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Fostering Drought Mitigation Strategies through Information Services

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

USDA Agricultural Outlook Forum
“Moving Agriculture Forward”
February 23-24, 2012

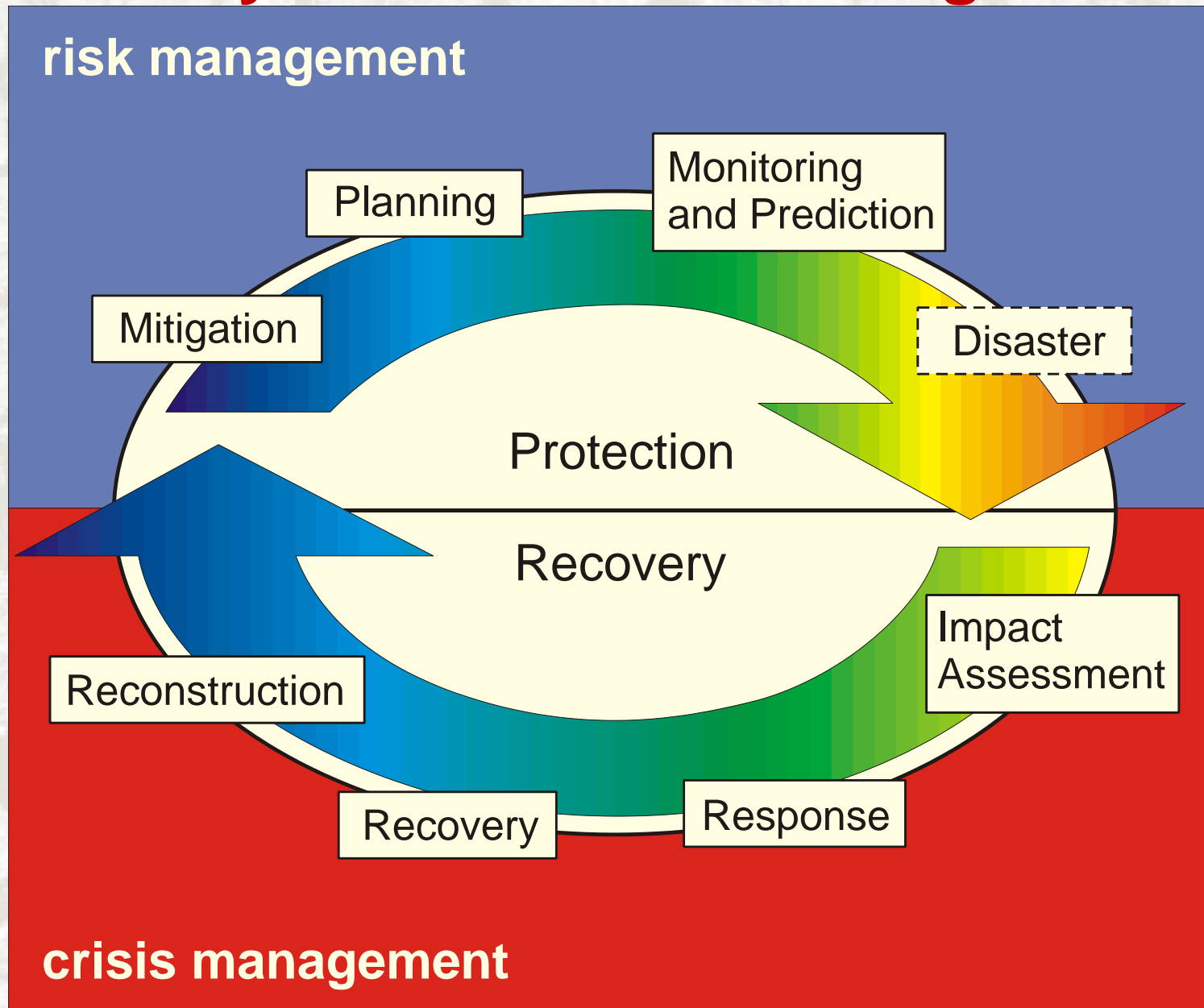
Drought Mitigation

Mitigation: actions and programs done before a drought that would reduce long-term vulnerability to future droughts

