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Summer 2010

DroughtScape- Summer 2010

Kelly Smith

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Summer 2010

Upcoming Workshops:

Boise, Idaho, July 27

A workshop focusing on the Vegetation Drought Response Index (VegDRI) and the Vegetation Drought Outlook (VegOut) will be July 27 in Boise, Idaho.

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Missouri River Basin, Oct. 26-27

The NDMC and its research partners will solicit input from water managers on multi-decadal drought outlooks.

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Visiting Scientists

Linda Botterill, Australia

Botterill, a political scientist and drought policy expert from down under, urged the NDMC to help the U.S. avoid the "lines on maps" problem that Australia encountered.

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Esther Dieker, Netherlands

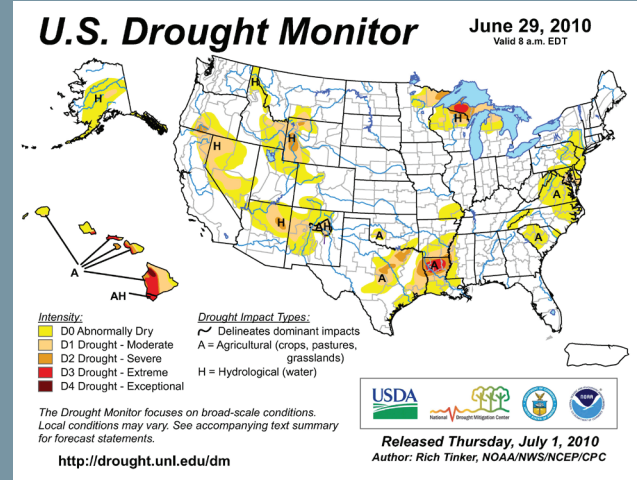
Yes, the Netherlands has drought, too. Dieker, a hydrology student, has found herself answering that question many times since she decided to spend the summer at the NDMC studying drought impacts.

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DroughtScope is the quarterly electronic newsletter of the National Drought Mitigation Center.

Mild Drought Season Likely to Persist

Just under 8 percent of the U.S. is in drought, and the only area likely to see drought expand is in Alaska, according to the U.S. Seasonal Drought Outlook. Spring summary and summer outlook, page 2.



Drought Impacts Intensify in Upper Midwest

Drought in Wisconsin, Minnesota and Michigan led to a new area where impacts were being reported. California continued to have a steady stream of reported impacts, even though drought appeared to be abating there.

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North Carolina Takes Drought Monitor Seriously

North Carolina's Technical Drought Advisory Team, a subgroup of the state's Drought Management Advisory Council, holds weekly calls to reach consensus on the state's recommendation to U.S. Drought Monitor authors.

**NORTH CAROLINA
 Drought Management
 Advisory Council**

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International Work

Murcia, Spain, June

NDMC experts were among those who gathered to recommend best practices for monitoring agricultural drought.

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Aleppo, Syria, May

Shepherding was one of the agricultural practices that Tsegaye Tadesse saw at a Borlaug exchange workshop.

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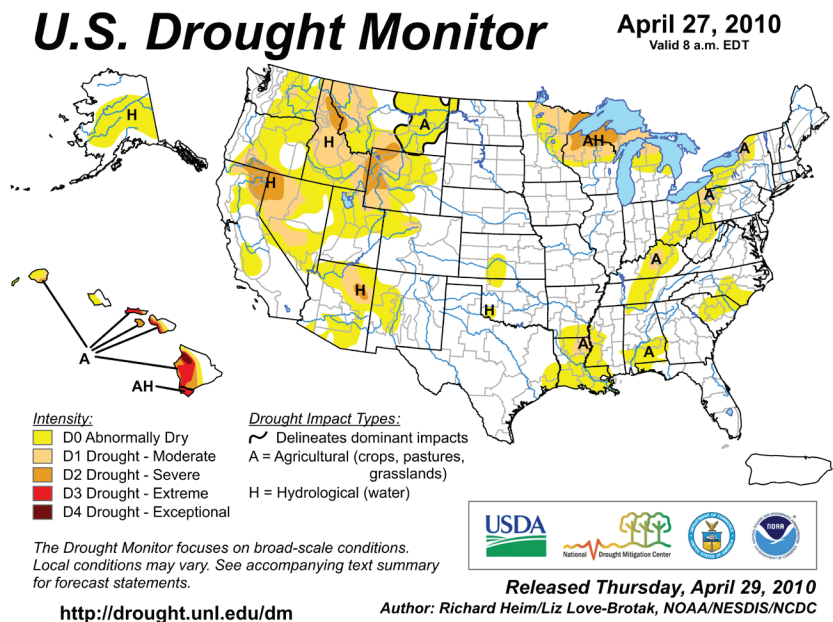
Summer 2010 Outlook and April to June Summary

By Brian Fuchs, Climatologist, National Drought Mitigation Center

Drought classifications are based on the U.S. Drought Monitor. For a detailed explanation, please visit <http://drought.unl.edu/dm/classify.htm>. The outlook integrates existing conditions with forecasts from the National Oceanic and Atmospheric Administration's Climate Prediction Center: <http://www.cpc.ncep.noaa.gov/>

Outlook: Through the summer, the drought situation for the United States should not change too much. There may be some improvement to the drought regions in the Great Lakes region as well as in the southern United States, while drought will persist in Hawaii and possibly develop further in Alaska. ENSO conditions will shift from a neutral to a cold phase towards the end of summer and early fall. A moderate La Niña is expected to develop and influence conditions through the winter and into spring, which typically means warm and dry conditions over the southern United States and cooler, wetter conditions over the northern plains, northern Rocky Mountains, and Alaska.

