



NOVEMBER 2021

WestFAST News

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Chair – Roger Gorke; Federal Liaison Officer – Heather Hofman

New Groundwater Time Series Service Available

USGS 11/5/21

By Candice Hopkins and Brad Garner

USGS collects water-level information at groundwater monitoring locations across the country and often produces dataset that are rich in detail down to the minute. However, not all users need datasets this rich in detail. For some people interested in trends and patterns, one value per day is sufficient. Therefore, we filter our available data into a data offering we call the Best Available Time Series (BATS) for Groundwater Levels. BATS for Groundwater Levels will provide users with a single time series with one value per day based on the best available data for that time period, removing the need for users to filter and select from multiple data sources to construct a complete record of groundwater levels.

Condensing Robust Data Sets

There are two ways that USGS measures groundwater-levels:

- A USGS scientist or hydrologic technician visits a monitoring location, such as a well, borehole, piezometer or spring, and uses a steel tape, electronic tape, or another [device to measure the depth to groundwater](#). This is called a **field visit** and generates **discrete** groundwater-level data.



A USGS scientist measures the groundwater level using a steel tape in a shallow well near Wind River at Kinnear, WY

- An instrument called a pressure transducer can be placed in a well, borehole, or piezometer, or a streamgage can be placed at a spring. These instruments can be left at a monitoring location and collect data on a designated interval. Typically, we collect instrumented measurements every fifteen minutes. Some of these instruments relay these data to our computer systems in real-time. Other instruments are left in place and are visited every few weeks to months to obtain data. Data generated in this manner are called **instrumented** data or **timeseries** data.



USGS groundwater site 414831072173002 in Tolland County, Connecticut. This well is equipped with a transducer and equipment that allows groundwater level data to be transmitted in real-time.

These two methods of data collection create a data-rich record with varying data frequency over time; you can see this in our many [groundwater monitoring location pages](#). Due to changing methodology over time, we often serve the data using multiple methods or parameters over the period of record. We also calculate some statistics from instrumented data called daily value data. This metadata is important, but may not consistently be available over the period of record.

This can be confusing to someone who just wants to know **“How has the groundwater level changed over the entire period of measurement?”** To help answer that question, we are now providing a simpler data offering for groundwater levels. Our algorithm determines the longest period of record available by merging discrete and instrumented data, and delivers one measurement per day to represent groundwater levels at a site.

How do we know which record is “best”?

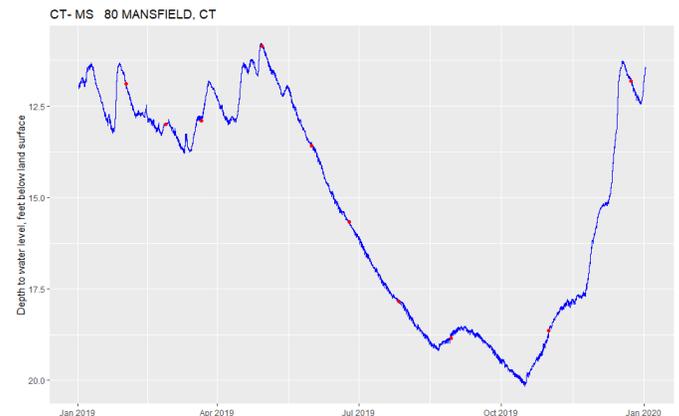
We determine the Best Available data records by:

1. merging discrete and instrumented data of the same parameter code into one combined record,
2. choosing the water-level value from a parameter code that the monitoring location is currently serving, and
3. choosing the parameter with the longest running record if the location is currently reporting multiple groundwater-level parameters, and
4. serving the discrete value instead of the instrumented value if they happen on the same day (because we use discrete visits to calibrate instrumented records).

