

August 2019



WestFAST News

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Chair – Patrick Lambert; Federal Liaison – Deborah Lawler

Highlights From the 2nd National Drought Forum

NIDIS 08/08/19. The 2nd National Drought Forum, held July 30-31 in Washington DC, convened high-level drought experts and decision-makers from drought-impacted regions and economic sectors of the country, along with the private sector, research institutions, and officials across all levels of government to discuss priority actions around drought early warning, long-term resilience, and the billions of dollars lost to drought in the U.S. each year.

The goals of the meeting were to:

- Take stock of lessons learned and progress toward U.S. drought readiness since the last Forum in 2012.
- Strengthen the state-federal relationship to realize greater collaboration and promote, where appropriate, cooperative partnerships with U.S. businesses to address drought across time scales and across levels of government and sectors.
- Discuss new information and opportunities for coordination that help move the Nation from a reactive to a proactive approach to drought risk management.
- Produce a list of clear “action items” that could improve U.S. drought readiness and resilience

Below are some highlights from the two-day Forum. A full Forum Report will be produced this fall and will include all the highlights, key takeaways, and action items.

Day 1, Tuesday, July 30

Linking National Security and Drought (Panel)

This session focused on how the U.S. depends on vital, up-to-the-minute drought information for preparedness, response, and recovery for both public safety and the protection of the Nation’s critical infrastructure and natural resources.

- Domestic drought can affect military readiness by reducing training exercises due to wildfire threat and heat issues.(Vice Admiral Lee Gunn USN (Ret), CNA Military Advisory Board)
- International drought causes migrations and instability, such as the conflict in Syria. (Vice Admiral Lee Gunn)
- The military and national security apparatus needs to anticipate water shortages to prepare for associated humanitarian and security issues. (Vice Admiral Lee Gunn)
- We need to look at successes in managing drought and learn from the areas and communities that do well in identifying risk and preparing for those risks. (Dr. Gerry Galloway, Jr., University of Maryland)

Drought Conditions: Past, Present, and Forecasted (Panel)

This panel presented on major drought events since the 2012 Great Plains Drought, the accomplishments in the intervening seven years, the role of intergovernmental coordination in drought response, and current drought conditions and the forecasted outlook.

- The floods of 2019 lasted 3½ months. Some of the areas that flooded are now in, or almost in, drought. We need to be able to identify and predict with greater assurance the onset of severe weather. (Honorable Mike Bawden, Mayor, Riverdale, IA and Mississippi River Cities and Towns Initiative)
- California experienced many negative impacts from the recent drought such as orchards being removed, public health issues like West Nile Virus, massive wildfires, and \$3.3 billion losses in the San Joaquin Valley. But the drought also led to innovation and changed behaviors. (Honorable Daron McDaniel, District 3, County of Merced, CA, and Rural County Representatives of California)
- The signals in predicting the California drought were opposite of what we'd normally expect, putting some of our assumptions to question and indicating that we need to do more research. (Dr. David Dewitt, Climate Prediction Center, NOAA)
- We can't forecast precipitation as a science community beyond about two weeks at a time. (Dr. David Dewitt)

Drought Decisions around the New (Ab)Normal: Water Scarcity, Drought, and Aridity (Panel)

This panel discussed the implications of water management decision-making under increasingly arid conditions. In particular, panelists explored: (1) the role of existing water infrastructure in arid environments and investment-based repurposing of infrastructure for drier conditions; (2) opportunities consistent with the Presidential Memorandum on Promoting the Reliable Supply and Delivery of

Water in the West; (3) the use of natural water storage as an effective response to a more arid future; (4) the U.S. Farm Bill and opportunities for Western irrigated agriculture; and (5) associated research priorities.

- Drought preparation involves much more than the public sector: insurance, infrastructure, and banks are integral to planning. (Dr. Upmanu Lall, Columbia Water Center)
- The West's storage reservoirs capture 5–10% of the West's snowpack (depending on the water year). We need a landscape-scale distributed response—natural features that retain and slow down the flow of water across the landscape. This will help not only flooding but also drought by allowing recharge of surface water and groundwater. (Laura Ziemer, Trout Unlimited)
- We used to be very good at water allocation, but the ability to manage into the future is being confounded by events like the likelihood of megadroughts. (Astor Boozer, U.S. Department of Agriculture)

Lunch Keynote by Joaquin Esquivel, California Water Resources Control Board Chair

- The recent California drought changed the way the state looks at drought. There was a shift in understanding our vulnerabilities.
- We need to convert data into actual information to make better decisions. Decision-support tools are also important as a way to better respond to drought challenges.
- How do you take what is generally accepted as a collection of good things we should do and place metrics around them so that you can assess how we are doing? How do you set resilience targets? How do we set framework, metrics, and targets to further move forward on water? In answering these questions, there is a generational opportunity to look at how we manage water differently.

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Economics of Drought Part I: Understanding the Cost of Drought (Panel)

This panel featured representatives from diverse sectors to discuss how drought is impacting bottom lines and ecosystems throughout the country and how we can better measure those economic impacts.

