

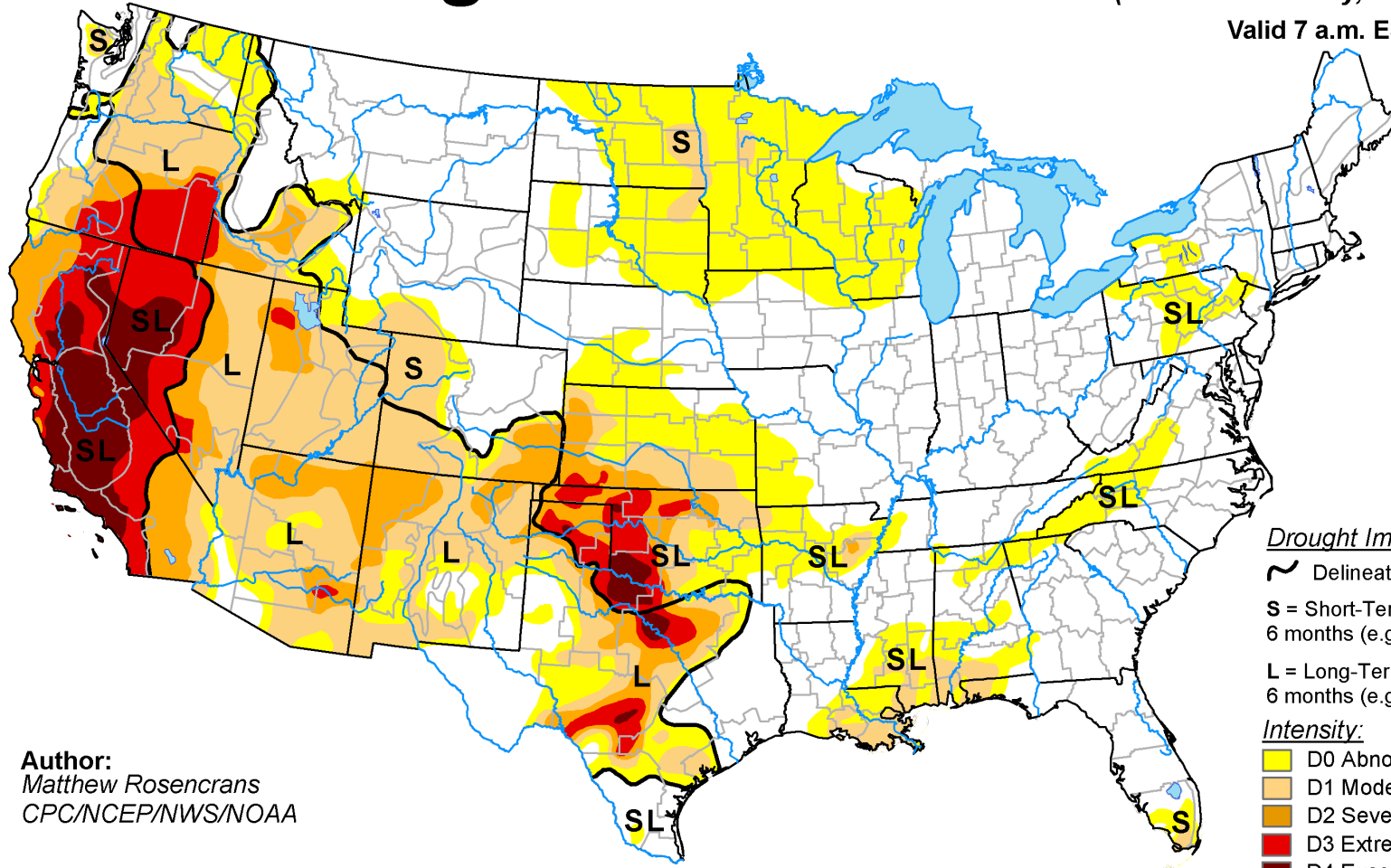
Overview of Drought Planning and Risk Management



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

U.S. Drought Monitor

March 10, 2015
 (Released Thursday, Mar. 12, 2015)
 Valid 7 a.m. EST



Author:
 Matthew Rosenkrans
 CPC/NCEP/NWS/NOAA

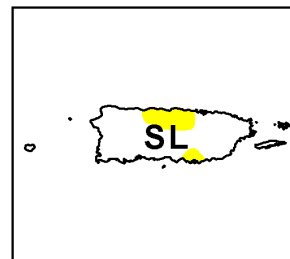
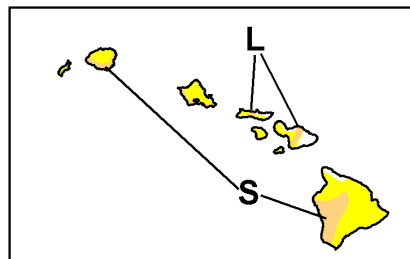
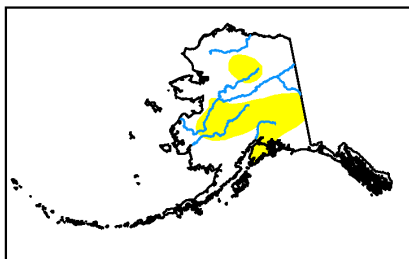
Drought Impact Types:

- ~ 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:

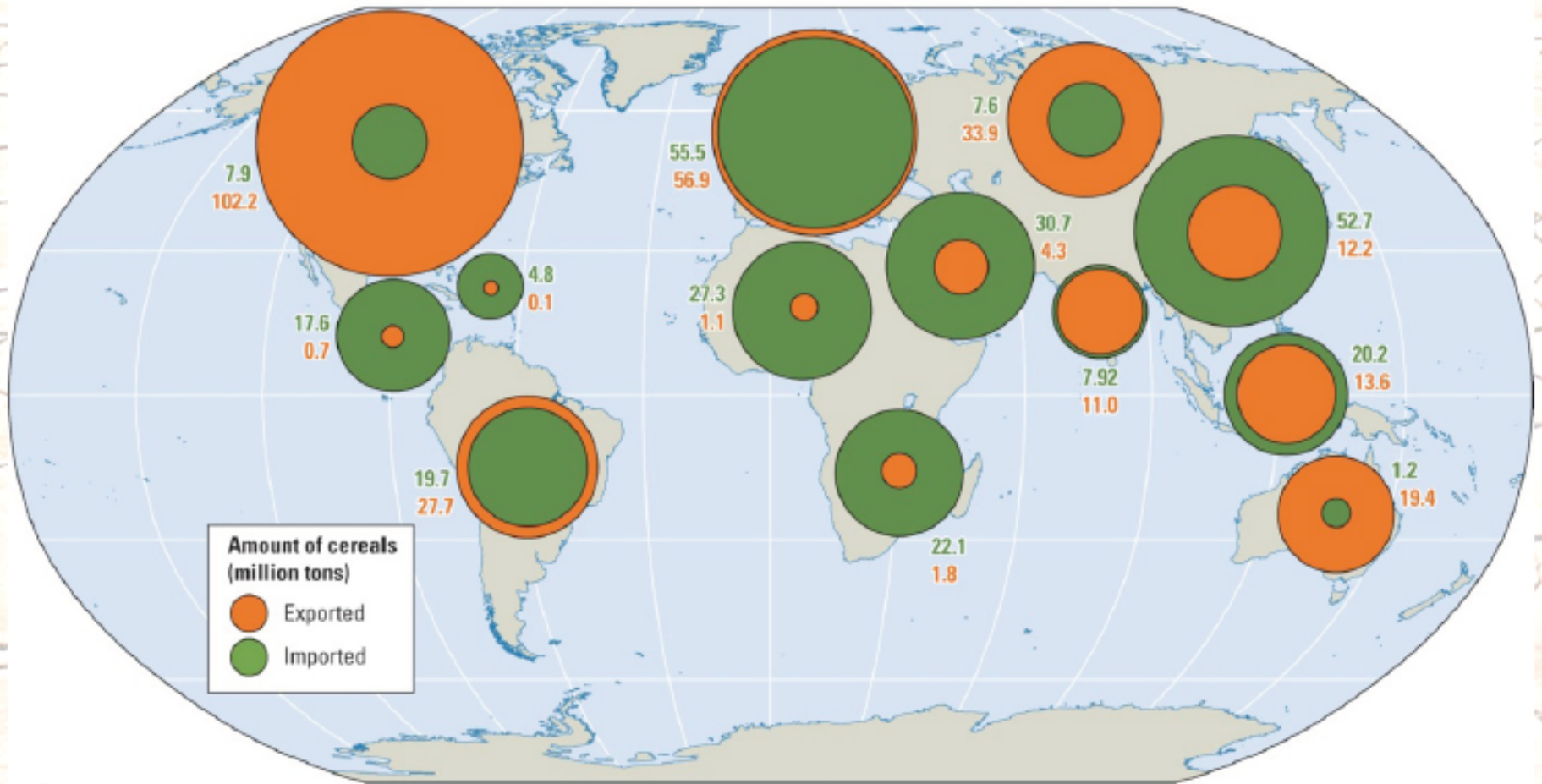
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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



