

Veles Water Weekly Report

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February 6th 2025

Authors:

Lance Coogan - *CEO*

Joshua Bell - *Research Analyst*

research@veleswater.com

+44 20 7754 0342



VelesWater



WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell

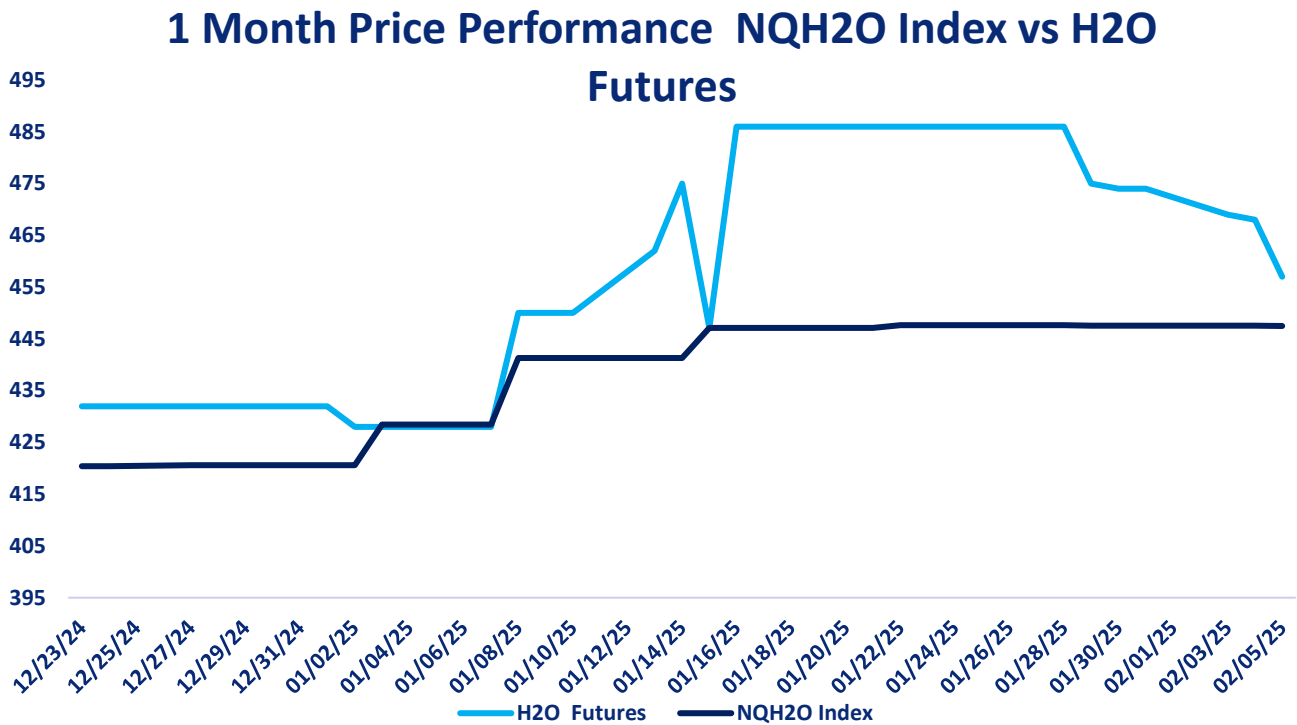
CLICK THE LINK BELOW

"A 2 minute technical analysis video of H2O futures"

<https://vimeo.com/1054045274?share=copy#t=0>



NQH2O INDEX PRICE vs H2O FUTURES PRICE



Price Chart Based upon Daily Close

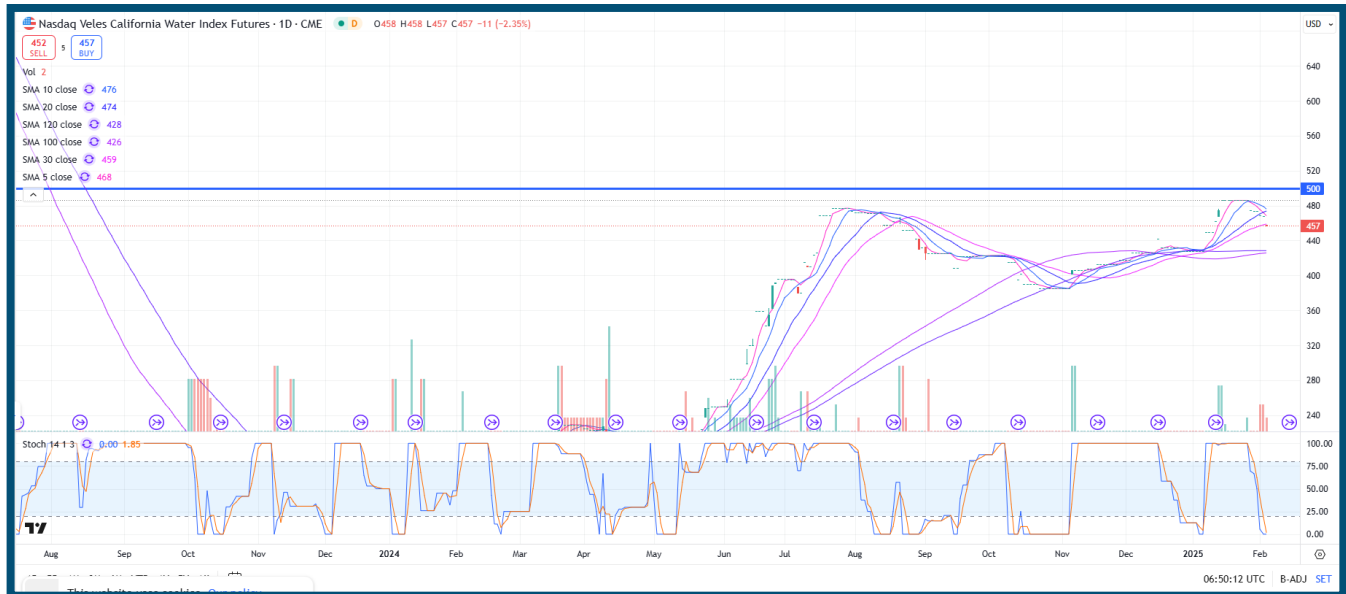
The new NQH2O index level of \$447.49 was published on February 5th, down \$0.09 or 0.02% from the previous week. The February contract is considered the front month. The futures prices have closed at a premium of \$9.51 to \$26.42 versus the index over the past week.

Below are the bid offer prices on different expiries being quoted in the market.

Feb 25	452@457
Mar 25	462@487
June 25	500@550
June 26	580@660



H2O FUTURES TECHNICAL REPORT



- **Current Price: 457**
- The price has decreased by 2.35% in today’s session, indicating a shift toward bearish momentum after recent gains.

Moving Averages (MA) Analysis

- **Short-Term Averages:**
 - **MA 5 (468)** - The price is below this level, confirming short-term bearish momentum.
 - **MA 10 (476)** - The price is also below the 10-day moving average, further reinforcing short-term weakness.
 - **MA 20 (474)** - The price is below the 20-day moving average, signalling a potential shift in momentum.
- **Medium-Term Averages:**
 - **MA 30 (459)** - The price is slightly below this level, confirming a weakening medium-term trend.
- **Long-Term Averages:**
 - **MA 100 (426)** - The price remains above this level, indicating that the long-term trend is still bullish.
 - **MA 120 (428)** - Similarly, the price is above the 120-day moving average, confirming long-term bullish sentiment despite short-term volatility.



Support and Resistance Levels

- **Immediate Resistance: 500**
 - This level has been tested multiple times and remains a key breakout zone for continued bullish movement.
- **Immediate Support: 457 (current price level)**
 - If the price fails to hold here, the next key support levels to watch are:
 - 474 (MA 20)
 - 426 (MA 100), which is the stronger long-term support.

Stochastic Oscillator

- **K%: 0.00, D%: -1.85**
 - The stochastic oscillator is in oversold territory, indicating that downward pressure is strong but also that a potential reversal could be near.
 - A bounce may occur if buying interest picks up.