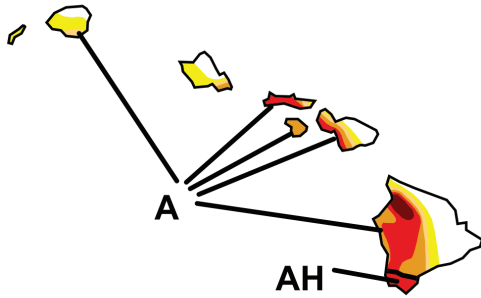
April: Pockets of dryness started to develop in the eastern United States, while the end of the rainy season continued to bring welcome moisture to the West. April started with 30.5 percent of the country abnormally dry or in drought, compared to 34.1 percent at the end of the month. Hawaii continues to stand out as the state suffering the most from drought. Just over 25 percent of the Islands were in extreme to exceptional drought at the end of April and just over half of the Islands were in drought of some intensity. Drought got worse over the upper Mississippi Valley and upper Great Lakes region. Long-term hydrological issues coupled with recent dryness have expanded and intensified drought in that region. In Louisiana, moderate drought was introduced, because short-term deficits were starting to become substantial, even though few impacts had been reported. A wet month throughout much of California allowed for modest improvements in areas where the short-term benefits outweighed the long-term concerns.



May: The overall drought status for the United States improved during the month of May, with 8.6 percent of the country in moderate or worse drought at the end of May, compared

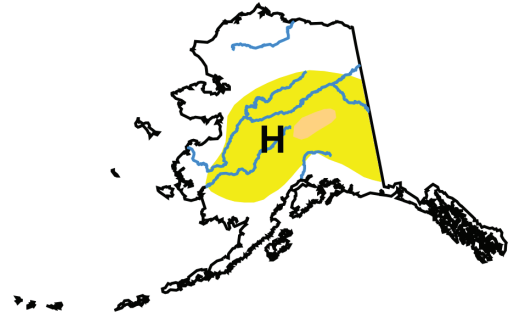
Summer 2010

April to June Summary, continued



Hawaii, May 25 U.S. Drought Monitor

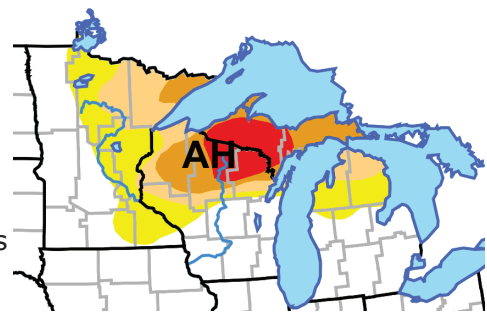
to 9.2 percent at the start of the month. The only exceptional drought was found on the Big Island of Hawaii and the only areas of extreme drought were found in Hawaii, Wisconsin and the Upper Peninsula of



Alaska, May 25 U.S. Drought Monitor

Michigan. Dryness in Louisiana and east Texas continued to develop and the drought in this region expanded, with severe drought introduced into Louisiana and moderate drought in east Texas. Drought continued to improve over portions of the West, with much of California now drought-free, and moderate drought eliminated in Washington. Improvements were also made in Idaho, Montana and Wyoming, where a full assessment of the runoff along with spring precipitation helped to improve conditions. A small area of moderate drought emerged in Alaska in mid-May, where about 40 percent of the state has been abnormally dry for most of this year.

June: Conditions deteriorated in Hawaii, with more than 76 percent of the state experiencing drought of some intensity and almost 31 percent in extreme to exceptional drought. Back on the mainland, areas along the East Coast are showing some abnormally dry conditions. The extreme drought over the Upper Great Lakes region has expanded further into Michigan, while portions of Minnesota and Wisconsin have seen some improvements with recent rains. Heat and dryness over Oklahoma and Texas led to more abnormally dry and moderate drought conditions in central and northern Texas and southern Oklahoma. Extreme drought was introduced to northern Louisiana at month's end. As of the June 29 Drought Monitor, 28.6 percent of the U.S. was abnormally dry or in drought, and 7.5 percent was experiencing moderate drought or worse.



Upper Midwest, June 8 Drought Monitor

Contact the National Drought Mitigation Center

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

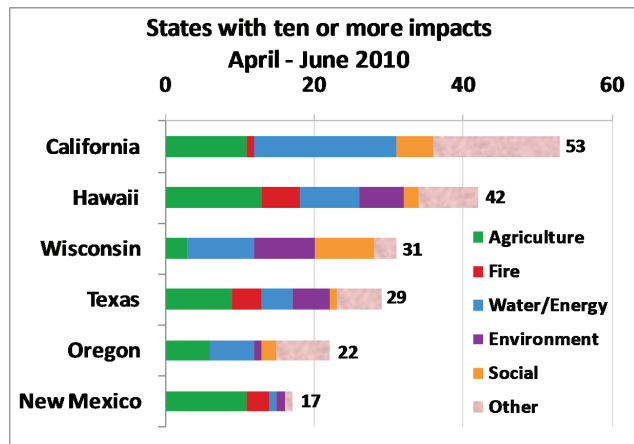
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Drought Impacts Summary, April - June 2010

by Denise Gutzmer, Drought Impacts Specialist

The NDMC added 258 impacts to the Drought Impact Reporter between April and June, documenting drought's effects across the U.S. California accrued 53 reports, with much discussion of the water supply situation as storms moved through the state, boosting snowpack levels and water deliveries. Extreme northern California was affected by water shortages in Oregon's Klamath Basin. Hawaii amassed 42 impacts as accounts of severe agricultural damage and meager water supplies made the news. Wisconsin logged 31 impacts, as flowages and rivers become so low that hydropower was interrupted. Decreasing water levels in northern lakes have limited access for boaters for several years in some areas and restricted navigability on sections of the Wisconsin River. There were 29 impacts listed for Texas, where drought recently reappeared in the eastern part of the state. Crop, pasture loss, and hay shortages were concerns for farmers, while some locales noted an uptick in livestock sales. In Oregon, there were 22 impacts for the southwestern part of the state. Reports of water shortages and alternate cropping plans were common this spring as farmers worked to adjust to the water shortage and still meet contractual obligations for their produce. There were 17 impacts reported for New Mexico, with the majority of those coming from local residents describing falling water levels and the lack of moisture for crop growth.