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

Context: Drought and Food Security

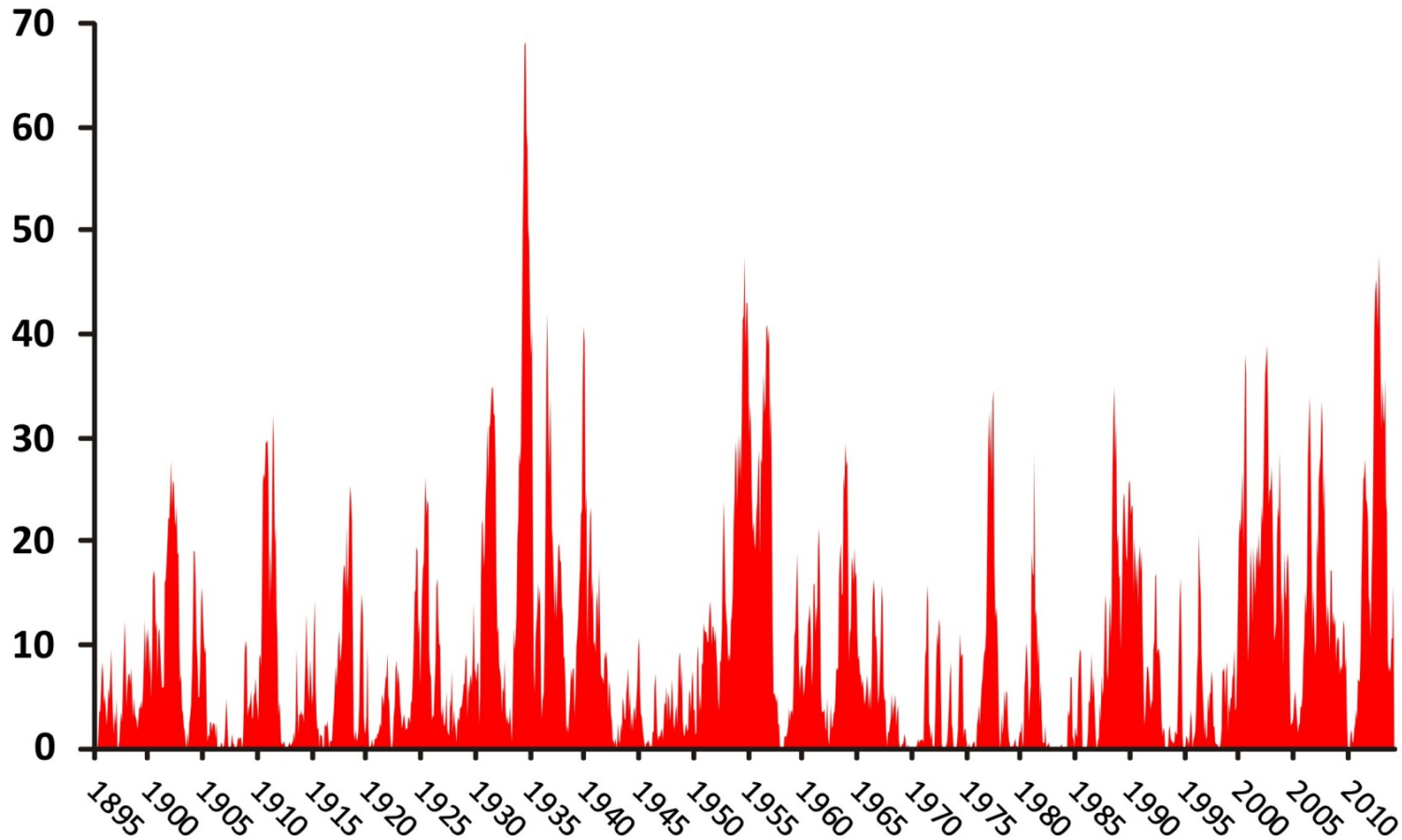


World grain trade depends on exports from a few countries

FAO 2009

Percent Area of the United States in Severe to Extreme Drought

January 1895–March 2014

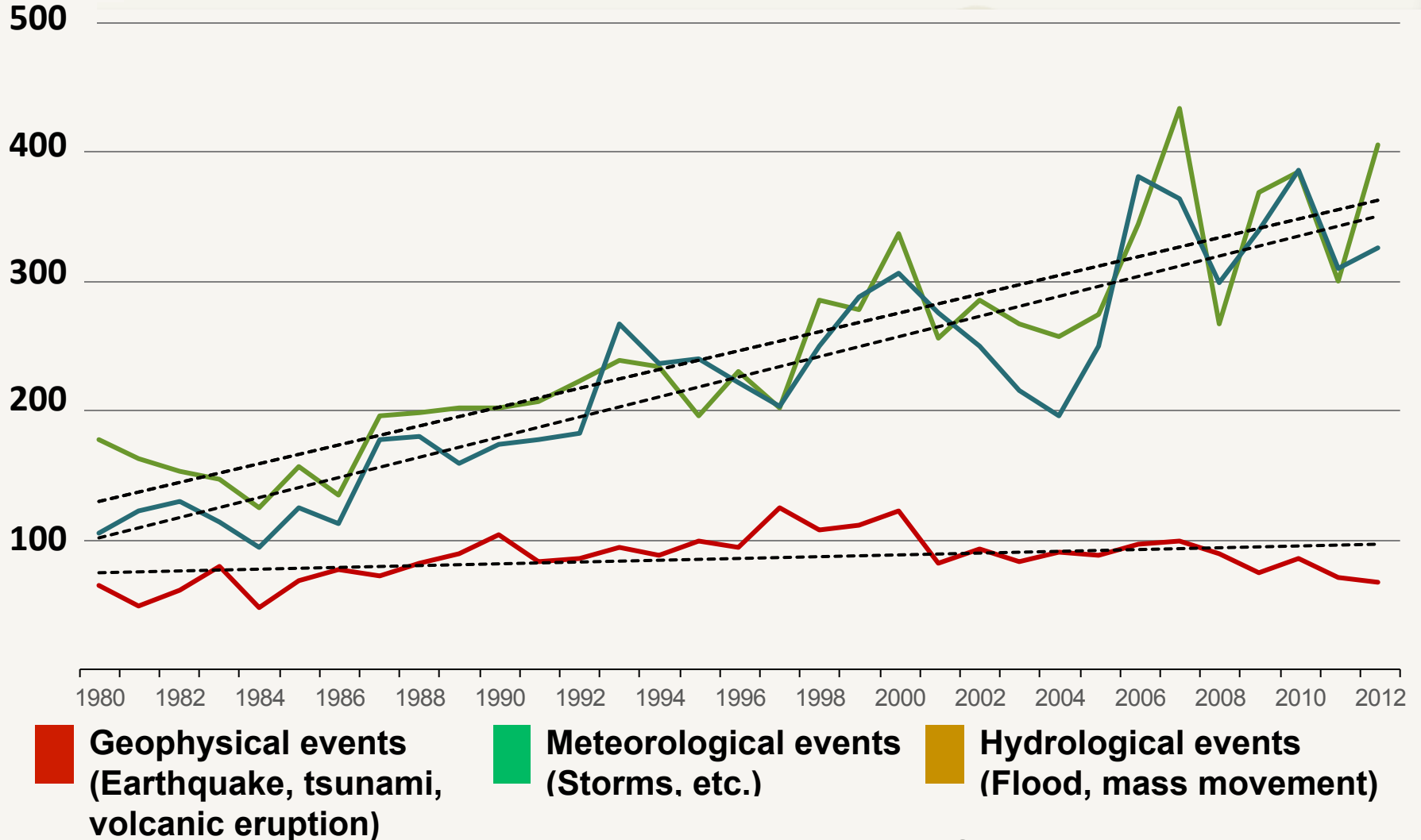


Based on data from the National Climatic Data Center/NOAA



Context: Why Plan Ahead and Prepare for Natural Disasters?