Summary & Key Takeaways

- The short-term trend has turned bearish, with the price falling below the MA 5, MA 10, and MA 20.
- Medium-term momentum is weakening, with the price dropping below the MA 30.
- The long-term trend remains bullish, as the price is still above the MA 100 and MA 120.
- The stochastic indicator signals oversold conditions, meaning a potential short-term bounce could happen.

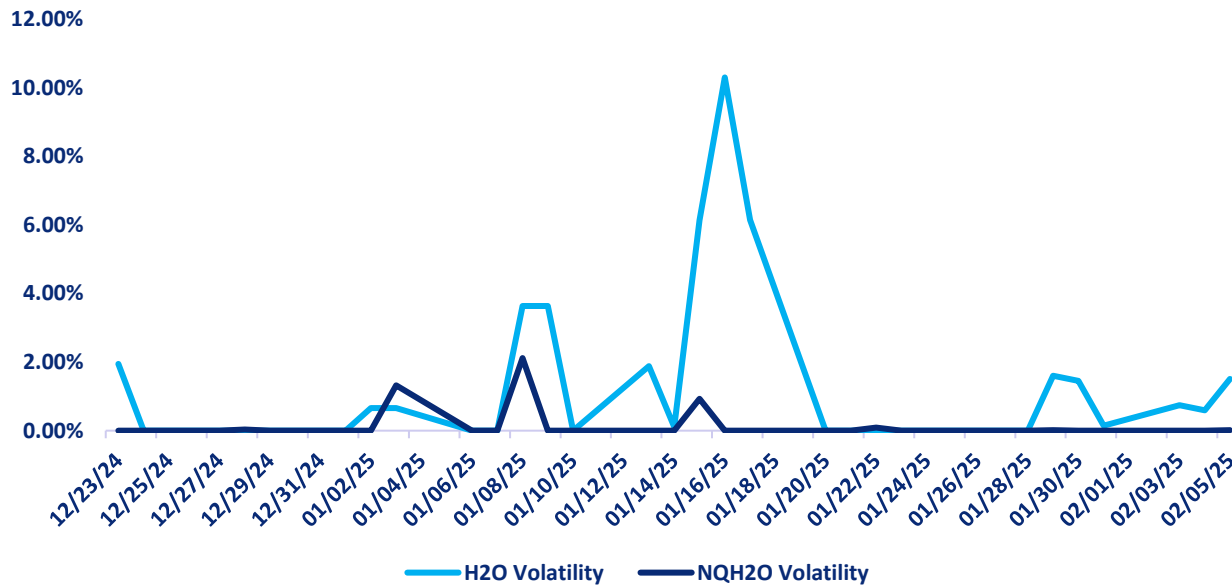
Key Levels to Watch

- Resistance at 500 - A breakout above this level could confirm bullish continuation.
- Support at 457 (current price) - If broken, watch 474 (MA 20) and 426 (MA 100) for further downside.



H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



DAILY VOLATILITY

Over the last week the February contract daily future volatility high has been 3.63%.

ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	28.82%	3.00%	0.16%	0.00%
H2O FUTURES	N/A	14.07%	12.00%	2.18%

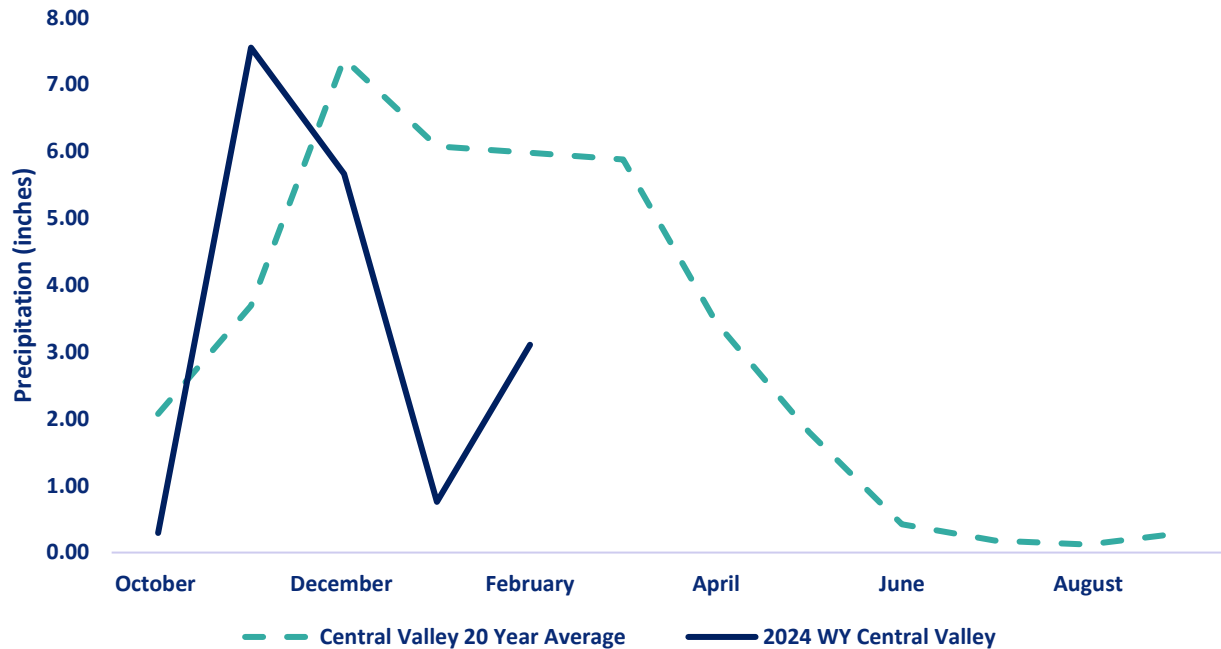
For the week ending on February 5th, the two-month futures volatility is at a premium of 11.07% to the index, down 0.13% from the previous week. The one-month futures volatility is at a premium of 11.84% to the index, up 0.64%. The one-week futures volatility is at a premium of 2.17% to the index, volatility.

*Above prices are all **HISTORIC VOLATILITIES**. All readings refer to closing prices as quoted by CME.*



CENTRAL VALLEY PRECIPITATION REPORT

Central Valley Precipitation Index



Central Valley average is calculated using data from 19 weather stations in the Central Valley, California.
Data as of 05/02/2025

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2025 WYTD VS 2024 WYTD %	2025 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	1.22	1.22	20.77	62	53
TULARE 6 STATION (6SI)	0.03	0.03	0.73	55	48
NORTHERN SIERRA 8 STATION (8SI)	8.07	8.08	101.53	82	114
CENTRAL VALLEY AVERAGE	3.11	3.11	12.45	66	72

