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Fall 2007

Drought Scape- Fall 2007

the National Drought Mitigation Center

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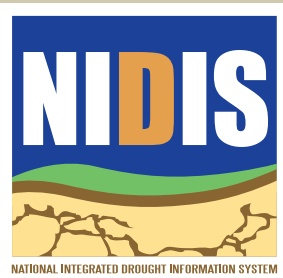
DROUGHTSCAPE

The Newsletter of the National Drought Mitigation Center

Fall 2007

US Drought Monitor Forum
October 10-11, 2007
Portland, Oregon

The final agenda is now available and you can still sign up!
Read more on page 15.



Drought.gov is live. Look for Current Drought and other content soon. Meanwhile, read the *NIDIS Implementation Plan*.

Read more on page 7.

Drought Experts Take Roadmap to Congress

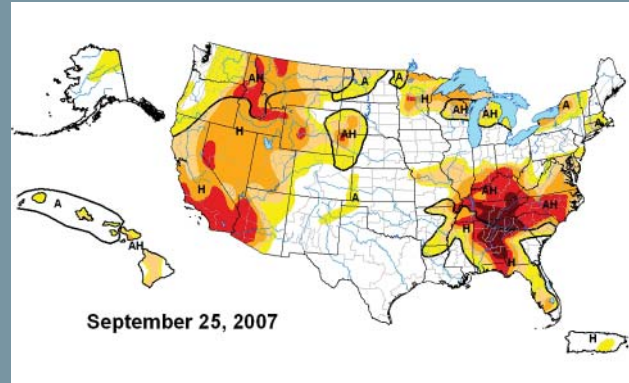
The National Drought Mitigation Center, the Geological Society of America and the Hazards Caucus Alliance teamed up to brief Congress on findings from the GSA's 2006 meeting, "Managing Drought and Water Scarcity in Vulnerable Environments."

Read more on page 7.

DroughtScope is the quarterly newsletter of the National Drought Mitigation Center (NDMC). The NDMC's mission is to reduce vulnerability to drought, nationally and internationally. Please email the editor with ideas: droughtscape@unl.edu

Fall 2007 Outlook

The desert Southwest is likely to see continued drought, due to the emerging La Niña pattern. The Mid-Atlantic region will probably also be dry in the coming months. Other areas will see improvement. Read more on page 2.



Diverse Impacts Reported in Summer of 2007

Drought in 2007 affected agriculture, energy, wildlife, water supplies, and communities, as illustrated by this collection of highlights from the Drought Impact Reporter. Read more on page 4.

Decadal Climate Cycles Hold Predictive Potential

Researchers at the Center for Research on the Changing Earth System are looking at seasonal to decadal climate variability. This article, the first in a series, examines possible causes of long-term variability. Solar or lunar cycles? Sea surface temperatures?

Read more on page 8.

NDMC Research Updates

Republican River Basin decision-support web portal
Read more on page 10.

Vegetation Drought Response Index (VegDRI)
Read more on page 11.

Vegetation Outlook (VegOut)
Read more on page 13.

User Workshops on Tools Inform Development
Read more on page 14.



Fall 2007

Fall 2007 Drought Outlook and July to September Summary

By Brian Fuchs, Climatologist, National Drought Mitigation Center

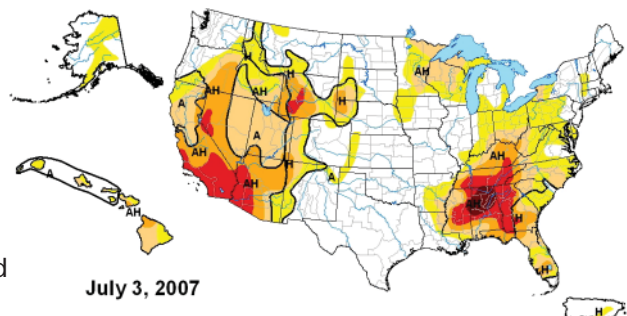
Drought classifications are based on the US Drought Monitor. For a detailed explanation, please visit <http://drought.unl.edu/dm/classify.htm>. The outlook integrates existing conditions with forecasts from the National Oceanic and Atmospheric Administration's Climate Prediction Center: <http://www.cpc.ncep.noaa.gov/>

Outlook: La Niña conditions are developing in the Pacific Ocean, so we anticipate that weather patterns will show a La Niña influence from the fall into next spring. During a typical La Niña pattern, the Pacific Northwest and Ohio River Valley regions are wetter than normal, while the southwest and Gulf Coast regions are drier than normal. Based on the emerging La Niña pattern, drought should recede in the northern Rocky Mountains and northern Nevada and California. Drought should also get less intense over much of the Tennessee and Ohio River valleys, the upper Midwest, the Gulf coasts of Alabama and Florida, and along the Great Lakes of New York. Drought will probably persist in the desert southwest and in the Mid-Atlantic region. Temperatures are projected to be well above normal for much of the United States through fall and into winter. The warmest temperatures should be observed through the Southwest and Southern Plains, and into the Tennessee Valley.

