

The National Drought Mitigation Center: Translating Research into Usable Information

**Mark Svoboda, Climatologist
Monitoring Program Area Leader**

And

Michael Hayes, Director

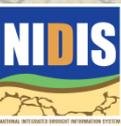
And

The entire NDMC crew

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

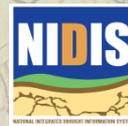


NIDIS MO Basin Pilot Kick-off Meeting, Nebraska City, NE February 26-27, 2014



National Drought Mitigation Center

- ▶ ***Bridge and translate science*** to policy/decision makers and the public
- ▶ Developing ***usable*** information and services
- ▶ Users drive and guide our research and activities from the ***beginning...***



Education, Feedback and Outreach



Managing Drought Risk on the Ranch Professional Development Webinar Series

10 am Central Time

January - May, 2013

Last Wednesday
of each month

Each session will include a briefing on current drought status, followed by a session on a specific topic or tool related to drought planning.

January 30: Managing Drought Risk on the Ranch: The Planning Process

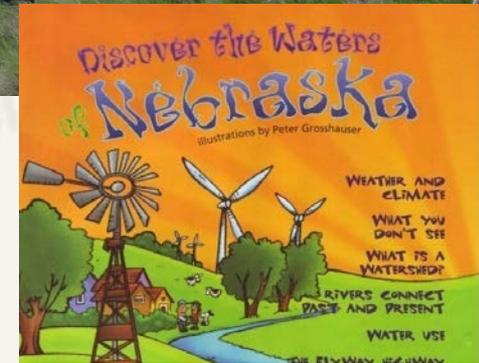
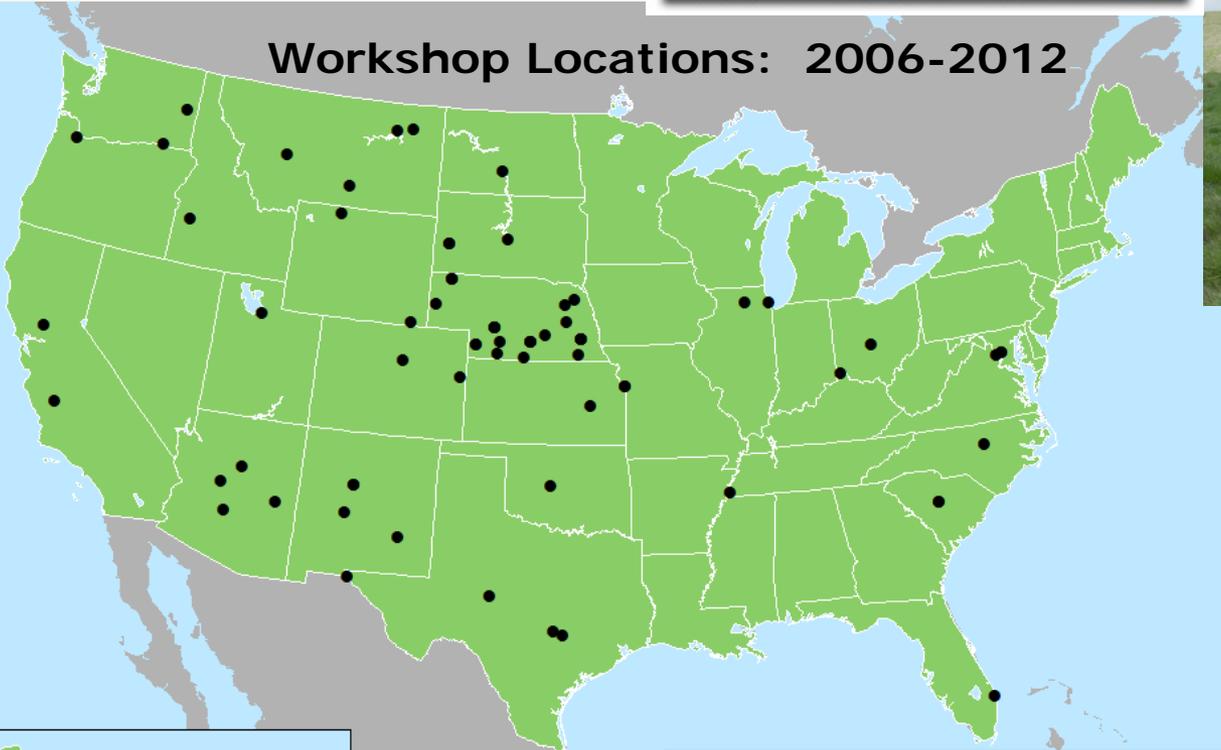
Jerry Volesky, Range and Forage Specialist at the West Central Research and Extension Center, and Lynn Myers, Tippets-Myers Ranch

February 27: Avoiding Analysis Paralysis: Monitoring and Setting Critical Dates for Decision Making During Drought

