Perspectives from the National Drought Mitigation Center: Addressing Communication Issues in the Context of Drought

Mark Svoboda, Climatologist
Monitoring Program Area Leader
National Drought Mitigation Center
School of Natural Resources
University of Nebraska-Lincoln

NOAA Attribution Workshop: Broomfield, CO, August 17-18, 2010
National Drought Mitigation Center

Founded: 1995 at the University of Nebraska-Lincoln by Dr. Don Wilhite

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

- **National Integrated Drought Information System (NIDIS)**
  - NIDIS Program Implementation Team, NIDIS Pilots Teams, NIDIS Portal Team, NIDIS Working Groups
- **NOAA**: RISAs, RCCs, NCDC, NWS Offices (D.C., Regional, RFCs, WFOs), CPC, ESRL/PSD etc…
- **NASA**: NASA Goddard Space Flight Center (GSFC) and Jet Propulsion Laboratory (JPL)
- **USDA**: NRCS National Water and Climate Center, RMA, ARS, Joint Agricultural Weather Facility, World Agricultural Outlook Board
- **USGS**: Center for Earth Resources Observation Science (EROS)
- **U.S. Army Corps of Engineers**: Institute for Water Research
- **Bureau of Reclamation**: Lower Colorado Region

---

**National**

- U.S. Drought Monitor Author Group and Listserv
- North American Drought Monitor Author Group and Listserv
- National Phenology Network
- National Conference of State Legislatures

---

**Other**

- **Researchers at Universities**: Colorado, Arizona, Iowa State, Missouri, Kansas, Indiana, Purdue, Texas A&M, South Dakota State, Illinois, Oklahoma, New Mexico, UNK, Augustana, Colorado State, UMKC, South Carolina, Washington, Wisconsin, Dartmouth, California-Riverside, Scripps Research Institute, Center for Research on the Changing Earth System
- **States/Tribes**: Hualapai, Hawaii, Colorado, Missouri, Nebraska, Arizona, Illinois, Oklahoma
- **Communities**: Lincoln, NE; Kansas City, MO; Johnson County, KS; Nebraska City, NE; Decatur, IL; Ada, Cordell, Norman, OK
- **Nebraska Natural Resources Districts**
• **UN organizations:**
  - FAO, ISDR, and CCD
  - *World Meteorological Organization (WMO)*
  - USAID
• Various regional and national drought centers
• Numerous government agencies and universities in different countries

- Czech Republic • Italy • Switzerland • Spain • Slovenia • European Union • Southern Europe/Northern Africa • Morocco • Tunisia • Mali • Ethiopia • Mozambique • Namibia • Egypt • Saudi Arabia • Jordan • India • Japan • China • South Korea • Vietnam and Cambodia • Australia • Brazil • Chile • Mexico • Canada • United States
Drought-related Educational Materials

- Guides: Discover the Waters of Nebraska
- Games: “Meteoropoly”, “Water Banking” and “Wheel of Misfortune”
## Billion Dollar Disasters

### NCDC, 1980-2008

<table>
<thead>
<tr>
<th>Disaster</th>
<th>Events</th>
<th>Damage$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurricanes</td>
<td>27</td>
<td>367</td>
</tr>
<tr>
<td>Tornadoes</td>
<td>16</td>
<td>34</td>
</tr>
<tr>
<td>Droughts</td>
<td>14</td>
<td>180</td>
</tr>
<tr>
<td>Floods</td>
<td>13</td>
<td>70</td>
</tr>
<tr>
<td>Fires</td>
<td>9</td>
<td>21</td>
</tr>
<tr>
<td>Winter-related</td>
<td>11</td>
<td>39</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>90</strong></td>
<td><strong>711</strong></td>
</tr>
</tbody>
</table>
Getting into the Drought Biz

- Heighten awareness of drought as a hazard
- Answer these three questions (Kelly Redmond) PLUS one or two more:
  - How bad is it?
  - How does this drought compare to past droughts?
  - When will it end?
  - What does climate change mean for future droughts and/or is this drought due to climate change?!
- The NDMC, on average, fields between 300-500+ interviews per year
What are the communication challenges in dealing with drought?

- Heightened awareness as a result of IPCC AR4: Drought is a normal part of the climate cycle and will continue to be
- Slow onset hazard: apathy
- Definitions: no universal definition….one size does not fit all…nor should it.
- Differences in spatial, temporal, magnitude (duration) and impact characteristics
  - Short- vs. Long-term drought
  - Lags
  - Going into and coming out (triggers)
What are the communication challenges in dealing with drought?

- **Drought vs. Aridity**
  - If there is a drought in the desert, does anyone see it?

