

National Drought Mitigation Center

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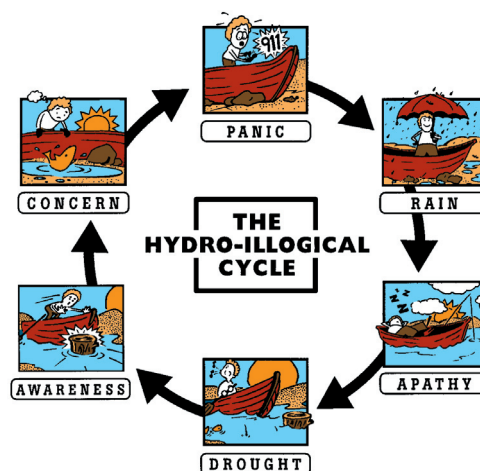
<http://drought.unl.edu/>

The National Drought Mitigation Center's mission is to reduce societal vulnerability to drought. We advocate mitigation -- taking steps ahead of time, such as gathering data and planning, to reduce drought's impacts. Drought is a normal part of virtually every climate on the planet, although

its characteristics differ from place to place. We can't prevent it and we usually can't predict it, but we can reduce our vulnerability to it. Drought mitigation includes monitoring rain and other components of water supply, understanding drought's impacts, and coordinated planning.

Monitoring: Recognizing Drought Before It's Too Late

Drought is a shortfall of precipitation. Because normal precipitation varies greatly from one place to another, the National Drought Mitigation Center (NDMC) recommends that decision-makers at all levels, from farm or ranch to federal agency, adopt a definition of drought based on their specific water supply and uses. They should know ahead of time what normal precipitation is for a given place and season, and they should know how they will recognize an emerging drought. Even though drought is a slow-moving disaster, people are much better off when they act on an early warning instead of waiting until there is a full-blown crisis. For example, farmers may choose to plant less, or to plant more drought-resistant crops. Ranchers may decide to reduce herd sizes. A homeowner might wait to plant a new lawn.



Impacts: Identifying and Reducing Exposure to Risk

Knowing drought's effects in an area helps policymakers, agricultural producers, and others be better prepared and less vulnerable to future drought. When planners use risk management to prepare for drought, they examine impacts to learn where the greatest losses occur and what actions might

be most effective in reducing risk. Examples of actions to reduce drought risk could include changes in agricultural or energy policy, changes in zoning and land use laws, building a water treatment plant, and teaching people about alternatives to thirsty lawns.

Planning: Leadership and Education

The United States has no single water or drought policy. State laws vary. River system managers, local water suppliers, and individual agricultural producers each have different decision-making authority. When the NDMC consults with state, tribal, and foreign governments on drought planning, we recommend that drought monitoring and impact analysis be part of a task force led by the executive office. We also advocate teaching private citizens, students, business owners, farmers, ranchers and others about water, drought manage-

ment, and the interconnections between urban, rural and uncultivated land. This helps build support for policy based on the best available information about natural resources, and increases the likelihood that individual decisions will reflect the understanding that water is a limited renewable resource. One of the most difficult messages to convey is that certain growth patterns may increase vulnerability to drought, either by straining limited water supplies or by reducing the ability of an area to handle variation in precipitation and climate.

Drought Monitoring Provides Early Warning, Triggers Aid

U.S. Drought Monitor

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

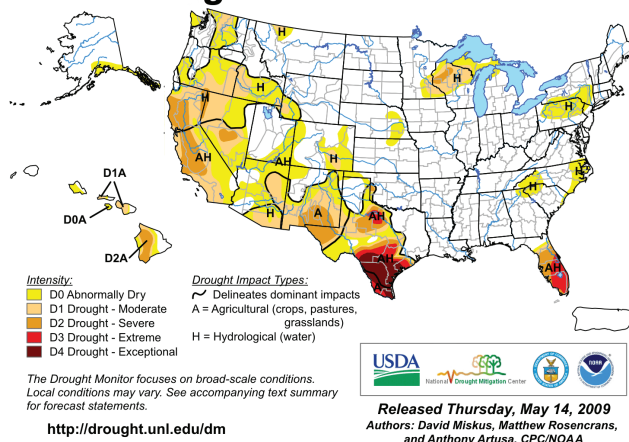
The U.S. Drought Monitor has been operational since 1999 and is widely used by media and policymakers. It synthesizes many indicators and a vast amount of data into a single map that is released each Thursday morning. The Drought Monitor is used to trigger drought aid such as a tax deferral on livestock losses, the U.S. Department of Agriculture (USDA) Livestock Forage Disaster Program, the USDA Dried Milk Program in 2002-03, and releasing land from the Conservation Reserve Program for emergency haying and grazing.