Dwayne Rice, Rangeland Management



Workshop Locations: 2006-2012



EDEN
EXTENSION DISASTER EDUCATION NETWORK

Reducing the Impact of Disasters Through Education

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Hazards & Threats

EDEN > Topics > Hazards & Threats > Drought > extension

Drought

Key & Emerging Issues

- Individuals & Families
- Crop and Livestock
- Community

Quick Find Key Current and Future Issue Resources

National VOAD Drought and Wildfire Taskforce

eXtension

The Drought articles and FAQs on eXtension can be reached through the

- eXtension Drought pages

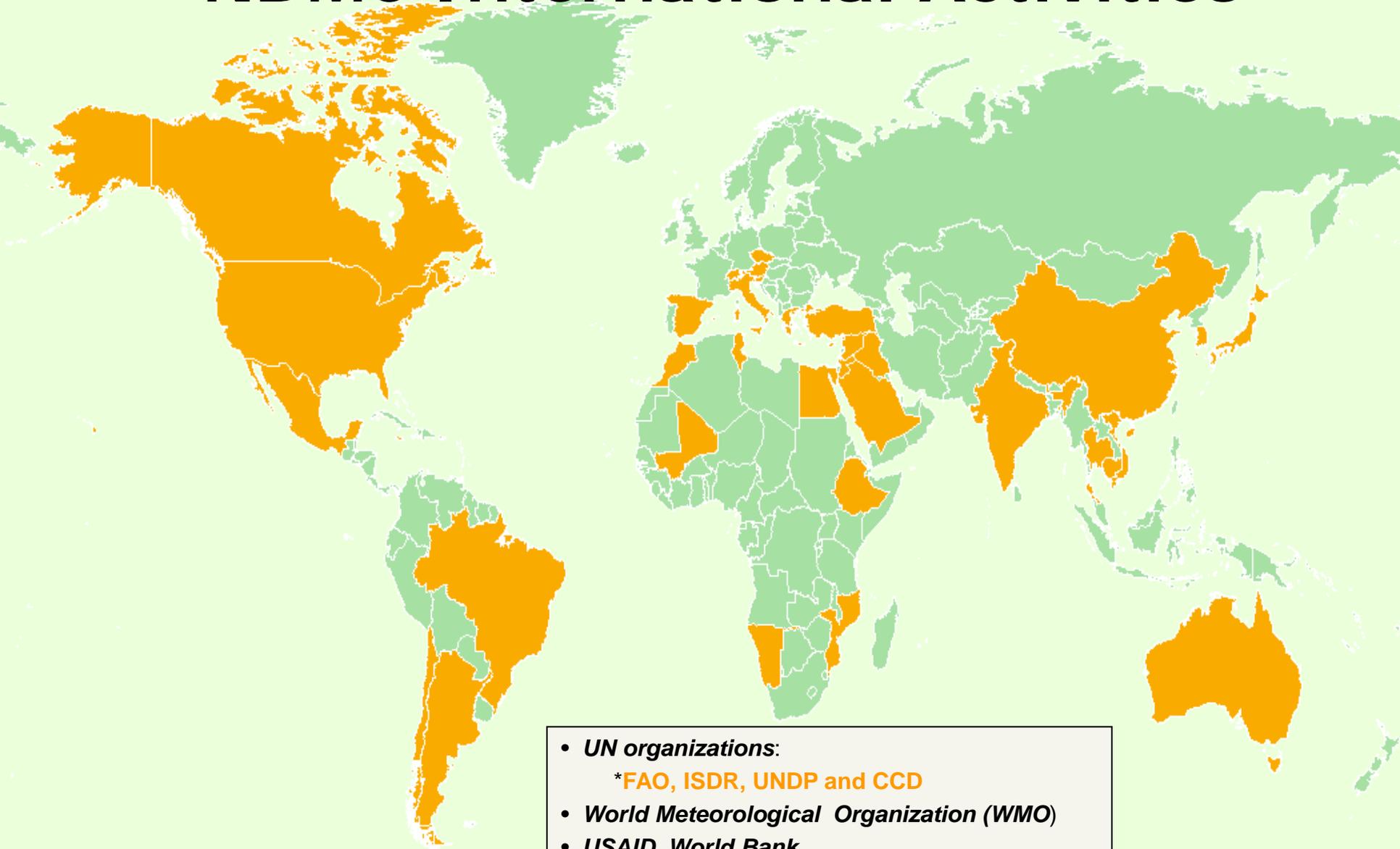
Articles are grouped under the following headings:

- Livestock and Pasture
- Crops
- Home and Landscape

eXtension
more mind reach

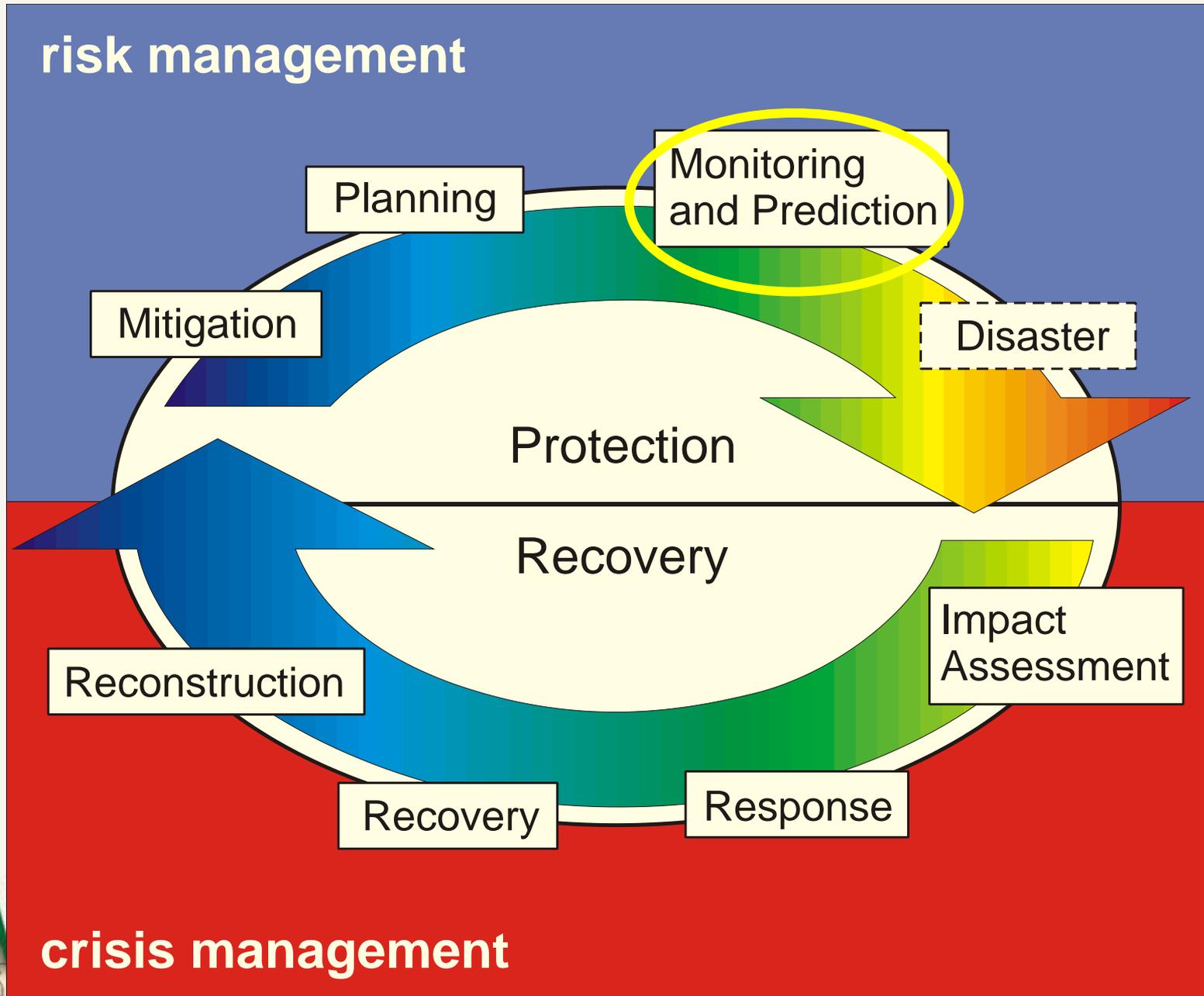
Agroecological Disasters
Families & Communities
Hazards & Threats
Human Health