RESERVOIR STORAGE

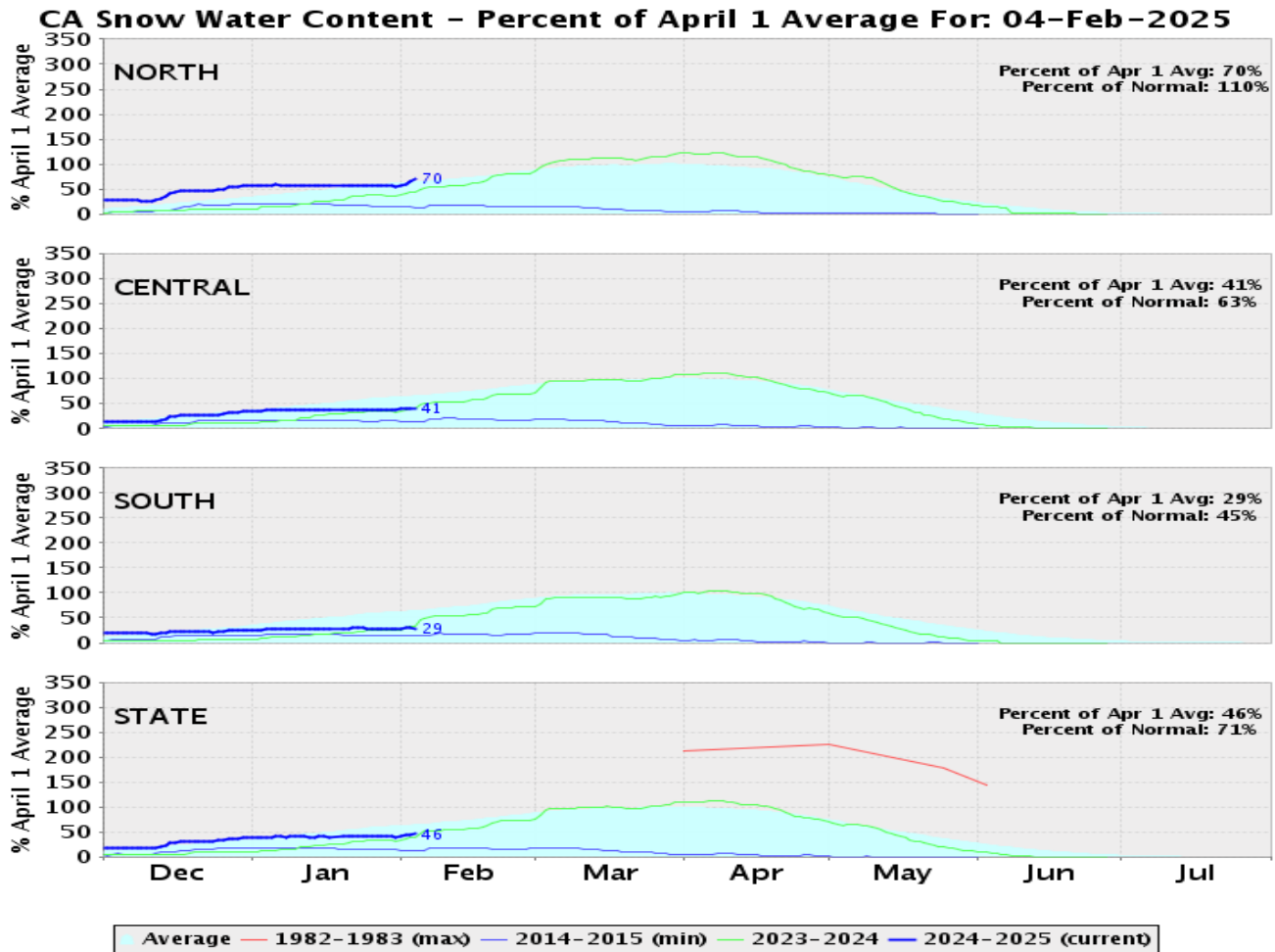
RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	*% HISTORICAL AVERAGE
TRINITY LAKE	1,954,214	80	63	125
SHASTA LAKE	3,717,976	82	81	124
LAKE OROVILLE	2,772,001	77	76	131
SAN LUIS RES	1,561,464	77	61	101

*% Historical Average is based on a daily average that is interpolated from historical monthly averages. The monthly averages are computed using monthly data from water year 1991 to 2024. The monthly averages are updated every 5 years using a sliding 30 year period.

[Reference: California Water Data Exchange](#)



SNOWPACK WATER CONTENT



REGION	*SNOWPACK WATER EQUIVALENT (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF AVERAGE LAST YEAR	% OF 20 YEAR HISTORICAL AVERAGE	% OF HISTORICAL **APRIL 1ST BENCHMARK
NORTHERN SIERRA	15.4	0.2	45	129	58
CENTRAL SIERRA	10.2	-0.2	48	80	37
SOUTHERN SIERRA	6.5	0	30	60	28
STATEWIDE	10.7	0	44	90	41

*Snow Water Equivalent, or SWE, is a commonly used measurement used by hydrologists and water managers to gauge the amount of liquid water contained within the snowpack. In other words, it is the amount of water that will be released from the snowpack when it melts. SWE has regional variance.

** April 1st is used as the benchmark as it when the snowpack in California is generally deepest. It has been used the benchmark date since 1941 by DWR and can be used to predict spring river flow.



DROUGHT MONITOR

California

[Home](#) / California

Map released: Thurs. January 30, 2025

Data valid: January 28, 2025 at 7 a.m. EST

Intensity

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

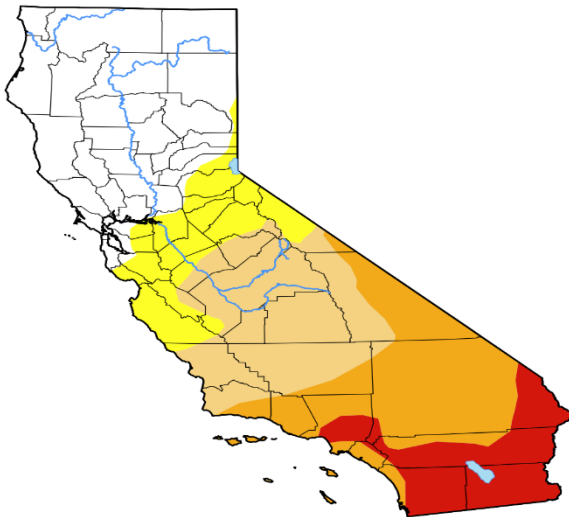
Authors

United States and Puerto Rico Author(s):

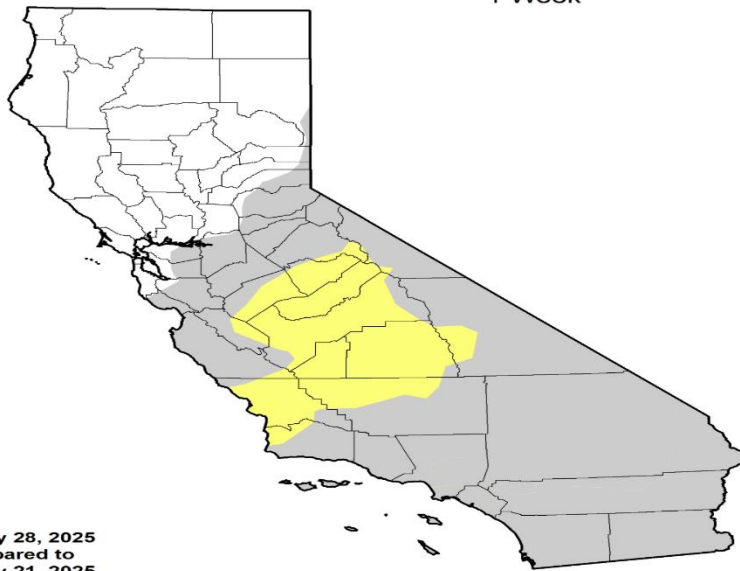
[Brian Fuchs](#), National Drought Mitigation Center

Pacific Islands and Virgin Islands Author(s):

[Curtis Riganti](#), National Drought Mitigation Center



U.S. Drought Monitor Class Change - California
1 Week



January 28, 2025
compared to
January 21, 2025



- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

droughtmonitor.unl.edu

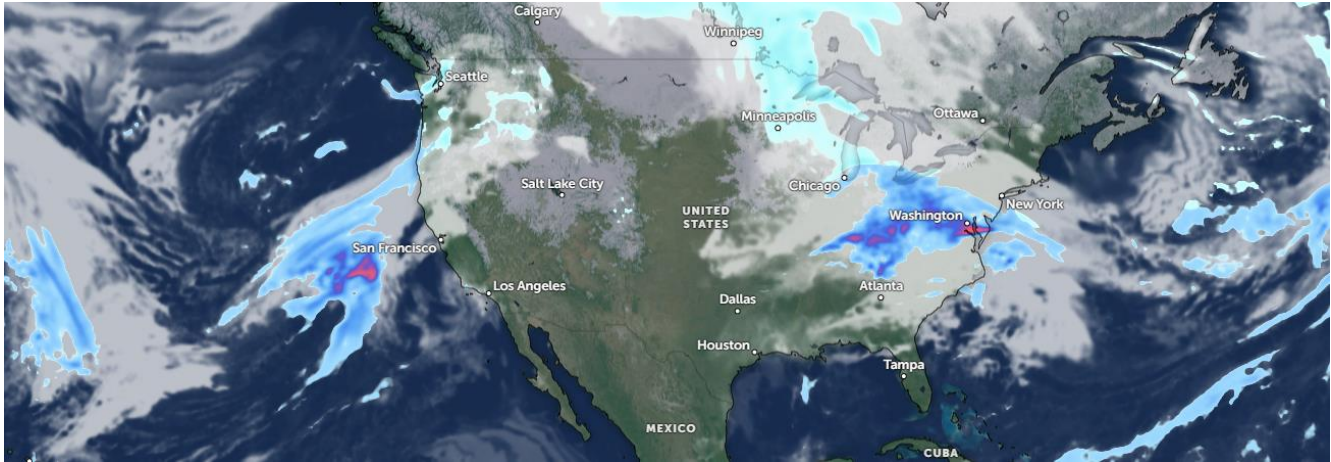
Week	Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
Current	2025-01-28	33.22	66.78	54.31	32.86	11.88	0.00	166
Last Week to Current	2025-01-21	33.22	66.78	39.39	32.86	11.90	0.00	151
3 Months Ago to Current	2024-10-29	25.37	74.63	12.26	4.30	0.00	0.00	91
Start of Calendar Year to Current	2024-12-31	40.90	59.10	31.52	5.70	1.06	0.00	97
Start of Water Year to Current	2024-10-01	28.40	71.60	10.67	0.08	0.00	0.00	82
One Year Ago to Current	2024-01-30	90.53	9.47	0.00	0.00	0.00	0.00	9