- Natural hazards community
- “Adaptation” in climate change vocabulary



The Cycle of Disaster Management



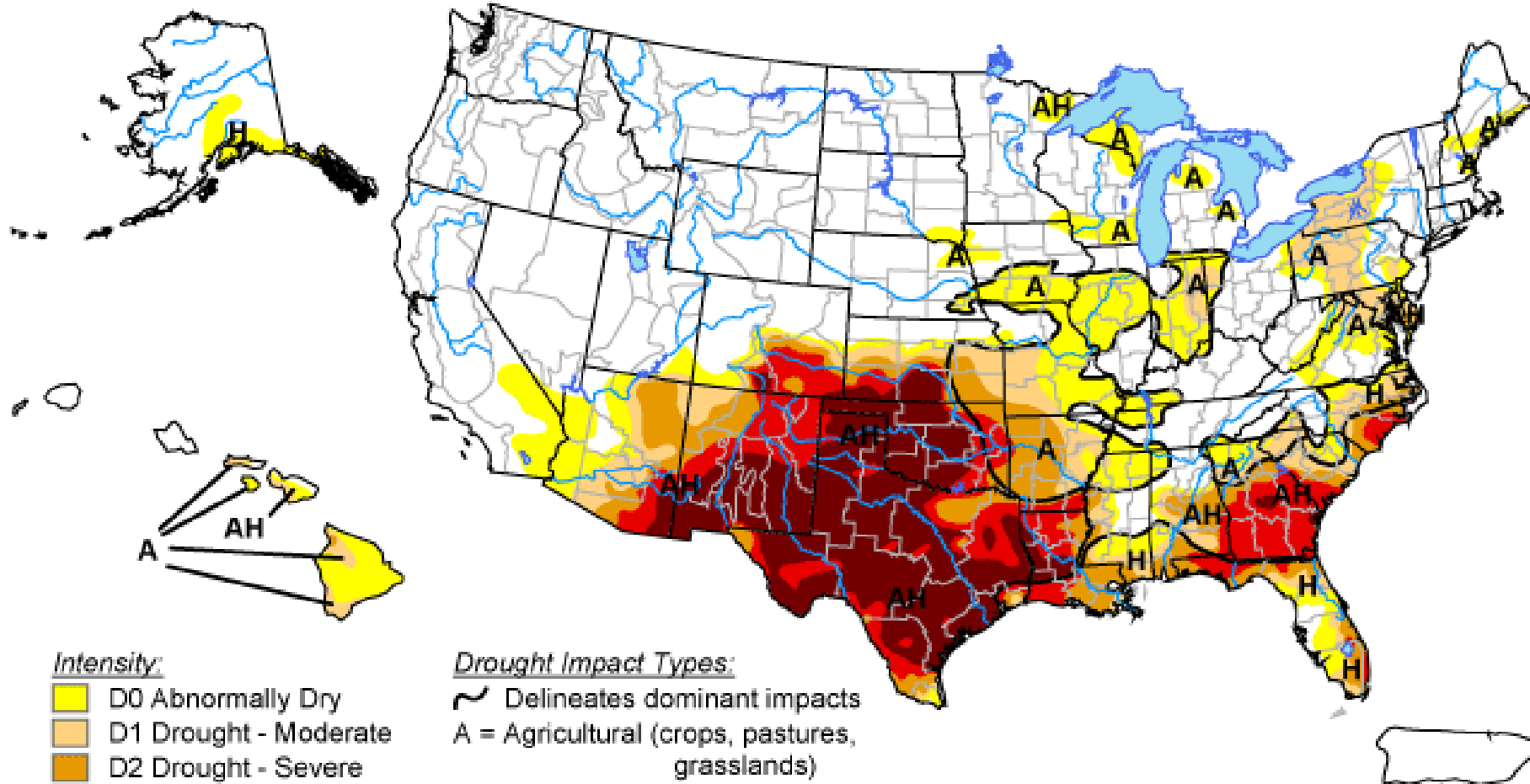
Billion Dollar Disasters

NCDC, 1980-2011






<u>Disaster</u>	<u>Events</u>	<u>Damage\$</u>	<u>\$/Event</u>
Hurricanes	29	375	12.9
Tornadoes	30	79	2.6
Droughts	16	195	12.2
Floods	14	74	5.3
Fires	11	20	1.8
Winter-related	13	43	3.3
Total	113	786	7.0