- Lake Mead faces a 35% risk of falling below 1,000 feet in 2026. At that level, Lake Mead is only at 17% capacity and access would be lost to two intakes with limited ability to meet demands. Over \$800 million was allocated, funded by ratepayers, to insert a lower intake into Lake Mead. (Colby Pellegrino, Southern Nevada Water Authority)

- Right now we don't have good information on quantifying drought impacts on ecosystems. Drought resilience strategies designed to benefit humans can also yield ecosystem benefits. (Tom Iseman, The Nature Conservancy)

- Summer 2017 was the worst fire season in Montana in decades. This caused a lot of issues with air quality—it was not healthy to go outside and do physical activities. The state lost 800,000 visitors in the third quarter of 2017 and \$240.5 million in visitor spending. When people don't visit there are cascading effects: employees don't get paid and people can't pay rent. (Jan Stoddard, Montana Office of Tourism and Business Development)

Day 2, Wednesday, July 31

Opening Remarks by Neil Jacobs, Acting Administrator, NOAA

- We have a big data problem—this is a bottleneck. We pull in several terabytes for every cycle but if we can't use it, we can't put it into the forecast model. Only 8% of the data we get from satellites are put into the model.

- It is in our best interest to enable the community to run the model. Community is a force multiplier for further development.

- Improvements in forecasting can be made with physics and data assimilation—this is where the European system is superior and this is where we'll see improvements in precipitation forecasting.

- A focus on ocean modeling and coupling it with the atmospheric model will improve forecasting skills beyond 3 weeks.

Economics of Drought Part II: Risk Analysis and Investments that Drive Innovation (Panel)

This panel brought together private sector and government representatives to discuss drought risk analysis and decision-making, illuminating new financing solutions for drought resilience, cost of drought to cities and bond ratings for flood and drought resilience, and insights into how industry metrics are changing in the context of drought.

- We need to have an asset management conversation in regards to climate and drought—how we're siting infrastructure or making changes incorporating drought or climate data.

- Corporations think short term when spending money. Leadership of drought impacted companies need to get beyond that if they're going to be prepared. We need to take steps that might not have immediate return. (Jon Radtke, The Coca-Cola Company)

Drought Policies: Congressional Perspectives (Panel)

In this panel, congressional staffers discussed recent and potential legislation, including the Farm Bill, NIDIS Reauthorization, the Water Resources Development Act, and legislation tackling water infrastructure, soil moisture monitoring, and other issues.

- The 2018 Farm Bill included an update to the US Drought Monitor, improvements to the regional conservation program, increased funding for the environmental quality incentives program, and the Watershed Act to help federal, state, tribal, and

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local to restore and protect watersheds up to a certain acreage. (Rosaly Brummette, U.S. Senate Agriculture, Nutrition, & Forestry Committee)

•Whether it is flood or drought, how do we manage a system built in the last century to attack challenges today? (Camille Calimlim Touton, U.S. House Committee on Transportation and Infrastructure)

•Some farmers are concerned that the US Drought Monitor doesn't reflect their local conditions. We know there is a gap in soil moisture monitoring. (Dr. Fern Gibbons, U.S. Senate Committee on Commerce, Science, and Transportation)

Drought Coordination: Federal Water Officials and the National Drought Resilience Partnership

Federal Water Officials shared their key drought issues and opportunities. Then, National Drought Resilience Partnership (NDRP) Co-Chairs, Bill Northey, Undersecretary of Farm Production and Conservation, USDA, and David Ross, Assistant Administrator for the Office of Water, EPA, provided background context for what progress has been made between 2012 and today on Federal coordination, and announced the release of a new document on Priority Actions Supporting Long-Term Drought Resilience.

Monitoring and Forecasting of Drought (Panel)

Over the past seven years, advances have been made in monitoring and forecasting of drought, but many challenges remain. This panel identified priority needs for strengthening existing capabilities in monitoring and forecasting, as well as applied research, to build our nation's drought early warning capacity.

•Similar to the U.S. Drought Monitor, a hypothetical U.S. Water Monitor could include moderate surplus, extreme surplus, etc. and be a complementary product with supply and demand. (Dr. Mark Svoboda, National Drought Mitigation Center)

•The product, Climate Engine, has the goal of processing satellite and climate data at a variety of scales using cloud computing to drill down from global to field scale in a number of seconds. (Dr. Justin Huntington, Desert Research Institute)

•To build a drought early warning systems, we need to mine historical data and paleodata, modernize water observing systems, integrate access to other observing systems, advance water modeling and prediction, and integrate decision support. (Dr. Don Cline, U.S. Geological Survey)

Priority Actions for Improving National Drought Readiness

The forum closed with the participants sharing the ideas and recommendations they heard over the previous two days. These recommendations will be captured in the full report of the Drought Forum coming this fall. Stay tuned!

[Reclamation announces funding opportunity grants to improve water reliability and energy efficiency](#)

RECLAMATION 08/08/19. The Bureau of Reclamation has announced that it is making grant funding available as part of the WaterSMART Water and Energy Efficiency Grant Program. Through water and energy efficiency grants, Reclamation provides funding to undertake projects that result in quantifiable and sustained water savings, increase the production of hydropower and support broader water reliability benefits. This funding opportunity is for projects in 2020 and 2021.