NDMC International Activities



- **UN organizations:**
 - *FAO, ISDR, UNDP and CCD
- **World Meteorological Organization (WMO)**
- **USAID, World Bank**
- **Various regional and national drought centers**
- **Numerous government agencies and universities in different countries**

The Cycle of Disaster Management

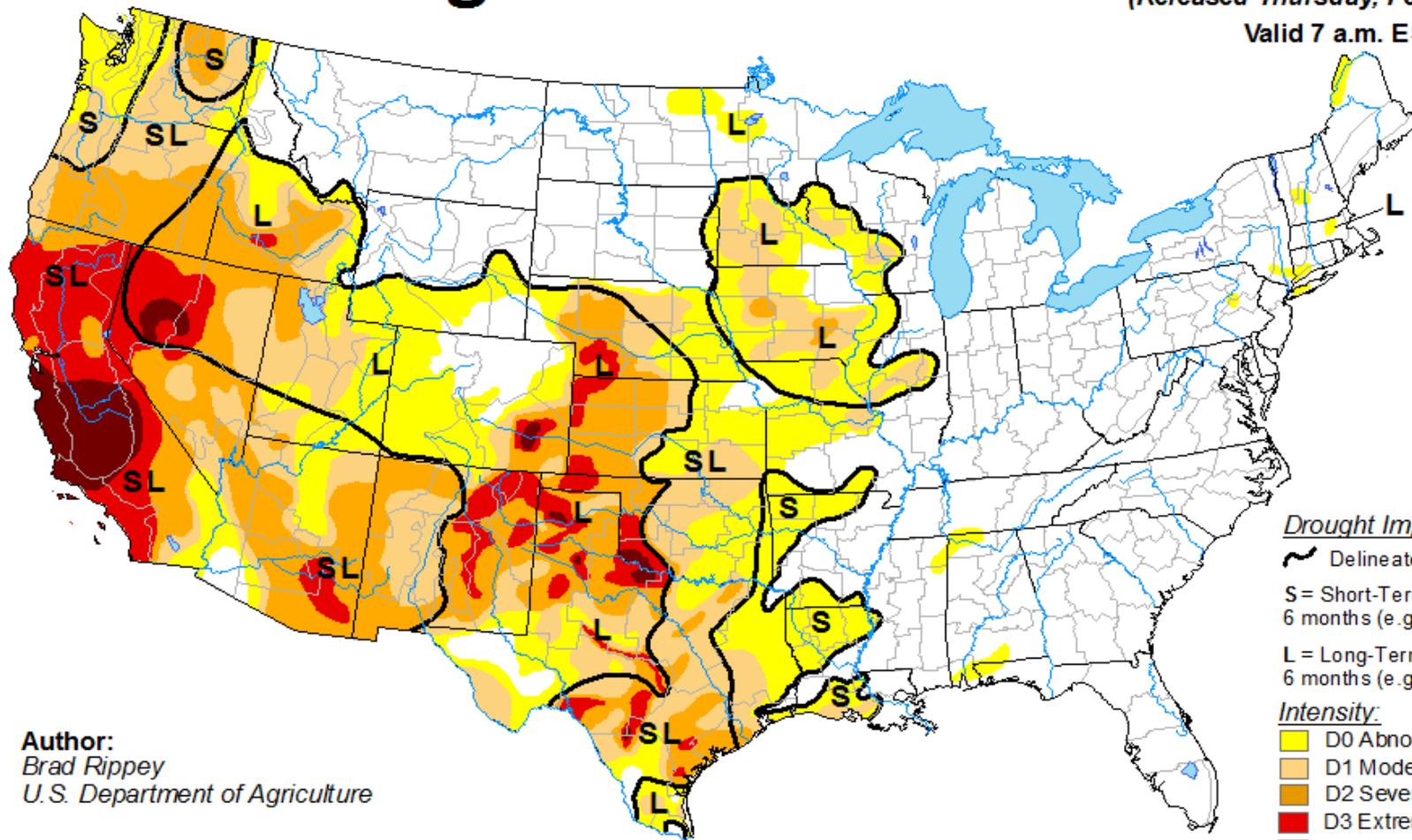


U.S. Drought Monitor

February 25, 2014

(Released Thursday, Feb. 27, 2014)

Valid 7 a.m. EST



Author:
Brad Rippey
U.S. Department of Agriculture

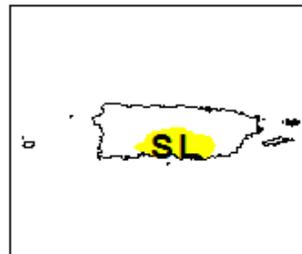
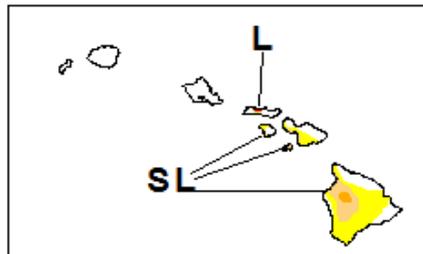
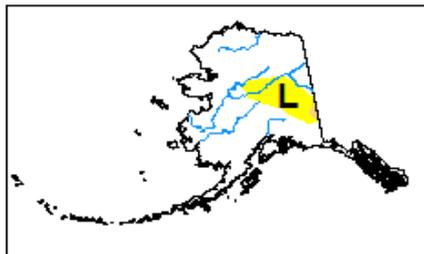
Drought Impact Types:

- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

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

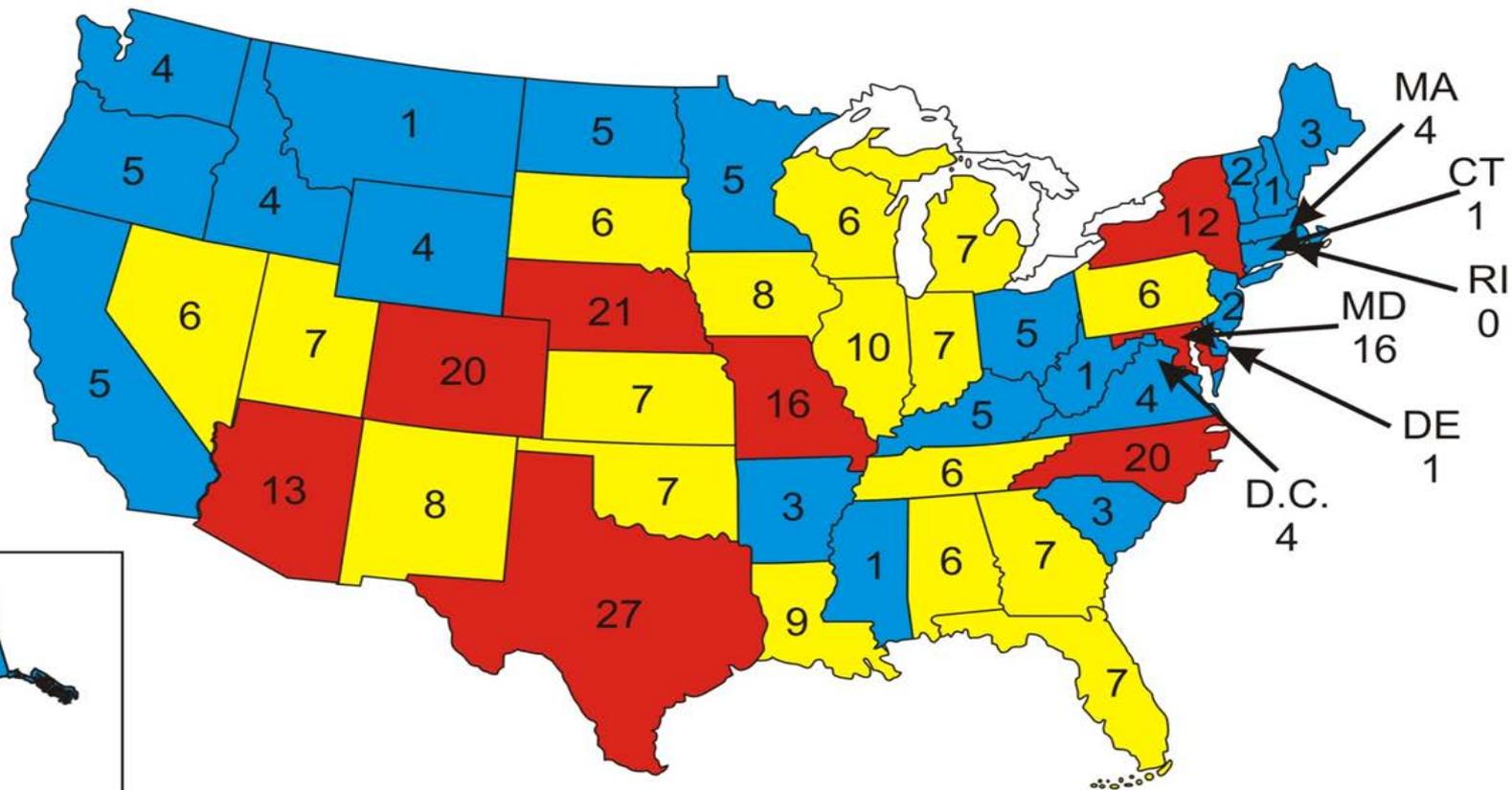
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.



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

USDM Listserve Subscribers

(as of November 1, 2013)



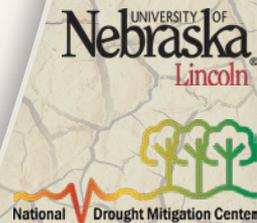
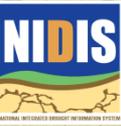
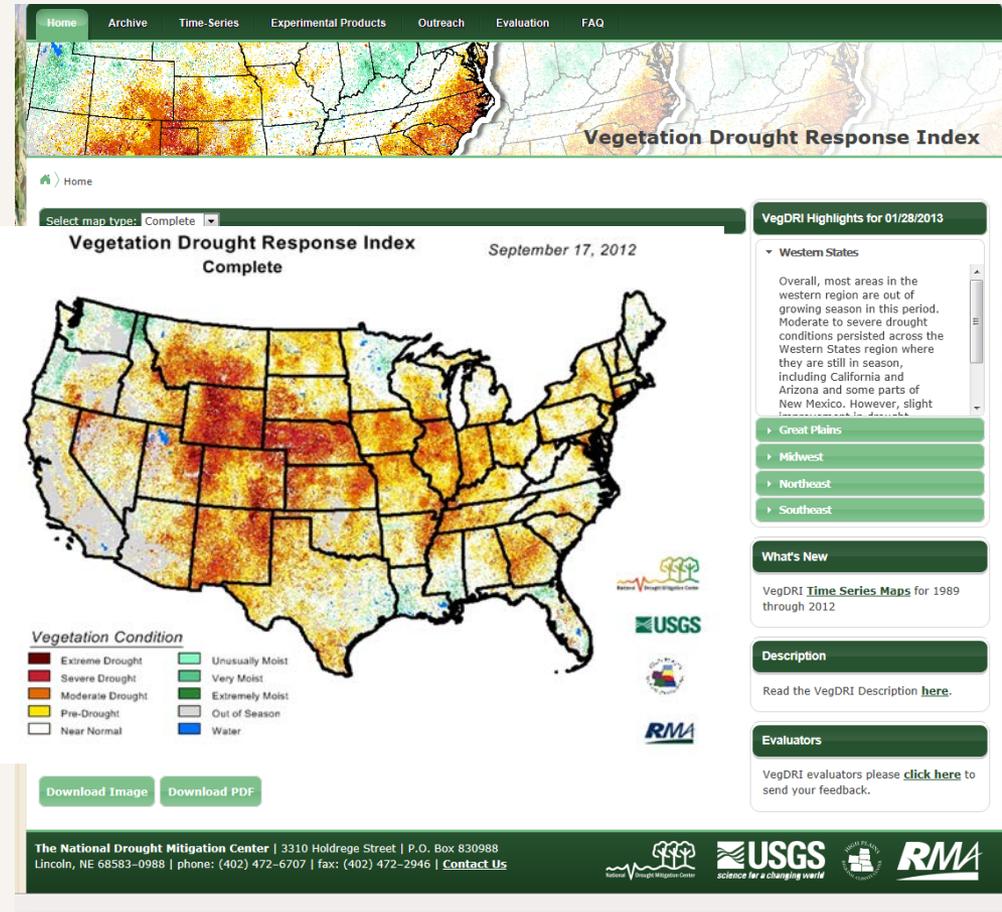
- 1-5 participants
- 6-10 participants
- 11+ participants