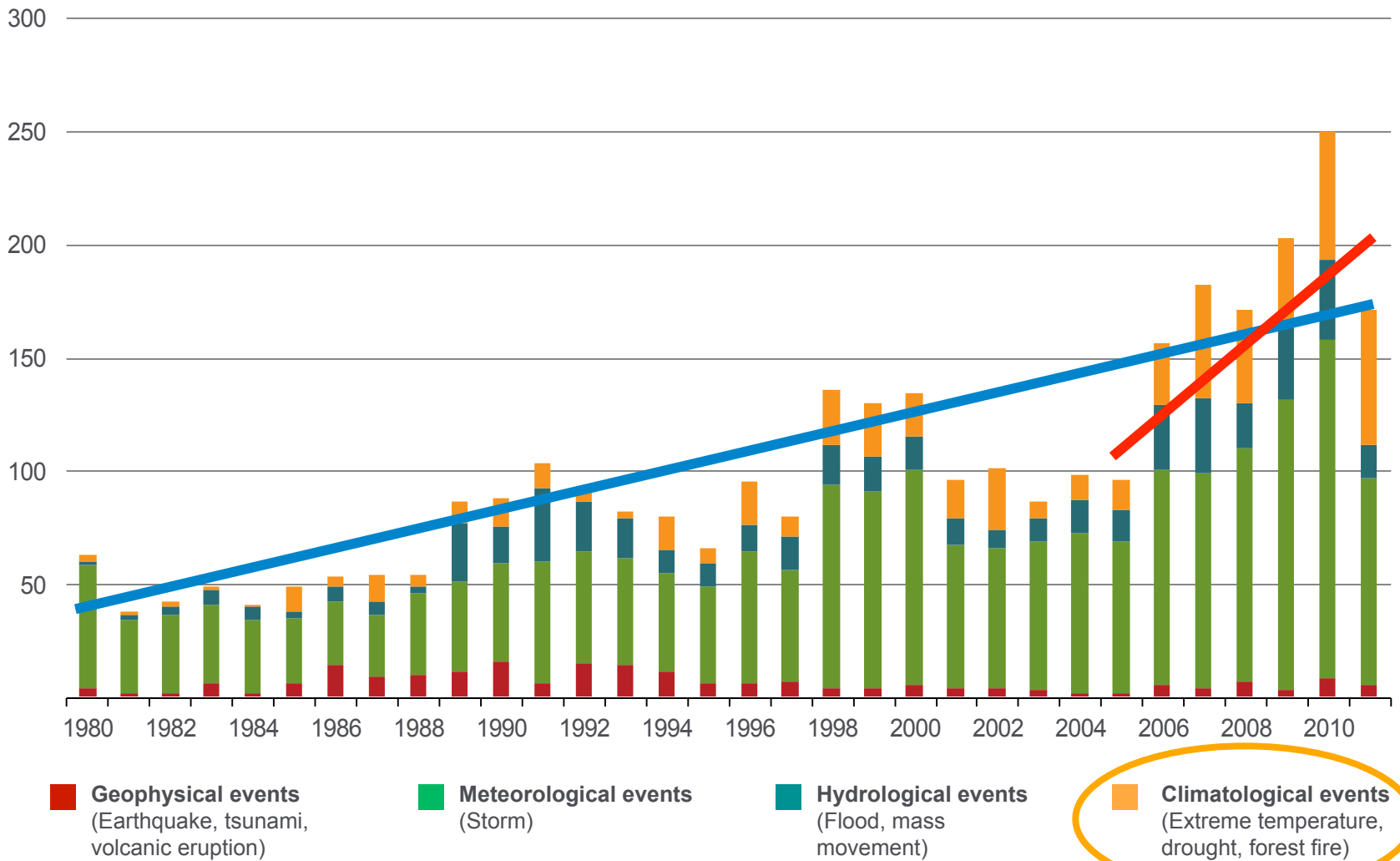
Number



Source: Munich Re

Context: Natural Disasters in the U.S. 1980-2011

Number



Source: MR NatCatSERVICE

© 2011 Munich Re

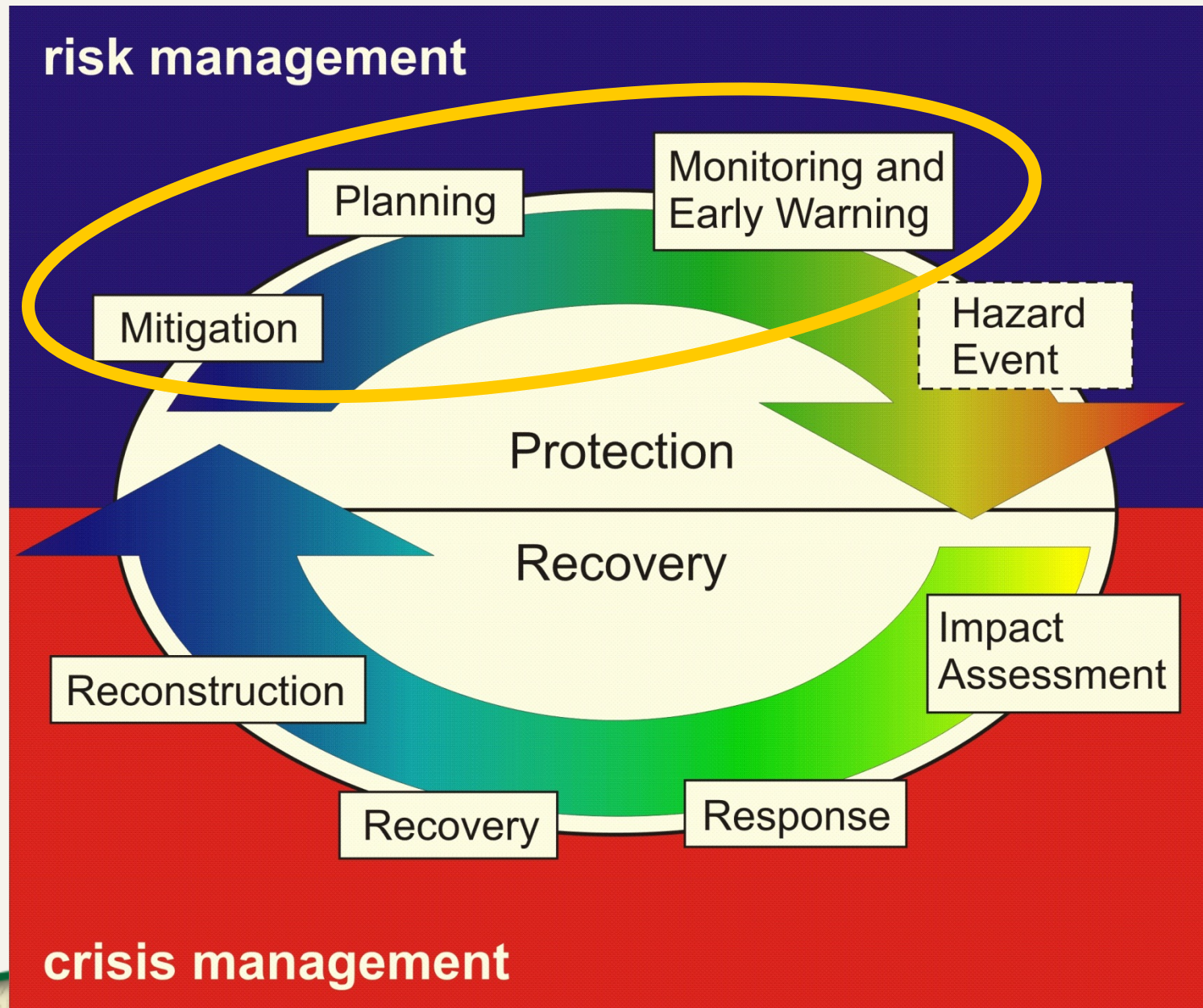
Context: Why Plan Ahead for Natural Disasters?

- ▶ Economic losses from disasters worldwide since 2000 are in the range of *\$2.5 trillion* (UN, 2013)
 - Considerably higher than previous estimates
- ▶ “Losses from floods, earthquakes and drought will continue to escalate” **unless actions are taken to reduce disaster risks**

National Drought Mitigation Center



The Cycle of Disaster Management



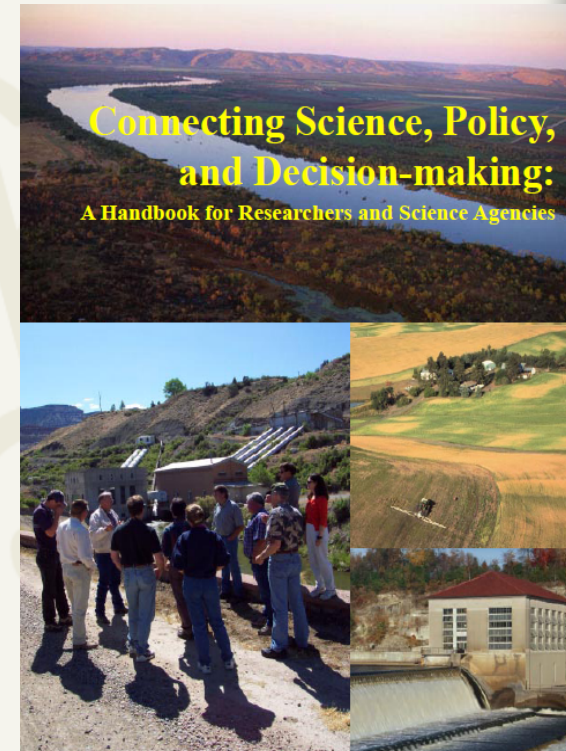
Lesson

- ▶ ***Monitoring and Early Warning Information:*** often the starting point for the engagement of stakeholders for drought planning and risk management.
 - It is often what the stakeholders know and can relate to
 - Allows trust to develop (between different stakeholders, with the data, making decisions, etc...)
 - Droughts provide “windows of opportunity” for engagement with stakeholders
 - “Cannot manage what is not monitored”