"We've seen drought severely impact local, western communities," said Commissioner Burman. "Through Water and Energy Efficiency Grants, water districts are partnering with Reclamation on the construction of water conservation and hydropower projects, one of the priorities of this administration to modernize our infrastructure."

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Eligible applicants for funding include states, tribes, irrigation districts, water districts or other organizations with water or power delivery authority located in the western United States or United States territories. Alaska and Hawaii are also eligible to apply.

Federal funding is available in two groups. In the first group, up to \$300,000 per agreement is available for a project that can be completed within two years. In the second group, up to \$1.5 million per agreement is available for a project that can be completed within three years. Recipients must match the funding with a minimum of 50% cost-share.

"Water entities can leverage their money and resources through this program to conserve and use water more efficiently," said Reclamation's WaterSMART program manager Joshua German. "Some of the projects will facilitate future on-farm improvements and may be eligible for funding from the Natural Resources Conservation Service through their Environmental Quality Incentives Program."

There are two closing dates for the funding opportunity. For projects in 2020, applications are due on October 3, 2019. After this date, applications will be considered for 2021 and will be due on September 30, 2020. Learn more at www.grants.gov by searching for funding opportunity number BOR-DO-20-F001.

This funding opportunity supports the Presidential Memorandum on Promoting the Reliable Supply and Delivery of Water in the West. To learn more, visit www.usbr.gov/watersmart.

[Reclamation announces grant funding opportunity for drought resiliency projects in 2020 and 2021](#)

RECLAMATION 08/08/19. The Bureau of Reclamation announced that it is making grant funding available to assist communities build long-term resilience for future droughts. Part of the WaterSMART Drought Response Program, this funding opportunity is for projects in 2020 and 2021.

"Drought across the West is more of a norm than an exception today that severely impacts everyone and everything," said Commissioner Burman. "These grants show Reclamation's commitment to supporting western communities as they build drought resiliency through innovation, investment and collaboration."

Eligible applicants for funding include states, tribes, irrigation districts, water districts or other organizations with water or power delivery authority located in the western United States or U.S. territories. New this year, projects in Alaska and Hawaii are also eligible.

Funding is available for projects that:

- Increase the reliability of water supplies through infrastructure improvements
- Improve water management through decision support tools, modeling and measurement
- Provide protection for fish, wildlife and the environment.

Up to \$300,000 per agreement is available for a project that can be completed within two years. Up to \$750,000 per agreement is available for a project that can be completed within three years. Recipients must match the funding with a minimum of 50% non-federal cost-share.

"While many areas across the West have received good snow pack and more plentiful water supplies

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this year, some areas were not so lucky. As each of us knows, this could be a one-year blip. We need to take advantage of this break to plan and prepare for the next drought. This reminds us that drought planning, in advance of a crisis, is far more cost-effective than addressing it during the drought," said Reclamation's Drought Response Program Manager Darion Mayhorn.

Applications are due on October 16, 2019, for projects in 2020. Applications are due on October 14, 2020, for projects in 2021. Learn more at www.grants.gov by searching for funding opportunity number BOR-DO-20-F002.

Visit Reclamation's WaterSMART program at www.usbr.gov/watersmart and the Drought Response Program at www.usbr.gov/drought.

[What They Are Saying: EPA Issues Proposed Rule on Clean Water Act Quality Certification](#)

EPA 08/09/19. On Friday, the U.S. Environmental Protection Agency (EPA) issued a proposed rule to implement Section 401 of the Clean Water Act (CWA). This action will increase the transparency and efficiency of the 401 certification process and to promote the timely review of infrastructure projects while continuing to ensure that Americans have clean water for drinking and recreation.

Arkansas Attorney General Leslie Rutledge:

"With natural beauty and energy resources, states like Arkansas stand to benefit from EPA's proposed Clean Water Act rule. Today's guidance gives Arkansas the freedom we need to develop our energy infrastructure while preserving and protecting the natural beauty and water resources that draw millions of Americans to our state each year."

Louisiana Attorney General Jeff Landry

"Abuse of the WQC process has resulted in staggering amounts of regulatory waste and delay, costing many hard-working Americans the chance for a good-paying job. So I appreciate the EPA's efforts to ensure Section 401 is used for its intended purpose to protect water quality, minimizing its potential for misuse and providing predictability in permitting energy infrastructure."

Oklahoma Governor Kevin Stitt:

"Oklahoma is currently enjoying the cleanest water in state history, and protecting those sources is our state's highest priority," said Gov. Stitt. "I applaud the Trump administration and EPA Administrator Andrew Wheeler for the new rule under Section 401 of the Clean Water Act. It is an important step in protecting the integrity of the Clean Water Act and the states' role to set their own standards, while ensuring that Oklahoma's growing economy is not stifled by misuse of the federal regulatory process."

North Dakota Governor Doug Burgum:

"This action to streamline the permitting of essential energy infrastructure promotes overall U.S. energy dominance, allowing us to sell energy to our friends and allies versus buying it from foreign sources. We thank the EPA and Trump administration for supporting responsible energy development that protects our environment, creates jobs and grows our economy."