The U.S. Drought Monitor is the work of several rotating authors and nearly 275 reviewers across the country. It physically resides on servers at the National Drought Mitigation Center in Lincoln, Nebraska. Drought Monitor authors work for the NDMC, the National Oceanic and Atmospheric Administration, the USDA, and the Western Regional Climate Center. It is based on real-time data from automated rain, snow, soil moisture and streamflow networks, on purely statistical drought indices, on reported impacts, and on the authors' best judgment.

Since it first became operational, the Drought Monitor has undergone continual refinement, working toward meeting the demand for information at ever-finer spatial scales. It has also gone international. A North American Drought

U.S. Drought Monitor

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Valid 8 a.m. EDT



Monitor, produced monthly in partnership with Canada and Mexico, became operational in 2003.

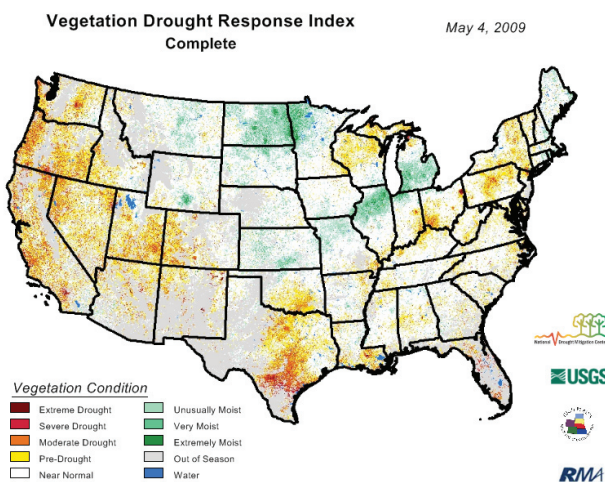
Related tools under development with sponsorship from the USDA's Risk Management Agency include the Drought Monitor-Decision Support System, which will integrate several tools and types of data, and the Drought Atlas, with historic drought information.

Vegetation Drought Response Index (VegDRI)

http://drought.unl.edu/vegdr/VegDRI_Main.htm

The Vegetation Drought Response Index (VegDRI) expanded to cover the 48 contiguous states in May 2009. VegDRI is based on data from satellites and incorporates many variables to show whether grass and crops are drying out. It is expected to be of greatest use to ranchers and land managers. The NDMC is developing VegDRI in conjunction with the U.S. Geological Survey's Center for Earth Resources Observation and Science, with sponsorship from the USDA's Risk Management Agency.

The researchers are currently recruiting people to join the VegDRI evaluator network to help compare what's on the map with conditions on the ground. Evaluators in the past have included ranchers, farmers, climatologists, extension agents, resource management agency employees, and others in the general public. To volunteer as a VegDRI evaluator, please contact the NDMC.



Standardized Precipitation Index

Depending on what type of pattern someone is looking for, there are many ways to view climate data. The Standardized Precipitation Index (SPI) is particularly good at detecting drought on a variety of time scales. The NDMC has pro-

duced a suite of monthly SPI maps since 1996. More recently, we are working with the High Plains Regional Climate Center to provide a Daily Gridded SPI, with data updated each day.