Total: 345 (does not include 1 participant from Canada)

Vegetation Drought Response Index (VegDRI):

- **Partnership** w/ USGS + HPRCC
- **20+ year archive** back to 1989
- **Augment** *in situ* obs
- **Hybrid** indicator combines satellite, biophysical and climate indicators together to detect **vegetation stress**
- **Weekly (MODIS) & bi-weekly (AVHRR)** production over contiguous U.S.
- **Value-added** products:
 - National, state and sub-state maps
 - Change maps
 - Area statistics
 - Descriptive narrative
 - Animations

 vegдри.unl.edu



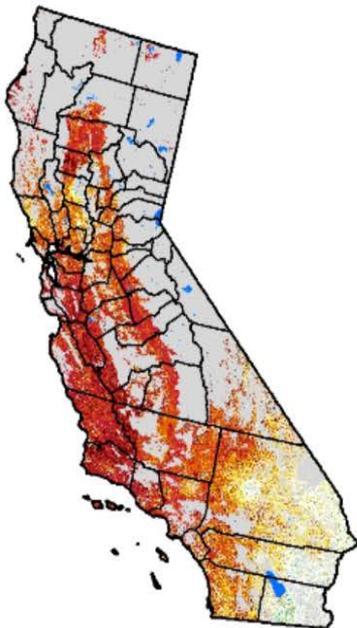
Vegetation Drought Response Index Complete: California

February 10, 2014

[Download Image](#)

[Download PDF](#)

[View Statistics](#)



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
- Near Normal
- Unusually Moist
- Very Moist
- Extremely Moist
- Out of Season
- Water

Reference Map

(Click a region to zoom in further.)

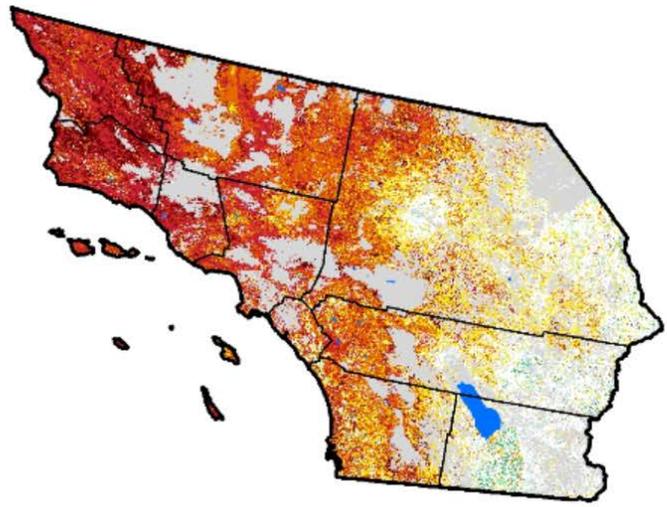


Vegetation Drought Response Index Complete: California, Quad 4

February 10, 2014

[Download Image](#)

[Download PDF](#)



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-Drought
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- Out of Season
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(Click a region to zoom in further.)



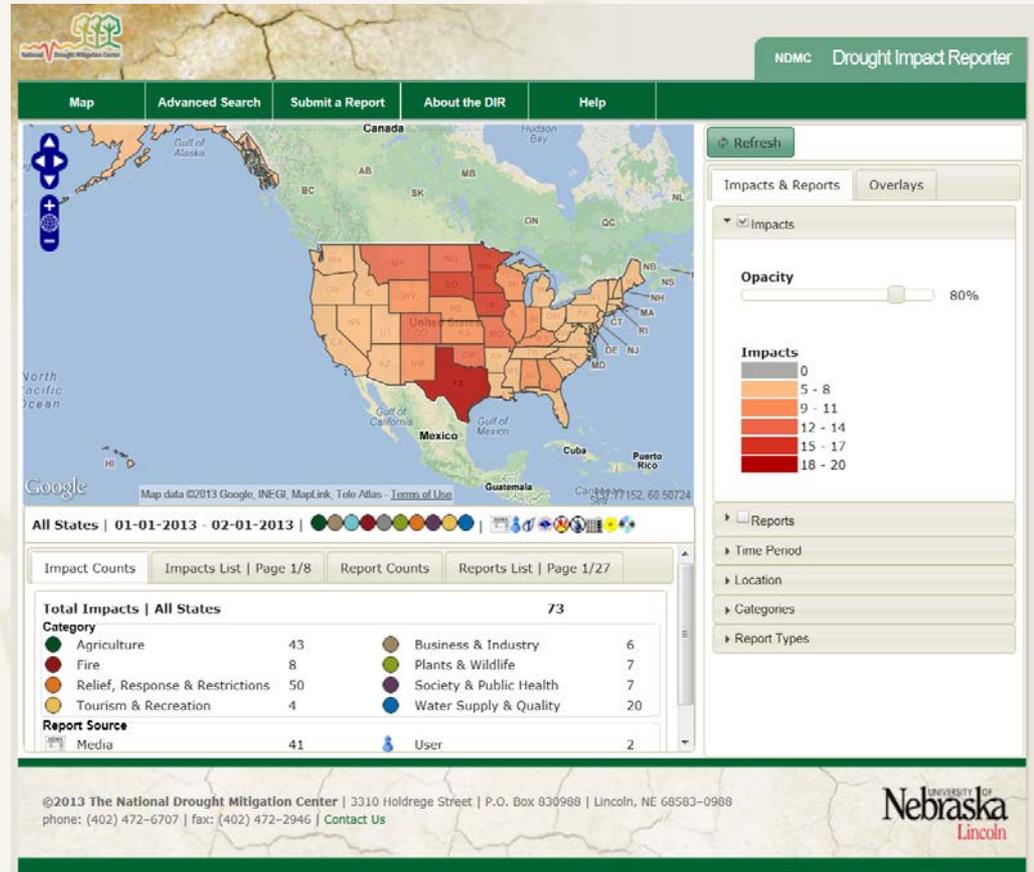
[Return to the State map](#)