For more on La Niña:

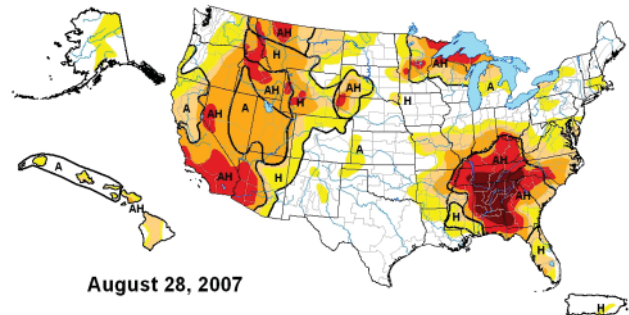
The La Niña effect is named after a periodical cooling of the waters in the Pacific Ocean that influences weather patterns around the world. For more on La Niña, please go to <http://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/enso.shtml>

July: During July, several new areas of drought developed, especially in the Midwest. July started with 53.8 percent of the United States designated as abnormally dry or in drought, and ended with 64.1 percent. Intensification of drought was prevalent in the western United States, where severe drought spread to include much of the region. Drought intensification over the High Plains and upper Midwest was observed during July. With above normal temperatures and little or no precipitation, areas of South Dakota and Minnesota quickly deteriorated from no drought to severe drought. Drought became less intense in the Southeast as rains in Mississippi, Alabama and Florida helped make up precipitation deficits and ease impacts. During July, almost 500 new drought impacts were recorded to the United States Drought Impact Reporter (<http://droughtreporter.unl.edu>). Michigan, California, Montana and Alabama were the states where the most drought-related impacts were observed during the month.



Fall 2007 Drought Outlook and July to September Summary, continued

August: A heat wave over much of the southeastern United States coupled with below normal precipitation intensified drought in the Southeast. Extreme and exceptional drought conditions covered much of the region by the end of August, with Alabama, Georgia and Tennessee experiencing the most severe drought. During August, the overall drought status for the United States improved. August ended with 61.5 percent of the United States experiencing abnormally dry or drought conditions, compared to 64.1 percent at the beginning of the month. Extreme and exceptional drought status increased from 6.8 percent to 12.8 percent during the month. Reductions in drought intensities were observed over portions of the Midwest and High Plains and Southwest during the month. More than 500 drought related impacts were logged into the Drought Impact Reporter. North Carolina and Tennessee were the states logging the most impacts, at 66 and 49, respectively.



September: Warmer than normal temperatures dominated September, with most of the country having temperatures 2-4 degrees Fahrenheit above normal for the month. The warmest temperatures were over the Midwest. Precipitation amounts varied through the United States, with most areas receiving precipitation and a handful recording amounts above normal. Overall drought conditions improved during September with 58.7 percent of the country depicting abnormally dry or drought conditions at the end of the month compared to 61.9 percent at the beginning of the month. Extreme to exceptional drought conditions continued to dominate the Southeast, where some relief came in September. The intensity eased in the upper Midwest while drought conditions continued to intensify over portions of western New York.



Fall 2007

Sample of Drought Impacts Reveals Diverse Effects

by Denise Gutzmer, NDMC Drought Impact Reporter Moderator

This collection of impacts, drawn from the Drought Impact Reporter shows the variety of ways that drought affected agriculture, people, animals and the environment in summer 2007. The National Drought Mitigation Center is developing the Drought Impact Reporter with sponsorship from the Risk Management Agency and from the National Oceanic and Atmospheric Administration. For more impacts, please visit <http://droughtreporter.unl.edu/>

Agriculture

- Week of May 28, 2007, Tennessee. Livestock producers sold cattle early, fearing continued drought would result in lack of pasture and water. The Tennessee Department of Agriculture reported that two to three times more cattle were sold this week than in the same week in 2006. Sales occasionally lasted until the small hours of the morning.
- June 4, 2007, Alabama. Statewide, 27,100 cattle were sold that week in Alabama, up 63% from the previous year when 16,668 cattle were sold. An auction manager in Russellville stated that at least three entire herds were sold at a sale. Producers were selling because pastures were dry and hay was too expensive.
- July 12, 2007, Johnston County, North Carolina. A farmer reported that his hay production was down by 50%. Since his pastures were dry, he resorted to feeding his cattle hay. Difficult choices awaited the farmer concerning purchasing hay and selling cattle.
- Sept 13, 2007, Lake Okeechobee, Florida. Polluted storm water will be allowed to flow back into Lake Okeechobee to increase the amount of water in the lake for irrigation purposes. A month previously, the South Florida Water Management District Governing Board voted against actively pumping water back into Lake Okeechobee. Some farmers who rely on lake water for irrigation are wondering whether or not to plant their crops since there clearly is not sufficient water in the lake for irrigation in the coming months.
- Sept. 19, 2007, Tennessee. The University of Tennessee's Agriculture Extension Office said that roughly 10% of Tennessee's farmers were being forced out of farming after this year of hardships, including drought and the late freeze this spring.

