COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES

HEARING CHARTER

Reauthorization of the National Integrated Drought Information System

Tuesday, October 1st, 2013
10:30 a.m. to 12:00 p.m.
2318 Rayburn House Office Building

PURPOSE

The Subcommittee on Environment will hold a hearing entitled *Reauthorization of the National Integrated Drought Information System* on Tuesday, October 1st, 2013, at 10:00 a.m. in Room 2318 of the Rayburn House Office Building. The purpose of the hearing is to examine the state of drought forecasting, monitoring, and decision-making and the role of the National Integrated Drought Information System (NIDIS) in drought planning. The Subcommittee will also receive comments on H.R. 2431, Rep. Hall's *National Integrated Drought Information System Reauthorization Act of 2013.*

WITNESSES

Dr. Roger Pulwarty, Director, National Integrated Drought Information System, NOAA.

Mr. J.D. Strong, Executive Director, Oklahoma Water Resources Board.

Dr. Donald Wilhite, Professor, School of Natural Resources, University of Nebraska.

Background

The conditions that lead to drought and its very definition can vary depending on geographic location or region. However, drought can be loosely defined as the absence of water and further identified as a "condition of moisture deficit to have an adverse effect on vegetation, animals, and man over a sizeable area."[1] Droughts are generally associated with periods of dry weather characterized by a shortage of precipitation (meteorological droughts). These conditions can cause hydrologic imbalances and lead to below average water levels in streams, reservoirs, and groundwater aquifers (hydrological droughts), and can adversely affect agriculture and livestock operations (agricultural droughts), negatively impact flora and fauna, and strain water resources for affected municipalities and communities.

The severity of droughts depends upon many factors, including the degree of moisture deficiency, duration of the conditions, and the size of the affected area. The variability of the

[1] USGS Definitions of Drought, Accessible at: http://md.water.usgs.gov/drought/define.html.

definition, and the conditions that cause droughts, presents unique challenges in identifying the onset, severity, and duration of a drought. As no single operational definition works in all circumstances, planning for and recognizing droughts can be difficult.[2]

Classifying Drought

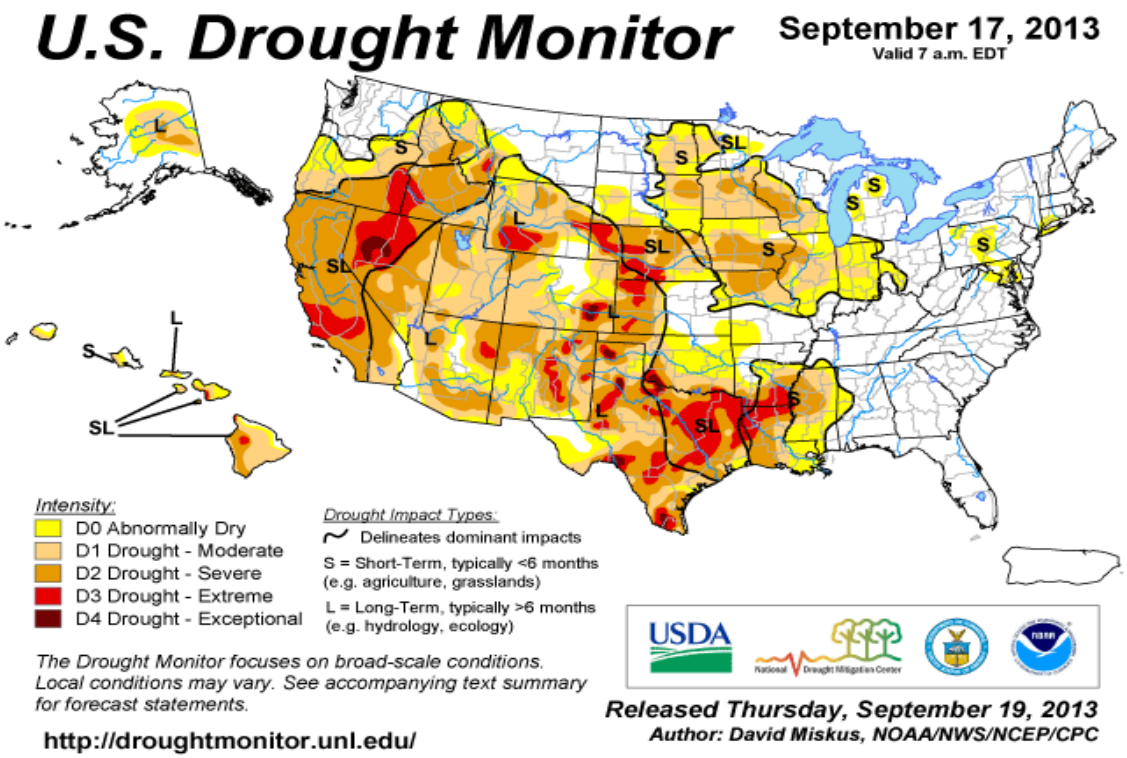
Drought has afflicted portions of North America for thousands of years. Prolonged droughts played a role in the disintegration of Pueblo society and the demise of Mississippi Valley societies in the 13th through 16th centuries. In the 20th century, droughts in the 1930s and 1950s were remarkably widespread. In 1934, 65 percent of the contiguous United States was affected by severe to extreme drought.[3] Drought continues to significantly impact society. Consequently, the coordination of resources to effectively manage drought is critical.