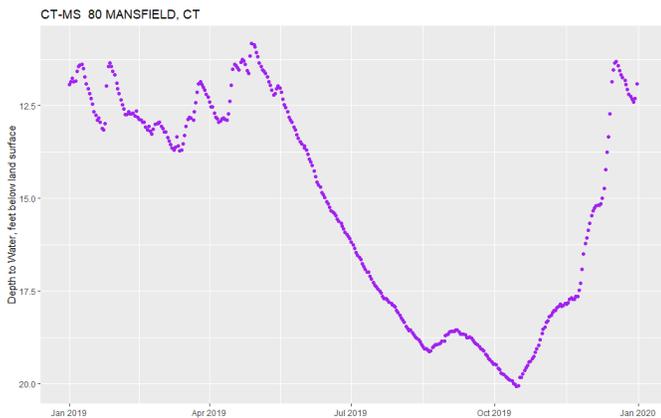
This method allows us to serve one value per day that represents groundwater levels.

Aren't we omitting important data?

A Best Available Time Series for Groundwater Levels is designed to be a simplified offering of our very rich data sets; it is optimal for calculating trends and statistics or comparing sites. We also have filtered both our instrumented and timeseries data, so you can select that if it is your only focus. Our [Groundwater Levels Service](#) is still available for those who would like more detailed data. These data are also available for download or for interactive viewing on [Monitoring Location Pages](#).



All groundwater level observations for one year, including instrumented data (solid blue line, representing measurements every fifteen minutes) and discrete data (red dots) representing site visits at site 414831072173002.



Best Available Time Series, or one value per day, for one year, representing instrumented data and discrete data at site 414831072173002

Options for accessing this new data offering

These timeseries can be accessed through the [WDFN Observations Services API](#), and data are output following the WaterML schema. Through this API, users can request the data type as 'gw_combined', meaning they are requesting both discrete and instrumented data from the same call, and can ask to use the 'best' data available.

Potential Uses in the Future

We use Best Available Time Series for Groundwater Levels to calculate and display groundwater-level trends in the [National Groundwater Monitoring Network Data Portal](#). The Best Available Time Series for Groundwater Levels may be involved in future efforts, such as the eventual replacement of the USGS Groundwater Watch website. Best Available Time Series also could be used by hydrologists and data scientists who are focused on local to regional scale trends and patterns in groundwater levels.

Beyond the realm of groundwater, we may investigate whether this Best Available Time Series concept can be extended to data records at rivers. For example, many USGS streamgaging stations with long historical records began publishing datasets rich in detail in 2007. But thousands of these streamgages offer a longer historical record—one data value per day—back to the 1930s or even earlier. And even before daily data values were collected, some streamgages have scattered discrete measurements—or sometimes just one maximum value for the entire year—published as far back as the 1890s or even earlier! Combining some or all of these types of data into a Best Available Time Series could be compelling for general

visualizations, and uniquely valuable for assessments of long-term trends or other patterns. Many USGS subject matter experts helped us work through the subtle aspects of this logic, and we appreciate their insight and contributions. Please let us know your thoughts about this new data offering by emailing gs-w-iow_po_team@usgs.gov.

OpenET: A Transformative Tool for Tracking Water in the U.S. West

NASA 11/5/21

By [Aries Keck](#)

OPENET IS A SATELLITE-BASED DATA RESOURCE SUPPLYING CRUCIAL WATER USE INFORMATION IN 17 WESTERN U.S. STATES.

Using the best available science to provide easily accessible satellite-based estimates of water use, [OpenET](#) is being used to improve U.S. water management. The data is available on 17 western states, most notably the area covered by the Colorado River basin.

The "ET" in OpenET stands for [evapotranspiration](#), which is the process through which water leaves plants, soils, and other surfaces and returns to the atmosphere. It's a measurement that farmers can use to estimate the amount of water being taken up or used by their fields and crops and that will usually need to be replaced through irrigation or rainfall.

[Watch the video](#)

Knowing how much water is transferred to the air allows farmers to better calculate crop water requirements, helping them to use water more efficiently and better plan irrigation. This makes evapotranspiration a crucial measurement for farmers and other water resource managers, especially in the western United States where the majority of the water used by people goes to irrigate crops and produce food.

The primary satellite dataset for OpenET is from the [Landsat program](#), a partnership between NASA and the U.S. Geological Survey ([USGS](#)). The most

recent satellite in the program, Landsat 9, [successfully launched on Sept. 27, 2021](#).