Water Supply

Many parts of the southeastern U.S. and California restricted water use as drought diminished water supplies. In California, many water districts requested that customers reduce their water consumption after a winter when many areas received less than 40% of the average snowfall. For example:

- Mid-June, 2007. The Sonoma County Water Agency (SCWA) told its customers to reduce water use by 15%. The SCWA was the first water supplier to begin mandatory rationing in California this year and serves Santa Rosa, Petaluma, and the Marin Water District, among others, affecting 750,000 customers.
- July 31, 2007. The Fresno Irrigation District stopped water deliveries on July 31. Normally water is delivered from March 1 through the end of August, but this year there was only enough water to provide deliveries from May 1 through July 31.
- Sept. 10, 2007, North Carolina. Governor Easley of North Carolina ordered increasingly stringent water restrictions for the state during the summer. In September, he asked all water systems to implement voluntary water restrictions. Many water systems already had manda-



Fall 2007

Sample of Drought Impacts Reveals Diverse Effects, continued from page 4

tory or voluntary restrictions in effect.

- Sept. 13, 2007. Water restrictions became more stringent in Long Beach as the city declared a water emergency, facing the prospects of continuing drought and limited water deliveries from Northern California. Officials monitor water bills to discover those who use excessive amounts. A telephone hotline and email system were being set up for residents to report neighbors who disobey the new water restrictions.

Hydropower

- January – June 16, 2007, Tennessee. The Tennessee Valley Authority produced about half of the energy it had anticipated, due to low water levels at its 29 hydroelectric dams. TVA lost roughly \$200 million since October 2006, the beginning of their fiscal year. The loss of hydropower generation has resulted in higher costs for consumers.
- Sept. 13, 2007, North Carolina. Low water levels in North Carolina's rivers reduced hydroelectric generating capacity. Progress Energy reported production was down almost 30% at the company's three hydroelectric plants in North Carolina. Duke Energy reported production 45% below the same time last year at its 18 plants.

Business and Industry

- June 12, 2007, Moore County, Tennessee. Cave Spring, which supplies water to the Jack Daniels distillery, flowed at a rate of one-third to one-half of its usual rate, according to the distillery plant manager. Water conservation at the distillery has become paramount because one of the ingredients in the famous whiskey is the iron-free water that comes from the spring.
- Sept. 17, 2007, Alabama. The Alabama Power Company said it would attempt to keep river flows on the Alabama River above 20% so dredging operations could continue. The river has been so low that barge traffic had not moved on the river between Selma and Mobile since March.

Community

- Sept. 4, 2007, Cherokee County, South Carolina. The majority of wells dried up in Rock Springs, prompting two Baptist churches to delay eight baptisms until water supplies are more abundant. Members of the Rock Springs Baptist Church are praying for rain.

Wildlife Habitat

- July 24, 2007, Maryland. Blue crabs were less abundant this summer in parts of the Chesapeake Bay because the salinity of the bay changed, due to drought. The warmer, saltier water led the crabs to move north to more hospitable areas. The scarcity pushed the price of blue crabs to \$120 per bushel, which was 50% higher than last year.
- Sept., 2007. The drought has reduced the amount of berries and water available for bears and other wildlife. This has led to greater numbers of animals encroaching into residential areas and coming into contact with people in Nevada, California, Utah, Colorado, New Mexico and Idaho.

Wildfire

- May 28, 2007, Florida. Dry vegetation on the lakebed of Lake Okeechobee began burning.



Fall 2007

Sample of Drought Impacts Reveals Diverse Effects, continued from page 5

The Frog Light Fire, as it was termed, burned in the lakebed near Buckhead Ridge and consumed more than 18,000 acres.

- May 29, 2007, Georgia. The Okefenokee Swamp burned near the Georgia-Florida border and blackened more than half of the 438,000 acre wildlife refuge. The swamp is very dry. Normally it is about waist-deep with water.
- Late June, 2007, Reno, Nevada. A golfer reportedly started a fire by hitting a golf ball with his club near Reno. Drought has dramatically increased the fire danger in the region.
- July 4, 2007, Santa Barbara County, California. The Zaca Fire began near Zaca Lake when sparks from a metal grinder fell on dry vegetation. The fire consumed more than 240,000 acres and cost over \$118 million to fight. Officials say the continued dry weather is making the fire difficult to fight.
- July 6, 2007, Utah. The Milford Flat fire began from a lightning strike and consumed 363,000 acres in southwestern Utah, easily making it the largest wildfire in Utah history. Many ranchers are struggling to find new areas to graze their cattle because much of the land burned in the fire was summer range.
- July 16, 2007, Idaho, Nevada. The Murphy Complex fire burned over 600,000 acres across Nevada and Idaho. The fire began from a lightning strike on July 16 and was contained Aug. 2. The Bureau of Land Management estimated that the containment cost of the fire was about \$9.5 million.