Listed below are some representative impacts taken from the Drought Impact Reporter between April and June 2010. See more online at <http://droughtreporter.unl.edu/>

California

The Department of Water Resources increased its projected deliveries to 20 percent of requested allocations, up from 15 percent, since additional snowfall pushed the snowpack in the Sierra Nevada to 106 percent of normal for the beginning of April. Storage in Lake Oroville was 60 percent of normal. The director of the DWR stated that pumping restrictions in the San Joaquin Delta continued to reduce deliveries of state water by 10 percent, and three years of drought had also limited water supplies. *San Jose Mercury News*, April 1.

The Department of Water Resources announced that water allocation will rise to 50 percent of requested supplies since additional precipitation has fallen in the Sierra Nevada. Initial estimates of water deliveries at the beginning of the year were just 5 percent and rose to 45 percent in May. June 24, *The Examiner.com-San Francisco*.

Hawaii

Pasture in the Haleakala area looked as though a hot, arid summer was at its end, according to the vice president and land and resource manager of a 23,000-acre ranch. Just 45 percent



Summer 2010

Drought Impacts Summary, April - June 2010, continued

of the usual precipitation had fallen, leaving the land parched. Kula pastures were also behind in rainfall, leading ranchers to worry about feeding cattle. *Maui News*, April 23.

Few endangered Hawaiian coots and stilts nested at the north Kihei pond at the Kealia Pond National Wildlife Refuge because water levels were low there, according to the refuge manager. *Maui News*, May 23.

Farmers who receive water from the Waimanalo reservoir were ordered to cut their water use by 30 percent because the reservoir had reached its lowest level since it was constructed. Markers in the middle of the reservoir were exposed, indicating that there was less than ten feet of water remaining. The Board of Water Supply gave a well and a pump to aid farmers. KITV Honolulu, May 27.

Crops on the Big Island, including coffee, avocados, rambutan, bananas, macadamia nuts, loquat, and jabotica were not growing well, given the lack of rainfall, according to a National Weather Service hydrologist. He also noted that livestock in Kohala and Ka'u were in very poor condition with some deaths among older or sick animals. Ranchers resorted to supplemental feeding. *Hawaii Tribune Herald*, June 6.

Texas

A peach and berry grower in Smith County reported that a large portion of his blackberries were not saleable, due to drought damage. The grower effectively drained all of his ponds in an attempt to salvage the berries, leaving little to no water for the peaches, which are only half of their normal size for the lack of water. KYTX, approx. June 3.

Cherokee County ranchers began to sell cattle, according to the county AgriLife extension agent. Grass was not growing due to the dry conditions and heat. There was little surplus hay in the region to feed cattle because farmers sold it last year to ranchers in other parts of the state who desperately needed hay to sustain their livestock. *TylerPaper.com*, June 3.

Watermelons in Cherokee County that ought to be roughly 10 - 12 inches in length by the beginning of June were just 3 - 4 inches and had wilted leaves on the vines. Some melons were not firm, indicative of a severe lack of water. *Southwest Farm Press*, June 3.

Wisconsin

Some stretches of the Wisconsin River were just navigable for fishermen, according to the director of the Wisconsin Valley Improvement Company. The Wisconsin River at Merrill normally flows at 4,000 cubic feet per second (cfs) in late April, but the flow was just 900 cfs or less than 25 percent of average. *Wausau Daily Herald (WI)*, April 23.

There were 386,501 breeding ducks in Wisconsin this spring, according to an estimate by the state's Department of Natural Resources. That was 23 percent fewer than in 2009 and 12 percent fewer than the long-term average over the past 37 years. Wetlands declined by 59 and 47 percent in two survey regions in the northern part of the state, while wetland area decreased by 37 and 26 percent in the southern survey regions. *JSOnline*, June 16.

Frog populations decreased near small ponds because many ponds have gone dry, according to a Wisconsin Department of Natural Resources wildlife biologist. He expects that the populations will recover within two to three years after the drought abates. *USAToday*, June 25.

North Carolina Syncs Depictions to U.S. Drought Monitor

by Kelly Helm Smith, Communications and Drought Resources Specialist

North Carolina is unique in how its state water and resource managers provide input to the U.S. Drought Monitor. What began as an informal, volunteer effort to get agencies talking to one another is now written into law. A weekly teleconference by the Technical Drought Advisory Team, a subgroup of the state's Drought Management Advisory Council, or DMAC, is a direct conduit to U.S. Drought Monitor authors, who join the calls as time permits.