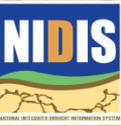
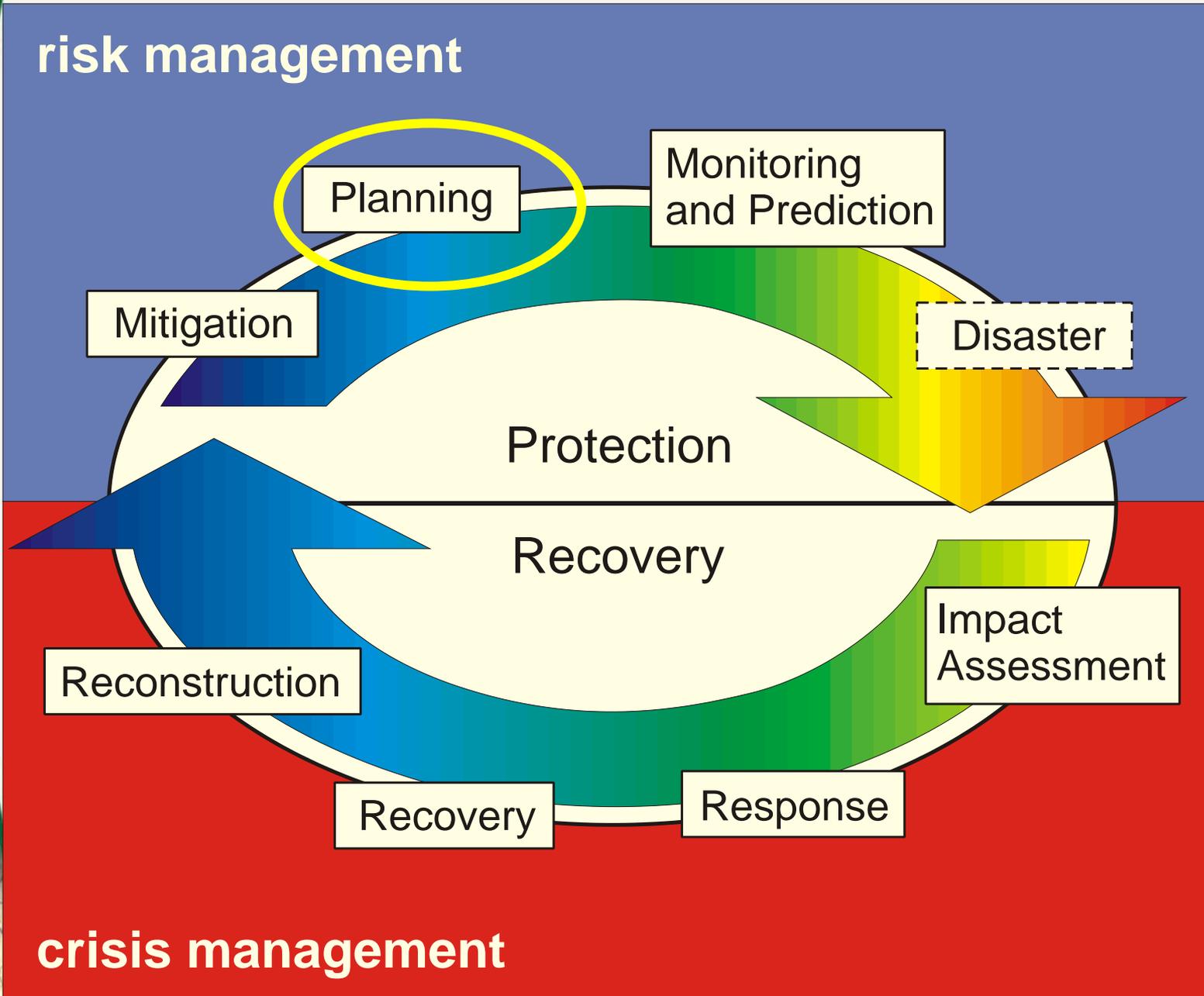
Drought Impact Reporter (DIR):

 droughtreporter.unl.edu

- On-line since **2005**
- **17,045** media reports and **16,000+** impacts in our database to date and growing
- Establishing a **“baseline”** of impacts due to droughts over time
 - “Face of drought”
 - Risk/vulnerability
 - Climate change
- **Ground truth** indices/RS
- Quantitative **AND** qualitative
- **Open to the public!**



The Cycle of Disaster Management



Planning Tools



Friday, November 22, 2013

National Drought Mitigation Center

Home Full Search About Submit a Strategy State Planning Info

National Drought Mitigation Center

Home Login

Drought Management Database

Introduction

This is a growing collection of information about what has been tried in responding to and preparing for drought in the United States. It's categorized by sector, that is, information of interest for farming, livestock production, water supply and quality, energy, recreation and tourism, fire, plants and wildlife (environment), and society and public health. Each sector is further divided into subsectors.

The [Full Search](#) option lets you search by many more criteria, including dates, type of activity (planning, response, monitoring, etc.), decision-making scope (from individual through federal government), by state, and by resource type. You can also do a text search.

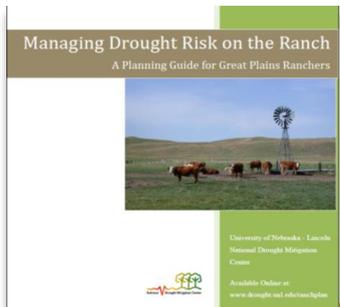
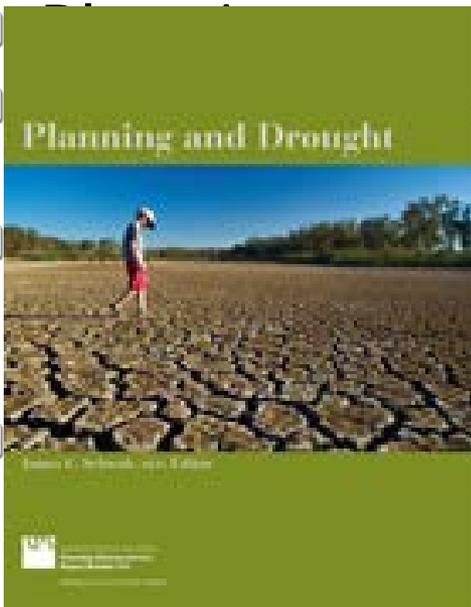
Have something to contribute or recommend? Visit the [Submit a Strategy](#) page.