A dedicated and extremely efficient employee of the National Drought Mitigation Center spends the better part of her working days during the summer sifting through media reports on drought and extracting impact information. She has observed patterns that raise interesting questions for further research:

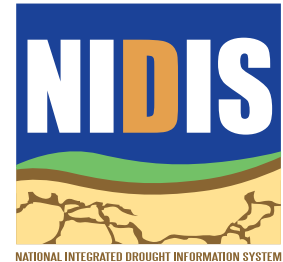
1. It is interesting to note differences in the frequency of drought reports in different parts of the country. The southeastern part of the country reports frequently on a wide range of drought impacts. Many media reports come from Alabama, Georgia, Florida, Tennessee, and Kentucky, discussing water restrictions, crop growth and yield, fireworks bans, and wildfire. The western part of the US, the southwest particularly, addresses drought issues less frequently. Perhaps it is the arid climate of the southwestern US that makes drought seem unremarkable, unless conditions are truly severe. Nevada, California, and Arizona are in drought, but, given their size, few media reports come from those areas, compared to the southeastern part of the country. Despite the fact that it is highly urban, California reports are mainly about agricultural impacts, such as livestock, with dry pastures, wildfires, and water restrictions.
2. It is clear that water managers at any level are reluctant to impose water restrictions, whether voluntary or mandatory, unless the situation is urgent. Repeatedly, cities and counties suggest voluntary water restrictions as dry conditions affect water supplies, only to implement mandatory water restrictions a week or two later. This suggests that water managers wait too long to request voluntary restrictions to avoid inconveniencing their citizens or raising concerns, in hopes that rain will fall and rescue them from falling reservoir levels. Another possibility is that media attention to voluntary restrictions leads to discussion or a political climate that makes mandatory restrictions an easier step to take.



Fall 2007

Drought.gov Goes Live

The web site of the National Integrated Drought Information System is live at drought.gov. Drought monitoring content is being developed and should be available on the site this fall. Meanwhile, read the *NIDIS Implementation Plan*, available as a pdf from <http://drought.gov>.



The National Drought Mitigation Center is a key non-federal partner in the congressionally mandated effort to develop the NIDIS portal, a one-stop drought monitoring site, and to develop drought impacts datasets and response plans. The President signed the multi-agency NIDIS Act into Public Law in December 2006. The National Oceanic and Atmospheric Administration (NOAA) is the lead federal agency.

Drought Roadmap Presented to Congress

In September 2006, drought scholars and policy makers gathered for the annual meeting of the Geological Society of America, "Managing Drought and Water Scarcity in Vulnerable Environments."

In July 2007, the conference organizers presented their collective findings and recommendations to Congress in the form of "Managing Drought: A Roadmap for Change in the United States," as well as an accompanying fact sheet. Both are on-line at the GSA's site.

The findings contained in the Roadmap document and summarized in the fact sheet were presented in briefings sponsored by the GSA to the Congressional Hazards Caucus on July 18, 2007. Those briefings were moderated by Dr. Gene Whitney, Assistant Director for Environment, White House Office of Science and Technology Policy. Dr. Jack Hess, executive director of the Geological Society of America, made introductory remarks describing the need for better approaches to managing drought. Dr. Donald A. Wilhite, founder of the NMDC, presented the findings of the conference. David Witter, Director of Environmental Compliance and Water Policy, El Dorado Water District, California, described how the El Dorado Water District has developed and implemented drought management planning into its operations.

There were many thoughtful questions from staffers attending both Senate and House briefings covering a wide range of drought-related issues from saline ground-water intrusion to the contribution of ground-water in drought planning. The power point presentations as well as some photos of the briefing are available on the Hazards Caucus Alliance web site at http://www.hazardscaucus.org/briefings/drought_briefing0707.html

Roadmap and conference website:
<http://www.geosociety.org/meetings/06drought/>

Introduction to Decadal Climate Variability

By Vikram M. Mehta
 The Center for Research on the Changing Earth System, Columbia, Maryland
 vikram@ccres.org

Research on decadal climate variability (DCV) dates back to at least the 19th century, perhaps to as far back as when sunspots were first seen to vary in number, size and location on the Sun. One anecdote suggests that Meton of Athens, an engineer in charge of the Athenian irrigation system, speculated in 400 B.C. about solar variability as the cause of rainfall variability in and around Athens.

Observers have identified sunspots cycles of roughly 11 and 22 years, and fluctuations in lunar tidal strength of 18.6 years, as well as lower harmonics of these cycles. Because of the hypothesized influence of the 11- and 22-year solar cycles and the 18.6-year lunar cycle on earth's climate, early researchers invoked the phrase "decadal climate variability" to describe climate "cycles" with 10 to 20-year repeat intervals.

Figure 1 shows perhaps the oldest definition of decadal climate patterns based on the 11-year sunspot cycle, dating back to at least Renaissance times. This particular example is of sea-surface temperature (SST) anomalies in the tropical Pacific, overlaid with solar radiation fluctuations. They appear to be in synch during the 1960s and 1970s, but move out of phase in the 1980s and 1990s. Such phase shifts are why solar and lunar explanations fell out of favor around the mid-20th century.

What causes decadal climate variability?

Numerous causes of decadal climate variability have been hypothesized. At the center of many of them is natural variability in ocean circulations and ocean waves bouncing between continental boundaries, and their interactions with the atmosphere. Also, radiation from the sun undergoes near-cyclic variability at 11- and 22-year periods, setting off reactions in different parts of the earth's systems – atmosphere, oceans, ice, land and vegetation. Each system reacts at its characteristic speed, atmosphere adjusting in days to weeks, and oceans over months to centuries. Each cycle affects climate and weather.