Because the OpenET system uses open source software and open data sources, it will help water managers establish an agreed upon measure of evapotranspiration across agricultural areas, said lead project scientist Forrest Melton of NASA's [Western Water Applications Office](#).

Different estimates of evapotranspiration have previously been a source of confusion for water managers, he said, explaining that water users and managers currently have to evaluate a variety of methodologies to measure water use and evapotranspiration, which often leads to different numbers and debates over accuracy.

OpenET provides a solution to those debates, said project manager Robyn Grimm. "OpenET brings together several well-established methods for calculating evapotranspiration from satellite data onto a single platform so that everyone who makes decisions about water can work from the same playbook, using the same consistent, trusted data," said Grimm.

Denise Moyle is an alfalfa farmer in Diamond Valley, Nevada, and an OpenET collaborator. "What OpenET offers is a way for people to better understand their water usage and, more importantly, their water loss through evapotranspiration," she said. "Giving farmers and other water managers better information is the greatest value of OpenET."



Nevada farmer Denise Moyle will use OpenET to plan irrigation of her alfalfa fields. Credits: Photo courtesy of Glow by G Photography

Highlights from the Bipartisan Infrastructure Investment and Jobs Act

FACT SHEET: EPA & The Bipartisan Infrastructure Law

EPA 11/6/21

Following the passage of the historic Bipartisan Infrastructure Investment and Jobs Act, the U.S. Environmental Protection Agency (EPA) will be making significant investments in the health, equity, and resilience of American communities. With unprecedented funding to support our national infrastructure, EPA will improve people's health and safety, help create good-paying jobs, and increase climate resilience throughout the country.

The single largest investment in water that the federal government has ever made.

The nation has underinvested in water infrastructure for too long. Insufficient water infrastructure threatens America's security, and it risks people's health, jobs, peace of mind, and future prosperity. The Bipartisan Infrastructure Law delivers more than \$50 billion to EPA to improve our nation's drinking water, wastewater, and stormwater infrastructure. This is a historic investment that includes:

Safe Drinking Water

\$11.7 billion to the Drinking Water State Revolving Fund (SRF) and \$15 billion to the Drinking Water SRF for Lead Service Line Replacement. \$4 billion to the Drinking Water SRF for Emerging Contaminants. \$5 billion to Water Infrastructure Improvements for the Nation (WIIN) Grants to address emerging contaminants.

What this means

There are still 6 to 10 million lead services lines in cities and towns across the country, many of which are in communities of color and low-income neighborhoods. Because of the investments in the Bipartisan Infrastructure Law, millions of American families will no longer have to fear the harmful health effects caused by lead and other pollutants in

their water. People will be protected from PFAS or “forever chemical” contamination. And investing in our water infrastructure will put Americans to work in good-paying jobs.

Clean Water for Communities

\$11.7 billion for the Clean Water State Revolving Fund SRF and \$1 billion for the Clean Water SRF for Emerging Contaminants.

What this means

More people will be able to freely swim, fish, and play in their waters. Wild spaces will be cleaner and more vibrant. Communities will benefit from improved economic prosperity built on clean water resources as more quality, good paying jobs are created.

Protected Regional Waters

\$1.7 billion for Geographic Programs and \$267 million for the National Estuary Program, Gulf Hypoxia Program, and more.

What this means

From the Chesapeake Bay, to the Great Lakes, to Puget Sound, communities will be able to better protect our national water treasures and ensure they continue to serve as vital economic and recreational assets.

Historic funding to clean-up longstanding pollution and redevelop communities

The Bipartisan Infrastructure Law invests \$5.4 billion in cleaning up legacy pollution at Superfund and brownfields sites, helping to restore the economic vitality of communities, including:

Superfund Clean-Up

\$3.5 billion for Superfund site clean-up work.

What this means

More than one in four Black and Hispanic Americans live within 3 miles of a Superfund site. No community deserves to have contamination near where they live, work, pray and go to school. With this funding, communities living near many of the most serious uncontrolled or abandoned releases of contamination will finally get the protections they deserve.

Brownfields Revitalization

\$1.5 billion to scale-up community-led brownfields revitalization.

What this means

Blighted and polluted sites in communities across America will be assessed, cleaned up and made available for safe reuse, spurring job creation and economic opportunity in areas that need it most.