U.S. Drought Monitor


August 2, 2011
Valid 8 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
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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

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



Released Thursday, August 4, 2011
Author: Brad Rippey, U.S. Department of Agriculture

2011 Drought Impacts



- NCDC: total direct losses to crops, livestock, and timber = \$10 billion
- Texas: \$5.2 billion in agricultural losses through July
 - Livestock \$2.1 billion, Crop losses \$3.1 billion
 - \$13.1 billion in agricultural losses since 1998
- Oklahoma: more than \$2 billion in agricultural losses
- Kansas: more than \$1.7 billion in agricultural losses

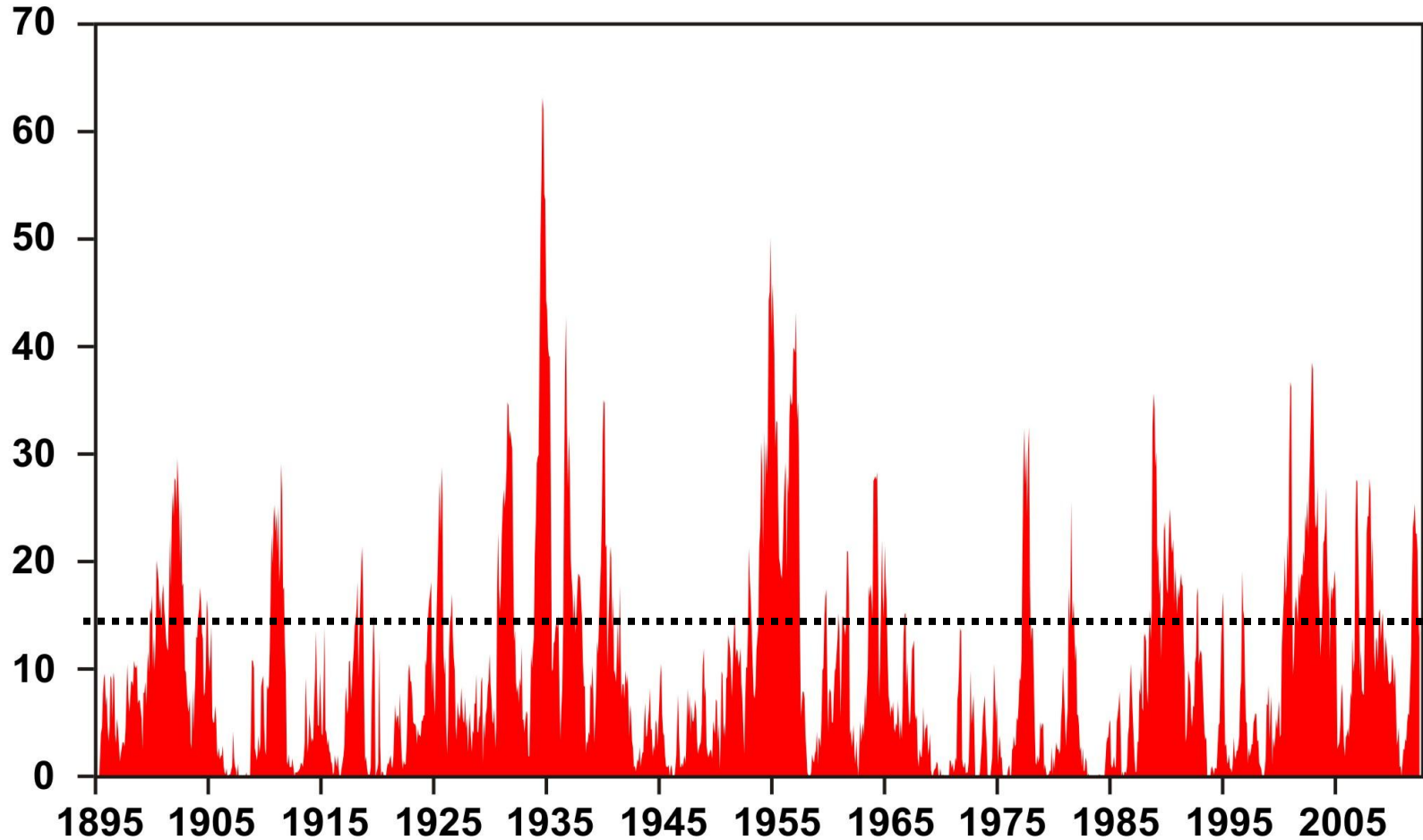
2011 Livestock Impacts