Wyoming Governor Mark Gordon:

"This is a much-needed step toward modernizing the application of the Clean Water Act (CWA) Section 401 and Wyoming's comments are reflected in today's proposed rule," Governor Mark Gordon said. "We are proud of Wyoming's primary role and fiercely defend our state's rights. Our responsibilities in Section 401 certification decisions have always been timely and based upon water quality. It's critical that all states are held accountable by requiring rationale for 401

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certification denials. With these updates, I welcome the pending implementation of EPA's updated regulations."

U.S. Senate Committee on Environment and Public Works (EPW):

EPW Chairman John Barrasso (R-Wyo.)

"The Clean Water Act is being hijacked by a number of coastal states to block energy projects. This coastal blockade cannot continue. It threatens America's energy dominance and unfairly harms energy workers in Wyoming and other states. These coastal states are preventing cleaner American fuels from getting to communities in the North East and around the world. These states can't be allowed to weaponize the Clean Water Act. I applaud the Trump administration for working with me to develop solutions."

EPW Subcommittee on Fisheries, Water, and Wildlife Chairman Kevin Cramer (R-N.D.)

"It is encouraging to see the EPA moving forward with this proposal according to President Trump's timeline. We cannot let states hijack energy infrastructure without legitimate cause and prevent the United States from continuing its energy revolution. I will continue working with the EPA to ensure the final regulations are right for North Dakota, and I urge stakeholders to offer their input."

Senator Jim Inhofe (R-Okla.)

"Today, we are one step closer to making sure that water quality certification reviews are used solely to protect water quality – and not as a tool by environmental activists to delay and block pipelines and needed infrastructure projects. The EPA's proposed reforms fully implement President Trump's executive order on Promoting Energy Infrastructure and Economic Growth and will continue our path to energy dominance. I'm glad to have worked with the president and EPA Administrator Wheeler to enact these reforms."

Senator Shelley Moore Capito (R-W.Va.)

"This is a welcome change that will make sure our regulatory and permitting processes are clear and avoid costly and unnecessary burdens that have the ability to disrupt development and the completion of critical infrastructure projects, such as pipelines to get West Virginia natural gas to markets around the country. These clarifications of Section 401 of the Clean Water Act ensure a more responsible and predictable permitting process and help prevent unnecessary costs and delays. Through these reforms, we can help encourage and support both infrastructure development and economic growth. Today's announcement is further proof that the Trump administration is committed to rolling back harmful regulations that do nothing but hold back our efforts to improve our economy and environmental quality."

Senator Steve Daines (R-Mont.)

"This is great news for Montana's energy economy," said Daines. "Today's announcement will help stop activist bureaucrats from abusing the law to limit the potential of Montana's booming energy economy. Common sense regulation will lead to more high paying jobs for Montanans and strengthen our nation's energy independence."

Senator Mike Enzi (R-Wyo.)

"This is important for exporting Wyoming's natural resources and supporting jobs in our state. Clarifying the water quality certification process should lead to a more responsible permitting process focused on protecting America's water rather than political motives."

National Association of Manufacturers President and CEO Jay Timmons:

"The EPA's efforts to modernize regulations and deliver regulatory certainty have contributed to strong manufacturing growth in recent years. This proposal is a win for manufacturers that would build on that success by offering much-needed clarity to

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states and manufacturers alike. Too often, the vaguely worded Section 401 has been used as an excuse to block critical infrastructure and trade projects. By setting clear guidelines, the EPA is empowering manufacturers to invest in our people and communities with confidence and to work with state leaders to protect our water and environment.

“We are grateful that Administrator Wheeler chose to announce this landmark proposal at the NAM’s Council of Manufacturing Associations’ Summer Leadership Conference. It demonstrates that by working together, government and business leaders can ensure economic growth and environmental stewardship go hand-in-hand.”

U.S. Chamber’s Global Energy Institute Acting President Christopher Guith:

“Congress never intended for Governors to use the Clean Water Act as a political tool to block projects for reasons unrelated to clean water. We support EPA’s new rule to prevent more abuse, facilitate construction of necessary energy infrastructure, and continue economic growth.”

API Vice President for Midstream and Industry Operations Robin Rorick:

“API is pleased that the EPA’s new rule continues to support a rigorous, consistent and transparent process for Section 401 water quality certifications, and maintains the vital role that states play in protecting water quality within their borders. A well-defined timeline and review process for water quality certifications are integral to developing infrastructure that reliably provides clean and affordable energy to American families and businesses every day.”

NGSA President and CEO Dena Wiggins:

“This is a welcome and valuable clarification to the part of the Clean Water Act that outlines states’ participation in the certification process. This proposal should restore Section 401 certification to

its intended purpose of ensuring water quality while enabling the development of critical infrastructure.

“Clearly establishing a very reasonable one-year deadline for states to act on water quality concerns related to project permits reaffirms states’ roles while helping to prevent instances where states have misused the certification process as a political tool to indefinitely delay or block a much-needed project. The regulatory change will enhance the predictability and efficiency of the permitting process for interstate natural gas pipelines and will allow states and federal authorities to do their jobs of protecting water quality.”

Center for LNG Executive Director Charlie Riedl:

“We commend EPA for working to fix the parts of the state water certification process that were broken without compromising on environmental standards. We think this proposed change will provide greater clarity and certainty to the process of permitting LNG facilities and infrastructure.”