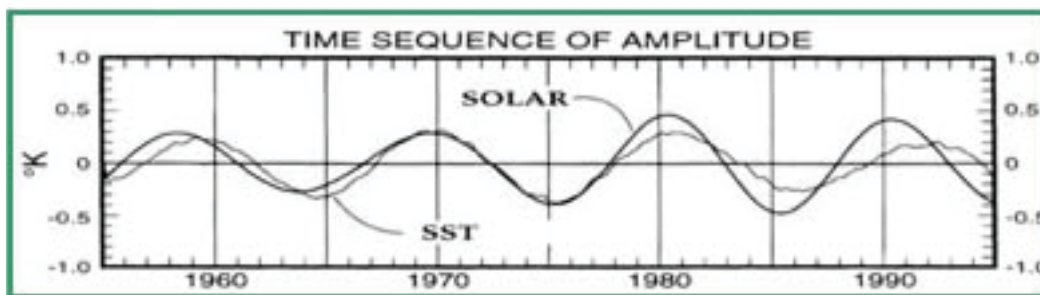


Figure 1: Overlaying solar radiation fluctuations with changes in sea surface temperatures in the second half of the 20th century suggests that a longer record would be needed to draw a meaningful conclusion about whether the two are normally in or out of phase.

Introduction to Decadal Climate Variability, continued

Another way to define a climate variation lasting approximately a decade is from the duration of “bursts” or groups of more frequent phenomena, such as El Niño-La Niña events, hurricanes and other tropical cyclones, extreme precipitation or heat. The example shown in Figure 2 depicts the so-called Niño3 SST index, a mea-

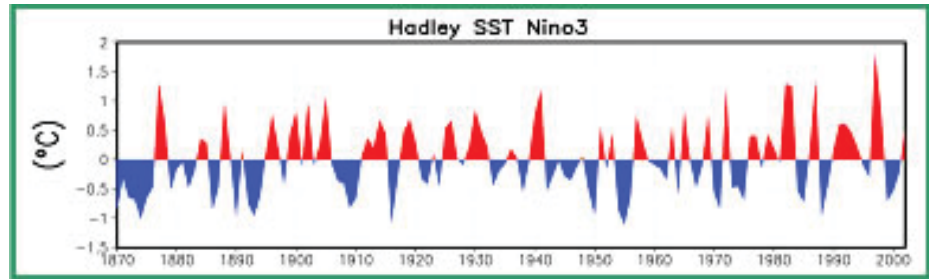


Figure 2 shows the “Niño 3 Sea Surface Temperature Index,” with El Niño, higher temperatures, in red, and La Niña, lower temperatures, in blue. It shows two El Niño bursts, one from the mid-1890s to 1905 and another from the mid-1970s to the late 1990s, and one La Niña burst from the early 1940s to the late 1950s.

sure of the El Niño-La Niña variability in the tropical Pacific. In this time series, there are two bursts of El Niño events (red) from mid-1890s to 1905 or so, and from the mid-1970s to the late-1990s. There is also one burst of La Niña events (blue) from approximately the early 1940s to the late 1950s. Each of these bursts lasts approximately 10-20 years.

History is full of pivotal events related to climate — precipitation, surface temperature, river flow, droughts, and floods that have affected the course of civilizations. Decade-long droughts in the North American Great Plains led to out-migration of people, especially in the 1890s, the 1930s, the 1950s, the 1980s, and the years since 2001-02. The Pacific Northwest experiences decadal climate variation in precipitation, stream flow, fish catch, and forest fires, and the Southwestern United States and Mexico, in precipitation. Socio-economic-political instability in the Nordeste region of Brazil is linked to multiyear to decadal droughts. The suffering caused by the Sahelian droughts in the 1970s-1980s-1990s is well-known. Long-term variability in numbers of hurricanes and other tropical cyclones in the Atlantic, Pacific, and Indian Oceans is also well-known.

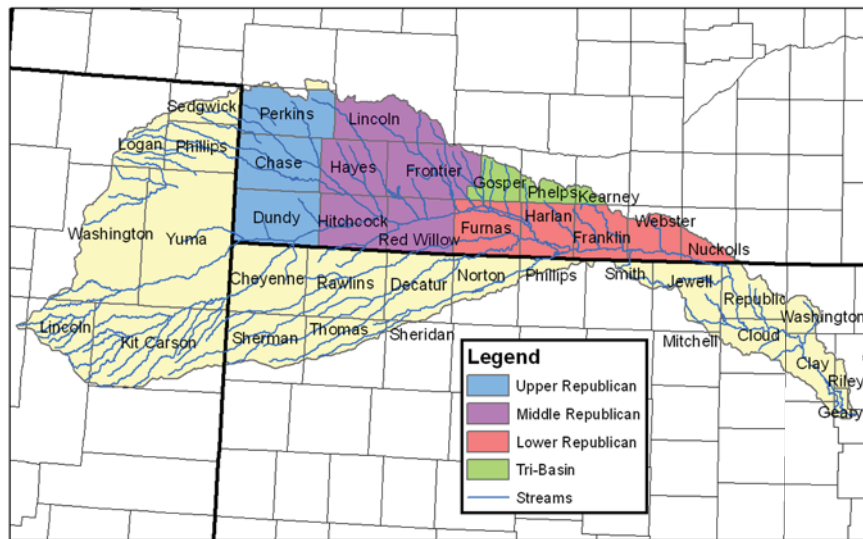
Scientists hope that by arriving at a better understanding of the concurrent cycles of the earth’s many subsystems, they will be able to provide more reliable forecasts of precipitation, temperature, and other climate events a season, a decade or longer in advance. Such information could be used to anticipate food shortages, avoid crop losses, protect habitats and reduce suffering and mortality.