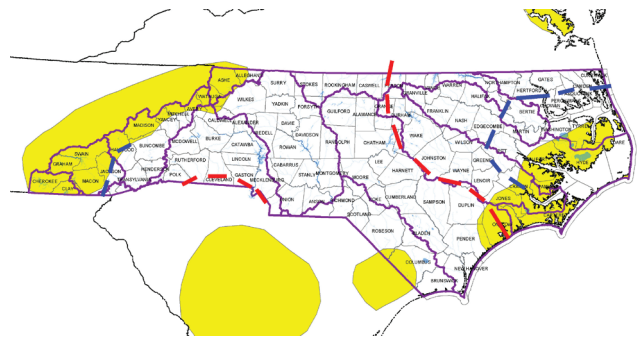
The DMAC formed in 1992 after the state went through a serious drought in the late 1980s. When the next serious drought struck in 2002, the council "did a creditable job monitoring and coordinating drought responses," according to its fact sheet. In 2003, the state legislature passed a law requiring that the DMAC produce official, objective drought status advisories to give local governments a reliable basis for their management decisions and an alternative to statewide declarations that did not consider local conditions. The same law also requires local governments and water suppliers to add drought response provisions to water supply plans. The DMAC considers stream flow rates, ground water levels, reservoir storage, forecasts, the time of year and impact information to produce its advisories. The DMAC's drought advisories are linked to the North Carolina Emergency Operations Plan and the activation of the Drought Assessment and Response Plan.

The state has adopted the U.S. Drought Monitor's depiction of North Carolina as its own characterization of drought. Although state law provides a process for the state's Drought Monitoring Advisory Council to disagree with how the U.S. Drought Monitor depicts drought status, the provision has never been used. North Carolina distributes information from the North Carolina Drought Monitor to media and others through news releases and e-mail and through its website, www.ncdrought.org.

DM Authors: It's a Reliable Synthesis

U.S. Drought Monitor authors said they appreciate the state's recommendations and accept them with few, if any, modifications.

"North Carolina is the only state with an operational process in place that is structured both to allow the author input, by inviting him or her to join the conference call, and to provide the author with a unified suggestion, culled from input from a diverse collection of state experts and stakeholders. It's on a set schedule each and every week that drought is affecting or threatens to affect the state," said U.S. Drought Monitor author Rich Tinker, who works with the National Oceanic and Atmospheric Administration, or NOAA.



Curtis Weaver, a hydrologist with the U.S. Geological Survey who is a regular on North Carolina's weekly drought monitoring calls, sent the recommendation above to the U.S. Drought Monitor author following a recent call. Yellow areas indicating abnormally dry conditions were from the preceding week's U.S. Drought Monitor, blue lines represented the author's draft for the upcoming Monitor, and red lines showed the consensus recommendation from North Carolina.

North Carolina, continued

"The biggest value is a consensus viewpoint or analysis of the state, coming from a single source with all the players involved," said Brian Fuchs, a Drought Monitor author and climatologist at the National Drought Mitigation Center (NDMC). "You know they're doing the work. They have multiple people going over it and contributing. It's not just ad hoc. As an author, I don't really have to question a whole lot that comes out of that."

Eric Luebehusen, a Drought Monitor author with the U.S. Department of Agriculture, agreed.

"Most importantly, the author does not get involved in local tug of wars over drought status designations, where parties from the same region disagree," Luebehusen said.

And, as Fuchs said, "If you can eliminate some time analyzing a region because you know somebody is doing a good job of it, you can commit time to another region."

Author Richard Heim, also at NOAA, said, "If other states followed the North Carolina process, time would prevent me from sitting in on their conference calls, but it would be a tremendous help. The biggest advantage is having state and local experts condense the indicators, data and impacts for the state down into a recommendation, or brief overview/summary of the indicators, data and impacts for us, so that we don't have to wade through all of that information ourselves. It's too much to look at in just three days."

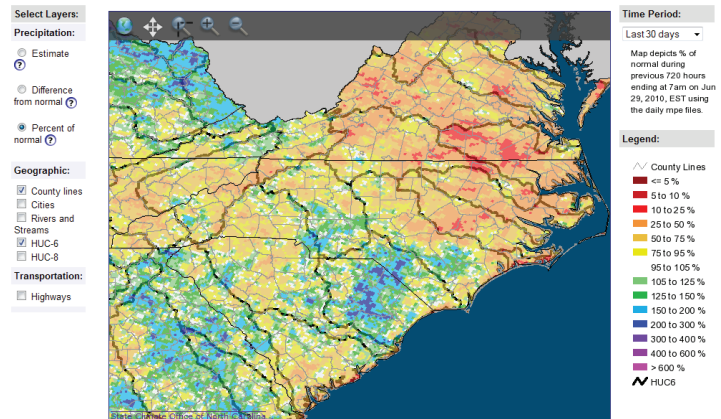
Other states are starting to experiment with similar processes. The state of Colorado has just this year initiated a similar weekly process, Fuchs said. Colorado provides information to the authors for individual river basins, incorporating parts of Utah and Wyoming.

Tinker pointed out circumstances that would prevent U.S. Drought Monitor authors from following state recommendations exactly: when state recommendations might violate the authors' "unwritten rules," such as not changing drought status by more than one category at the time except in extraordinary circumstances, and when state recommendations are not consistent with drought depictions in neighboring states.

Physical drought typically doesn't follow state borders, although water management decisions, land use patterns and other anthropogenic factors may make one side of a border more vulnerable to the effects of drought than another.

North Carolina's Choice of the U.S. Drought Monitor

In effect, North Carolina goes through its own version of the drought monitor process, and



Among the data regularly reviewed is the percent of normal precipitation received in the past 30 days. This map is from the State Climate Office of North Carolina.

North Carolina, continued

uses the consistent depiction of drought in the state for the national map and its own needs, such as putting local water systems on alert. If local systems don't have their own drought response plans, provisions of the state's plan apply by default when they are under severe or exceptional drought.