- **Drought vs. Desertification**

- **Drought vs. Water/Food Scarcity**

- **Definitions: Mitigation**
  - C.C. = GGH reduction
  - Drought = climate change adaptation

- **Early warning is more than just a forecast**

- **FEMA doesn’t deal w/ drought (hazard credibility) (NIDIS)**

- **Urban vs. Rural**

- **Mitigation incentives**
NDMC Stakeholder Workshops 1996-2009
Engaging Users on Drought Management Tools

- Building partnerships and trust
- Provide producers and advisors with easy-to-use tools, data and resources to better understand/utilize the linkages between local climate and their operations/decisions
- Obtain feedback on what information or tools are needed to better understand these linkages
  - Multiple feedback approaches (needs)
  - Continuous dialogue/learning
Goal: Make our tools so easy to use a Caveman can do it!

Courtesy of GEICO
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)
Promoting the “drought impact reporting” idea to their volunteers...

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

* CoCoRaHS “Message of the Day”

* Monthly e-mail reminders

* Guide to reporting drought impacts

* Banners on the Web

Courtesy: Henry Reges, Colorado State University

National Drought Mitigation Center
DROUGHT SEVERITY
(LONG TERM, PALMER)
JULY 2, 1988

DROUGHT SEVERITY INDEX (PALMER) DEPICTS PROLONGED (MONTHS, YEARS) ABNORMAL DRYNESS OR WETNESS;
RESPONSWS SLOWLY; CHANGES LITTLE FROM WEEK TO WEEK;
AND REFLECTS LONG TERM MOISTURE RUNOFF, RECHARGE,
AND DEEP PERCOLATION, AS WELL AS EVAPOTRANSPIRATION.

USES...APPLICABLE IN MEASURING DISRUPTIVE EFFECTS OF PROLONGED
DRYNESS OR WETNESS ON WATER SENSITIVE ECONOMIES; DESIGNATING DIS-
ASTER AREAS OF DROUGHT OR WETNESS; AND REFLECTING THE GENERAL LONG
TERM STATUS OF WATER SUPPLIES IN AQUIFERS, RESERVOIRS, AND STREAMS.

LIMITATIONS...IS NOT GENERALLY INDICATIVE OF SHORT TERM (FEW WEEKS)
STATUS OF DROUGHT OR WETNESS SUCH AS FREQUENTLY AFFECTS CROPS AND
FIELD OPERATIONS (THIS IS INDICATED BY THE CROP MOISTURE INDEX).

NOAA/USDA JOINT AGRICULTURAL WEATHER FACILITY
Based on preliminary reports

Courtesy: Weekly Weather and Crop Bulletin, JAWF

National Drought Mitigation Center
U.S. Drought Monitor

August 10, 2010
Valid 8 a.m. EDT

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 12, 2010
Author: Brian Fuchs, National Drought Mitigation Center
The NDMC (and DM authors) have engaged stakeholder communities:

- USDM/NADM Forums and surveys
- USDM/NADM Listservers (participatory)
- USDA/RMA and other projects: workshops, listening session, focus groups w/ producers/etc. (60 since 2003)
- Meetings w/ Media (face-to-face, conferences)
- Meetings at annual conferences/trade shows/etc.
- Meetings/briefings/workshops with/for various federal/state/tribal officials
Challenges

- Find new ways to interact with our users
  - **Stakeholder “burnout”**
- Convince decision-makers that their mitigation/adaptation actions will reduce impacts
  - Quantify impacts and benefits
  - Incorporate into drought planning/mitigation
    - Proactive vs. Reactive
  - **Continual education and awareness**
- It is also hard for mitigation measures to compete for funding with the many urgent and immediate emergency funding needs facing governments
Lessons Learned?

1. Drought needs to be placed into the broader context of the issues surrounding water, sustainability, and all natural hazards
Lessons Learned?

2. Drought is a normal part of climate across the United States

- Recent droughts provide opportunities to learn lessons
- Worst-case scenarios have been difficult to conceptualize
- Independent of global warming….no need to wait for it to deal with it!
Lessons Learned?

3. Drought is not a West-only phenomenon
Lessons Learned?

4. Vulnerability matters!

- Drought is not just a physical event
  - Public health
  - Quantitative vs. qualitative impacts
- Not all impacts are equal
Communication Challenges

- Response and decision support should focus on the needs of our users (WGA (June 2010), Climate Adaptation Priorities for the West, as taken from the National Research Council’s, Informing Decisions in a Changing Climate)
  - Develop information to allow for informed responses
  - Have to plan under uncertainty

- Give Priority to Processes over Products
  - Fosters interaction and learning….not just a final “one-off” product (USDM/DIR)

- Design for Learning w/ a continuous dialogue

- Establish Monitoring and Reporting Protocols:
  - Use feedback to adjust planning and implementation as appropriate
Thank You

Please contact me at:

Mark Svoboda
National Drought Mitigation Center
402-472-8238
msvoboda2@unl.edu

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