The U.S Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC.



CURRENT SATELLITE IMAGERY

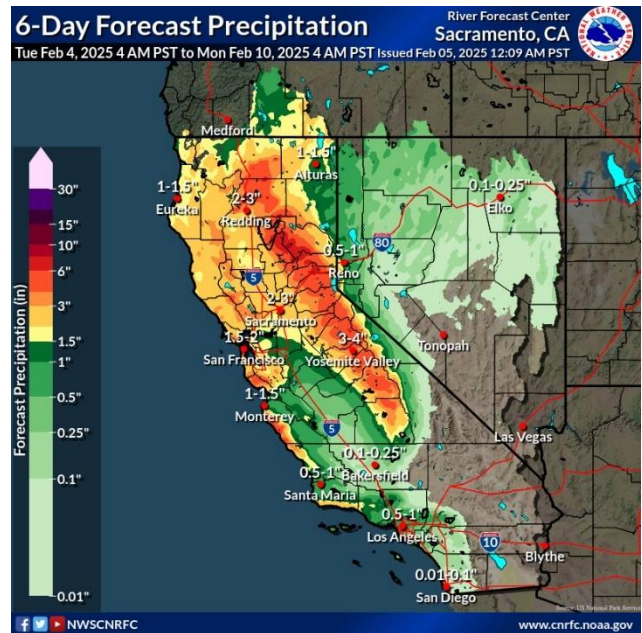
The satellite picture shows the weakening of this weeks atmospheric river which brought large amounts of moisture into California. The rest of the SW is relatively clear but from Dallas westwards and north of Tampa there is a large amount of cloud and precipitation moving eastwards.



Map Ref: Zoom Earth

10 Day Outlook

Wednesday will see the drying trend continue for much of the area...except in the vicinity of northwest CA and the upper Klamath River basin...as the area continues to be influenced by the upr spinning west of the Pacific Northwest coast. This feature will open up and the resulting s/wv trof will swing toward the CA coast on Thursday into Friday...bringing the next round of widespread precip to the region with the best totals over the length of the Sierra from 1.00- to 2.00-inches...local to 2.50-inches from the Feather River basin down to the American River basin. Along coastal sections...amounts will range from 0.50- to 1.00-inch from the CA/OR border all the way down to the transverse mountains of southern CA. Some localized amounts may approach 1.50-inches between the Eel and Russian River basin...as well as the Big Sur coast. Freezing levels will average from around 2500-feet near the CA/OR border...to approx 4000-feet along I-80...5000- to 7500-feet across central CA into much of southern NV...and above 9000-feet for southern CA and the extreme southern portion of NV near Las Vegas.





VELES WATER WEEKLY REPORT

Conditions dry out for the weekend with northwesterly flow aloft. A weak s/wv trof moving through this flow on Saturday may generate some scattered light showers over the crest of the southern OR Cascades and the Smith River basin.

Reference: National Weather Service / California Nevada RFC / Sacramento CA

WESTERN WEATHER DISCUSSION

Temperatures were colder than normal over almost the entire region, with departures of 9-12 degrees below normal in the northern Rocky Mountains and 3-6 degrees below normal most other places. Most of the region was drier than normal this week with only some areas of southern California, western Arizona and eastern Montana recording above-normal precipitation. The dryness allowed for the expansion of moderate drought into the central valley of California where the water year has continued to be drier than normal. In Arizona, the winter continues to be on the dry side and allowed for the expansion of moderate, severe and extreme drought conditions over the western, northern and southern portions of the state. In Nevada, moderate and severe drought were expanded over the eastern part of the state and were also expanded in the southern portions of Utah. Abnormally dry and moderate drought conditions expanded over western Washington and abnormally dry conditions were filled in over northwest Montana. In Colorado, abnormally dry conditions and moderate drought expanded over the west, south and southwest portions of the state with a new area of severe drought added in the south.

Reference:

Lindsay Johnson, National Drought Mitigation Center

Richard Tinker, NOAA/NWS/NCEP/CPC



WATER NEWS

CALIFORNIA WATER NEWS

2.2 billion gallons of water flowed out of California reservoirs because of Trump's order to open dams

The US Army Corps of Engineers opened two dams on Friday in Central California and let roughly 2.2 billion gallons of water flow out of reservoirs, after [President Donald Trump](#) ordered the release with the misguided intent to send water to [fire-ravaged Southern California](#).

Trump celebrated the move in posts to Truth Social post on Friday and Sunday, declaring, “the water is flowing in California,” and adding the water was “heading to farmers throughout the State, and to Los Angeles.”

There are two major problems, water experts said: The newly released water will not flow to Los Angeles, and it is being wasted by being released during the wet winter season.

“They were holding extra water in those reservoirs because of the risk that it would be a dry summer,” said Heather Cooley, director of research for California water policy organization the Pacific Institute. “This puts agriculture at risk of insufficient water during the summer months.”

On Friday, [Trump posted](#) that 1.6 billion gallons was being released adding that “in 3 days, it will be 5.2 billion gallons.”

About 2.2 billion gallons were released from Friday to Sunday, local water districts said in a statement released Monday. That water was discharged into the dry lakebed of Tulare Lake, according [to a letter](#) from Sen. Alex Padilla to Secretary of Defense Pete Hegseth.

“Downstream entities used these releases for limited irrigation demand and groundwater recharge,” the statement said.

“This release is extremely concerning,” Cooley said. “It’s providing zero benefit and putting California farmers at risk of water supply constraints in the coming months.”

California Department of Water Resources director Karla Nemeth told reporters that there was little coordination between federal officials and the state and local water managers for the Army Corps releases at the Terminus Dam at Lake Kaweah and Schafer Dam at Lake Success.

“These reservoirs were federal reservoirs, and the state of California was not part of the decision making in this instance,” Nemeth said. “We traditionally have a high degree of coordination at the operational level, which really wasn’t a part of this decision.”



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California's State Water project supplies water from Northern California to Southern California, including to Los Angeles. Los Angeles' water supply comes partly from state reservoirs and partly from the Colorado River.

But Los Angeles' water sources are completely separated from the water system that Lake Kaweah and Lake Success supply. That water system flows into the agriculture-heavy Central Valley — where large farms grow nuts, citrus and grasses for animal feed, among other crops. The water-stressed region is heavily reliant on groundwater and winter precipitation stored in state reservoirs to irrigate crops.

The US Army Corps of Engineers and the White House did not respond to CNN's request for comment.

Original Article: [CNN Climate by Ella Nilsen](#)

Newsom orders more water for California farmers and towns

As downpours soak Northern California, Gov. Gavin Newsom [has ordered state officials to capture and store more stormwater](#) in San Joaquin Valley reservoirs for farmers and towns, and to “remove or minimize” any obstacles that stand in the way.

If that sounds familiar, it is: The governor issued [similar orders](#) two years ago, when he waived environmental laws to store more water as storms drenched the state and caused [disastrous flooding](#). Months later, the Legislature and Newsom enacted a [new law](#) that smooths the way for such actions.