- Oklahoma experienced a 12% cattle inventory decline.
- New Mexico: “2011 the worst year in memory for the range livestock industry.”
- Texas: “Of the 15,500 members of the Texas and Southwest Cattle Raisers Association, 84% have reported reducing herd size by an average of 38%. This translates to a net reduction of 600,000 to 800,000 head, or about 12%-16% of supply. Total impacts on the Texas economy are estimated at \$2.2 billion from livestock losses alone.”

Percent Area of the United States in Severe and Extreme Drought

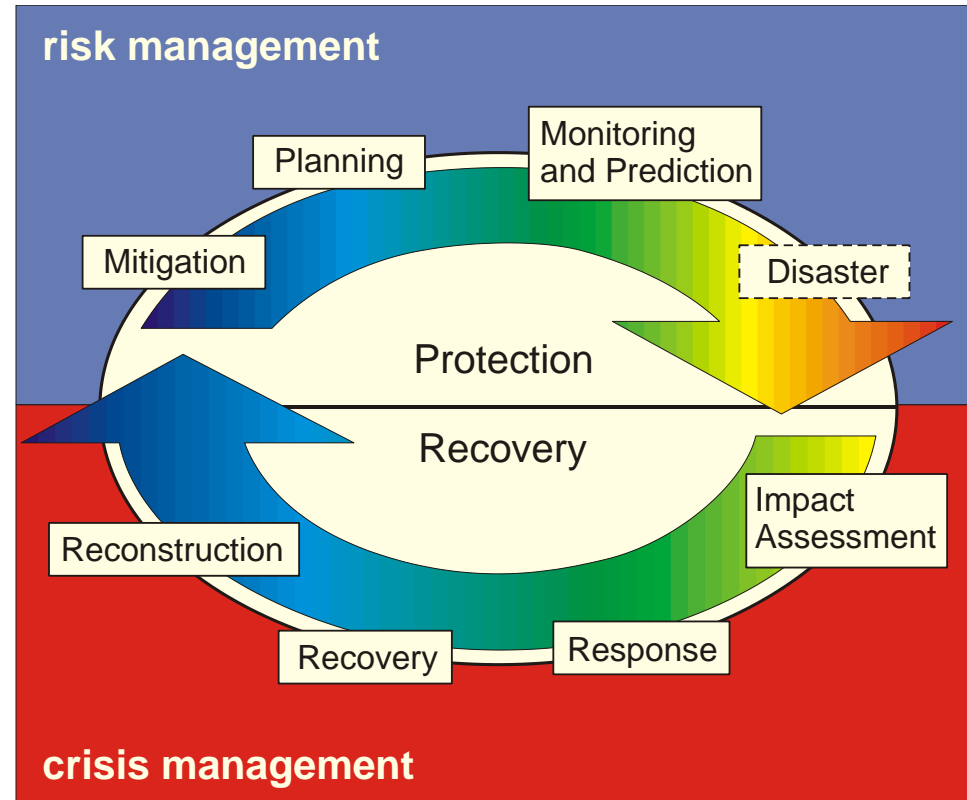
January 1895–January 2012



Based on data from the National Climatic Data Center/NOAA

Characteristics of Crisis Management

- Reactive, post-impact
- Poorly coordinated
- Untimely
- Poorly targeted
- Ineffective
- Decreases self-reliance → greater vulnerability