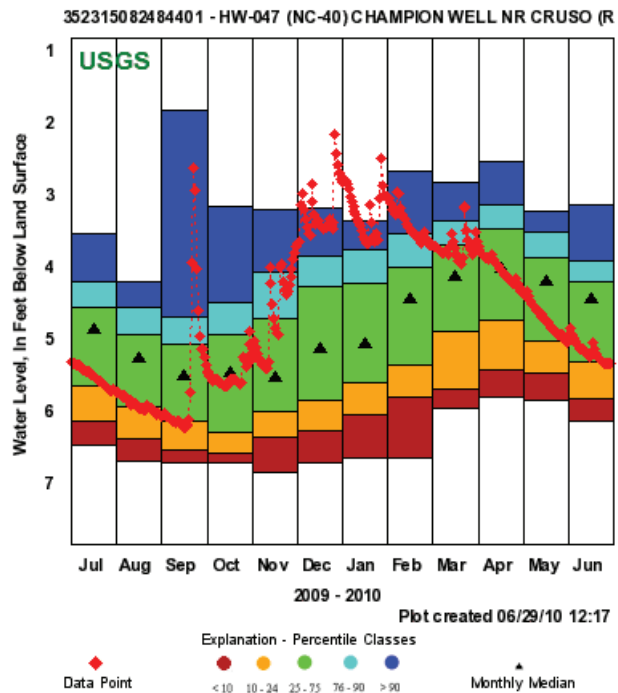
Tom Fransen, chief of the Hydrology and Management Section of the N.C. Division of Water Resources, recalled that "after the 2002 drought, I guess one of the things I was doing was trying to figure out what we needed to do better. I started playing around with a new drought index that we could use for water supply. Woody (Yonts, chairman of the N.C. Drought Management Advisory Council) saw what I was doing, so he made me the chair of a technical group. We came to the conclusion that rather than create something new, what we wanted to do was build on what, at that time, was still pretty young -- the Drought Monitor. Since the media had kind of picked up on that in the 2002 drought as a way to get the message out, we thought the better thing to do than create our own index was to give the national folks the best input we could on the national product."

Yonts is a civil engineer with the state Division of Water Resources. In 1988, Yonts said he decided it was time to "settle down" and take a job with the state, where he soon became the point person on drought issues. Yonts had decades of drought-related experience, including laying pipe as a high school student on an emergency work crew to keep municipal water flowing, hydrological monitoring for the U.S. Geological Survey and working for Progress Energy, a power company that relied on hydroelectric and coal-generated power.

Yonts praised the evolution of the U.S. Drought Monitor toward finer spatial resolution, an issue he pushed for when he met drought monitor authors after the drought of 2002.

"I came up and talked about how we did business, and how we were going to be depending on the U.S. Drought Monitor, and how we were going to use that sucker as soon as it hit the street," Yonts said. "I told them, 'We need drought depicted by counties, not climate divisions,' because regulatory authority flows from the state to county level, and a lot of emergency management is county-based. Finally, I guess they started getting a lot of pressure from around the country. Now we're getting right down to the nitty gritty."

In 2006, the Drought Monitor added county lines and separate state-level depictions of drought.



The technical advisory group regularly reviews hydrological data, at times including water levels in wells in particularly significant locations. The U.S. Geological Survey generated this image.

North Carolina, continued

The U.S. Drought Monitor, which was established in 1999, is published every Thursday. It synthesizes data and drought impact information from a variety of sources to produce a single map depicting drought status across the United States. The rotating authors come from federal and academic institutions and work with a network of more than 270 reviewers nationwide. Some states are better represented than others. By necessity, the process simplifies complex information. Additional and supporting analyses of climate, soil moisture, hydrology and impacts are available on www.drought.gov, or at drought.unl.edu, and from many other state and federal agencies.

Time and Resource Commitment

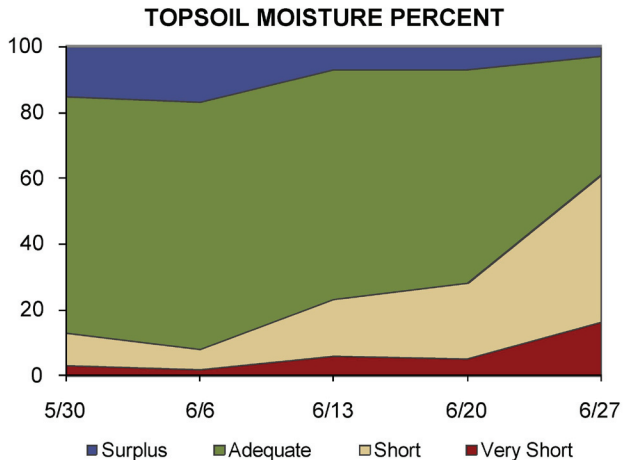
North Carolina's weekly teleconferences typically take anywhere from 30 minutes to an hour, depending on the severity of drought, but some of the participants prepare data and organize information ahead of time, including current climatological, hydrological and impact-related depictions of conditions in the state.

Curtis Weaver, a hydrologist from the U.S. Geological Survey and a regular participant in the group, said "one of the things that I've been doing on a weekly basis is to put out an e-mail in advance of the call talking about the streamflow and groundwater conditions. If there's a [Drought Monitor] draft that's already out that's been released, we'll take that into account. If there's not a draft available and there's not any strong feeling one way or the other, then I may make some suggestions just to stir things up and get the group members thinking in advance of the call. It takes me a couple of hours."