In a [video](#) posted on social media, Newsom said he aims to store more stormwater “for people and agriculture.” The [three-year, statewide drought](#) “yielded ongoing, significant impacts” on farm communities, he wrote in his order.

Growers and cities that use water from the State Water Project welcomed Newsom's action.

But environmental groups worry that it will kill salmon and other fish spiraling toward extinction. By diverting and storing more water, less is left in Delta rivers for fish.

Environmentalists also noted the similarity between Newsom's order and President Donald Trump's order last week [to waive the Endangered Species Act and pump more water out of the Delta](#). The Army Corps of Engineers then abruptly increased outflow from two small San Joaquin Valley reservoirs.

Trump [posted](#) on social media that the water would have prevented the Los Angeles wildfires — but that water [does not reach Southern California](#). It also will do little to help farmers, since they need irrigation water for crops in spring and summer, not now.

- **Jon Rosenfield**, science director at San Francisco Baykeeper: “Trump issued an executive order that is nothing short of an assault on California's environment, and it's like Newsom said, ‘Hold my beer.’”

Speaking of Trump: On Saturday Trump [issued an order](#) imposing tariffs on goods from Mexico, Canada and China. The tariffs are meant to hold the countries “accountable to



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their promises of halting illegal immigration” and stopping fentanyl and other drugs “from flowing into our country,” according to the order.

As CalMatters [reported in November](#), Mexico and China made up 40% of California’s imports in 2023 and the state could feel the brunt of the tariffs. Nationally, prices are projected to rise by nearly 1 percentage point, according to the [UCLA Anderson Forecast](#). Because Canada is also [a key supplier of lumber for the U.S.](#), Trump’s order also has major implications for Southern California as it rebuilds from the deadly wildfires.

In addition to customers and [small businesses](#) feeling a hit, leaders from Canada and Mexico said they will impose [retaliatory tariffs](#) on American goods. California’s top exports include almonds, wine and dairy products.

Original Article: [CalMatters by Alastair Bland](#)

Weather tracker: Pineapple Express drenches northern California

An atmospheric river has been under way through the weekend, pummeling northern and central parts of [California](#) with spells of wind and heavy rain and hill snow, and is forecast to continue into Wednesday.

The weather system, locally called the Pineapple Express, is set up by low pressure situated to the north-east of Hawaii, which propels moist tropical air from Hawaii and across the Pacific Ocean on blustery westerly winds. The result is a stream of heavy precipitation piling into parts of the west coast of the US, falling as snow down to about 1,200 metres (4,000ft) with rain at lower levels. A cumulative total of up to 500mm (20in) of rain is expected to have fallen by Wednesday, while up to 1.8 metres (6ft) of snow will be possible in mountainous areas. Subsequently, there has been a risk of flooding.

Farther north in Canada, an arctic air mass has brought strong katabatic winds to parts of British Columbia. Sometimes called a Squamish, these north-easterly winds funnel cold air through fjords and towards the west coast, strengthening in the process, gusting up to 75mph. The combination of strong winds and low temperatures brought the risk of wind chill values of -20C to -25C from Saturday, and these are expected to continue into Tuesday, potentially into Wednesday. A warning for frostbite and hypothermia – which can occur in minutes in these conditions – is in place.

Areas of north-east Queensland in Australia, particularly around Townsville have been under weather and flood warnings through the weekend, which are continuing into early this week.

Torrential and persistent rain through the course of the weekend and early this week is expected to bring 1000mm of rainfall, with up to 300mm of this falling within six hours. This rainfall has caused severe floods, with river levels forecast to rise to their highest in



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more than 50 years, and possibly breaking records. One person has already died as a result of the floods and thousands have been evacuated.

The severe rainfall is caused by a very slow-moving low pressure to the north of Australia, which drives a warm and moist south-easterly flow from the coral sea. Meanwhile, South Australia and Victoria are experiencing an intense, but brief heatwave with temperatures expected to reach about 40C in Adelaide on Monday and Tuesday, which is more than 10C above average. The temperature in Perth is also expected to peak at over 40C.

Original Article: [The Guardian by James Parrish and Morgan Thomas](#)

How California Reservoir Water Levels Changed After Atmospheric River

California's two largest reservoirs, Lake Shasta and Lake Oroville, saw water level increases over the weekend after an atmospheric river brought heavy rain to the region.

Why It Matters

Both reservoirs have been steadily rising since November, after the start of California's water year in October. A series of atmospheric rivers brought heavy rain to the region in December, but California [hadn't seen much rain](#) since until [another atmospheric river arrived over the weekend](#).

What To Know

As of Monday, Lake Shasta water levels were at 1,032.21 feet, a 4-foot rise over their elevation on Friday. Lake Shasta is California's largest reservoir.

Lake Oroville water levels are at 847.33 feet, a nearly 7-foot rise since Friday. Lake Oroville is California's second-largest reservoir.

A spokesperson for the California Department of Water Resources (DWR) told *Newsweek* that Lake Oroville's water level increase could be attributed to the atmospheric river.

Lake Shasta is about 35 feet below full capacity, and Lake Oroville is about 53 feet below full capacity. Both lakes either reached or neared capacity in 2023 and 2024 after battling years of drought that depleted the water levels.

Lake Oroville is currently above 2023 and 2024 levels at this time of year. Lake Shasta is above its 2023 levels but about 4 feet below its 2024 levels as of February 3.

To prepare for this week's heavy rain, the DWR increased water releases to the Feather River from Lake Oroville over the weekend to "maintain flood protection for downstream communities."

Original Article: [Newsweek by Anna Skinner](#)



Sierra snowpack drastically below normal — and no one’s turning on the pumps, DWR says

Snowpack in the Sierra Nevada, which supplies about one-third of California’s water needs, was far lower than average for the end of January at one of the state’s measurement points Friday.

The results from Phillips Station, in El Dorado County, were presented at a news conference where the director of the Department of Water Resources also rebutted President Donald Trump’s assertion that the U.S. military had turned on unspecified water pumps that he said would deliver more water to California.

Snowpack measurements in the second manual survey of the winter season showed 22.5 inches of snowpack, which is a water equivalent of 8 inches.

That’s 46% of average levels on Jan. 31 for Phillips Station, a key measurement point near Echo Summit, south of Lake Tahoe, at an elevation of 6,800 feet.

It’s drastically less snowpack than indicated on Jan. 1, when the level was 110% of average for that time of year, following a series of storms that moved through the region in November and December.

The snowpack that accumulates during the wet season is critical for the state’s water system when it melts in the spring. Measurements at 130 points throughout the year help the state estimate how much water will be available and how to manage it.

The snowpack is measured at several locations, so average levels can vary.

Statewide, the snowpack is at about 65% of average for this time of year, down from 108% of average on Jan. 1. The snow water equivalent was 10.5 inches on Jan. 31.

A ‘bone-dry’ January

“We had a fairly wet December into a bone-dry January,” Water Resources Director Karla Nemeth said.

While the state is ahead of the curve heading into the winter, prolonged dry conditions like those seen in January can change the long-term calculus fast, she said in a statement.

“For each day it’s not snowing or raining, we are not keeping up with what we need,” Nemeth said.

As for the president’s statement that the military turned on pumps last Monday, Nemeth said that state water officials were “perplexed” by the claim. She speculated that Trump may have been referring to two dams operated by the U.S. Army Corps of Engineers at Success Lake and Lake Kaweah, in Tulare County.

California Department of Water Resources Engineers confer after conducting the second media snow survey of the 2025 season Friday. Snow levels at the end of January were significantly lower than the start of the month. “For each day it’s not snowing or raining, we are not keeping up with what we need,” Said DWR Director Karla Nemeth.



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A spokesperson for the Corps' Sacramento District, Tyler Stalker, confirmed the Army is conducting controlled water releases from those reservoirs, but said they started Thursday, three days after the president's statement.

Gene Pawlik, a spokesperson for the Army Corps of Engineers in Washington, confirmed the water releases but could not explain how the water would reach Southern California, how such water transfers were being made without coordination with state water officials, or how fire departments could potentially utilize it for fighting fires.