Interstate Natural Gas Association of America President and CEO Don Santa:

“INGAA supports EPA’s proposed rule for the implementation of updated guidance pertaining to Clean Water Act Section 401 and the protection of water quality. When an infrastructure project requires federal authorization, Section 401 of the Clean Water Act provides states and tribes the opportunity to certify or deny that any discharges from the project to regulated waters will comply with applicable federal water quality standards. While the statute recognizes the distinctive roles of the federal and state governments in the environmental review process, the balance between those roles has recently been disrupted and some states have viewed Section 401 as a means of determining which interstate pipeline projects are in the public interest and which are not.

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“EPA’s draft rule is necessary to restore efficient and consistent implementation of Section 401 reviews. We welcome today’s action to clarify the discrete roles of federal, state and tribal authorities throughout the Section 401 review process.”

[Bering Land Bridge Experiences Unprecedented Lake Draining](#)

NPS 08/13/19. A recent NPS study shows that Arctic national parks are losing lakes rapidly where ice-rich permafrost dominates the landscape even though precipitation has remained largely the same over time. In Bering Land Bridge National Preserve alone, 3 square miles of lakes drained in 2018, a single-year loss that previously characterized a decade’s worth of draining. The study found that major episodes of lake draining in Arctic parks also occurred in 2005-2007 following very warm years in 2003 and 2004. The extreme loss of lakes is continuing during the 2019 record-warm summer, as scientists have already witnessed numerous drained lakes in the northern portion of Bering Land Bridge National Preserve. Lakes are an important part of the Arctic; their disappearance will have significant consequences for the animals and people that depend on them.

The full study is available at <https://www.tandfonline.com/doi/full/10.1080/15230430.2019.1629222>

[July 2019 was hottest month on record for the planet - Polar sea ice melted to record lows](#)

NOAA 08/15/19. Much of the planet sweltered in unprecedented heat in July, as temperatures soared to new heights in the hottest month ever recorded. The record warmth also shrank Arctic and Antarctic sea ice to historic lows.

Here’s a closer look into NOAA’s latest monthly global climate report:

Climate by the numbers

July 2019

The average global temperature in July was 1.71 degrees F above the 20th-century average of 60.4 degrees, making it the hottest July in the 140-year record, according to scientists at NOAA’s National Centers for Environmental Information. The previous hottest month on record was July 2016.

Nine of the 10 hottest Julys have occurred since 2005—with the last five years ranking as the five hottest. Last month was also the 43rd consecutive July and 415th consecutive month with above-average global temperatures.

Year to date | January through July

The period from January through July produced a global temperature that was 1.71 degrees F above the 20th-century average of 56.9 degrees, tying with 2017 as the second-hottest year to date on record.

It was the hottest year to date for parts of North and South America, Asia, Australia, New Zealand, the southern half of Africa, portions of the western Pacific Ocean, western Indian Ocean and the Atlantic Ocean.

More notable stats and facts

Record-low sea ice: Average Arctic sea ice set a record low for July, running 19.8% below average – surpassing the previous historic low of July 2012.

Average Antarctic sea-ice coverage was 4.3% below the 1981-2010 average, making it the smallest for July in the 41-year record.

Some cool spots: Parts of Scandinavia and western and eastern Russia had temperatures at least 2.7 degrees F below average.

More > [Access NOAA’s full climate report and download images.](#)

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[Reclamation launches prize competition to protect steel structures](#)

RECLAMATION 08/22/19. The Bureau of Reclamation is launching a new prize competition today, dubbed Rust Busters. This competition is stage 2 of a long-term corrosion protection competition that seeks new, improved or lower-cost solution that can be prototyped to better protect steel structures from corrosion. Many hydraulic steel structures need continuous corrosion protection, but some past methods have been abandoned due to safety and environmental concerns. Many newer protection methods do not last as long, are less effective or come with much higher costs.

This competition builds upon stage 1, completed in 2017, which sought written theoretical ideas for long-term corrosion protection for hydraulic steel structures. Stage 2 hopes to advance those ideas from the Stage 1 effort and seeks additional concepts that solvers can prototype and submit for further testing and evaluation as part of the competition.

"Reclamation has many miles of hydraulic steel pipelines, gates and penstocks in and around our dams and powerplants," said Reclamation Science Advisor David Raff. "Finding a way to reduce the maintenance costs of these structures while increasing the life of a protection system will be a great benefit to Reclamation and its customers."

Stage 2 of the competition is divided into two phases. Phase I seeks innovative ideas to protect hydraulic steel structures for more than 50 years with minimal maintenance and at relatively low cost, the scientific backing for their idea, and any supporting data to support their proposed solution. The first phase winners will be invited to participate in phase II, where they will prototype their approach on steel samples supplied by Reclamation. Once evaluated, three final winners will be selected to share \$100,000.

Reclamation is conducting this challenge through an ongoing partnership with the U.S. Army Corps of Engineers and a new partnership with the NASA Tournament Labs. The competition is being managed by HeroX. Learn more at <https://www.usbr.gov/research/challenges/corrosion.html>.