The state has invested in developing data infrastructure and mapping tools. Fransen said "one of my frustrations was that the USGS quantifies drought with different percentiles than what the drought authors do, and some of the (National) Weather Service uses different percentiles, so what I've tried to do is take these common data sets that we're used to looking at and come up with tools where we can put things in the same percentiles, comparing apples to apples as much as possible."

The mapping tools have been well-received and adopted by other organizations in the Southeast.

The calls regularly consider impacts on water resources, crop health, and forests, such as fire risk. Ryan Boyles, North Carolina state climatologist, emphasized, "It's just dry weather until we have impacts. When we have impacts, then we have drought."



A weekly report by the U.S. Department of Agriculture and the N.C. Department of Agriculture & Consumer Services for the week ending June 27, 2010, included this topsoil moisture chart, which was also reviewed on the drought monitoring call.

North Carolina, continued

As drought intensifies, so does the number of participants and the amount of information flowing to the technical group. In fact, Fransen said, during severe drought, about six different weekly conference calls take place, all of which feed information into the state's drought technical group call. The U.S. Army Corps of Engineers holds weekly calls to monitor drought, flooding and other issues. Major power companies have provisions in their low-inflow protocols, required by the Federal Energy Regulatory Commission (FERC), that trigger weekly calls at a certain threshold.

"As the situation continues to get worse, that's when the experts come into a real strong role as regards to forestry, agriculture folks, public water supply, water quality," Yonts said. "We read the numbers and see what the impacts are for these various water users. We add it all together. Everybody has their part in the program in gathering our depiction."

The state has developed an automated system to allow municipalities to report impacts.

"And of course we've got water quality folks that are on the line telling us about the condition of the resource, and typically when things are getting bad, we'll have some of the wildlife folks on line, too," Yonts said. "I'll put it to you this way: If things get worse, we don't seem to have any problems with people wanting to step forward telling us what kind of problems they're seeing."

Members of the technical group pointed to a "perfect storm" of circumstances that led to their focus on drought.

Boyles said, "you need two major droughts back-to-back and somebody like Woody twisting arms and talking people into joining the calls and keeping on top of them."

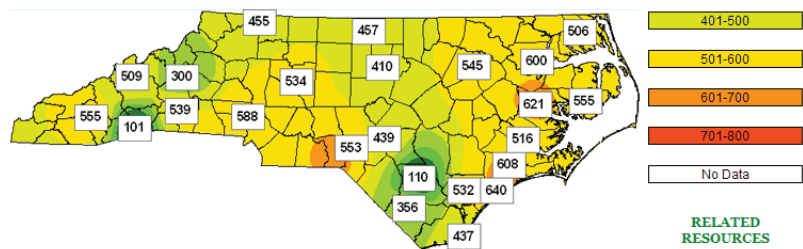
Others agreed, and added that power companies going through FERC relicensing amid concerns about the reliability of municipal water supplies also raised awareness of water as a limited, renewable resource.

"For the most part this group has been fairly consistent," Fransen said. "We've had a few people come and go, but there's a pretty solid core that's been doing this a number of years. We've gotten to know each other's personalities and how to work together. I know our departmental secretary after one of Woody's drought meetings said the thing that amazed him was you had such a diverse group, federal agencies, that came together that could reach consensus. He'd never seen that diverse of a group that was able to work as well as the group we put together here."

Keetch-Byram Drought Index (KBDI) Map

Observations on Monday, June 28, 2010 at 1300

KBDI is a soil/duff drought index that ranges from 0 (no drought) to 800 (extreme drought) and is based on soil capacity of 8 inches of water. Factors in the index are maximum daily temperature, daily precipitation, antecedent precipitation, and annual precipitation.



The Keetch-Byram Drought Index is used to assess forest fire risk, and is one of the products the N.C. drought monitoring group regularly consults.

Summer 2010

Australian Drought Expert Warns Against Lines on Maps for Relief

If the U.S. moves toward a national drought policy, it should learn from Australia's experience that using lines on maps to trigger relief for farmers and ranchers may not be the most effective use of resources, said Linda Botterill, a drought policy expert from the Australian National University. Botterill gave a public talk, "The role of science in the evidence-based policy process," at the University of Nebraska-Lincoln on June 24, near the end of her four-week stint as a visiting scientist at the National Drought Mitigation Center (NDMC).

With its boom-and-bust drought-and-wet cycles closely linked to El Niño, public and political awareness of drought is much higher in Australia than in the U.S. Botterill became a political scientist after 15 years of working as a policymaker on rural issues, including drought, and has collaborated with the NDMC for several years.

"One area that I am grappling with is the issue of drought declarations and what is known in Australia as the 'lines on maps' problem," she said. "I think I understand why scientists like the precision of lines on maps. But from a policy perspective, distinctions like this can be highly problematic if they become used as triggers for relief programs. As soon as you attach money to a particular category of dryness, people focus on how those lines are drawn, which detracts very quickly from a preparedness and risk management approach to drought. Instead, people debate the placement of the line so they can get relief."

Instead, she recommends a risk management approach, such as programs that allow farmers and ranchers to set aside before-tax income in good years, and draw on it during lean years.

The stated mission of the National Drought Mitigation Center — helping reduce vulnerability to drought — is consistent with Botterill's message of risk management. However, the NDMC partners with federal and academic organizations to produce the weekly U.S. Drought Monitor, which has been increasingly linked to programs for agricultural producers that Botterill characterizes as relief rather than risk management.

Efforts to establish a national drought policy in the United States have ended up with an intensive focus on the science of drought, and less emphasis on the policy side. The National Integrated Drought Information System (NIDIS) is online at drought.gov, characterizing and monitoring drought at ever-finer spatial and temporal scales, in response to stakeholder needs.