The White House did not respond to a request for comment.

In an average year, the snowpack in the Sierras provides about 30% of the state's water supply, maintained and transported through the California State Water Project, a 705-mile-long network of pipelines, canals, reservoirs, dams and pumps that sends water throughout the state.

The next snowpack survey is tentatively scheduled for Feb. 28.

Original Article: [Local News Matters by Thomas Hughes, Bay City News](#)

US WATER NEWS

Governor Abbott declares water infrastructure an emergency in state of the state address

During his State of the State address Sunday, Governor Abbott declared investing in water infrastructure an emergency item this session.

Texas loses \$2 billion in revenue every year just from leaking pipes, but it's not just aging infrastructure costing the state money. Between a booming population and extreme weather, the Texas Water Alliance says the state needs hundreds of billions of dollars to protect our water supply, an investment the governor seems intent on making.

"This generational investment in water is so important, I'm declaring it an emergency item this session," Abbott said. "An issue that affects every family and every business is water."

During his State of the State address Sunday, Governor Greg Abbott said he wants to put Texas on a path to have plenty of water for the next 50 years.

"We will make the largest investment in water in the history of the state of Texas," Abbott said.

Sarah Kirkle with the Texas Water Association says this is tremendous news. Her association works with water districts across the state and says right now everyone is struggling.



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"We're really facing incredible needs for additional financing for water infrastructure," Kirkle said. "Our communities are shouldering the large burden of investing in their water infrastructure at the local level."

Data from the policy think tank Texas 2036 shows the problem is three-fold: a historic drought causing water scarcity, not enough reservoirs to keep up with booming population growth, and aging infrastructure that also can't keep up.

The state's economy has grown by 63 percent in just a decade, and getting ahead requires an "all of the above" approach.

"We really need to get it right when it comes to water infrastructure, and make sure that the systems, infrastructure, and pipes are in place to support continued economic and population growth." Texas 2036 Director of Infrastructure and Natural Resources Policy Jeremy Mazur said.

It's not just the economy, Mazur says our entire power grid relies on water too.

"Natural gas, coal or nuclear-fired generation, all these generation sources require water to produce electricity," Mazur said.

Last session, Kirkle says the legislature took a first good step by creating the \$1 billion Texas Water Fund.

"That money is so appreciated, but it went very quickly, and we have hardly any left," Kirkle said.

Texas 2036 estimates needing at least \$154 billion over the next five decades, which must start with a regular revenue stream for the state fund. Abbott promises that funding will be "Texas-sized."

"The Texas miracle is something that we're all very proud of, and we certainly don't want water to be what holds the state back when we continue to grow and thrive," Kirkle said.

Original Article: [CBS Austin by Andrew Freeman](#)

Scientists showcase tools to help farmers profitability while also protecting groundwater

Scientists are unveiling innovative tools aimed at boosting farmers' profitability while safeguarding groundwater in Nebraska's Central Platte River Valley. Years of commercial fertilizer use have led to increased nitrate concentrations in the region's groundwater.

Dr. Richard Ferguson, an extension soil specialist at the University of Nebraska-Lincoln, has dedicated years to developing technology that assists farmers in determining the optimal timing for fertilizer application.

"The system that has our calculation algorithm built into it calculates if there's a fertilizer need, how much fertilizer is needed, and it controls the application in real time," Ferguson said.



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The technology involves sensors that emit light onto crops and measure the reflectance off the canopy with photodetectors. The wavelengths measured are processed through an algorithm to convert vegetation indices into a nitrogen recommendation rate.

"We started this project to encourage farmers to be familiar with this technology and consider adopting it," Ferguson said.

Tim Mundorf, director of soil management at Central Valley Ag, has been utilizing sensor technology for nearly three years and expressed satisfaction with the results.

"Certainly with some of our nitrate issues and our drinking water here in Nebraska, we see a lot of advantage with cutting off that final pass if we don't need it," Mundorf said.

"Because if the crop doesn't need it, that's gonna be sitting there on the ground, then it's gonna be liable to be leached into our groundwater in the future or lost to denitrification, which is a greenhouse gas."

Original Article: [Fox NE by Morgan Ahlstrom](#)

New Arizona bill aims to curb groundwater decline and protect rural farmers

Bipartisan lawmakers introduced [legislation](#) that could reduce groundwater use while offering an alternative to Active Management Areas (AMAs) and Irrigation Non-Expansion Areas (INAs).

At a press conference on Thursday, Governor Katie Hobbs presented the Rural Groundwater Management Act (RGMA) designed to give rural Arizonans an opportunity to voice their concerns and develop local solutions.

The RGMA aims to protect rural farmers from out-of-state corporations tapping into the state's most precious resource, according to the Governor's Office.

The bill's primary-sponsor, Democratic Sen. Priya Sundarashen (LD-18), called it a starting point for rural groundwater negotiations.

"We do want to make sure that what gets passed is based in science, based in the data," Sundarashen said.

If passed, the legislation would immediately protect areas experiencing severe groundwater decline for five initial basin areas: Gila Bend Basin, Hualapai Valley Basin, Ranegras Plain Basin and San Simon Sub-basin.

The recently designated Willcox AMA could also be converted into an RGMA, offering more flexible management.

Willcox Mayor Greg Hancock supports what he calls stronger regulations.

"It provides [a] foundation to build upon, allowing us to reach a compromise and move forward with future water legislation hopefully in 2025. Rural Arizona offers a unique cherished way of life, however its future depends on reliable water access," Hancock said.



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The bill is co-sponsored by Democratic Rep. Christopher Mathis (LD-18), who emphasized that the legislation is about local control.

“It includes a straightforward framework and key guard rails to ensure that meaningful reductions in groundwater levels declines are achieved,” Mathis said.

Democratic Sen. Rosanna Gabaldon (LD-21) is also a co-sponsor.

The bill was drafted based on a framework developed by the Governor’s Water Policy Council.

If passed, the bill would establish a five-person Council appointed by the Governor, with decision-making authority to set conservation targets for their communities.

The Senate President, House Speaker and minority leaders in both chambers would select four members.

The Council could adjust conservation programs every 10 years evolving water management needs.

Along with flexibility, the Governor’s Office says the legislation provides certainty for existing water users with Certificates of Groundwater Use, which formalize their water access, quantify usage, and support economic growth in rural areas.

A dedicated fund would be created to support voluntary conservation efforts, aquifer recharge and water reuse programs in rural Arizona, with initial seed funding determined through legislative appropriation.

Other rural groundwater basins could be designated as RGMAs if requested by basin voters, the County Board of Supervisors or initiated by the Arizona Department of Water Resources (ADWR)-- provided the basin meets the scientific criteria demonstrating a need for groundwater management.

Original Article: [AZPM by Katya Mendoza](#)

Giving a Dam: Wyoming Tribes Push to Control Reservation Water as the State Proposes Sending it to Outside Irrigators

Indigenous Peoples’ Day in October was thick with smoke on the Wind River Indian Reservation, with glimmers of fall foliage along its southwestern rivers shrouded in haze beneath a fuzzy horizon. Reservoirs were shriveled by drought, wildfires raged to the northwest, snow was conspicuously absent from mountain peaks and rivers dried to trickles. It wasn’t hard to imagine a future with much less water here.

Such a hereafter was at the forefront of Big Wind Carpenter’s mind as they sat on a soft gray beach beside Bull Lake Dam, the first of a triumvirate of federally-built and privately-managed dams on the reservation that feed a non-Indian irrigation district, and a place Big Wind’s family used to recreate when they were younger. Big Wind, a member of the Northern Arapaho, uses “they/them/their” pronouns, and asked to be identified by their nickname, after the Big Wind River running through the heart of the reservation, instead of their Anglo surname.



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“I grew up here. We’d come here during the summer. We’d ice fish in the winter, and we’d set up a campfire over here,” Big Wind said, pointing to a shaded area surrounded by cottonwoods and junipers. The family could usually count on hauling in ling and trout, but today the climate activist isn’t so sure future generations will be able to enjoy this place in the same way. “I think of this resource not being here in the future,” Big Wind said.