Contributors to decadal climate variability:

- Ocean-atmosphere interactions
- 11- and 22-year sunspot cycles
- 18.6-year lunar tidal cycles and their lower harmonics

Subsequent articles in this series will describe major DCV phenomena, their known societal impacts, and DCV forecast efforts.

New Project: Republican River Basin Decision-Support Web Portal



The National Drought Mitigation Center (NDMC) will be developing a decision-support web portal for the Republican River Basin in Nebraska, Colorado and Kansas, with support from the Sectoral Applications Research Program of the National Oceanic and Atmospheric Administration. Dr. Cody Knutson is the principal investigator, with Mark Svoboda and Dr. Jae Ryu of the NDMC serving as co-investigators, along with managers and staff of the Lower, Middle and Upper Republican Natural Resources Districts (NRDs) in Nebraska. Under the terms of the two-year grant, The NDMC will collaborate with the NRDs to identify and compile local drought monitoring and planning information needed by resource managers in the basin, including government agencies, local community planners, and agricultural producers, and package it into a web portal. The portal will eventually be housed on the websites of the natural resource districts, and can serve as a model for developing local applications of the National Integrated Drought Information System.



Fall 2007

VegDRI Seeks Reviewers for Western Expansion

As the 2007 growing season concludes, Vegetation Drought Response Index (VegDRI) researchers are thanking the reviewers who evaluated this year's VegDRI maps, recruiting additional reviewers for next year, and preparing to enhance the VegDRI models for the 2008 growing season.

In 2008, VegDRI coverage will expand beyond 15 states in the central U.S. to cover the remainder of the western U.S. In addition to bolstering the existing corps of reviewers, researchers are seeking a new set of volunteers from the western states. If you would like to be a reviewer, please contact Meghan Sittler, National Drought Mitigation Center (NDMC) Research and Outreach Specialist at msittler2@unl.edu or 402-472-2712.

"The comments the reviewers provided this year will be critical in helping us adjust our models as we plan for the 2008 growing season," said Dr. Brian Wardlow, the lead VegDRI researcher at the NDMC.

VegDRI researchers asked a team of 81 volunteer reviewers to ground-truth the biweekly VegDRI maps to determine whether the conditions represented on the maps corresponded with the vegetation conditions they observed for their local area.

VegDRI is relatively untested over the arid, sparsely vegetated, and mountainous environments that are encountered in the West. Feedback from climate and drought experts, rangeland and crop experts, and agricultural producers will be crucial in determining the accuracy of VegDRI there, and in guiding future research activities to enhance its effectiveness in the West.

Thank You!

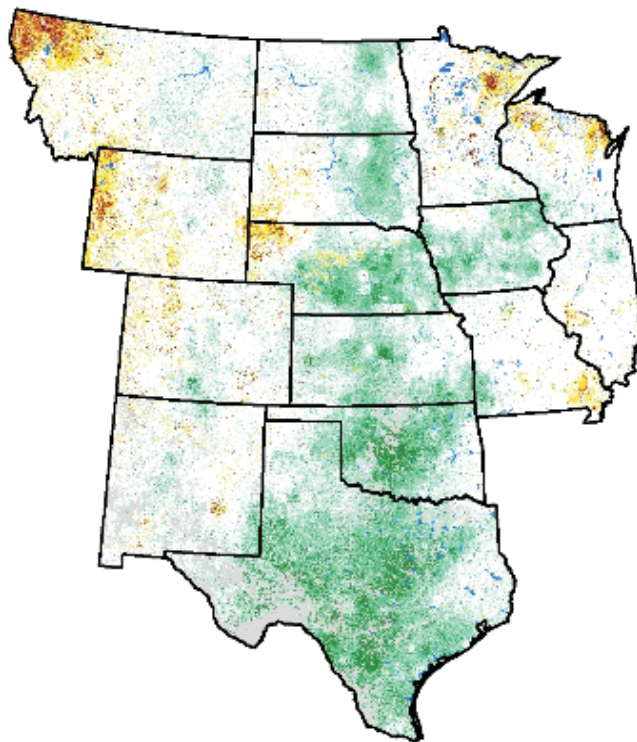
Heartfelt thanks go to the following reviewers of the 2007 Vegetation Drought Response Index (VegDRI):