Waste and Recycling

\$350 million for Solid Waste and Recycling Grants and \$25 million for Battery Recycling.

What this means

Communities across the country are burdened by pollution impacts from inefficient waste management systems. This historic investment will transform recycling and solid waste management across the country while creating jobs. This investment will also improve the nation’s battery recycling programs while promoting the safe handling of used batteries.

A major investment in electric and low-emission school buses and healthier air for children.

The Bipartisan Infrastructure Law invests in making the nation’s school bus fleet cleaner, including:

Electric and Reduced Carbon Buses

\$5 billion for decarbonizing the nation’s school bus fleet.

What this means

More than 25 million children ride the bus to school each day, some breathing polluted air from diesel school buses. By deploying electric and lower emission school buses, fewer children will face increased asthma risks and other health problems linked to diesel air pollution.

Increased funding for pollution prevention.

The Bipartisan Infrastructure Law increases resources to help businesses reduce toxic pollutants, with a new focus on underserved and overburdened communities, including:

Pollution Prevention

\$100 million for the Pollution Prevention (P2) Program and the launch of a new program targeting environmental justice.

What this means

More businesses will be able to get assistance to reduce toxic pollutants, cut water usage, improve efficiency, and lower costs, which will improve their operations while better protecting the communities in which they operate.

EPA Funding by Appropriations Account

State & Tribal Grants	55.426 billion
Clean Water State Revolving Fund Traditional	11.713 billion
Drinking Water State Revolving Fund Traditional	11.713 billion
Lead Service Lines Drinking Water State Revolving Fund	15 billion
PFAS Clean Water State Revolving Fund	1 billion
PFAS Drinking Water State Revolving Fund	4 billion
PFAS Small & Disadvantaged	5 billion
Underground Injection Control Grants	50 million
Brownfields	1.5 billion
Pollution Prevention	100 million
Save Our Seas 2.0	275 million
RECYCLE Act	75 million
Clean School Buses	5 billion
Superfund	3.5 billion
Remedial Cleanups	3.5 billion
Environmental Programs and Management	1.959 billion
Geographic Programs	1.717 billion
<i>Great Lakes Restoration</i>	<i>1 billion</i>
<i>Chesapeake Bay</i>	<i>238 million</i>
<i>San Francisco Bay</i>	<i>24 million</i>
<i>Puget Sound</i>	<i>89 million</i>
<i>Long Island Sound</i>	<i>106 million</i>
<i>Gulf of Mexico</i>	<i>53 million</i>
<i>South Florida</i>	<i>16 million</i>
<i>Lake Champlain</i>	<i>40 million</i>
<i>Lake Pontchartrain</i>	<i>53 million</i>
<i>Southern New England Estuaries</i>	<i>15 million</i>
<i>Columbia River Basin</i>	<i>79 million</i>
<i>Other, Pacific Northwest</i>	<i>4 million</i>
National Estuary Program	132 million
Gulf of Mexico and MS and OH Rivers Hypoxia	60 million
Class VI Wells/Underground Injection Control	25 million
Battery Recycling Best Practices	10 million
Battery Recycling Labeling	15 million

Interior Department Celebrates Passage of the Bipartisan Infrastructure Deal

Historic investments in climate resiliency, Indian Country will protect communities and advance environmental justice

DOI 11/6/2021

WASHINGTON – Secretary of the Interior Deb Haaland applauded the passage of the Bipartisan Infrastructure Deal (BID), a once-in-a-generation investment that will help communities tackle the climate crisis while creating good-paying union jobs, advancing environmental justice, and boosting local economies. The legislation is the largest investment in the resilience of physical and natural systems in American history.

“The Bipartisan Infrastructure Deal is an historic down payment on ensuring that future generations have clean air, drinkable water, fertile soil, and an overall quality of life that is currently threatened by the worsening climate crisis,” said **Secretary Deb Haaland**. “As our communities bear the brunt of intensifying droughts, wildfires, flooding, and legacy pollution, the BID’s investments will be crucial to ensuring local, state, and Tribal communities have the resources they need to bolster climate resilience and protect natural areas. The Interior Department stands ready to implement this transformational investment in our country as quickly as possible.”