As humanity continues to burn fossil fuels that heat the climate, glaciers in the mountains around the reservation are receding. Without the moisture that trickles down from them, Bull Lake and other reservoirs on the reservation could soon yield much less water, making agriculture, aquatic life and even human survival on the Wind River reservation—already rife with tension—even more difficult.

“It’s not looking good,” Big Wind said.

That vision of a desiccated future for the reservation turned even more grim in 2023 when U.S. Rep. Harriet Hageman, a Republican and Wyoming’s only House member, proposed a [bill](#) that would have directed the federal Bureau of Reclamation to give the Pilot Butte power plant, a defunct hydroelectric facility and its reservoir on the reservation, to a nearby agricultural community. The legislation giving Midvale the hydropower plant that once provided electricity to parts of Colorado, Kansas, Nebraska and Wyoming would provide that community with renewable energy each spring and summer. But it would have also further solidified non-native farmers’ control over a river within the reservation. For The tribes, this move was an affront to their sovereignty, and there’s concern that with a Republican trifecta in Washington, it may happen again.

They believe the water in question is theirs, and any law that transfers land or infrastructure from the federal government to private management within the boundary of their reservation is a continuation of centuries of mistreatment from both.

For the entirety of the reservation’s history, its water has poured down from the snow and ice in the Wind River mountains, known to locals as “the Winds” —towering peaks home to some of the country’s most stunning and climate-vulnerable glaciers. According to the Environmental Protection Agency, by 2015, snowpack in the Winds had diminished by as much as 80 percent, and researchers from Central Wyoming College studying glaciers in the range estimated in 2018 that some may disappear altogether in five or six decades.

More recent reports have found that average temperatures in the ecosystems around the Wind River reservation have risen 2.3 degrees Fahrenheit since the 1950s, and peak streamflow is occurring more than a week earlier, leaving less water to go around later in the summer when it is hottest and driest.

Bull Lake Dam is the manmade extension of a prehistoric impression on the land created to augment the flow of the Big Wind River, which runs through the heart of the Eastern Shoshone’s and Northern Arapaho’s reservation.



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An 1868 treaty gives the two tribes, which are both [recognized as sovereign nations](#) by the federal government, headwater rights to all the water within the boundaries of their roughly 2.2 million acre reservation.

But they have been boxed out of their water rights on the Big Wind River by decades of state-led lawsuits, which awarded control over that body of water to Midvale, an irrigation district on land within the original boundaries of the reservation that was sold over a century ago through an act of Congress. The tribes heavily contested the sale, but ultimately agreed to it.

Wyoming does not have a recognition process for tribes, so the Eastern Shoshone and Northern Arapaho pursue government-to-government relations with the state on an ad-hoc basis.

Across Wyoming's high, arid desert, water is likened to gold. On the Wind River Indian Reservation, water is known as "the gift of life." It is not just a resource for agriculture or ranching by the tribes, though they do put use it for both, but an important spiritual, recreational and aesthetic force, one to be preserved and enjoyed. The tribes want to let hundreds of millions of gallons a day from the Big Wind River pass undisturbed through Diversion Dam, the point along the river where Midvale diverts water into the Wyoming Canal for irrigation. The tribes want to use the "in-stream flow" for their religious ceremonies, fish habitat, riparian vegetation and recreation, while still leaving Midvale irrigators enough water for their crops.

But under state water law, which evolved from 19th century irrigation disputes, Wyoming has the right to adjudicate the water in the Big Wind River. Midvale irrigators, who draw the vast majority of its water, see gross profits north of \$15 million annually, according to the district's [website](#). They are not anxious to relinquish to the tribes control over the water their agricultural revenue depends on.

Leaders from the Eastern Shoshone and Northern Arapaho, enemies through most of their history who today exhibit a sometimes-uneasy alliance, agree the warming climate is changing the ecosystem around them. Both tribes agree that controlling all their natural resources, especially their water, is the best way to safeguard their communities' future health and prosperity.

Original Article: [Inside Climate News by Jake Bolster](#)



GLOBAL WATER NEWS

Britain's Thames Water seeks court approval for rescue plan

Thames Water asked an English court on Monday to approve a [debt lifeline](#) worth up to 3 billion pounds (\$3.7 billion), at the beginning of a four-day hearing it hopes will help to stave off nationalisation.

In a packed courtroom, judge Thomas Leech started to hear from witnesses from Britain's biggest water supplier, gathering evidence before deciding whether to approve the rescue. Without it, Thames Water has said it could run out of cash by March.

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Thames Water, which has 17 billion pounds worth of debt, is at the centre of a public backlash against Britain's privatised water industry, which has polluted rivers and seas with sewage, amid accusations that profit has been prioritised over the environment.

Thames Water said in legal documents published on Monday that if the plan was not approved, the government would need to step in and put it into special administration.

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"The most likely outcome, if the Plan is not sanctioned, is a SAR (special administration) of Thames Water," the documents said.

ALTERNATIVE PACKAGE

A group of lower-ranked creditors opposes the rescue plan and wants the judge to consider its alternative.

The company is confident its plan will succeed as it has the backing of creditors holding more than 90% of its secured debt.

Thames Water's lawyers said there was insufficient time for an alternative rescue to be considered, plus there were questions over the "implementability" of the lower-ranked, or B, creditors' package.

In their legal documents, the B creditors said the way the company's plan had been designed would enable the majority creditors to "divert value" from other stakeholders, including the minority creditors, at the final stage of restructuring.

They also said its 9.75% interest rate made it too costly.

Their alternative plan would provide liquidity "on the most favourable terms to the group", they said in legal documents.

Original Article: Reuters by [Sarah Young and Paul Sandle](#)

Lebanon's rainfall drops by over 50%, worsening drought and agricultural losses

In Lebanon, the agricultural sector is confronting severe drought conditions. Farmer Salem Abdallah reflects on the situation, stating, "This year, the earth has turned against



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us." The drought has severely impacted groundwater levels and crop viability across the region.

Meteorological data from Beirut's Rafic Hariri International Airport indicate a drastic reduction in rainfall this winter. Precipitation levels in Beirut decreased from 520 mm to 242 mm, in Tripoli from 540 mm to 247 mm, and in Zahle from 285 mm to 149 mm.

Geologist Jamal Khair attributes these changes to climate change, noting, "The Earth's temperature has already exceeded 1.5 degrees above pre-industrial levels." This escalation leads to altered weather patterns, prolonged droughts, and increased heat waves.

Agricultural engineer Ghayath Hamdan highlights the consequences for crop yields and quality, stating, "Fruits and vegetables are smaller, weaker, and more susceptible to disease." Farmers face rising irrigation costs, with some like Omar Al-Khatib reporting an eight percent increase in expenses.

The Litani River, a critical water source, has also been affected. Farmer Talal Abu Fares observes, "The Litani has turned into a mere stream." Sami Alawieh, director general of the National Authority of the Litani River, confirms a reduction in Qaraoun Lake's water level, impacting both irrigation and hydroelectric power.

Water rationing measures have been introduced, affecting not only agriculture but also household water supply. Hamdan remarks, "People forget that drought doesn't just affect farmers. It affects all of us, our drinking water, sanitation, even our daily lives."

In response, Lebanon's caretaker Agriculture Minister Abbas Hajj Hassan has initiated the National Drought Management Plan with the Arab Organization for Agricultural Development. The plan seeks to address the drought's economic and environmental impacts and enhance cooperation with regional partners. Hajj Hassan emphasizes the importance of "joint Arab action" for addressing climate challenges and securing food resources.

Original Article: [Fresh plaza by Xinhua](#)

Urgent health warning: 17 million at risk from high sulfate levels in groundwater

About 17 million people are at risk of gastrointestinal problems from excessive sulfate levels in groundwater, according to the Hong Kong University of Science and Technology.

This alarming health finding was revealed by the world's first high-resolution global groundwater sulfate distribution map, developed by the university's School of Engineering.

Sulfate damages water quality and triggers the release of heavy metals from pipeline corrosion.



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Consuming groundwater with high sulfate levels can lead to diarrhea and dehydration, presenting increased risks for infants, seniors, and other at-risk groups.