Drought Early Warning Systems

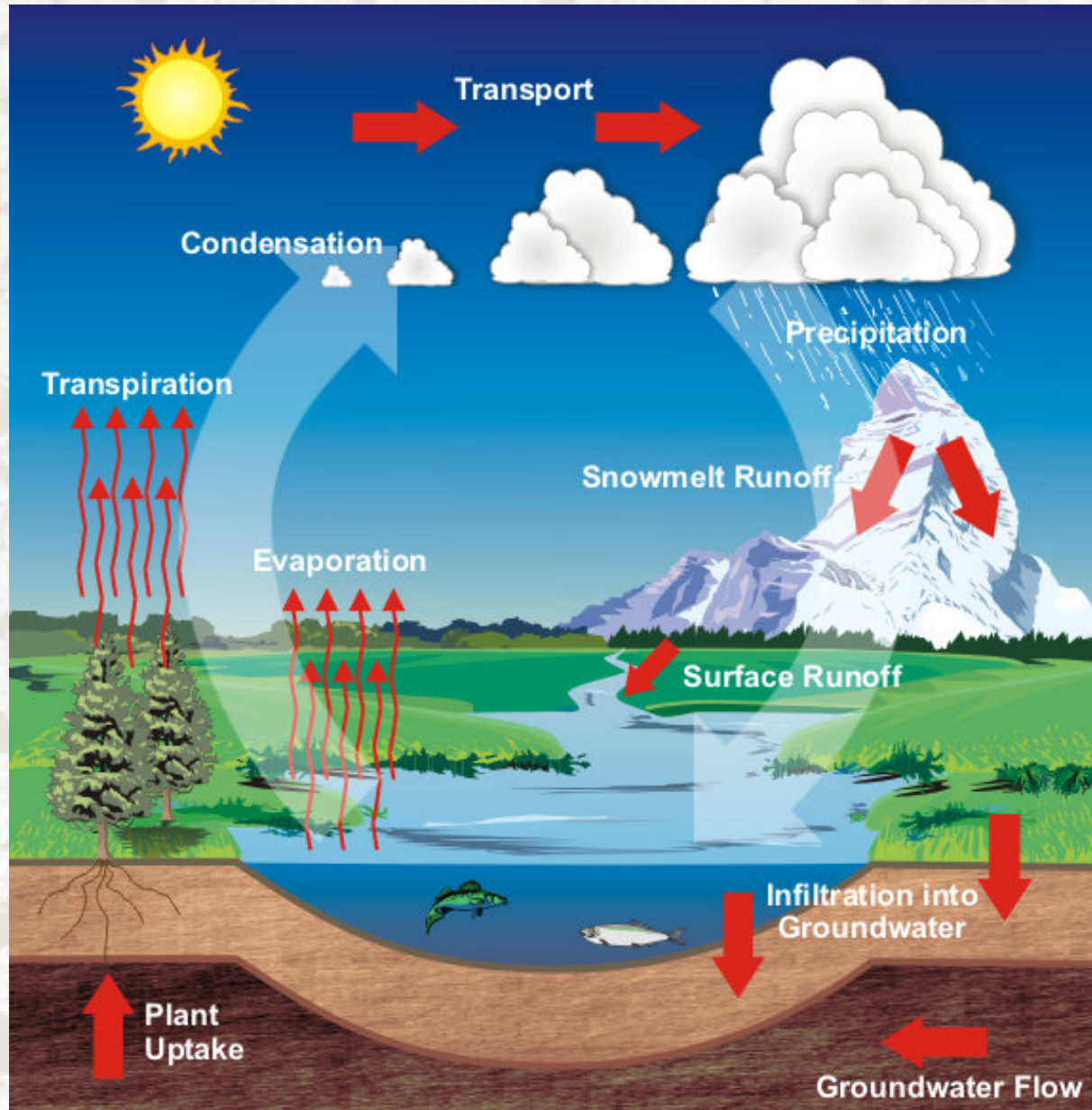
- Facilitate “the *provision of timely and effective information*”
- Not just a forecast...
- Important at all scales (temporal and spatial)
- Focus on usability, not just availability of information
- Empower stakeholders to: 1) prepare for response, and 2) take action to reduce future risk