The BID contains several provisions that fund Interior Department initiatives and benefit the communities we directly serve.

The legislation makes historic investments in bolstering climate resiliency, including:

- **\$8.3 Billion Investment in Water and Drought Resilience.** There is an urgent need to minimize the impacts of drought and develop a long-term plan to facilitate conservation and economic growth. Our shared priority is to build resilient communities and protect our water supplies for people and the natural environment. The BID’s investments will fund water efficiency and recycling programs, rural water projects, WaterSMART grants, and

dam safety to ensure that irrigators, Tribes, and adjoining communities receive adequate assistance and support.

- **\$1.5 Billion Investment in Wildfire Resilience.** Climate change is driving the devastating intersection of extreme heat, drought, and wildland fire danger across the United States, creating wildfires that move with a speed and intensity previously unseen. The BID will help better prepare communities and ecosystems against the threat of wildland fire by making historic investments in forest restoration, hazardous fuels management and post-wildfire restoration activities across America's national parks, forests and grasslands, as well as investing in our federal firefighters.
- **\$1.4 Billion Investment in Ecosystem Restoration and Resilience.** Climate change is impacting our natural ecosystems in ways never seen before. Changing temperatures are affecting water supplies, altering wildlife habitat and migration patterns, introducing new pests and diseases, and causing devastation from wildland fire. The BID makes a critical investment in the resilience and restoration of America's lands, including funding for stewardship contracts, ecosystems restoration projects, invasive species detection and prevention, and native vegetation restoration efforts.
- **\$466 Million Investment in Tribal Climate Resilience and Infrastructure.** As the effects of climate change continue to intensify, Indigenous communities are facing unique climate-related challenges. Flooding, erosion, permafrost subsidence, sea level rise, and storm surges are presenting existential threats to communities' economies, infrastructure, livelihoods, and health. The BID's investments will support community-led transitions for the most vulnerable Tribal communities, including climate adaptation planning, ocean and coastal management planning, capacity building, and relocation, managed retreat, and protect-in-place planning for climate risks. It will also help fund construction, repair, improvement, and maintenance of irrigation and power

systems, safety of dams, water sanitation, and other facilities in Tribal communities.

The legislation also invests in supporting and protecting communities by funding:

- **\$16 Billion Investment in Legacy Pollution Clean-Up.** The Department is committed to helping working families, often in rural and Tribal communities, who face hazardous pollution, toxic water levels, and land subsidence both during mining and long after coal companies have moved on. The BID makes historic investments to plug orphan wells and reclaim abandoned mine lands, which will help communities eliminate dangerous conditions and pollution caused by past coal mining. These funds support vitally needed jobs for coal communities by funding projects that close dangerous mine shafts, reclaim unstable slopes, improve water quality by treating acid mine drainage, and restore water supplies damaged by mining.
- **\$2.5 Billion Investment in Indian Water Rights Settlements.** Water is a sacred resource, and water rights are crucial to ensuring the health, safety and empowerment of Tribal communities. The Department is committed to upholding our trust responsibilities and delivering long-promised water resources to Tribes, certainty to all their non-Indian neighbors, and a solid foundation for future economic development for entire communities dependent on common water resources. The BID's historic investments will help the Department fulfill settlements of Indian water rights claims.
- Contact: Interior_Press@ios.doi.gov

Statement from Agriculture Secretary Tom Vilsack on the Passage of the Infrastructure Investment and Jobs Act

USDA 11/6/21

WASHINGTON— Agriculture Secretary Tom Vilsack released the following statement following passage of the Infrastructure Investment and Jobs

Act by the U.S. Congress. The bill will now go to President Biden for his signature.

“This is a transformative, historic investment for America as President Biden delivers on his promise to rebuild the physical infrastructure of our country, grow the economy for decades to come, create good-paying, union jobs, and better position us to compete in a global economy.

“As we make significant progress in closing the digital divide and delivering 21st century broadband, farmers will have access to real-time information and new technologies needed to maintain their competitive edge, small businesses will be able to develop their markets, and rural communities can become better connected to jobs, telemedicine, and distance learning.