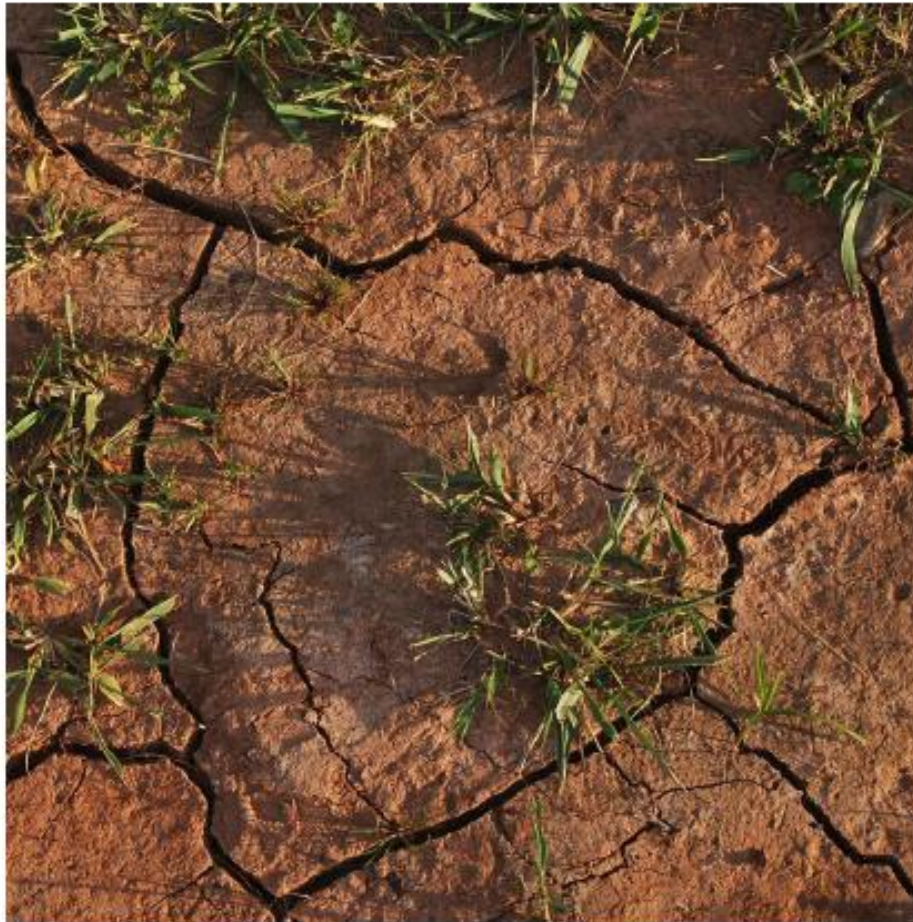


Risk Management: Planning

- State level
- Local level
 - Municipalities: Drought Ready Communities
 - River Basins
 - Producers: Managing Risk on the Ranch
- International

Drought-Ready Communities

A Guide to Community Drought Preparedness



OGALLALA AQUIFER
CORRIDOR ALLIANCE



Managing Drought Risk on the Ranch

Wednesday, October 05, 2011

National Drought Mitigation Center

Overview Drought Basics Inventory & Monitor Before Drought During Drought After Drought Write a Plan

Managing Drought Risk on the Ranch

Overview Login

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.

Managing Drought Risk on the Ranch: Great Plains Examples

South Dakota	Nebraska	Kansas	Colorado
 Daybreak Ranch (Central)	 Tippets-Myers Ranch (Western Sandhills) Reed Hamilton Ranch (Sandhills) Shamrock Ranch (Southwestern)	 Alexander Ranch (South Central) Adams Ranch (North Central)	Welch Ranch (Southern)
			Johnson Ranch (West Central)

