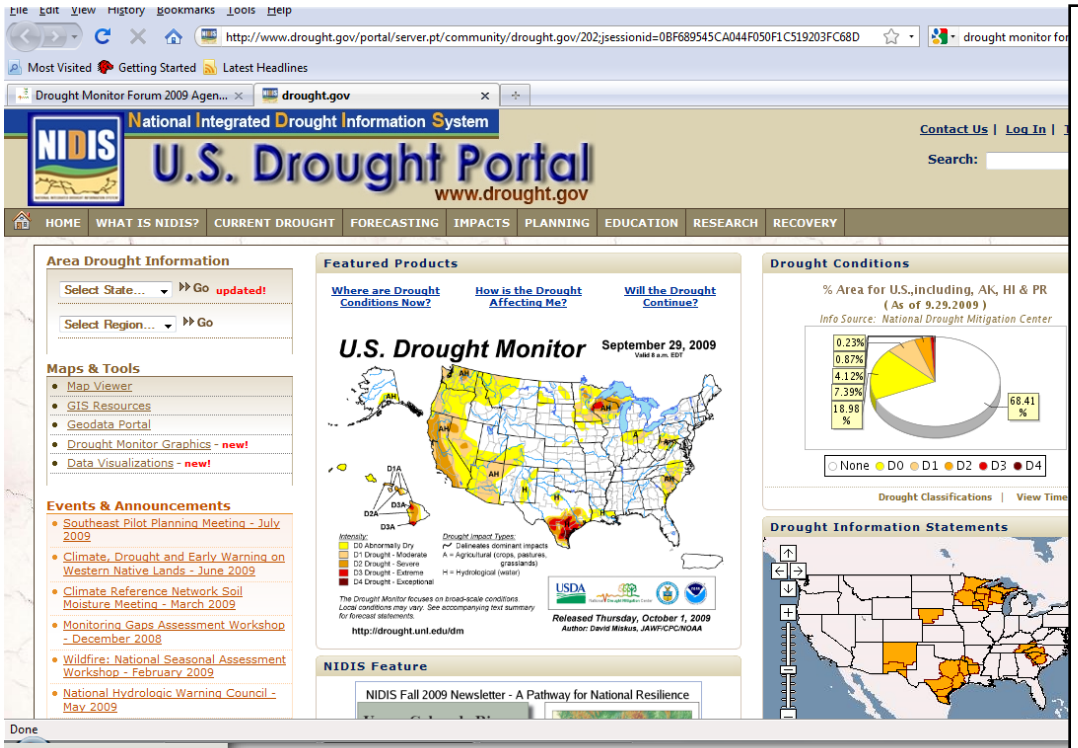
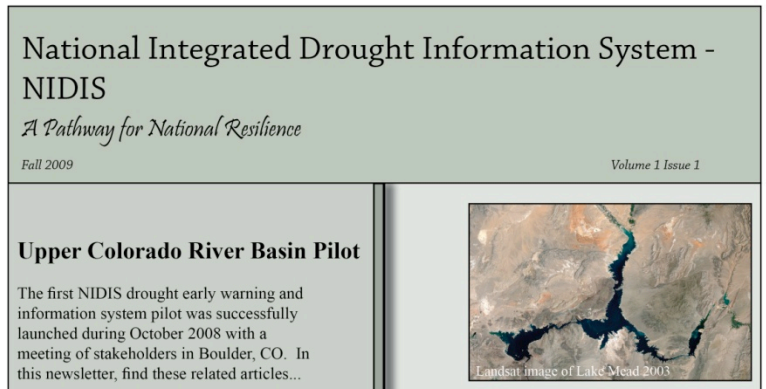




and then along comes . . .

NIDIS





National Integrated Drought Information System - NIDIS

A Pathway for National Resilience

Fall 2009 *Volume 1 Issue 1*

Upper Colorado River Basin Pilot

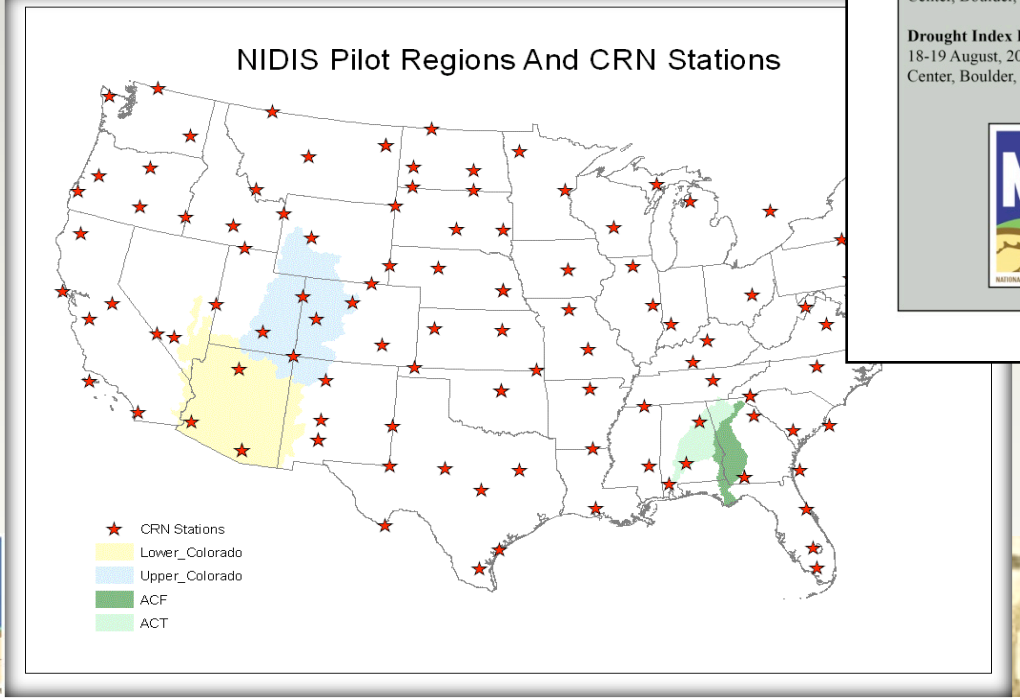
The first NIDIS drought early warning and information system pilot was successfully launched during October 2008 with a meeting of stakeholders in Boulder, CO. In this newsletter, find these related articles...