The US Drought Monitor (Figure 1) summarizes drought conditions across the country by combining diffuse data into a single composite drought indicator, updated weekly.[4] Similar to the scale used in communicating the intensity of tornados and hurricanes, the map classifies drought conditions based on four levels of intensity ranging from moderate to exceptional.[5] The Monitor also classifies conditions of abnormal dryness and identifies areas in a short or long term drought.

According to current US Drought Monitor data, over sixty percent of the contiguous U.S. is currently classified as abnormally dry or worse and more than 25 percent is experiencing severe to exceptional drought conditions.[6]

[2] National Drought Mitigation Center, University of Nebraska, Lincoln. What is a Drought? Accessible at: http://drought.unl.edu/DroughtBasics/WhatisDrought.aspx.
[3] Congressional Research Service. *Drought in the United States: Causes and Issues for Congress*. RL34580. June 12, 2012.
[4] The US Drought Monitor was unveiled in August 1999 at a White House press conference, and was the culmination of experts' recognition of the need for a simple and accurate way to communicate drought conditions to decision makers and the public. Accessible at: http://droughtmonitor.unl.edu/.
[5] D0=Abnormally Dry; D1=Moderate; D2=Severe; D3=Severe; D4=Exceptional
[6] Data accessible at http://droughtmonitor.unl.edu/DM_tables.htm?conus.

Figure 1. U.S. Drought Monitor[7]



History of the National Integrated Drought Information System

In 1998, Congress passed the National Drought Policy Act,[8] establishing the National Drought Policy Commission to provide advice and recommendations on the creation of an integrated, coordinated Federal policy designed to prepare for, and respond to, serious drought emergencies. The Commission submitted the report, *Preparing for Drought in the 21st Century*, to Congress in 2000.[9] The recommendations in this report included a policy shift from drought relief to drought preparedness, and urged coordination in delivering federal drought-related services and data. The report called for improved collaboration to enhance the effectiveness of observation networks, monitoring, prediction, information delivery, and applied research and specifically advocated a comprehensive information gateway for drought-related data. This report inspired the Western Governors Association's 2004 report, "Creating a Drought Early Warning System for the 21st Century," which conceptualized the NIDIS program.[10]

[7] NIDIS Drought Portal, U.S. Drought Monitor. Accessible at www.drought.gov.
[8] Public Law 105-199; 105th Congress, H.R. 3035, National Drought Policy Act. Accessible at: http://www.gpo.gov/fdsys/pkg/BILLS-105hr3035enr/pdf/BILLS-105hr3035enr.pdf.
[9] Report of the National Drought Policy Commission. *Preparing for Drought in the 21st Century*. Accessible at: http://govinfo.library.unt.edu/drought/finalreport/fullreport/pdf/reportfull.pdf.
[10] Western Governors Association, *Creating a Drought Early Warning System for the 21st Century: The National Integrated Drought Information Act*, June 2004. Accessible at: http://www.westgov.org/wga/publicat/nidis.pdf.

These reports ultimately led to H.R. 5136, *the National Integrated Drought Information System Act of 2006*[11], introduced by Congressmen Ralph Hall and Mark Udall in April of 2006, and subsequently referred to the Committee on Science. On May 4, 2006, the Environment, Technology and Standards Subcommittee held a legislative hearing on the proposed bill and the state of drought forecasting, drought information needs. The bill was later considered by the full Committee on June 7, 2006, and passed both the House and the Senate unanimously on September 26, 2006, and on December 6, 2006, respectively. On December 20, 2006, President George W. Bush signed the bill into law (Public Law 109-460).