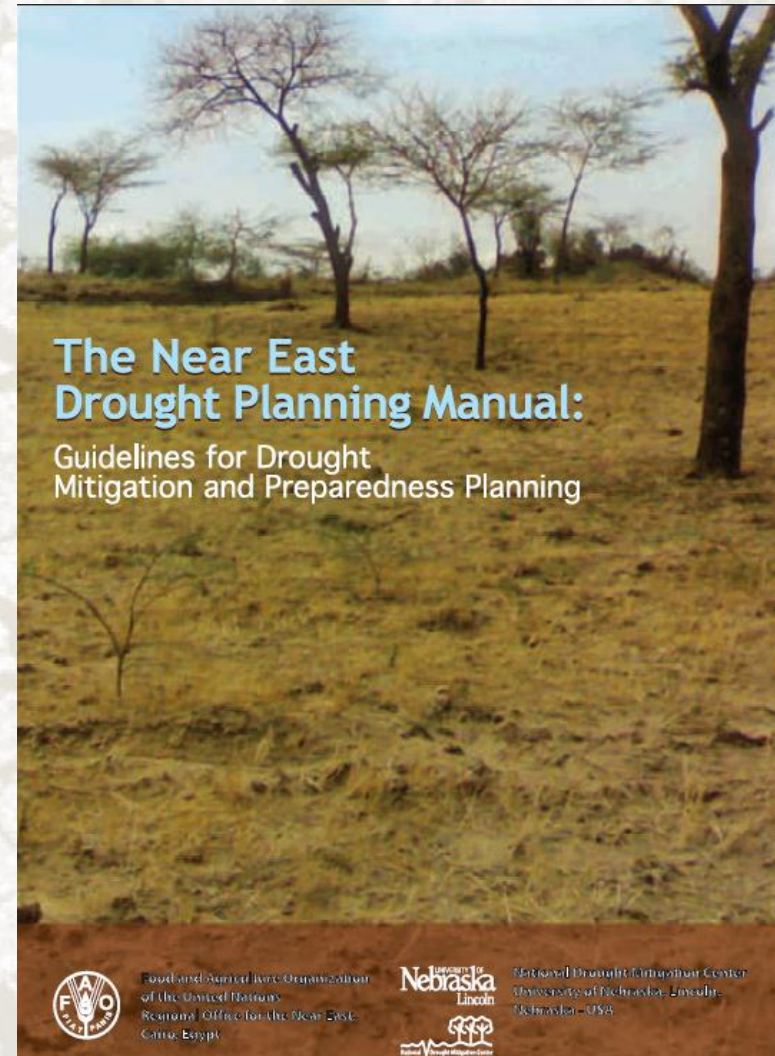
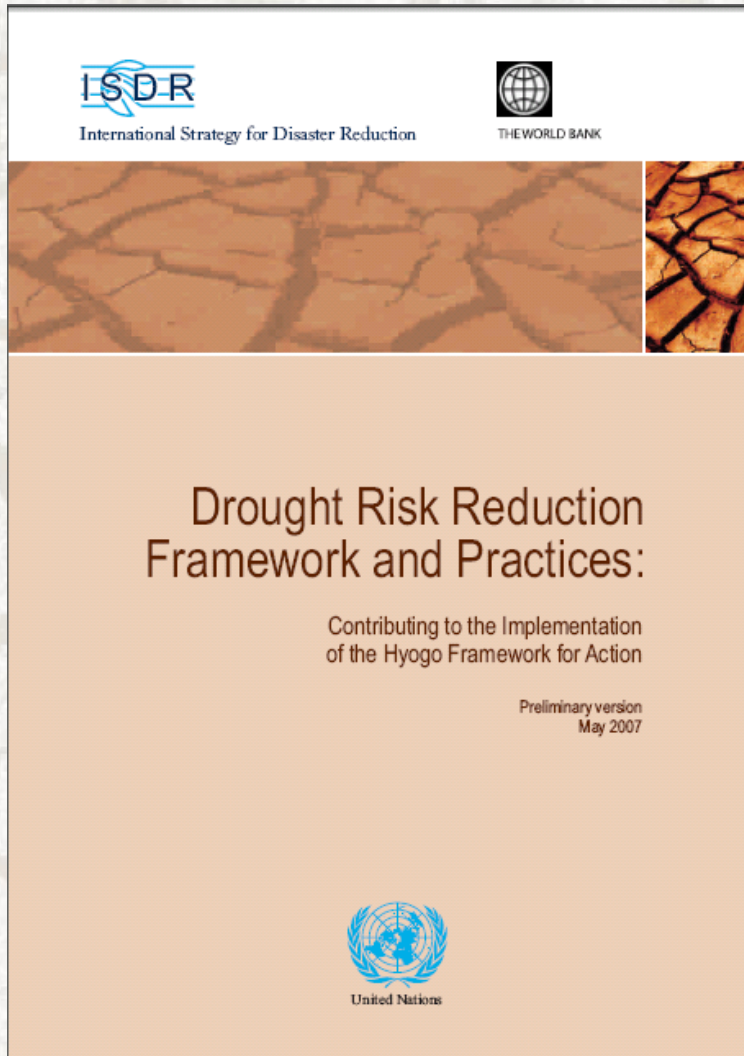
Where to Start here if you...
Start here if you...
Start here if you...
Write a Drought...
How to use this...