Landsat image of Lake Mead 2003

Welcome!

Welcome to the first edition of the NIDIS Newsletter. A lot has happened in the past year, and we want to update the drought risk management and water resources communities on NIDIS activities. In our newsletter you will find information about the various NIDIS meetings that have been held in the past year, along with the key outcomes from each meeting. We will also highlight early warning information system pilot and research activities.

Also in this issue...



Courtesy: NIDIS

Challenges

- Information technology advances
  - Future resources
- New ways to interact with decision-makers
  - Stakeholder “burnout”
- Convince decision-makers that their mitigation/adaptation actions will reduce impacts
  - Quantify impacts and benefits

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Summary

- Scale (flexible and relevant to the needs of our stakeholders)
- Tools and Technology (keep pace with scale issue)
- Impacts (establish a baseline)
- Citizen Science

→ Planning, Mitigation, and Adaptation

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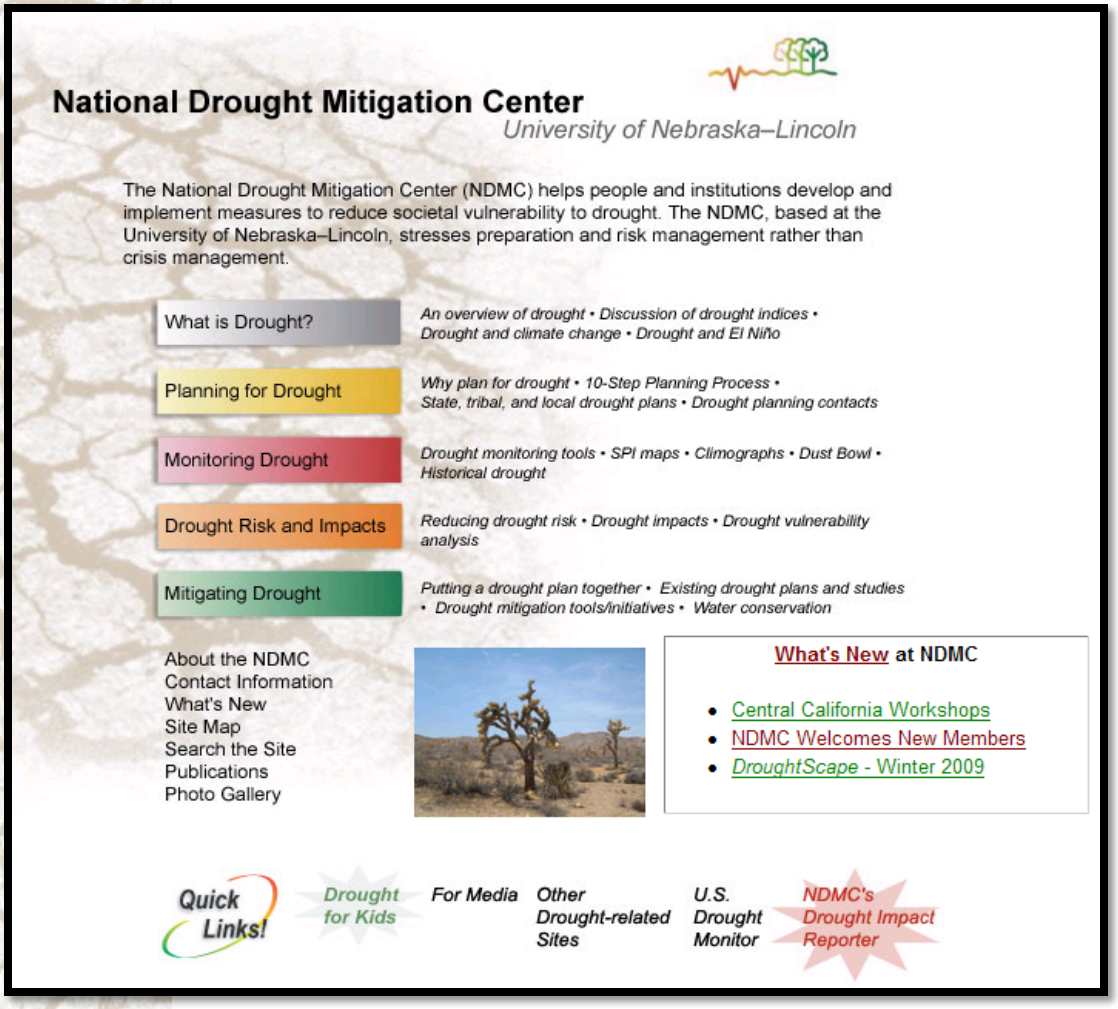
Please visit the NDMC website for more information: http://www.drought.unl.edu



Thanks!

Contact me at:
Mark Svoboda
402-472-8238
msvoboda2@unl.edu

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