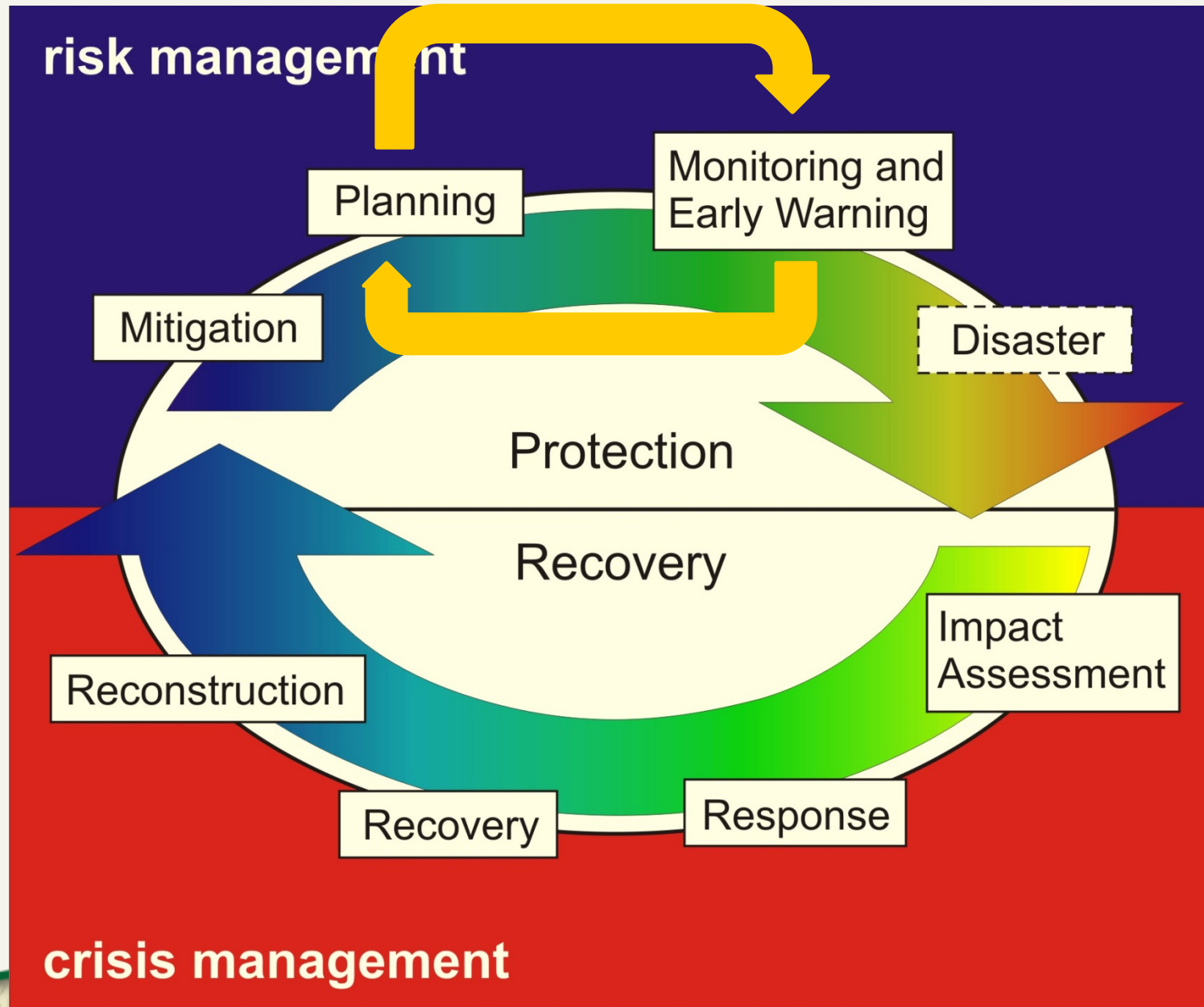
Kathy Jacobs



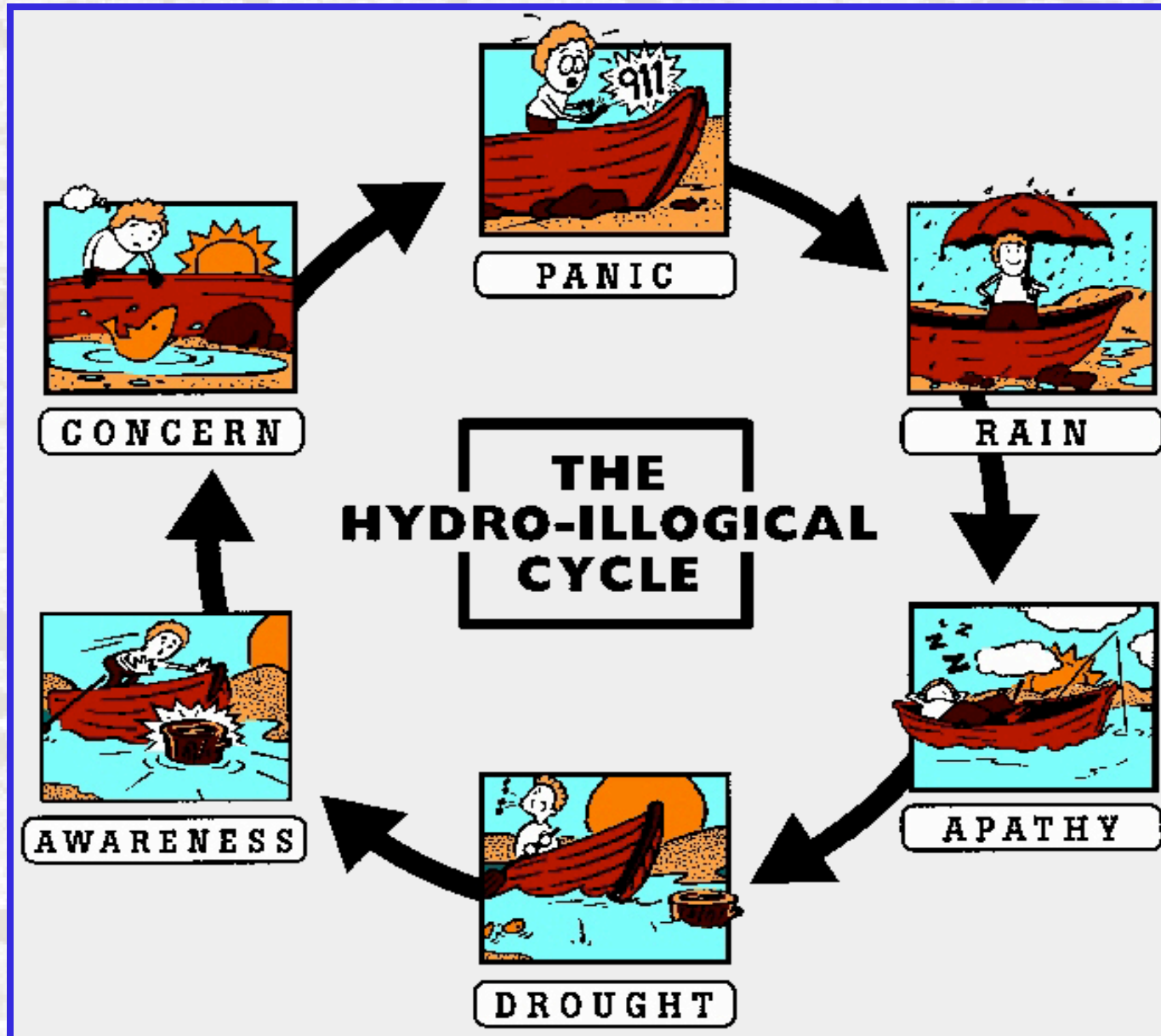
Drought Monitoring and Early Warning



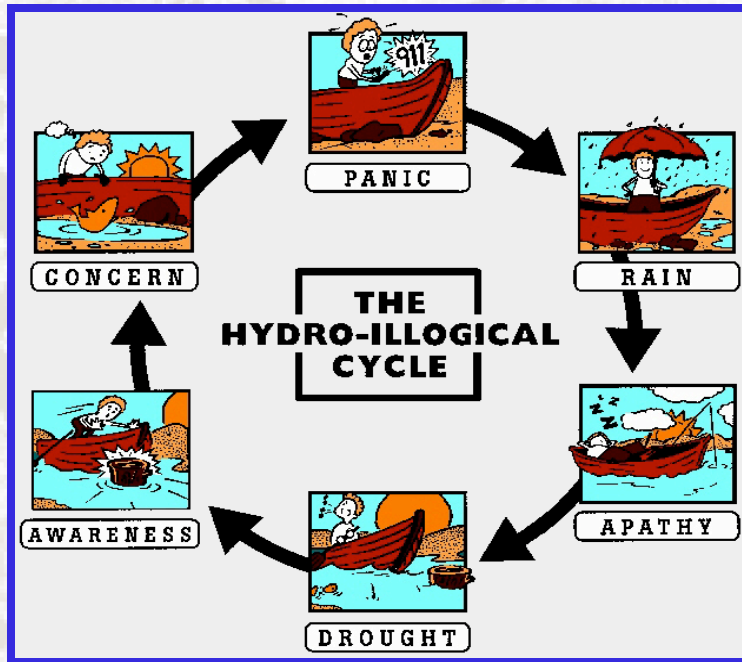
Lesson: Early Warning and Planning Feedback



Why Plan Ahead for Drought?



What Happens without Planning?



- Panic
- Frustration/confusion
- Poor decisions
- Slow/late responses
- Conflicts
- Inefficient resources
- Poor preparation
- Future resilience does not improve

Planning (Preparedness)

- ▶ Activities designed to increase the readiness to respond to a natural disaster event.
 - Targeting response and recovery
 - Reducing future drought vulnerability through mitigation strategies
 - Not an event, but a process
 - “Plans are nothing, planning is everything.”



Planning: Drought Plan Components

- Monitoring and early warning
 - Assess, communicate, and trigger action
 - Cannot manage what is not monitored
 - Information system
- Vulnerability assessment
 - Who and what is at risk and why?
 - Impacts