Reclamation conducts prize competitions to spur innovation by engaging a non-traditional, problem solver community. Through prize competitions, Reclamation complements traditional design research to target the most persistent science and technology challenges. It has awarded more than \$1,000,000 in prizes through 20 competitions in the past 5 years. Please visit Reclamation's Water Prize Competition Center to learn more.

[EPA Announces public comment period on revised Dewey-Burdock uranium in-situ recovery underground injection control permits in Edgemont, South Dakota](#)

EPA 08/27/19. The U.S. Environmental Protection Agency (EPA) is requesting public comment on two Underground Injection Control (UIC) Draft Area Permits and one associated proposed aquifer exemption decision for the Dewey-Burdock uranium in-situ recovery (ISR) site located near Edgemont, South Dakota, under the authority of the Safe Drinking Water Act and UIC program regulations. The Dewey-Burdock site is located in southwestern Custer County and northwestern Fall River County, on the Wyoming/South Dakota border. The public comment period will close on October 10, 2019.

EPA is reissuing the two revised Draft UIC Area Permits to Powertech (USA) Inc., for injection activities related to uranium recovery. One is a UIC Class III Area Permit for injection wells for the ISR of uranium; the second is a UIC Class V Area Permit for deep injection wells that will be used to

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dispose of ISR process waste fluids into the Minnelusa Formation after treatment to meet radioactive waste and hazardous waste standards. The EPA is also re-proposing an aquifer exemption approval in connection with the Class III Area Permit to exempt the uranium-bearing portions of the Inyan Kara Group aquifers. The EPA requested public comments on these permit actions in March 2017. After reviewing the comments received and modifying the draft actions, EPA is requesting additional public input on these actions. At the close of the public comment period, the EPA will review and consider all comments received during both the 2017 and 2019 public comment periods and during all the public hearings before making its final permit decisions. The EPA will also prepare a written statement that will include specific responses to all the comments received that are relevant to the UIC Class III and V Draft UIC Area Permits. For more information visit: EPA Region 8 UIC Program website: <https://www.epa.gov/uic/uic-epa-region-8>

How to Comment: Written comments must be submitted online at [Regulations.gov](https://www.regulations.gov) under docket number EPA-R08-OW-2019-0512

Comments may also be sent by mail to: Valois Robinson, U.S. EPA Region 8, Mail Code: 8WD-SDU, 1595 Wynkoop Street, Denver, CO 80202-1129

Written comments must be received by midnight Mountain Time on October 10, 2019.

Public Hearing Information: The public may also provide written and/or verbal comments during an EPA public hearing:

Saturday, October 5, 2019, from 9:00 a.m. to 12:00 p.m. and from 2:00 p.m. to 6:00 pm at the:

The Mueller Center, 801 S 6th Street, Hot Springs, South Dakota 57747

[A New Understanding of Soil Moisture - New techniques produce better information on drought and flood conditions](#)

NOAA 08/29/19. NOAA's U.S. Climate Reference Network (USCRN) observing stations provide detailed soil moisture data on an hourly basis at 114 locations across the country. But these numbers alone don't provide a complete picture of soil moisture conditions, so scientists at NCEI and the Cooperative Institute for Satellite Earth System Studies (CISESS) are developing new datasets that will provide better information about local hydrologic conditions.

One major goal of the research has been to give decision makers earlier warning and better information on the onset of or recovery from drought and flood conditions. The researchers hope to help farmers, land managers, and others prepare for changing conditions.

From Soil Moisture Data to Information

Soil moisture data can provide early warning of an emerging drought or saturated soils that can increase the likelihood of floods. However, turning these data into actionable information is challenging. That is partly because context matters for soil moisture data—a lot. As with temperatures, soil moisture conditions vary by region, season, and time of day, but they also depend on soil type, land cover, and local elevations and slopes. Soil moisture values can also vary significantly over short distances. As a result, getting an accurate picture of what constitutes normal conditions at a given site, and whether conditions are currently drier or wetter than normal, requires more than just current values of absolute (“volumetric”) soil moisture.

To address this challenge, scientists from the CISESS and NCEI are using high-quality soil moisture data from USCRN to produce a new standardized hourly soil moisture dataset. A new

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paper in the Journal of Applied Meteorology and Climatology documented their findings.

The term “standardized” refers to using statistical techniques to transform raw data into more useful metrics by comparing individual observations against longer-term historical conditions. For example, while a low absolute soil moisture value might indicate normal conditions if observed in the dry Southwest, the same value might suggest extreme drought conditions if observed in a wetter part of the country. Standardized soil moisture metrics transform those values into percentiles or deviations from normal to help decision makers understand how current conditions compare to historical conditions at a given time and place.

Generating a Climatology

The first step is developing an accurate record of historical conditions at each station, referred to as a climatology. Climate researchers typically use 30-year averages to produce a climatology, but USCRN stations only have soil moisture for the last seven to nine years, depending on the station.

To produce more robust historical information from these smaller datasets, the researchers turned to statistical sampling techniques to increase the effective number of observations. They then tested the results against longer-term data (ten years or more per station) from the USDA Soil Climate Analysis Network (SCAN). Using a Monte Carlo approach, the researchers found that it was possible to reproduce a long-term (ten or more years of data) soil moisture climatology with as few as five years of data. As a result, it is possible to estimate soil climatologies at USCRN stations and derive soil moisture anomalies.