Quick Search by Sector

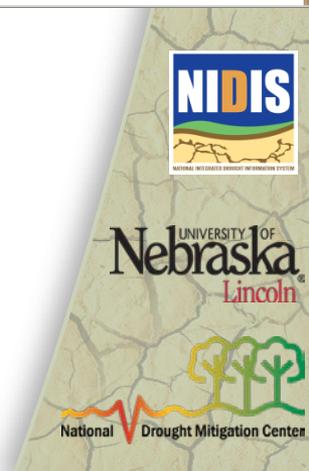
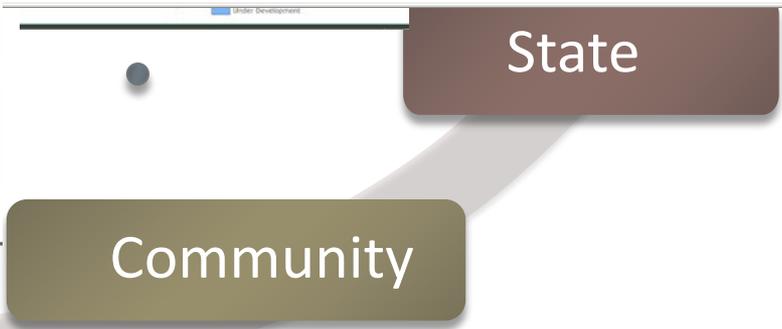
- Farming
- Livestock Production
- Water Supply & Quality
- Energy
- Recreation/Tourism
- Fire
- Plants & Wildlife
- Society & Public Health

Under Development

- ### Recent Drought Mitigation News
- [State urges steps to prepare for drought in 2014](#)
Sep. 6, 2013
 - [Drought Threat Hampers Hay Crop - Fort Smith Southwest Times Record \(AR\)](#)
Jul. 21, 2013
 - [Mark Keaton: Grazing of toxic plants can be a problem - Baxter Bulletin \(AR\)](#)
Jul. 17, 2013
 - [Fighting wildfires with science - CBS \(NAI\)](#)
Jul. 7, 2013
 - [Nitrate spike tests Des Moines water supplies - Des Moines Register \(IA\)](#)
Jul. 1, 2013



Individual





Managing Drought Risk on the Ranch

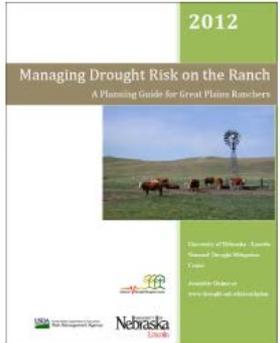
Overview Register Login

Managing Drought Risk on the Ranch

Drought is a normal part of climate...it will happen again. Fortunately, there are things you can do before, during, and after drought to reduce your risk. Ranchers are increasingly implementing new ways to better prepare for and respond to drought.

The information, strategies and resources on this site are designed to provide livestock producers in the **Great Plains region** with information on how to incorporate management strategies to reduce the threat drought poses to livestock and forage operations.

[Download "Managing Drought Risk on the Ranch" Handbook](#)



If you are unable to download this document would like to receive a paper copy by mail, contact the NDMC at ranchplan@unl.edu 472-6781.

[How to use this site](#)

Drought Conditions

[U.S. Drought Monitor](#)

Workshops and Webinars



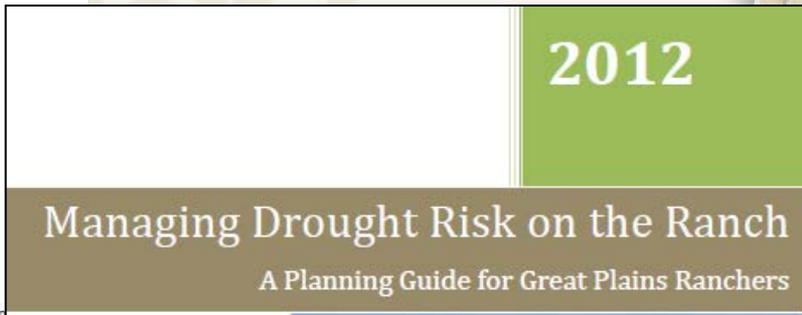
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February 27: Avoiding Analysis Paralysis: Monitoring and Setting Critical Dates for Decision Making During Drought
Dwayne Rice, Rangeland Management

Each session will include a briefing on current drought status, followed by a session on a specific topic or tool related to drought planning.

- **NDMC**
- **USDA-RMA**
- **USDA-SARE**
- **Cooperative Extension**
- **NIDIS**



University of Nebraska - Lincoln
National Drought Mitigation
Center

Available Online at:
www.drought.unl.edu/ranchplan



2012

Managing Drought Risk on the Ranch

A Planning Guide for Great Plains Ranchers



University of Nebraska - Lincoln
National Drought Mitigation
Center



Available Online at:
www.drought.unl.edu/ranchplan



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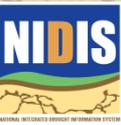
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UNDERSTANDING DROUGHT	5
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This guide to help range and land managers better prepare for and manage drought is a project of the National Drought Mitigation Center (NDMC) at the University of Nebraska-Lincoln (UNL) and other collaborators at UNL, South Dakota State University, and Texas A&M Kingsville. This project was made possible through funding from the U.S. Department of Agriculture Risk Management Agency.

Much of the content of this handbook and the companion website was developed with information provided by Dr. Pat Reece, Professor Emeritus at UNL and now owner/consultant with Prairie Montane Enterprises, LLC.

The handbook and website were developed by, and will be maintained by, the National Drought Mitigation Center. Comments and questions about the handbook and website can be directed to the NDMC at ranch_ndmc@unl.edu or 402-472-6781.

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



Writing a Ranch Drought Plan

Write a Drought Plan

Many range publications recommend that managers develop drought plans. The planning steps provided here have been developed by ranchers throughout the Great Plains, as well as forage, range, and agricultural economics specialists. These steps will help range managers develop a solid plan of action for situations (such as drought) that lead to forage shortages.