Drought of U.S. Drought...
Water Year Pr...
Precipitation -...
Weather forec...
Long Term Ou...

Tools and Inventory and...
Grazing Manag...
Financial Tools...

- Drought planning process and web-based educational resource for forage and rangeland producers
- Initiated with RMA funding in 2006
- Collaborators include SDSU, TX A&M, UNL, and ranchers and advisors from SD, NE, KS, CO, TX
- www.drought.unl.edu/ranchplan

International Drought Planning Guides



Risk Management: Mitigation



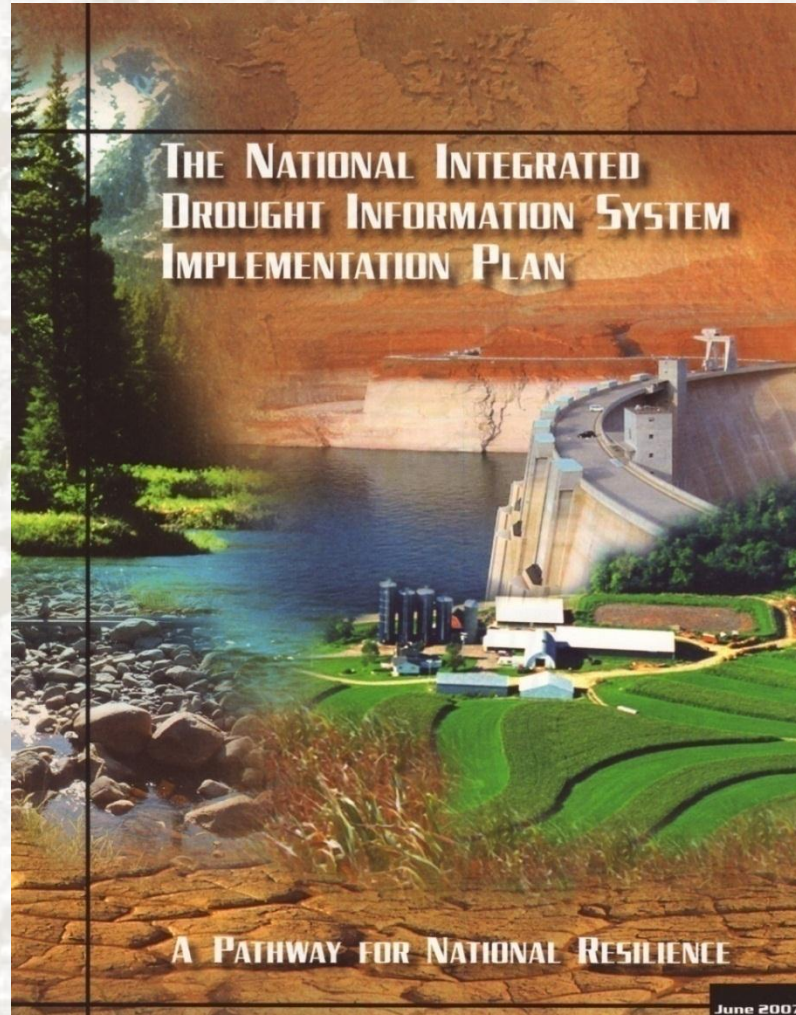
Categories of Drought Mitigation Actions

- Improved monitoring
- Drought planning
- Communication and coordination
 - Information Services
- Education/public awareness
- Water supply augmentation
- Demand reduction/water conservation
- Water use conflict resolution
- Legislation/policy changes

Mitigation Database Project

- Collaborate with officials and relevant stakeholders to identify appropriate methods for categorizing, reporting, and accessing drought mitigation case studies and news stories
- Develop a user-friendly web interface for improving accessibility
- Based off of the concepts used by the Drought Impact Reporter and UN-ISDR

Risk Management: NIDIS



Drought and Water Resources: Federal Partnerships (States, Tribes, Urban, other)

Monitoring & Forecasting

Logos: US Forest Service, NASA, NSF, EPA, NRCS Natural Resources Conservation Service, U.S. Department of the Interior, U.S. Department of Justice, US Army Corps of Engineers, AAU, NOAA.