The NIDIS Act defined drought as "a deficiency in precipitation that leads to a deficiency in surface or subsurface water supplies and causes or may cause substantial economic or social impacts or substantial physical damage or injury to individuals, property, or the environment." The law established a NIDIS program at the National Oceanic and Atmospheric Administration (NOAA), and tasked the Program with providing an effective early warning system, coordinating and integrating Federal research in support of the early warning system, and building upon existing forecasting and assessment programs and partnerships. NOAA was also required by the law to consult with relevant Federal, regional, state, tribal, and local government agencies, research institutions, and the private sector in developing the Program.

Implementation

The Program is housed within the Office of Oceanic and Atmospheric Research at NOAA. The goal of NIDIS is to "improve the nation's capacity to proactively manage drought-related risks, by providing those affected with the best available information and tools to assess the potential impacts of drought, and to better prepare for and mitigate the effects of drought."[12] In support of these goals, NOAA conducted workshops with federal, state, and local agencies, academic researchers, and other stakeholders to solicit input on how to develop a path forward. This culminated in the 2007 NIDIS Implementation Plan, which outlined the governance structure, priorities, and operational requirements needed to meet the Program's objectives. These objectives were identified as:[13]

- Develop the leadership and partnerships to ensure successful implementation of an integrated national drought monitoring system at federal, state, and local levels;
- Foster and support a research environment that focuses on risk assessment, forecasting, and management;
- Create a drought early warning system capable of providing accurate, timely, and integrated information on drought conditions and associated risks at relevant spatial scales to facilitate proactive decisions;
- Provide interactive delivery systems, including an internet portal, as part of the early warning information system, for easily comprehensible and standardized products; and,

[11] Public Law 109-430; 109th Congress, H.R. 5136, The National Integrated Drought Information Act of 2006. Accessible at: http://www.gpo.gov/fdsys/pkg/PLAW-109publ430/pdf/PLAW-109publ430.pdf.
[12] The National Integrated Drought Information System Implementation Plan: A Pathway for National Resilience," June 2007. Accessible at: http://www.drought.gov/pdf/NIDIS-IPFinal-June07.pdf.
[13] Ibid.

- Provide a framework for increasing public awareness and educating those affected by drought on how and why droughts occur, and how they impact human and natural systems.

The implementation plan also included a list of program milestones that reflect key objectives in support of the Program, and projected dates for meeting these objectives.

Table 1. NIDIS Implementation Milestones (FY 2007-2012, by year)[14]

Activity	Milestone	07	08	09	10	11	12	13
1	Initial portal operational capability at drought.gov							
1	Advanced portal mapping capability with GIS tools							
1	Populate drought.gov website (portal, plans, reports, agency links)							
1	Operational portal communities and collaborations							
1	Enhance data management and distribution							
1	Portal extension to hemispheric and global domains							
2	Drought forecast regionalization studies							
2	Enhance soil moisture and temperature measurements							
2	Forecast verification and calibration to measurements							
3	Coordinate with CPO Program Managers/agencies on interdisciplinary research goals							
3	Inventory drought-related service (federal/state/private)							
3	Assess national status of drought early warning							
3	Inventory drought-related research (federal/state/private)							
3	Coordinate drought preparedness plans							
3	Planning for adaptation							
3	Institutionalize "Drought Coordinator" network							
3	Enhanced regional impacts research							
3	Implement adaptive management strategies							
4	Pilot study scoping and selection							
4	NPIT workshops: Define criteria and assess partner interest and capacity for pilots							
4	First Workshop: Assessment of Drought Early Warning System Status in the United States							
4	Pilot study implementation							
4	Initial early warning prototypes							
4	Pilot study assessment and follow-on work							
5	Establish NIDIS Program Office, governance structure, and final Program Implementation Team							
5	Establish regional sub-team leads within NPIT							
5	Establish initial agency/state rotational assignment to NIDIS Program							
5	Establish NIDIS Interdisciplinary Research Coordination Board							
5	Extend NIDIS to National Governors' Association and Inter-basin Watershed Commission							
5	Operational workshops to assess national drought monitoring and forecasting gaps							

Current Activity

In support of the overall program goals, the NIDIS Program is engaged in the collection, consolidation, and dissemination of drought-related data and information on an ongoing basis. The Program develops "a suite of usable drought decision support tools focused on critical management indicators, thresholds and triggers, and engages and enables proactive planning by those affected by drought."[15] In this function, NIDIS acts as a data clearinghouse, and works to develop and actively support a collaborative framework between researchers and managers. The

[14] The National Integrated Drought Information System Implementation Plan: A Pathway for National Resilience," June 2007. Accessible at: http://www.drought.gov/pdf/NIDIS-IPFinal-June07.pdf.