Drought Planning Steps

- Step 1: [Form Planning Team](#)
- Step 2: [Set Ranch Vision and Strategic Objectives](#)
- Step 3: [Take Inventory](#)
- Step 4: [Identify Critical Dates and Target Conditions](#)
- Step 5: [Learn to Monitor Resources](#)
- Step 6: [Develop Strategies for Preparing for Drought, Responding to Drought, and Recovering from Drought](#)
- Step 7: [Implement and Evaluate the Plan](#)

Sample Drought Plans

Colorado

[Southern Colorado Case Study - Welch Ranch](#)

Kansas

[South-Central Kansas - Alexander Ranch](#)

[North-Central Kansas - Adams Ranch](#)

Nebraska

[Southwest Nebraska - Shamrock Ranch](#)

[Western Nebraska Sandhills - Tippets-Myers Ranch](#)

[Nebraska Sandhills - Reed Hamilton Ranch](#)

South Dakota

[Central South Dakota - Daybreak Ranch](#)

Texas

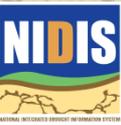
[West-Central Texas - Johnson Ranch](#)

Submit a Drought Plan Example

Drought planning process developed with input from rancher and advisor stakeholders

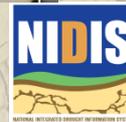
Interviews and participatory workshop resulted in a recommended process involving 7 planning steps

Website includes links to resources to help with drought planning, as well as sample drought plans by producers across the Great Plains

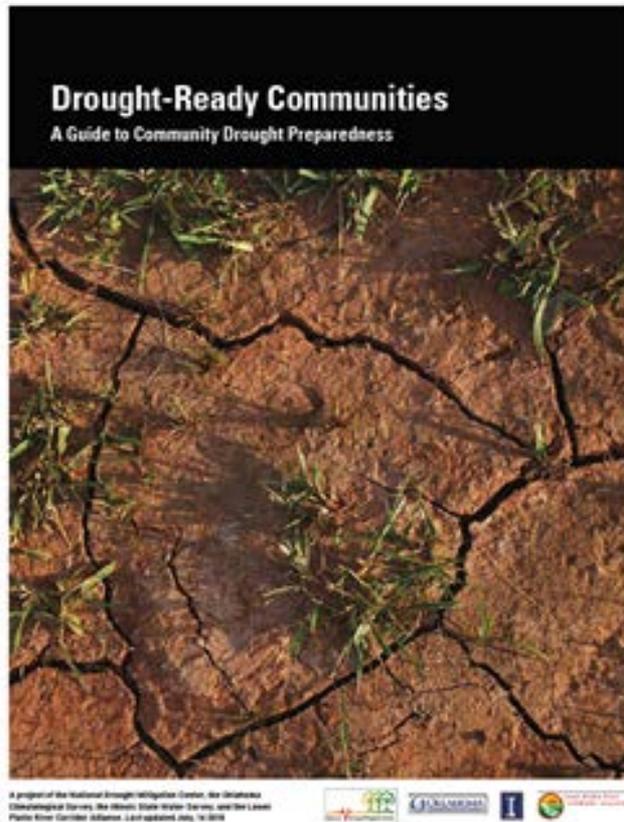


Workshops for Producers and Advisors

- ▶ Kansas (2), Nebraska, South Dakota, Wyoming, Colorado, New Mexico over the past 2 years
- ▶ Funding support from RMA Risk Management Education, NCR SARE, NIDIS
- ▶ **Goal:** increasing ranchers' capacity to manage drought risk, through improved understanding of risk management tools and drought planning methodologies



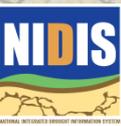
Drought-Ready Communities: Guide to Community Drought Preparedness



- Scalable
- Community \neq Municipality
- Not just water supply

<http://drought.unl.edu/Planning/PlanningProcesses/DroughtReadyCommunities.aspx>

Funded by NOAA's Climate Program Office,
Sectoral Applications Research Program (SARP) and NIDIS



Drought Risk

Community Stakeholders

1. Getting Started

I. Leadership (authority), convening a task force

II. Vulnerability analysis – effects (impacts) of recent/past drought, future drought, on water and people



III. Monitoring and reporting climate, water levels, conditions/impacts, etc.

IV. Long-term: Getting people on board ahead of time by understanding water supplies, limits, etc.

IV. Short-term: Persuading people to conserve, etc., during drought

V. Mitigation (long-term)
How can you reduce vulnerability before the next drought?

5. Action Plan

V. Response (short-term)
: Decide ahead of time what to do during the next drought

Drought-Ready

Drought Risk Atlas (DRA):

- Set to launch in **Spring 2014**
- ~ **3000** stations archived
 - 139 clusters/regions developed and analyzed
 - SPI, SPEI, PDSI, sc-PDSI and Deciles through **2012**
 - Weekly gridded maps for all parameters back to early 1900s
- Created to answer questions about the **characteristics of drought**:
 - Frequency/return periods
 - Duration
 - Trends
 - Intensity
 - Spatial extent

 **Coming Soon!**



Friday, February 01, 2013

 **Drought Risk Atlas**

Home Climate Data Methodology About Help

Current Location » Home

Welcome to the Drought Risk Atlas

Introduction

The idea of updating and expanding a national drought atlas was developed from the original Drought Atlas that was done in conjunction with United States Army Corps of Engineers by Hoskings, Wallis and Guttman in the early 1990s. The original Drought Atlas consisted of those stations in the Historical Climate Network (HCN), numbering approximately 1,000 stations. The period of record at the time was limited, as many stations only had records from the 1940s to present, and these data points were put into their respective climate divisions. A monthly time step was used to calculate the Palmer Drought Severity Index (PDSI). With the new Drought Atlas, bringing precise data down to spatial scales that would allow decision makers to use this tool to better understand drought in their respective region and to make a better decision.

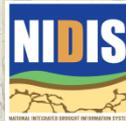
For the new National Drought Atlas, the idea was to expand the data both in the number of stations analyzed and the period of record to include the most complete long-term stations, some of which are not part of the HCN. Using a weekly time-step to calculate multiple drought indices at each station location, not on a climate division scale, allows for a more precise representation of drought histories. The Standardized Precipitation Index (SPI), Palmer Drought Severity Index (PDSI), Deciles, the United States Drought Monitor and other Climatological data are included in the new drought atlas. Along with the Climatological data, gridded maps created on a weekly time-step are available for the entire United States.

Climate Data Map

The National Drought Mitigation Center | 3310 Holdrege Street | P.O. Box 830988 | Lincoln, NE 68583-0988
phone: (402) 472-6707 | fax: (402) 472-2946 | Contact Us

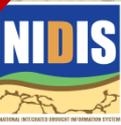
UNIVERSITY OF Nebraska Lincoln

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Final Thoughts

- ▶ ***Boundary organizations*** play a critical engagement and dissemination role in collaboration with many of you in this room...
- ▶ Developing ***usable*** information and services is critical (trust factor too)
- ▶ ***Tools help bridge*** the gap between monitoring/early warning, prediction and preparedness (triggers for decision support)
- ▶ Goal is to ***link scientific knowledge w/ the actions*** needed to reduce impacts and future risk



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