“With climate change and urbanization intensifying, sulfate exceedance is expected to worsen, further jeopardizing global water quality and availability,” said Xiao Chengyu, a PhD student and the first author of the study.

To investigate more, the research team analyzed over 17,000 sulfate concentration measurements and global geospatial datasets to create a 1-km resolution map highlighting sulfate hotspots and identifying key contributing factors.

The team discovered that around 194 million people are exposed to water with sulfate concentrations over 250 mg/L -- a World Health Organization-recommended level indicating that water may taste unpleasant -- and about 17 million people live in areas with sulfate levels exceeding 500 mg/L.

Also, the map underscored the need for region-specific sulfate mitigation strategies by showing that natural geological conditions contribute in some areas, while anthropogenic factors like industrial discharge are more significant in others.

The study, conducted with Princeton University, the City University of Hong Kong, and the Beijing Institute of Technology, emphasized the urgent need to incorporate sulfate into global water safety management practices.

Original Article: [The Standard by Cheng Wong](#)

Rising floodwaters force evacuations in eastern Australia

Fast-moving floodwaters rose Monday in northeastern Australia after forcing many to flee, blacking out homes, and sweeping away a chunk of a critical bridge.

Storms have already dumped more than a meter (39 inches) of rain in two days in parts of Queensland, engulfing homes, businesses and roads in muddy waters, authorities said.

Aerial footage showed [rural communities](#) surrounded by the floodwaters, cut off from nearby roads.

"We are going to see widespread rain and storms spread across much of northern Queensland," the state's premier, David Crisafulli, warned in a news conference.

"We remain prepared for the ongoing prospect of more rain and the likelihood of more flooding, both flash flooding and riverine flooding," he said.

Emergency services carried out 11 "swift water rescues" overnight, the premier said.

Areas of flood-hit Townsville, a popular coastal tourist destination that lies near the Great Barrier Reef, had been declared a "black zone", he said.

"Our advice to residents in the black zone at the moment is to stay out of that zone and stay safe."

The authorities told 2,100 people in the town to evacuate at the weekend, though about 10 percent refused, [emergency services](#) officials said.



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'Bridge torn in two'

One woman in her 60s was killed Sunday when the rescue boat she was in flipped over in the flood-hit rural town of Ingham, about 100 kilometers (60 miles) from Townsville, police said.

Her body was recovered later.

The floods swept away a section of a concrete bridge over a creek, cutting off the state's main coastal road, the Bruce Highway, the state premier said.

"It's not every day you see a bridge torn in two. That's what has happened at Ollera Creek, and it is significant," Crisafulli said.

Almost 11,000 properties remained without power across north Queensland, Ergon Energy said, with no timeframe given for when electricity would be restored.

The heavy rain is expected to continue for 24 hours—with some locations to receive 300 millimeters (12 inches)—before it begins to ease, the national weather agency said.

Townsville acting mayor Ann-Maree Greaney said the floods were expected to peak on Tuesday morning.

"The roads at the moment are cut off, so communities are isolated," she told AFP.

Crocodiles

The town was pressing for power to be restored and working with large supermarket chains to deliver food, the mayor said.

People could expect to see crocodiles moving about in search of calmer waters, the environment department warned this weekend.

One farmer told national broadcaster ABC he saw a "bunch of crocodiles" around his rural property—140 kilometers (87 miles) south of Cairns— sharing a photo of one of the reptiles lit up by a car's headlights as it lurked on a flooded road.

As global temperatures rise because of [climate change](#), scientists have warned that heat waves and other extreme weather events, will become more frequent and more intense. Queensland is Australia's most disaster prone state, experiencing major floods in 2019, 2022 and 2023, research from the non-profit Climate Council shows.

Original Article: [Phys.org by Laura Chung](#)

Government gives Murrumbidgee Irrigation \$62 million to replace ageing channels with pipelines in Griffith and Leeton

Water supply company Murrumbidgee Irrigation (MI) has commenced a new project to replace inefficient aging channels around Griffith and Leeton with 47.5 kilometres of new pipeline.

The Urban Channel Pipeline (UCP) project is supported through \$62.2 million in Commonwealth funding and is being delivered in partnership with the NSW Government under the Australian Government's Resilient Rivers Water Infrastructure Program.



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MI says more than 2675 megalitres of unproductive water will be recovered through this project, a significant portion of which will be returned to the Commonwealth to contribute to delivering the 450 gigalitres of additional environmental water for the Murray-Darling Basin.

MI CEO, Brett Jones, said the Urban Channel Pipeline Project would also further enhance water use efficiency and improve system capacity through more precise water control. “Updating aged and outdated infrastructure puts our communities and industries in the best possible position to weather water challenges and improve water security across Griffith and Leeton,” he said.

Mr Jones said MI was looking forward to working together with federal, state and local governments to complete this important project.

“We’ve commenced discussions with both Griffith and Leeton councils to make sure this project is delivered as seamlessly and efficiently as possible for NSW communities,” he said.

“We also understand there is a lot more to be done and we are committed to working with all levels of government to deliver it.”

Griffith Mayor Doug Curran said this was an important project for Griffith and the wider region.

“By replacing aging infrastructure with modern pipelines, the Urban Channel Pipeline Project will not only enhance water efficiency but also improve safety, reduce maintenance costs, and support our community’s growth,” he said.

“We’re pleased to collaborate with Murrumbidgee Irrigation and Leeton Shire Council to ensure this funding delivers lasting benefits for our residents and future generations.”

Director of Grants Programs, NSW Department of Climate Change, Energy, the Environment and Water, Kirsty Fenton said improved water efficiency across the Murrumbidgee was a priority for the NSW Government.

“This program is a great example of how simple infrastructure upgrades can make a big difference in delivering water security and reducing the need for water purchase, which is a win-win for everyone,” Ms Fenton said.

The project is being undertaken in stages over the next two years.

For residents in areas where works are planned, MI says an engagement officer will be in contact to discuss the works and connection options.

Original Article: [PS News by Oliver Jacques on Region Riverina.](#)

Belize Secures \$64M in World Bank Funding for Blue Economy Development

Belize has been granted access to just over 64 million Belize dollars to further its initiatives in the blue economy. The funding will come through multiple agencies which have all been approved by the World Bank’s Board of Executive Directors. According to



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a release from the World Bank, the project, 'Belize Blue Cities and Beyond' will look at improving the management of coastal and marine resources, increasing safe water supply, and reducing land-based pollution in targeted urban areas. The basis of the approval includes the environmental and economic pressures that Belize faces as a small island developing state, including the deterioration of the renowned Barrier Reef which has declined in health due to overfishing and loss of habitats. Consideration was also given to the country's coastal areas that are facing challenges due to urban development. Love News understands that it is through strategic policy and infrastructural interventions that the challenges will be addressed under the project. These are expected to include the development of comprehensive water quality control strategies, a national sanitation master plan, and sustainable fisheries and other blue asset monitoring policies; the development of proposals for future critical urban investments that would promote sustainable coastal and blue economy development in areas like Belize City, Ambergris Caye, and Punta Gorda. Chief Executive Officer of the Ministry of Blue Economy Kennedy Carrillo spoke briefly about the funding and how it will contribute to the government's efforts to protect and preserve its blue space.

Kennedy Carrillo, CEO, Ministry of Disaster Risk Management: *"There are a number of projects that the government is benefiting from as it relates to not only the blue bonds but presently you may have seen there is a \$36.4 million US project which looks at blue cities, which is going to identify different aspects of blue economy, not only at the fisheries level but also at coastal zone. It will also look at wastewater treatments for northern San Pedro in addition to other projects that often fall under what we call the Blue Cities project."*

Additionally, the project is to see the development of a carbon market initiative that would then establish regulatory mechanisms and digital infrastructure for carbon transactions. The aim is to have the country develop high-quality carbon credits that can be marketed internationally and unlock sustainable financing mechanisms for the blue economy. The over 60 million dollars are coming from World Bank's International Development Association, along with grants from the Global Environment Facility, the PROBLUE multi-donor Trust Fund, and the Global Facility for Disaster Reduction and Recovery.

Original Article: [Love FM](#)



Note the attachment is not an inducement to trade and Veles Water does not give advice on investments.