Botterill's visit to the U.S. is funded by the Australian Research Council to contrast the role of science in the drought policy process in the two countries. In Australia, policymakers approached the scientific community and asked them to come up with a set of triggers for relief programs, which resulted in the "lines on maps" problem. But in the U.S., she said, "there is no national drought policy, but the scientific community has been actively engaged in developing and promoting the use of drought monitoring tools to assist in preparedness for and mitigation of drought in this country."

Botterill, whose talk drew an interdisciplinary crowd, advocated that the policy side of drought



Linda Botterill

Summer 2010

Botterill, continued

research should catch up with the physical science, and emphasized that “nearly 20 years of Australian experience suggest that drought declarations provide disincentives to good drought planning.”

She left Lincoln for Washington, D.C., where she was interviewing policymakers and joining NDMC leaders for meetings with the U.S. Department of Agriculture and the Congressional Hazards Caucus, as well as a presentation and reception at the Australian embassy. When she returns to Australia, it will be to a new position as a professor of Australian public policy at the University of Canberra.

NDMC Welcomes Dutch Hydrology Student

Esther Dieker, a master’s student in hydrology from Wageningen University, is working at the National Drought Mitigation Center in Lincoln, Nebraska, from May through August to study how and whether drought impacts correlate with physical conditions.

Her research is focusing on the Texas drought from August 2007 through February 2010, the California drought from August 2007 to August 2009, recent drought in Wisconsin, and ongoing drought in Hawaii. She is using impact information collected in the U.S. Drought Impact Reporter, current media reports, and interviews for the impact data, and is using the U.S. Drought Monitor and the Vegetation Drought Response Index (VegDRI) for data on physical conditions.

Dieker first connected with the NDMC at the Xerochore conference on drought in June 2009 in the Netherlands, where she was helping out as a student worker. A mix-up at the hotel meant that NDMC climatologist Mark Svoboda couldn’t get into his room right away. Dieker thought, “I’ve gotta keep this guy happy,” so she made conversation. They found a lot to talk about, and later she went to hear Svoboda’s presentation, which included information on the NDMC’s drought impacts research.

And yes, Dieker says, the Netherlands has drought, too, although one of its best-known drought impacts is a flood caused by a peat dike that dried up and gave way.

Dieker is enjoying her stay in Lincoln. Without a car, she was pleasantly surprised to learn that Lincoln has excellent bike trails, and she found a city-organized softball league to join. She even likes the weather. What passes for a cool summer day in Lincoln, in the 70s Fahrenheit, would be considered hot back home.

Her one regret is, “I miss the whole World Cup craziness,” although she has found Dutch compatriots who gather at all hours to cheer on the Oranje.



Esther Dieker

Summer 2010

Experts Work Toward Agricultural Drought Monitoring Standard

National Drought Mitigation Center climatologist Mark Svoboda and founding director Don Wilhite were among the 19 experts from eight countries that met in Murcia, Spain, in June 2010 to recommend ways to standardize how countries monitor agricultural drought.

"The idea of trying to come up with a single index to monitor agricultural drought is a very difficult assignment because this type of drought is very complex. After reviewing the indices and indicators in general use in many countries, the participants of the meeting recommended a step-wise approach," Wilhite said. "At the simplest level, some developing countries would likely only be able to rely on precipitation data and an index such as the Standardized Precipitation Index. Temperature data might also be integrated into this assessment."

A second level of monitoring agricultural drought would be in those countries where there is a greater diversity of data available. This might include data on streamflow, reservoir levels, or soil moisture. Remote sensing data is also widely available and may help take agricultural drought monitoring to the next level, Wilhite said, noting that countries would "need the capacity to store and receive data, and trained staff to interpret this information."

"For countries that have high quality data and networks, we recommend that people use a composite approach like we do in the U.S. with the Drought Monitor," Wilhite said. "The preparation of this map requires extensive access to a wide variety of data on many indicators of agricultural drought. This approach also requires that countries build partnerships between the various agencies that are responsible for collecting data such as precipitation, temperature, soil moisture, ground and surface water levels, snow pack, and remotely sensed data from satellites. Unfortunately, in many countries there's very little collaboration or data sharing across agency lines," Wilhite said. "Agencies don't talk to one another. If you're going to monitor agricultural drought effectively, you must be able to share data and work in a collaborative environment. In most countries, the responsibility for collecting these types of data is divided between many agencies or ministries at various levels of government."

The meeting in Murcia was a follow-up to an international meeting of experts in Lincoln, Nebraska, in December 2009, where scientists adopted the Standardized Precipitation Index (SPI) as the recommended world-wide standard for monitoring meteorological drought. They also recommended additional meetings to agree on indices for monitoring agricultural and hydrological drought. The meeting in Murcia focused on agricultural drought, and a meeting in India in August will focus on hydrological drought.



The international panel of agricultural drought monitoring experts convened in Murcia, Spain, in June 2010 included Don Wilhite, founding director of the NDMC, at far left, and Mark Svoboda, NDMC climatologist, fourth from left in the back row.



Summer 2010

Murcia, continued

Subsequent to the December "Lincoln Declaration" identifying the SPI as the preferred method of monitoring meteorological drought, Svoboda has drafted a user manual to help countries around the world implement the SPI.

A panel on the outcome of the December meeting will be part of the Second International Conference on Climate, Sustainability and Development in Semi-Arid Regions, to be held in Fortaleza, Brazil in August. Wilhite will be joined by Mike Hayes, director of the NDMC; Dr. Robert Stefanski, a scientist in the Agricultural Meteorology Division of the Climate Prediction and Adaptation Branch of the World Meteorological Organization; and Dr. Paulo Sentelhas, University of Sao Paulo.