Evaluating Standardization Methods

The authors then explored several standardization methods, which involved computing differences (anomalies) between the raw volumetric data and either the mean or median values from the climatology. Percentiles were then generated for the

anomaly metrics as well as the volumetric data. The most promising metric was the standardized median anomaly (denoted as STA in the paper).

The final step was comparing these various standardized metrics with the drought categories reported by the U.S. Drought Monitor (USDM), both overall and at a few selected case study sites. The USDM drought categories range from no drought to D0 for abnormally dry and D1 through D4 for moderate, severe, extreme, and exceptional drought, respectively. The USDM is updated weekly, so comparisons were done using seven-day averages of the standardized soil moisture data.

Overall, the standardized median anomaly metric (denoted as STA in the paper) provided the best agreement with the USDM categories and offered a clearer indication than other measures of both improving and worsening conditions. The standardized metrics were also less sensitive to soil type than the raw volumetric measurements.

A Case Study in Nebraska

An evaluation of the onset of drought in Whitman, NE, in 2012 demonstrated the value of the standardized percentile measures for providing early indications of changing conditions. The authors noted:

“Without some background knowledge of central Nebraska’s sandy soils, the importance of the small 0.05 m³m⁻³ drop in volumetric soil moisture could have been overlooked by decision makers unfamiliar with local conditions. For this reason, the standardized soil moisture metrics provided information that is more comparable over time and geography concerning the severity of drought conditions than volumetric soil moisture alone.”

They also found that counts of percentile threshold exceedance were particularly useful for indicating drought severity.

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Graph comparing old techniques of measuring soil moisture with new metrics developed by NCEI and CISESS

Looking Ahead

The research team, with the help of a NOAA Hollings Scholar, is in the process of final testing and evaluation, with the release of an operational product expected in the fall of 2019.

The authors noted some caveats. For example, comparisons with longer-term SCAN data showed that there were limitations to the sampling approach, as standardized differences can vary over the calendar year and for some locations. The authors noted that the sampling methods needed to be clearly documented and updated annually to provide decision makers with reliable information. Also, these soil moisture metrics tended to capture shorter-term changes in soil moisture compared to the USDM categories, which generally reflect longer-term drought conditions.

Reference: Leeper, R.D., J.E. Bell, and M.A. Palecki, 2019: A Description and Evaluation of U.S. Climate Reference Network Standardized Soil Moisture Dataset. *Journal of Applied Meteorology and Climatology*, 58, 1417–1428, doi:10.1175/JAMC-D-18-0269.1

Upcoming Meetings

[WSWC Fall \(191st\) Meetings](#)

Breckenridge, CO
Beaver Run Resort & Conference Center
October 16-18, 2019

[Western Governors Association 2019 Winter Meeting](#)

Las Vegas, NV
December 13-14, 2019

[Western Governors Association 2020 Annual Meeting](#)

Medora, ND
June 29-July 2, 2020

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Upcoming Workshops

[Water Information Management Systems \(WIMS\) Workshop](#)

Fort Collins, CO
Hilton Fort Collins,
Sept. 16-19, 2019

Other Federal News

NOAA 08/01/19. [U.S. Drought Monitor Update for July 30, 2019](#)

RECLAMATION 08/02/19. [Reclamation announces slight improvement to Yakima basin water supply - August forecast](#)

RECLAMATION 08/05/19. [Jeff Rieker named Area Manager for the Bureau of Reclamation's Eastern Colorado Area Office](#)

EPA 08/05/19. [EPA Appoints Ken McQueen as Region 6 Administrator](#)

NOAA 08/05/19. [Accounting for Natural Variability in Our Changing Climate. New type of U.S. Normals addresses influence of El Niño and La Niña](#)

EPA 08/06/19. [EPA awards Clawson Excavating Inc. a \\$646,383 contract for work in Cove, Arizona](#)

NOAA 08/07/19. [Assessing the U.S. Climate in July 2019. Warmest month on record for Alaska](#)

NPS 08/07/19. [Mark Davison Selected as Superintendent of Fort Laramie National Historic Site](#)

NOAA 08/07/19. [Alaska had its hottest month on record in July. U.S. set another record for wettest 12-month period](#)

WHITE HOUSE 08/07/19. [President Donald J. Trump Approves Disaster Declaration for the Muscogee \(Creek\) Nation](#)

NOAA 08/08/19. [U.S. Drought Monitor Update for August 6, 2019](#)

NOAA 08/08/19. [August 2019 El Niño Update: Stick a fork in it](#)

RECLAMATION 08/08/19. [Reclamation funds local watershed projects in Montana, Oklahoma and Idaho](#)

EPA 08/08/19. [EPA and Coeur Alaska Settle Over Alleged Kensington Mine Pollution Discharges. Company will pay fines after 2015 inspection reveals violations of multiple environmental rules](#)

RECLAMATION 08/09/19. [Reclamation seeks public comment on potential changes to water storage in the Boise River system](#)