[15] Roger Pulwarty, Fall 2011 NIDIS Drought Research Special Issue, "*Coping with Drought: Research in Support of NIDIS*" Volume 2, Issue 2. Accessible at: http://drought.gov/imageserver/NIDIS/newsletter/Fall_2011_Research_Special_Issue.pdf

Program also conducts knowledge assessments to "determine where major drought-information gaps occur and where research improvements are needed" as well as to "coordinate capabilities among those conducting research and research activities."[16]

The NIDIS Program developed and currently operates the U.S. Drought Portal, a website that features a range of services related to drought, including historical data on past droughts, current data from climate observations, early warnings about emerging and potential droughts, decision support services for managing droughts, and a forum for stakeholders to discuss drought-related issues.[17]

In its FY 2014 budget request,[18] NOAA requested $13.6 million for NIDIS.

Table 2. NIDIS Funding, FY 2007-2012

Fiscal Year	Authorized Amount	Amount in NOAA Spend Plan
2007	$11.0 million	$4.0 million
2008	$12.0 million	$8.4 million
2009	$13.0 million	$10.4 million
2010	$14.0 million	$12.9 million
2011	$15.0 million	$13.7 million
2012	$16.0 million	$12.2 million
Total, FY 2007-2012	$81.0 million	$61.5 million

Legislative Activity

In the 112th Congress, the Science, Space, and Technology Committee held a hearing on July 25, 2012, on discussion draft legislation to reauthorize NIDIS. On June 19, 2013, Rep. Ralph Hall introduced H.R. 2431, *the National Integrated Drought Information System Reauthorization Ac*t of 2013. Sen. Mark Pryor introduced S. 376, *the Drought Information Act of 2013,* in the Senate, which was favorably reported with an amendment in the nature of a substitute by the Senate Commerce, Science, and Transportation Committee on July 30, 2013.

[16] Ibid.
[17] NOAA Climate Program Office, National Integrated Drought Information System. Accessible at: http://www.cpo.noaa.gov/cpo_pa/nidis/pdf/NIDIS_Feb17.pdf
[18] NOAA FY 2014 Budget Request Summary. Accessible at: http://www.corporateservices.noaa.gov/nbo/fy14_bluebook/FINALnoaaBlueBook_2014_Web_Full.pdf

H.R. 2431 *The National Integrated Drought Information System Reauthorization Act of 2013*

Section-by-Section Analysis

Purpose: To reauthorize the National Integrated Drought Information System.

Section 1: Short Title

The National Integrated Drought Information System Reauthorization Act of 2013

Section 2: NIDIS Program Amendments

Section 2 modifies Section 3 of the 2006 Act. Section 2(1) modifies the "In General" clause by adding the purpose of the NIDIS program "to better inform and provide for more timely decision making to reduce drought related impacts and costs."

Section 2 modifies existing language by reorganizing in order to distinguish between the function of the NIDIS program in general and the early warning system specifically. The functions are largely the same as those in existing law, reorganized to reflect the distinction. The only additional function added is to allow NIDIS to "continue ongoing research activities related to drought." Section 2 reestablishes NIDIS system functions including building upon forecasting and assessment partnerships and the designation of one or more cooperative institutes to assist with NIDIS functions.

Section 2 also adds a new subsection (e) which requires the Undersecretary of Commerce to provide the Committee with a report 18 months after enactment. This report should (i) include an analysis of the implementation of NIDIS, including how the information, forecasts, and assessments are utilized in drought planning policy and response activities; (ii) describe specific plans, including future milestones, for continued development of such programs; and (iii) identify research, monitoring, and forecasting needs to enhance the predictive capability of drought early warnings, the length and severity of droughts, and the contribution of weather events to reducing or ending drought conditions. In developing this report, the Undersecretary is also required to consult with relevant Federal, regional, state, tribal, and local government agencies, research institutions, and the private sector.

Section 3: Authorization of Appropriations

Section 3 amends Section 4 of the 2006 Act to authorize appropriations for each of fiscal years 2014 through 2018 in the amount of $13.5 million per year.