- Mitigation and response actions
 - Actions/programs that reduce risk and impacts and enhance recovery



Planning: Drought Plan Components

- ▶ **Monitoring** and early warning
 - Assess, communicate, and trigger action
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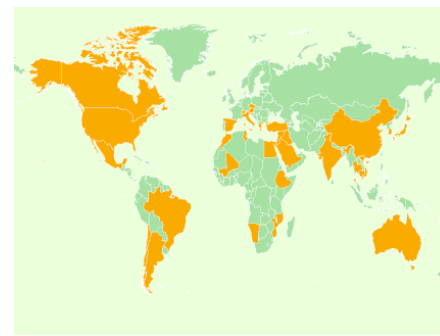
Benefits of Drought Plans

- ▶ Proactive, emphasizes mitigation and response
- ▶ Improves coordination between and within levels of government → organizational structure
- ▶ Enhances early warning through integrated monitoring efforts
- ▶ Involves stakeholders
- ▶ Reduces conflicts between water users
- ▶ Improves information dissemination → better delivery systems
- ▶ Builds public awareness



Planning Tools

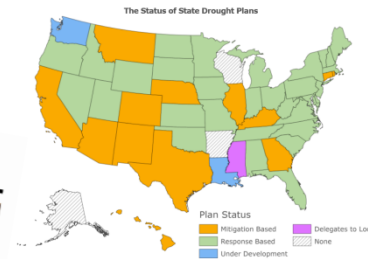
- ▶ Planning at ***all scales***
- ▶ Planning should start local and involve the ***“locals”***
- ▶ Planning is a ***“living”*** process



Nation



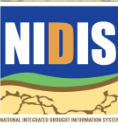
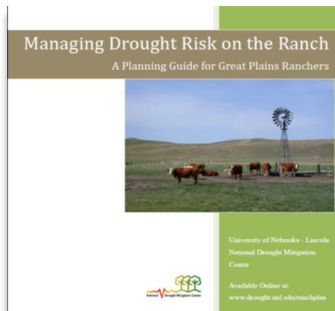
Basin