Adnan Akyuz	Steve Glasgow	John Nielsen-Gammon
Jim Angel	David Graham	Michael Palecki
Keith Banks	Mike Hayes	Myra Richardson
Deborah Bathke	Ed Hopkins	Todd Schwagler
Bob Battaglia	Mary Knapp	John Spain
Hilary Brinegar	Steve Krab	Greg Spoden
Homer Buell	Dana Larsen	Barbara Stewart
Dudley Byerley	Doug Lecomte	Mark Svoboda
Bill Carhart	John Lovell	Dennis Todey
Brad Carlson	Les Maierhofer	Jerry Volesky
Justin D. Derner	Malcom McCarty	TJ Walker
Lyle Frees	Travis Miller	Robert Williams
Brian Fuchs	Neil Moseman	Ray Wolf

VegDRI Seeks Reviewers for Western Expansion, continued

Vegetation Drought Response Index Complete

September 24, 2007



Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Near Normal
- Unusually Moist Spell
- Very Moist Spell
- Extreme Moist Spell
- Out of Season
- Water



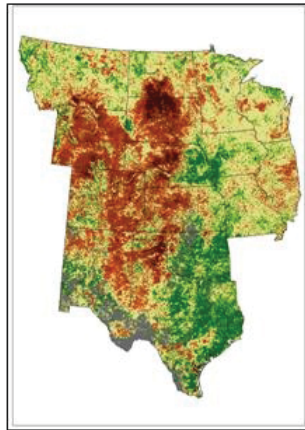
VegDRI integrates satellite-based vegetation observations and climate data traditionally used for drought monitoring with other environmental characteristics (such as soils, land cover, and irrigated land use) to map the impact of drought on vegetation conditions. The diverse set of environmental information contained in the data sets used to calculate VegDRI allows drought-related vegetation stress to be distinguished from other types of plant stress.

The NDMC produces VegDRI in collaboration with the U.S. Geological Survey's (USGS) Center for Earth Resources Observation and Science (EROS) and the High Plains Regional Climate Center (HPRCC), with sponsorship from the U.S. Department of Agriculture's (USDA) Risk Management Agency (RMA).

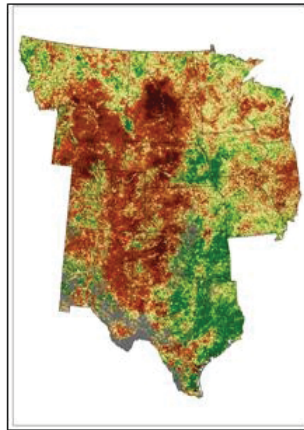
Main researchers working on VegDRI are Dr. Wardlow and Dr. Tsegaye Tadesse at the NDMC, and Jesslyn Brown and Yingxin Gu with Science Applications International Corporation (SAIC) at EROS.

VegDRI maps are on-line: http://drought.unl.edu/vegdri/VegDRI_Main.htm.

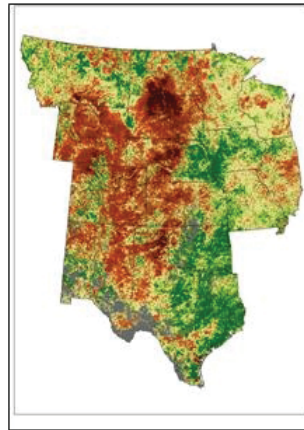
VegOut Offers a Glimpse into the Future



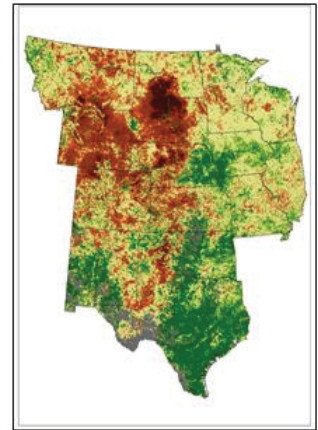
(a) Period 15



(b) 2-week outlook

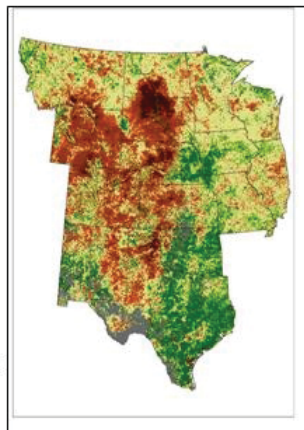


(c) 4-week outlook

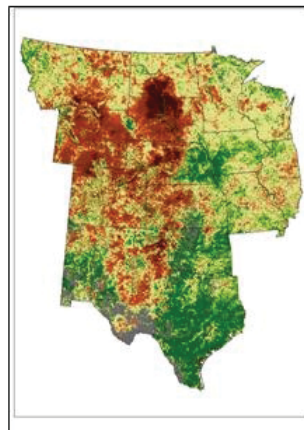


(d) 6-week outlook

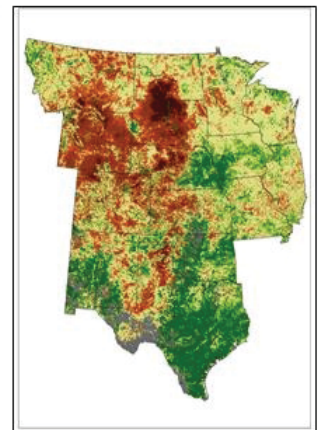
Vegetation Condition



(e) Period 16



(f) Period 17



(g) Period 18

This graphic compares Vegetation Outlook (VegOUT) predictions based on data through July 24, 2006, with later observed conditions. The top left frame is a satellite image of current vegetation conditions, and the following three frames predict what conditions will look like at two-, four- and six-week intervals into the future. The bottom three frames compare later actual observed values with predicted values.