Tracking Impacts Helps Planners Reduce Risk

Drought Impact Reporter

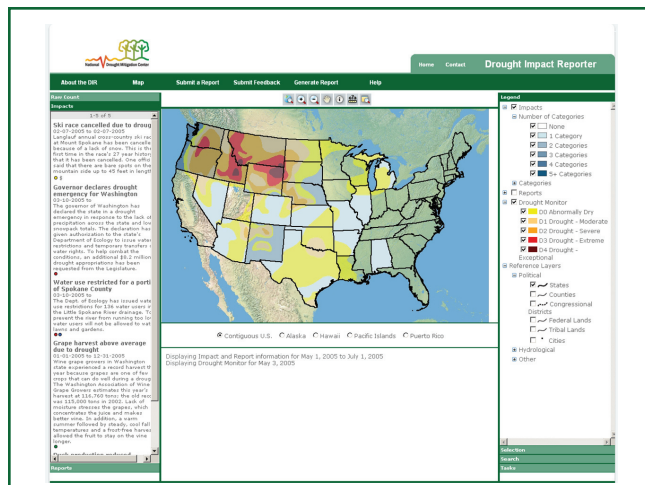
<http://droughtreporter.unl.edu>

The Drought Impact Reporter tracks drought's impacts for researchers, planners, policymakers, and the general public. It first became operational in July 2005. NDMC moderators scan news media, state websites, and other sources of information for drought impact reports. About 90 percent of the reports come from media, although the system is equipped to accept information from users, agencies, and others.

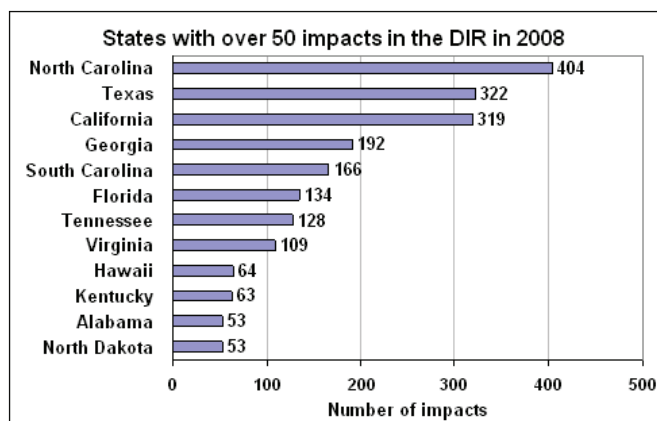
A new Drought Impact Reporter will be unveiled in 2009. The new system will distinguish between reports and impacts, capturing early indicators of drought reflected by media even before quantifiable losses are incurred. Impact categories in the new Drought Impact Reporter will be Agriculture; Water Supply and Quality; Energy; Tourism and Recreation; Business and Industry; Society and Public Health; Fire; Plants and Wildlife; and Relief, Response & Restrictions. Systematically monitoring a consistent sample of media outlets may help provide a baseline measurement of drought awareness.

The new system will be well equipped to handle input from a variety of federal and state networks as well as individual users. The NDMC is currently working with states to combine their local impact gathering with our nation-wide reporting system and with the Cooperative Community Rain, Hail and Snow Network to connect their 13,000-plus weather observers to the Drought Impact Reporter.

The NDMC is developing the impact reporter with sponsorship from the Risk Management Agency and from the National Oceanic and Atmospheric Administration.



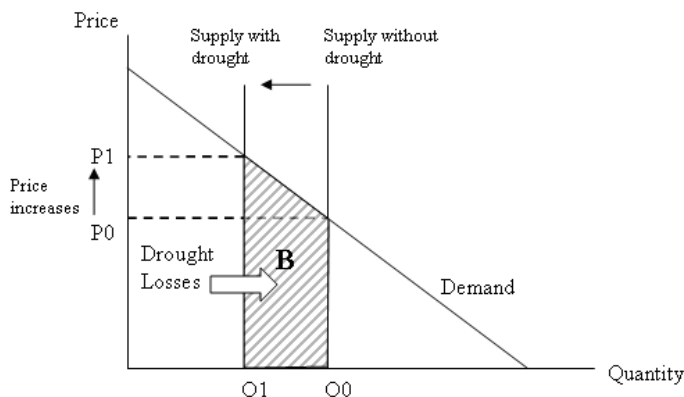
NDMC moderators logged more than 2,300 drought impacts in 2008, reflecting drought in the Southeast, much of the West, Texas, Oklahoma, and North Dakota.