Drought and Flood Impacts Assessments and Scenarios

Logos: NASA, AAU, NSF, US Forest Service, USGS, NOAA, EPA, U.S. Department of Justice, U.S. Department of Education.

Early Warning Information

Communication and Outreach

Logos: EPA, US Forest Service, AAU, U.S. Department of the Interior, NOAA, US Army Corps of Engineers, U.S. Department of Justice, U.S. Department of Education, U.S. Chamber of Commerce.

Engaging Preparedness & Adaptation

Logos: FEMA, USDA, CDC, AAU, NOAA, U.S. Department of Transportation, U.S. Department of Health and Human Services, U.S. Department of Justice, U.S. Department of Education, U.S. Chamber of Commerce, U.S. Department of the Interior.

Regional Drought Early Warning Systems (DEWS)

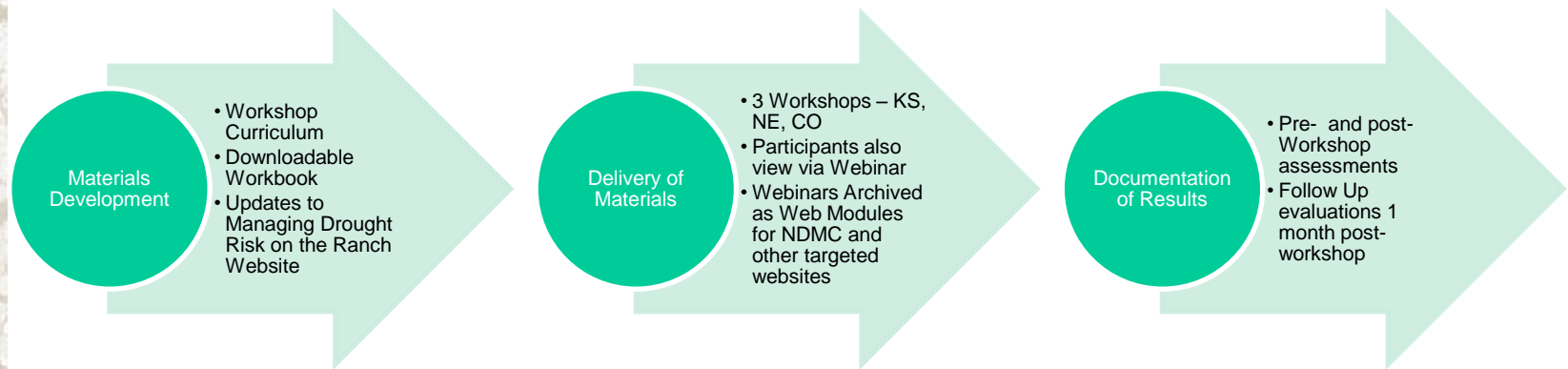


Risk Management Education for Ranchers

Products: Workshops in KS, CO, NE; workbook based on Managing Drought Risk on the Ranch website; archived materials available online

First workshop held January 21st, Emporia, KS

Links to archives (ppt and audio): www.drought.unl.edu/ranchplan





<http://www.AgClimate4U.org>

Transforming Climate Variability and Change Information
for Cereal Crop Producers in the Midwest

Linda Prokopy, PhD
Purdue University



United States Department of Agriculture
National Institute of Food and Agriculture





State climatologists

Crop modelers

Agronomists

Economists

Social scientists

RCC staff

NOAA staff



Final Thought

“Moving forward”, drought risk management needs to be placed into the broader context of the issues surrounding water, sustainability, and all natural hazards.



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<http://drought.unl.edu>