Researchers derive the future outlooks based on climate modeling, sea surface temperature modeling, and biophysical data. Data-mining is used to identify historical drought patterns that may have predictive value. VegOut is currently experimental, but has shown promising results. Researchers anticipate that it will be of use to agricultural producers, natural resource managers, and other decision makers.

Dr. Tsegaye Tadesse of the NDMC is the lead researcher for the VegOut tool. Dr. Tadesse and Dr. Brian Wardlow will be presenting a paper entitled "The Vegetation Outlook (VegOut): A New Tool for Providing Outlooks of General Vegetation Conditions Using Data Mining Techniques" at the IEEE International Conference on Data Mining (ICDM) in Omaha, October 28-31, 2007, which provides a general overview of VegOut and results from their initial research. Look for a link to this paper and more information regarding VegOut in the next edition of *DroughtScape*.



Fall 2007

You Are Invited to a Drought Tools Workshop, Coming Soon! Near You?

The National Drought Mitigation Center and partners are developing several drought decision-support tools with sponsorship from the Risk Management Agency of the U.S. Department of Agriculture.

In addition to institutional partners, the NDMC is working with extension agents, farmers and ranchers, and other resource managers who can benefit from the tools in various ways. To gather input as the tools are being developed, the NDMC is holding workshops and listening sessions around the country.

If you would like to learn more about the drought decision-support tools, please come to one of our workshops. The next one is scheduled for Monday, October 22, in Bismarck, North Dakota. Check What's New on the NDMC's web site for details on an upcoming workshop in Texas. Our 2008 workshops will focus on the western United States, and we are looking for local hosts.

Tools under development with RMA and other partners include the Drought Monitor, Drought Atlas, Drought Decision Support System, Drought Impact Reporter, VegDRI, VegOut, Ranch Planning Guide, and GreenLeaf.

If you have an organization or meeting that would benefit from a half-day or full day of information on drought decision support tools, please contact Meghan Sittler, NDMC Research and Outreach Specialist, msittler2@unl.edu, 402-472-2712.

If you are interested in attending the North Dakota workshop, please contact Donna Woudenberg, NDMC Drought Management Specialist, dwoudenberg2@unl.edu, 402-472-8287, and/or Kelly Smith, NDMC Science Communicator, ksmith2@unl.edu, 402-472-3373.

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What's New
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Fall 2007

Ag, Policy and Science Leaders to Convene for Drought Monitor

Prominent federal officials will discuss the government's role in monitoring, preparing for and responding to drought at the fifth U.S. Drought Monitor Forum, October 10-11, in Portland, Ore., and scientists will describe their most recent drought monitoring research.

The U.S. Drought Monitor is a weekly map that is produced by federal and academic partners, incorporating comments from about 250 climatologists, extension agents and others nationwide. Authors incorporate and reconcile a variety of data, relying on experts' best judgment where data and observations fall short. Since the U.S. Drought Monitor was first published in 1999, federal drought relief efforts and programs have increasingly relied on it to allocate assistance. The bi-annual Drought Monitor Forums are part of the ongoing effort to refine the assessments to account for more localized conditions.

Keynote speakers, topics, and times are:

- Arlen Lancaster, Chief of the Natural Resources Conservation Service, U.S. Department of Agriculture (USDA), "From Snow Surveys to SCAN: USDA's Commitment to Wise Water Use and Drought Mitigation," 8:30 a.m. Oct. 10.
- John Johnson, Deputy Administrator for Farm Programs, Farm Services Agency, USDA, "Use of the Drought Monitor with the USDA-Farm Services Agency," 9 a.m. Oct. 10.
- Vice Admiral Conrad C. Lautenbacher, Jr., National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, "Laying Out Drought Activities Within NOAA," 8:15 a.m., Oct. 11.
- Tim Owen, National Climatic Data Center, NOAA, will provide an update on implementation of the National Integrated Drought Information System (drought.gov), 8:45 a.m., Oct. 11.

Although the scope of the tool is national, the venue will provide an opportunity to focus on the drought-monitoring needs of the West. Greg Jones of Southern Oregon University will convey a regional perspective with his talk on "Understanding What Drought and Climate Variability Mean to Viticulture" at 9:45 a.m. Oct. 11. A current emphasis of climate research is to be responsive to the needs of specific industries, and to provide information that is current and geographically specific for resource managers.

This year's Drought Monitor Forum is being sponsored by the National Drought Mitigation Center (NDMC), and is being hosted by the USDA-NRCS Water and Climate Center. Conference activities will be at the DoubleTree Hotel (Lloyd Center) in Portland. The NDMC is based at the University of Nebraska-Lincoln.

The U.S. Drought Monitor is distributed on-line: <http://drought.unl.edu/dm/monitor.html>, with new maps released each Thursday morning.

A near-final agenda and registration information are available at <http://snr.unl.edu/ndmcsurvey/usdmforum.html>.