EPA 08/09/19. [EPA Awards \\$115,000 to Pueblo of Santa Clara to Protect the Environment](#)

NOAA 08/09/19. [Drought Stories from Hawai'i: A Workshop on Drought Recovery](#)

USDOJ 08/12/19. [What They Are Saying – Endangered Species Act Announcement](#)

EPA 08/13/19. [EPA Awards over \\$2 Million to Oklahoma to Prevent Water Pollution](#)

EPA 08/14/19. [W. Scott Mason IV appointed new EPA Director for the American Indian Environmental Office](#)

NOAA 08/14/19. [Unprecedented 2018 Bering Sea ice loss repeated in 2019](#)

NOAA 08/14/19. [Reporting on the State of the Climate in 2018. International authoritative climate report states 2018 was the fourth warmest year on record](#)

EPA 08/15/19. [EPA awards Montana Department of Environmental Quality \\$1,041,000 to protect water quality](#)

NRCS 08/15/19. [NRCS Announces \\$1.9 Million Investment in Collaborative Research](#)

RECLAMATION 08/15/19. [Reclamation Announces 2020 Colorado River Operating Conditions](#)

NOAA 08/15/19. [NOAA awards \\$2.7 million in grants for marine debris removal and research](#)

NOAA 08/15/19. [U.S. Drought Monitor Update for August 13, 2019](#)

NOAA 08/18/19. [How Drought Prone is Your State? A Look at the Top States and Counties in Drought Over the Last Two Decades](#)

RECLAMATION 08/19/19. [Reclamation awards \\$505,359 in Water Conservation Field Services Program grants](#)

NOAA 08/20/19. [U.S. Drought Monitor Update for August 20, 2019](#)

EPA 08/20/19. [EPA Announces Water Infrastructure Loans to Tualatin Valley Water District and the City of Hillsboro, Totaling Nearly \\$640 Million](#)

EPA 08/20/19. [U.S. EPA awards over \\$1.3 million to Nevada Department of Conservation and Natural Resources for water quality protection](#)

EPA 8/20/19. [U.S. EPA awards over \\$8.4 million to California State Water Resources Control Board for water quality protection](#)

RECLAMATION 08/22/19. [Reclamation awards \\$16.98 million to five projects for water recycling and reuse in California, Hawaii and Texas](#)

NOAA 08/22/19. [A Historical Perspective on Drought. Early 21st century U.S. drought ranks as one of the most severe in 120 years](#)

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EPA 08/22/19. [EPA Finalizes Action Providing No New Federal Requirements for Clean Water Act Hazardous Substance Spill Prevention](#)

EPA 08/22/19. [EPA awards Idaho Department of Environmental Quality nearly \\$2 million to protect water quality statewide](#)

NOAA 08/23/19. [The Ongoing Study of Global Change. Scientific partners continue to follow indicators of a changing climate](#)

NOAA 08/26/19. [NOAA research shows promise for predicting marine heat waves](#)

NOAA 08/26/19. [Predicting the evolution of the 2014-2016 California Current System marine heatwave from an ensemble of coupled global climate forecasts](#)

EPA 08/26/19. [U.S. EPA settles with LA County drinking water systems](#)

RECLAMATION 08/27/19. [News Advisory: Finalists compete in Reclamation contest to identify and develop water treatment technology](#)

RECLAMATION 08/27/19. [Lewiston Dam to temporarily increase releases over Labor Day](#)

NOAA 08/27/19. [U.S. Drought Monitor Update for August 27, 2019](#)

DOJ 08/27/19. [Houston, Texas Agrees to Implement Comprehensive Measures Aimed at Eliminating Sanitary Sewer Overflows and Illegal Discharges from Wastewater Treatment Plants](#)

EPA 08/27/19. [Houston, Texas Agrees to Implement Comprehensive Measures Aimed at Eliminating Sanitary Sewer Overflows and Illegal Discharges From Wastewater Treatment Plants](#)

EPA 08/28/19. [EPA Announces Five-Star Urban Waters Grants to Projects in New Mexico & Texas.](#)

[With support from EPA, community-led projects will restore urban waters and streams, address water quality in priority watersheds](#)

EPA 08/28/19. [Five Star Urban Waters Grant Awarded to Project in Creede, Colorado. With a \\$32k grant from EPA, Headwaters Alliance will help restore waters and streams, address water quality Lower Willow Creek project](#)

EPA 08/28/19. [U.S. EPA issues emergency order to Oasis Mobile Home Park drinking water system](#)

EPA 08/28/19. [Five Star Urban Waters Grants Awarded to Projects in Southern California. With support from EPA, community-led projects will restore urban waters and streams, address water quality in priority watersheds](#)

USDOJ 08/28/19. [In Case You Missed It: Trump Administration Improves the Implementing Regulations of the Endangered Species Act](#)

NPS 08/29/19. [Grand Canyon National Park Initiates Water Conservation Measures](#)

RECLAMATION 08/29/19. [Reclamation awards \\$3.4 million to 19 tribes for technical assistance in water development](#)

RECLAMATION 08/30/19. [Reclamation changes flows in Yakima basin for salmon spawning. Public should exercise increased caution around Yakima basin rivers.](#)

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