Economic Impacts of Drought

The NDMC and partners are devising a method to quantify economic impacts of drought, with sponsorship from the USDA's Risk Management Agency. Direct agricultural losses are relatively well understood, but inconsistent mixes of production losses, indemnity payments, and relief costs are often quoted by the media and misused by decision makers. Drought's effects on other profit-making sectors such as energy and tourism and recreation are less frequently addressed.

In the diagram at right, area "B" denotes hypothetical agricultural drought impacts. In this case, farmers' revenue losses do not tell the whole story. Drought-induced losses are not completely borne by farmers. Consumers pay higher prices, too, and farmers may receive crop insurance payments and/or direct disaster aid from the federal government. Higher prices may also attract goods from other areas, particularly



in a national or global market, so that producers in non-drought areas may benefit from the drought.

Planning and Education Reduce Long-Term Drought Risk

Planning Processes

Drought Ready Communities is currently underway. The NDMC and partners are working with pilot communities in Nebraska, Illinois and Oklahoma to devise a community-level drought planning kit.

The *Near East Drought Planning Manual* was done in cooperation with the Food and Agriculture Organization of the United Nations in 2008. http://www.fao.org/world/Regional/RNE/climate/Publications_en.htm

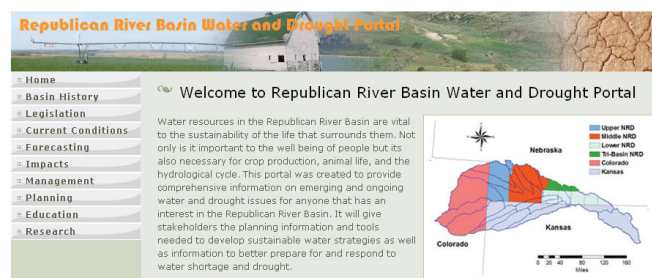
How to Reduce Drought Risk, done in cooperation with the Western Drought Coordination Council, is a comprehensive guide to vulnerability assessment and risk reduction, completed in March 1998. <http://drought.unl.edu/plan/handbook/risk.pdf>.

The 10-Step Drought Planning Process, first devised by NDMC Founding Director Dr. Donald A. Wilhite, published in 1991, has been applied and modified by states, tribes, and countries around the world. http://drought.unl.edu/plan/handbook/10step_rev.pdf.



The NDMC and partners are developing *Managing Risk on the Ranch*, sponsored by the Risk Management Agency. Incorporating insights from ranchers and Extension educators, the website will help livestock producers devise both long- and short-term drought plans tailored to their own operations.

Educational Resources



The NDMC is working with Nebraska Natural Resource Districts to create a Republican River Basin Water and Drought Portal.



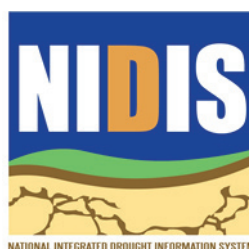
Fifth graders from Trinity Lutheran School in Lincoln, NE, played "Water Banking," balancing urban, rural, and environmental interests. First they were asked how they would divide 24 inches of water among 10 uses in a normal year, and then they were asked to allocate 12 inches of water among 10 uses in a drought year.

The NDMC is partnering with national and state Project WET representatives to produce *Discover the Waters of Nebraska*, an educational booklet for kids 8-12. We also take advantage of local outreach opportunities to pilot new educational activities such as Water Banking and Meteoropoly.

Drought in the Dust Bowl Years
<http://www.drought.unl.edu/whatis/dustbowl.htm>
Drought for Kids
<http://www.drought.unl.edu/kids/index.htm>
Drought Photo Gallery
<http://www.drought.unl.edu/gallery/gallery.htm>

U.S. Drought Preparedness

The NDMC has been involved in many efforts to help devise United States drought policy. Most recently, we are partnering with federal agencies on the National Integrated Drought Information System (NIDIS), signed into law in 2006. NDMC representatives serve on the NIDIS Implementation Team and on various working groups, and are helping provide content for drought.gov.



The NIDIS portal at drought.gov links to federal, state and academic drought- and water-monitoring websites. It helps decision-makers find drought data at a variety of temporal and spatial scales.