The Summary and Recommendations from the meeting in Murcia are online:
http://www.chsegura.es/export/descargas/cuenca/sequias/escasez/docsdescarga/WMO_Summary_and_Recommendations_of_the_Meeting.pdf

The WMO's press release on the Murcia meeting is online:
http://www.wmo.int/pages/mediacentre/press_releases/pr_887_en.html

Save the Date: October 26-27, Missouri River Basin Drought Outlooks

The National Drought Mitigation Center and partners will hold a workshop October 26-27 for community and urban water supply managers to see what long-term climate outlooks could be useful. The location is still to be determined.

The NDMC and the U.S. Army Corps of Engineers are partnering with the Center for Research on the Changing Earth System in Maryland, which is researching the predictive potential of long-term climate patterns in the Missouri River Basin.

Why Attend?

- To learn how long-term climate fluctuations of decades or more affect water availability in the basin.
- To learn about the potential for long-term climate outlooks to help with water planning in the basin.
- To help climate researchers better understand the effects of droughts and floods on urban areas.
- To help climate researchers better understand the needs of urban water managers.

Who Should Attend?

We're looking for about 30 local, state and federal water managers representing communities of all sizes in the Missouri River Basin.

If you'd like to be informed as plans firm up, or for more information, please contact Nicole Wall by phone, 402-472-6776, or via email, nwall2@unl.edu.

Summer 2010

Tadesse Leads UNL Exchange Delegation to Syria

Dr. Tsegaye Tadesse, a climatologist at the National Drought Mitigation Center and assistant professor at the School of Natural Resources, led a University of Nebraska-Lincoln (UNL) delegation to Aleppo, Syria, to mentor Iraqi agricultural researchers and officials. They took part in a workshop for Iraqi Borlaug Fellows, organized by the U.S. Department of Agriculture (USDA) and the International Center for Agricultural Research in Dry Areas (ICARDA), May 23-26. Others from UNL who traveled to Syria were Chuck Burr, from the West Central Research and Extension Center, and Dr. Tappan Pathak, climate change and variability extension educator.

A total of six U.S. institutions participated, including UNL. Among the Iraqi institutions participating were the Ministry of Agriculture, the Ministry of Science and Technology, and the University of Baghdad.



Dr. Tsegaye Tadesse and Dr. Salloum Salim posed in front of agricultural equipment near Aleppo, Syria. Dr. Salim was one of the Iraqi scientists who visited the University of Nebraska-Lincoln in 2008. Photo courtesy of Tsegaye Tadesse.



A well near Qalb Lozeh was manually operated, without even a pulley system to help lift water. Photo by Dr. Tsegaye Tadesse.

“The expectation is to help the Iraqis in identifying the technical, policy, and resource constraints in their country and make connections with U.S. institutions to mentor and collaborate in the future,” Tadesse said. He saw many possibilities related to his work at the Drought Center. “Drought is a very big issue for all of the Middle East countries in general.”

This was the second part of a Borlaug exchange program organized by Dr. Don Wilhite, director of the School of Natural Resources at UNL and founding director of the NDMC. In 2008, two scientists (i.e., Dr. Ahmed Mahaimed and Dr. Salloum Salim) from the University of Baghdad visited UNL. According to the USDA, the Norman E. Borlaug International Agricultural Science and Technology Fellowship Program helps developing countries strengthen sustainable agricultural practices by providing scientific training and collaborative research opportunities to visiting researchers, policymakers, and university faculty.



Summer 2010

VegDRI and VegOut Workshop, Boise, Idaho, July 27

The National Drought Mitigation Center is partnering with the United States Department of Agriculture Risk Management Agency (RMA) and the Idaho Department of Water Resources (IDWR) to sponsor a workshop on the Vegetation Drought Response Index (VegDRI) and the more experimental product, Vegetation Outlook (VegOut). The goal of the workshop is to confer with agricultural producers, extension agents, and agency and organizational representatives on the tools we are currently developing in partnership with the RMA. The tools we are developing:



- Can help with management decisions such as buying or selling cattle, utilizing irrigation or limited tillage and whether to plant more drought-resistant crops.
- Have some predictive capability, though it is still highly experimental.
- Help communicate ground-level perceptions and experiences to far-away decision-makers, claims adjusters and others.
- Can help track market conditions.

VegDRI: Using satellite information to map spatial patterns of drought impacts on current vegetation, the VegDRI (Vegetation Drought Response Index) tool allows producers to monitor vegetation stress at a regional, state, county or sub-county level. http://drought.unl.edu/veg-dri/VegDRI_Main.htm

VegOut (the Vegetation Outlook), is a highly experimental forecasting product that incorporates oceanic information into satellite data to provide outlooks into the expected level of vegetation stress at 2, 4, and 6-week intervals. <http://drought.unl.edu/veg-dri/experimental.htm>

Location

Idaho Water Center, 6th floor conference room
Idaho Department of Natural Resources
322 East Front Street
Boise, Idaho
Phone: (208) 287-4800
Fax: (208) 287-6700
<http://www.idwr.idaho.gov/contact/contact.htm>



Rolls and coffee will be served in the morning and lunch is provided. Space is limited so please register. To register and for more information, please visit:

http://drought.unl.edu/veg-dri/VegDRI_IDWorkshop2010.htm

Contact Nicole Wall (NDMC) at 402-472-6776 or nwall2@unl.edu or Liz Cresto Liz.Cresto@idwr.idaho.gov to RSVP or with questions.