Tribal/
State

Community

Individual



Lesson

- ▶ Planning ahead and mitigation reduces vulnerability, impacts, and the need for some government intervention; **a good investment**
 - Challenge
 - Opportunity for innovation!
 - Plant Breeding
 - Irrigation Technologies
 - Innovative Marketing Strategies
 - Increase Supply/Reduce Demand
 - Education and Outreach



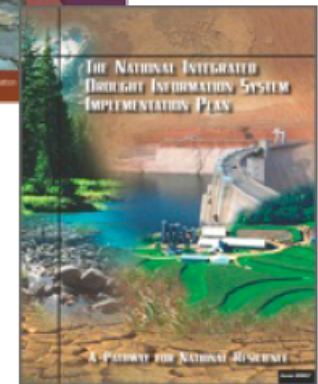
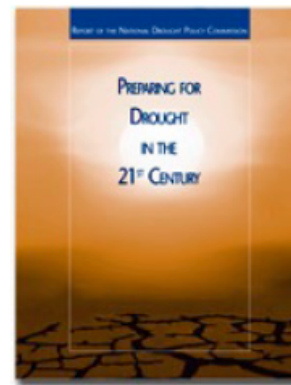
Lesson

- ▶ ***Partnerships and networks are fundamental:*** necessary because of the complexity of drought and for reaching the stakeholders
 - National Drought Resilience **Partnership** (NDRP)
 - Federal: NIDIS, Regional Climate Centers, RISAs, Climate Science Centers, USDA Climate Change Hubs
 - State, local, NGO resources
 - Universities are critical for building the capacity related to research and outreach
 - ▶ Extension (Climate Extension Specialists)
 - Media

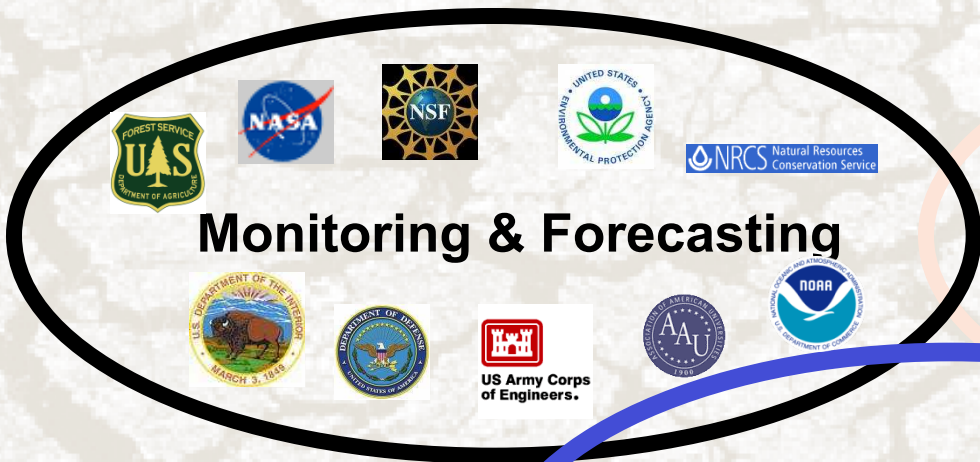


NIDIS: Creating a drought early warning information system

- Public Law 109-430
(The NIDIS Act 2006)
 - “Enable the Nation to move from a reactive to a more proactive approach to managing drought risks and impacts”
 - “better informed and more timely drought-related decisions leading to reduced impacts and costs”



Drought Information Partners



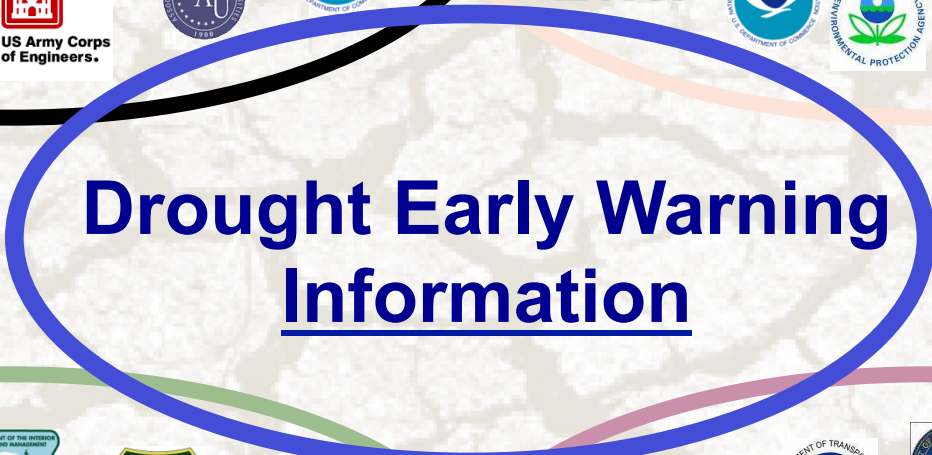
Monitoring & Forecasting

Partners in this category include: Forest Service (US), NASA, NSF, Environmental Protection Agency (EPA), NRCS (Natural Resources Conservation Service), U.S. Department of the Interior (Bureau of Reclamation), U.S. Department of the Interior (Bureau of Land Management), U.S. Army Corps of Engineers, AAU (American Association of Universities), and NOAA (National Oceanic and Atmospheric Administration).



Drought and Flood Impacts Assessments and Scenarios

Partners in this category include: NASA, AAU (American Association of Universities), NSF, Forest Service (US), USGS (United States Geological Survey), NOAA (National Oceanic and Atmospheric Administration), EPA (Environmental Protection Agency), U.S. Department of the Interior (Bureau of Reclamation), and U.S. Department of the Interior (Bureau of Land Management).



Drought Early Warning Information

This central hub is surrounded by all the partner organizations listed in the other categories.



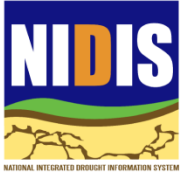
Communication and Outreach

Partners in this category include: Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service, U.S. Department of the Interior (Bureau of Reclamation), Forest Service (US), AAU (American Association of Universities), U.S. Department of the Interior (Bureau of Reclamation), NOAA (National Oceanic and Atmospheric Administration), National Park Service, U.S. Army Corps of Engineers, and U.S. Chamber of Commerce.