“As we repair crumbling roads and bridges and make much-needed investments in our ports, waterways, and rail transit, we will connect agriculture and rural communities to more markets and more economic opportunity. Upgraded power infrastructure, environmental remediation, and clean and safe drinking water will power and revitalize communities historically left behind.

“As we invest in green infrastructure, we will preserve our lands and natural resources and the outdoor recreation opportunities they provide for so many Americans. At the same time, we will respond to the climate crisis by increasing community resiliency and conducting critical work on our farms and in our forests to mitigate wildfires, support farmers and ranchers grappling with drought, and improve watersheds and water supply in the West.

“This is a tremendous opportunity to build up rural America with wealth that stays in rural communities, jobs you can raise a middle-class family on, and the ability to compete around the world. I’m thankful to those in Congress who drove this bipartisan legislation over the finish line, and to President Biden for his leadership for America’s working families. Now, let’s get to work and see to it that the benefits of modern infrastructure reach every corner of country.”

Contact: USDA Press
Email: press@usda.gov

Upcoming Meetings

[WestFAST Webinars](#): WestFAST is hosting a [series of webinars](#) to discuss the importance of water resources related to wildfire prevention, reduction, recovery, and rehabilitation:

December 15th – [Wildfire and Geologic Hazards](#)
January 27th – [Burned Area Emergency Response \(BAER\)](#)

[2022 WSWC Spring \(198th\) Meetings and Washington Roundtable](#)
4/5-7/21, Crystal City, VA

Other Federal News

[USDA 11/3/21. USDA Invests \\$11 Million in Partnerships to Restore Wetlands, Support Historically Underserved Producers](#)

[NOAA 11/8/21. October 2021 was sixth warmest on record for U.S.](#)

[BLM 11/15/21. Secretary Haaland Announces Steps to Establish Protections for Culturally Significant Chaco Canyon Landscape](#)

[BOR 11/16/21. Reclamation awards \\$80,000 in prize competition seeking to improve reliability in hydropower facilities](#)

[NOAA 11/18/21. NOAA and NFWF grant \\$39.5 million for national coastal resilience projects](#)

[COE 11/19/21. U.S. Army Corps of Engineers releases the 2021 Report to Congress on Future Water Resources Development](#)

[BOR 11/19/21. Reclamation to conduct aerial survey of the lower Colorado River](#)

[BOR 11/23/21. Reclamation awards \\$9.9 million to 31 Tribes for drought response water projects](#)

[USFS 11/29/21. Building the Salmon SuperHwy](#)

People

[BOR 11/4/21. Casandra Arthur named Reclamation’s Project Manager of the Year](#)

USDA 11/4/21. USDA Announces Additional Farm Service Agency and Rural Development State Directors

USDA 11/8/21. U.S. Department of Agriculture Announces Key Staff

NOAA 11/9/21. Study Shows That Climate Change is the Main Driver of Increasing Fire Weather in the Western U.S.

USDA 11/10/21. Statement by Agriculture Secretary Tom Vilsack Following Swearing in of Adrienne Wojciechowski to Serve as Assistant Secretary of Congressional Relations

BOR 11/10/21. Robert “Bob” Pike selected as Senior Advisor - Design, Estimating and Construction Oversight and Dam Safety Officer

DOI 11/15/21. Interior and Agriculture Departments Take Action to Strengthen Tribal Co-Stewardship of Public Lands and Waters

USDA 11/15/21. U.S. Department of Agriculture Announces Deputy Under Secretary for Research, Education, and Economics and Other Key Staff Appointments

NOAA 11/17/21. Nancy Hann to lead NOAA Office of Marine and Aviation Operations and NOAA Corps

EPA 11/18/21. EPA Announces Appointments of Regional Administrators for Regions 2, 4, and 8

USDA 11/18/21. USDA Announces Additional Farm Service Agency and Rural Development State Directors

The Western States Federal Agency Support Team (WestFAST) is a collaboration between 12 Federal agencies with water management responsibilities in the West. WestFAST was established to support the Western States Water Council (WSWC), and the Western Governors Association in coordinating Federal efforts regarding water resources.