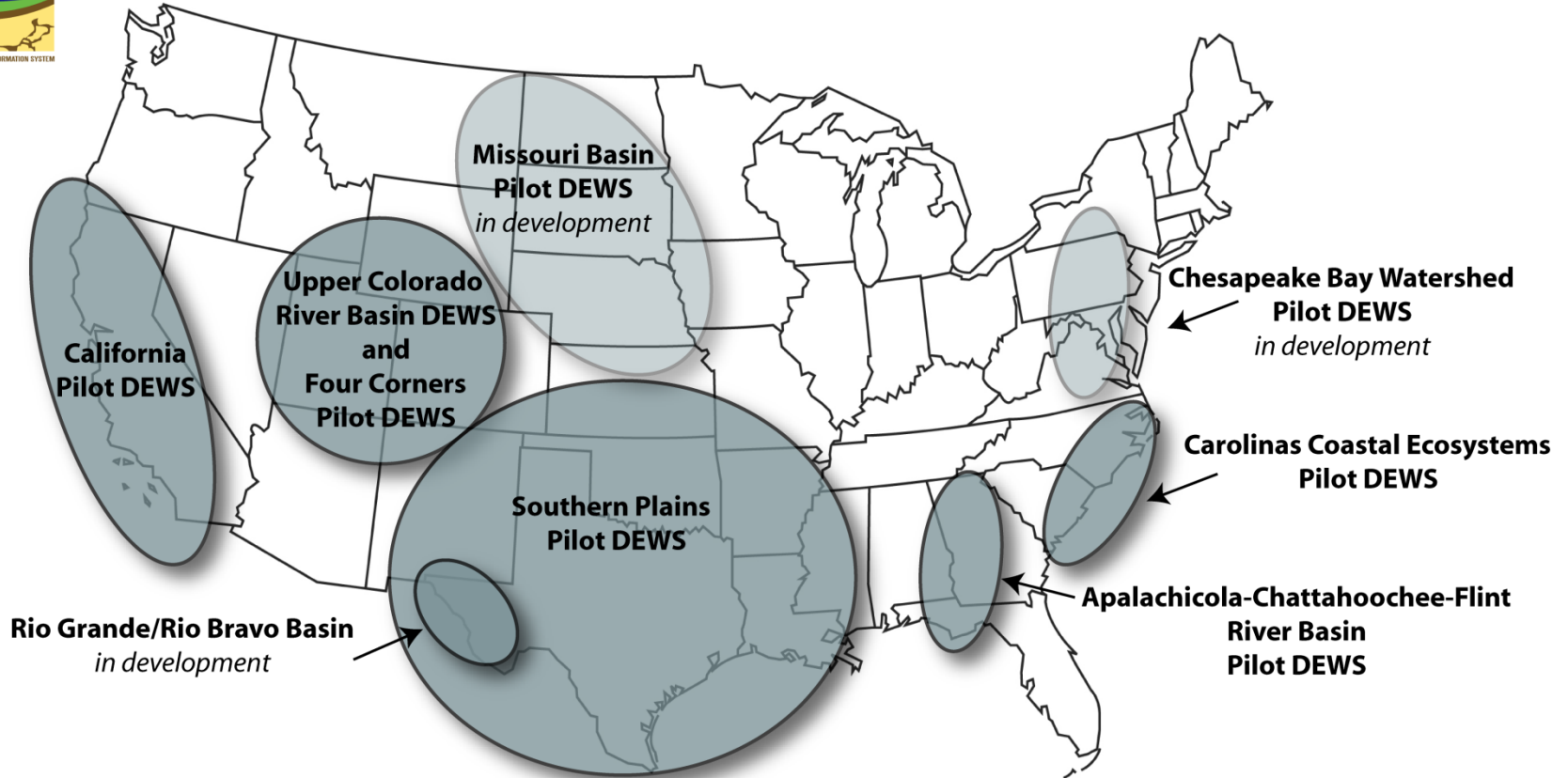


Engaging Preparedness

Partners in this category include: U.S. Chamber of Commerce, National Governors' Association, U.S. Department of Transportation, U.S. Department of Health and Human Services (CDC), FEMA (Federal Emergency Management Agency), USDA (United States Department of Agriculture), U.S. Army Corps of Engineers, AAU (American Association of Universities), U.S. Department of Homeland Security, U.S. Department of the Interior (Bureau of Reclamation), U.S. Department of the Interior (Bureau of Land Management), NOAA (National Oceanic and Atmospheric Administration), U.S. Chamber of Commerce, U.S. Department of the Interior (Bureau of Reclamation), U.S. Department of the Interior (Bureau of Land Management), and U.S. Department of the Interior (Bureau of Reclamation).



National Integrated Drought Information System (NIDIS) Regions in the US where NIDIS is currently developing drought early warning information systems



NIDIS is working toward a fully national drought information system through national, tribal and state partnerships

NIDIS-supported research and monitoring is conducted across the nation

For monitoring, forecasting, data products, research activities and information on NIDIS webinars and meetings, visit the drought portal - www.drought.gov

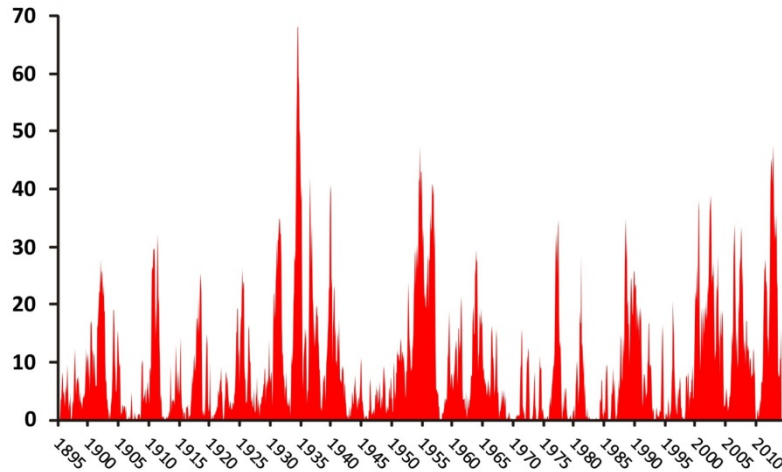
Lesson: Looking Ahead

► “Societies will manage climate variability and potential changes in the same way that they manage droughts (for better or worse).”

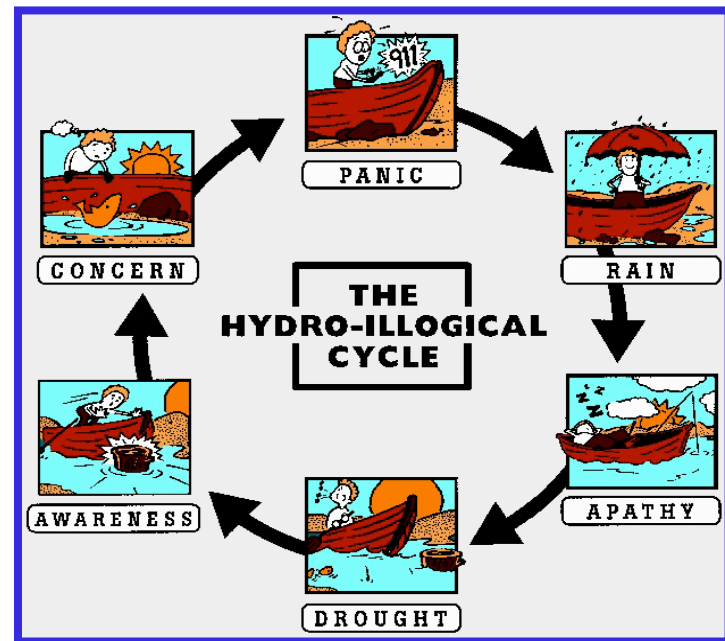
● Daniel Connell, Australian National University, 2010

Percent Area of the United States
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January 1895–March 2014



Based on data from the National Climatic Data Center/NOAA



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Photo: Nicole Wall, NDMC, Platte River, August 2012